Recognizing dyslexia: school experience, recorded care and family circumstances in Denmark

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Abstract

Registered research design and conditional interpretation policy; no outcomes observed.

Keywords: Pre-registration, research design

Recognizing dyslexia: school experience, recorded care and family circumstances in Denmark

Pre-registration: no experimental outcomes have been observed.

USER-FROZEN DRAFT — NOT INDEPENDENT SCIENTIFIC ACCEPTANCE. The user requested packaging of the current draft without further scientific iterations. Buildability and a sealed World do not establish feasibility, causal identification or successful review. See the freeze record below.

Research question

Among children assessed for dyslexia in Denmark, how does marginal administrative recognition affect school experience, recorded care, family responses and age-eligible life-course circumstances, and which parts remain descriptive or unmeasurable?

Scope

Retained child assessments ages 9–17 during 2015–2024; provisional spring-2015 initial grade-specific margin, fixed baseline relatives and outcome-specific follow-up capped at 2024. Closed pre-data adaptive graph.

Graph overview

Dependency edges summarize the graph, not unconditional activation. Exact logical conditions and all local outcomes follow below; the separate graph atlas shows each Atom's branches.

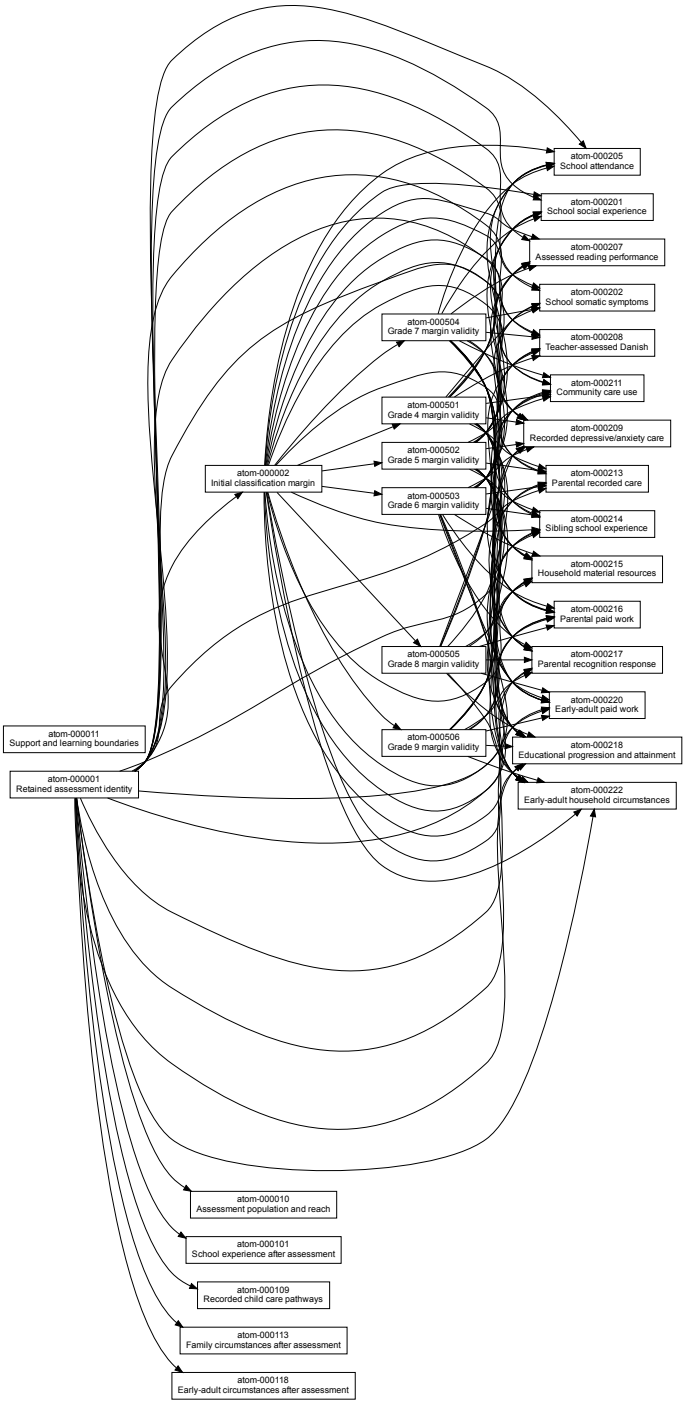

Fig. 1 Registered Atom dependencies

Registered storyline

One child–family question organizes this World. Begin with assessment composition and life-course reach; establish the retained national-assessment construct, the historical initial-margin provenance and each required grade margin. Four descriptive experiments remain independent of the causal margin. The 15 policy experiments contain 24 frozen primary endpoint/horizon slots with their ascertainment and robustness. Conditional nonactivation, partial evidence and operational failures remain visible for every member and component. School, symptom, care, relative and early-adult results retain their own scientific meaning and no domain is reduced to wages.

All interpretation composes restrictions first, then compatible primary and supplementary claims; residual narration enumerates missing scope without overriding surviving evidence. Source component judgments, not a unit's coarse summary label, establish each endpoint direction. Evidence reuse below is exploratory interpretation of already registered outputs, with no model, new target, difference of coefficients, hypothesis test, holdout or additional alpha. Suppressed signs and values cannot be published through narrative.

Grade summary: read support/support.csv, density/density.csv, balance/balance.csv and classification/classification.csv from all six grade-margin units, plus their component/root statuses. Preserve six grade rows and the eight balance slots per grade. A missing or failed grade stays visible; never require all six grades to permit a grades-4–7 outcome. No second all-grade pass gate exists. grade-summary.csv may contain grade, component, component_state, component_terminal, inference_status, reason and source_path only; it performs no refit.

HEALTH COMPARISON. Inputs are loneliness from atom-000201 and depressive_encounter/anxiety_stress_encounter from atom-000209, each at its endpoints//primary, ascertainment and robustness paths. Read one effects row, one primary component judgment/status, one scope record and one robustness judgment/status per endpoint; assert one-to-one exact endpoint/horizon joins. Required primary nonactivation means interpretation_status=not_activated with its trace, never no_result or a scientific null. Unknown required primary or required robustness stays pending. A completed primary in increase/decrease/uncertain/selection_limited requires its internal robustness to finish or terminate no_result; unexpected robustness not_activated is a scheduler-contract error and remains pending. Boundary/otherwise or primary no_result needs no robustness; such expected inactivity permits a partial comparison. These are reader-composition statuses, not new native local states.

Qualify each endpoint separately: primary increase/decrease, valid simultaneous point or bounds interval agreeing with its direction, and its OWN robustness=stable. Point intervals require a finite point within ordered limits; bounds can omit the point. Primary selection_limited, uncertain (whether a zero-containing interval or unestimable), boundary, otherwise or operational no_result cannot contribute a direction. Sensitive, unresolved or failed robustness restricts only its own endpoint. Malformed contradictory supplied values raise an input-contract error; they never become a scientific boundary. Apply this to governed values before public suppression.

For each loneliness/care pair compare complete verified D10 scope fields: target_id, eligibility_rule, index_rule, baseline_set_digest, sorted_required_grades, exact pre-outcome grade-weight numerator/denominators, observation_cap, horizon_class and nominal_horizon_rule. TRUE equality means within_target; known inequality means cross_target with differing fields; unknown metadata means scope_unresolved and disqualifies only that pair. The registered loneliness grade4–7/school-year and care grade4–9/730-day targets differ. No common-population refit is allowed.

Ordered health narration: (1) divergent when a qualified loneliness decrease accompanies at least one qualified care increase with known pair scope. Report ALL qualifying pairs in depressive then anxiety/stress order. An unused care boundary, selection limitation, uncertainty, sensitive robustness, no_result or unknown scope does not veto a qualified pair; state that unused endpoint's exact disposition. (2) With no divergent pair, concordant requires THREE qualified decreases and both scopes known. (3) Every other completed combination is unresolved, not no effect. Known different targets always require side-by-side cross_target wording, with no latent-health, detection-share, common-population or mediation conclusion. Partial care plus a care decrease never establishes concordant.

health-patterns.csv has exactly two reader rows when composition completes: comparison=loneliness_depressive/ loneliness_anxiety_stress; first_atom,second_atom,first_endpoint,second_endpoint,first_state,second_state,first_terminal,second_te Boolean qualification flags, TRUE/FALSE/unknown scope and ordered pair labels preserve partial evidence. An unrun composition emits only a reader disposition, not findings.

MATERIAL COMPARISON. Pair education18 and attainment20 from atom-000218 with wages20 from atom-000220 and resources20 from atom-000222, in that four-pair order. Employee participation and co-residence remain separately narrated outcomes and are not prerequisites. Read each pair's primary/robustness/scope records under its endpoint namespace. Valid zero-containing intervals are still numerical evidence; sensitive robustness remains an explicit restriction. Any selection_limited, boundary, unestimable, no_result, not_activated or pending primary makes that pair unavailable, without erasing other pairs. Scope equality uses the same D10 predicate and additionally the fixed horizon classes birthday18, birthday20 and annual20. Their registered differences imply different_scope; UNKNOWN metadata gives scope_unresolved. Contradictory compatible metadata is rejected, never permission to refit. Preserve all four rows with comparison, first_atom,second_atom,first_endpoint,second_endpoint,first_state,second_state,scope_compatible,compa No within-population divergence, financing, insurance or welfare mechanism follows from side-by-side signs. Resource provenance restrictions attach to each income row.

FAMILY RECOGNITION COMPARISON. Read parent_assessment from atom-000217 and parent_care from atom-000213, including primary, robustness and verified D7/D10 scope records. First, a valid adjusted POINT interval wholly above zero for parent_assessment plus stable own robustness supports recognition_response immediately; do not await care, work, resources or sibling outcomes. This intentionally retains the registered point-interval-only recognition narration: a valid directional

bounds result remains a separately reported primary result but does not enter this named comparison. Second, a point interval wholly below zero for assessment with stable robustness permits family_response only when parent care has its own directional adjusted point interval, stable robustness and identical verified baseline_set_digest, index_rule, parent-roster definition and child730 horizon. Otherwise the joint interpretation remains unresolved; a zero-containing assessment interval never becomes a decrease or nonincrease. Neither resolved pattern isolates caregiving or rules out alternative unrecorded recognition. Optional care pending does not disable the early increase route; required nonactivation and unknowns retain their exact reader dispositions. family-patterns.csv records comparison=parent_recognition/parent_care_with_recognition, source endpoint/Atom paths, states, inference_status, robustness_states, scope_compatible, compatibility_reason, interpretation_status, interpretation and reason. No pilot effect is estimated.

All comparison algorithms are derived implementations of these rules, never a second scientific authority. Status-only and synthetic truth tables test symmetric partial-care cases; sensitive versus stable, selected, boundary, operationally failed, inactive and unknown inputs; zero-containing intervals with either point sign; discordant/unknown scopes; and early parental recognition with optional care pending. No fixture enters a manuscript slot or accepted plot-ready result.

Literature, institutions and retrieval ledger

All searches below occurred on 5 September 2026. Earlier source records are retained as inherited provenance; the final verification section identifies retrieval performed for the present package. Access levels refer to material actually retrieved in the named search round; full text means the relevant sections were read, not that every page of a book was audited. Searches examined public scientific/documentation material only. No confidential rows or study outcome summaries were accessed. Published studies' results were screened for theory and prior-art restrictions, never imported as this study's estimates.

Positioning and competing theories

Recognition could relieve self-blame and improve access to instruction, while stigma, altered expectations or assessment assistance could change reported experience and demonstrated performance. Referral could increase recorded care without worsening health. Family advocacy, shared liability and parents' own recognition provide competing routes to changes in relatives' care and paid activity. Educational participation can coexist with lower current earnings or parental co-residence; neither establishes a welfare loss. These are hypotheses, not predicted signs. The study asks whether separately recorded dimensions support or constrain a common policy account. It cannot recover latent health, unaided literacy or mediation by comparing coefficients.

The closest Danish threshold study is Nielsen and Ibsen's 2023 chapter 4, **The Effect of Supporting Children with Dyslexia**, in Ibsen's *Essays in Economics of Education*. Original Aarhus thesis, full text, especially PDF pp.181–185: its data,

sample restrictions and RD specification were re-read. It already covers reading/math tests, grades, attendance, school wellbeing and continuation. It used additional assessment-survey and membership information; those fields are not presumed in FSV. Its clinical and future-outcome exclusions, strict score inequality and support-receipt interpretation are not adopted. School outcomes here are conceptual-replication benchmarks; exact sample/result reproduction is not claimed.

The updated **Unlocking Potential: The Impact of Dyslexia Diagnosis and Support on Educational Outcomes and Well-Being** is identified in ESPE 2026 abstract 440, PDF p.100, abstract access. It announces upper-secondary completion, age-20 NEET and wellbeing, so those are not priority claims here. The updated full manuscript was not obtained, and no author was contacted. Novelty of the symptom/service distinction and classification-related family/material outcomes remains provisional; unavailable full text and unpublished work prevent claims of being first.

Kraka Economics (2024), *Ordblinde i Danmark – Opvækst og uddannelse*, full text methods/context, PDF pp.30 and32, documents close child/family health, work and sibling comparisons. Its OLS-adjusted associations make broad dyslexia-health/family disadvantage non-novel. The proposed margin is a different estimand, conditional on evidence it can be recovered.

Kjeldsen et al. (2019), *Reading and writing difficulties and self-rated health among Danish adolescents*, full text via Europe PMC: the FOCA study is cross-sectional and measures self-reported difficulties and health. Its mediation analysis is not identification of a recognition pathway, and FOCA instruments are not added to FSV. Wilmot et al. (2023), *Understanding Mental Health in Developmental Dyslexia: A Scoping Review*, full text via Europe PMC, supplies psychosocial mechanisms and coverage limitations. It does not certify causal identification or absence of prior classification work.

Aro, Özbek and Torppa (2024), *Predicting adult-age mental health with childhood reading and math disability: do resilience and coping styles matter?*, full text via Europe PMC: voluntary Finnish follow-up and childhood emotional/attention exclusions limit transfer. Its reading-disability findings challenge an inevitable persistent-harm narrative without supporting equivalence. Parenting Stress and Broader Phenotype in Parents of Children with ADHD, Dyslexia or Typical Development (2019) was identified in PMC metadata in this revision; earlier full-text screening is background, so no newly verified result is claimed here. Wilmot et al., mothers' perspectives is an adjacent qualitative lead from PMC metadata; it motivates attention to family experience without supplying a Danish treatment effect.

A new 2026 search hit, *The effect of reading problems on emotional and behavioral problems in children: the chain mediating role of parenting stress and parental anxiety/depressive symptoms*, was retrieved in full text through Europe PMC. It uses a two-wave Chinese sample and questionnaire/PROCESS mediation, not a Danish assignment margin. It strengthens the family-mechanism neighborhood but does not justify mediation claims here. UK pain research in the supplied background was not re-read beyond bibliographic discovery, so the modest somatic endpoint choice rests on the documented school items and the stated stress hypothesis rather than transferred effect sizes.

Institutional verification

Ministry, May 2016 note on use of Ordblindetesten, full text p.1, is the newly retrieved historical authority for launch-period thresholds. Only its rule table and period statement enter the design; published totals do not establish sample feasibility. January 2018 official guide hosted by the reading centre, browser-indexed text of opening sections, confirms individual suspected-dyslexia testing, spring testing and professional approval. Direct downloads and subsequent page retrieval returned 404; its numerical table is **not** treated as verified here. The January 2024 EMU PDF URL returned 404 in the browser and HTML rather than PDF via requests; no full-text verification is claimed from that response.

February 2026 professional guide, browser full text, especially pp.9–12, supports the composite-score interpretation, approval requirement and current seasonal norms. Its rules are not backdated. STIL warehouse documentation, full text pp.2–3, documents national introduction in February 2015, other assessment tools, approved-result retention and possible replacement of a grade-3 result. It retains categories; the FSV table additionally lists SCORE. Whether the FSV delivery follows that retention is unresolved, not inferred. The archive catalogue for Ordblindetesten was viewed as documentation discovery only; non-FSV archive tables were not inspected or added.

SPS Ordblindetesten guidance, full web text, distinguishes tests, evaluation and repeat-test exceptions. UVM OBU questions, web text, describes supplementary assessment for some yellow scores from January 2021. These cannot prove historical receipt. November 2024 parent-screening pilot guidance, cover/calendar inspected in this revision, establishes a recent planned initiative, not rollout participation, an instrument or post-pilot income follow-up. The adult-instruction literature and VEUV schema history motivate an explicit service boundary; they do not justify appending an unrelated adult study.

Official older-pupil questionnaire, June 2016, browser full text, verifies the selected item wording and answer labels. Direct download failed; browser text supplies item evidence only. FSV numeric coding and year-specific correspondence remain a validation requirement. DST SPEC2 dictionary, full text, verifies community specialties. DST health-insurance statistical processing, full text, cautions about billing corrections, chronic-care honoraria and changes in contact subdivision. No published contact totals are imported.

Local original LPR3 researcher-model guide (18 December 2023), pp.3–4, verifies contact/forløb key distinctions; the SKS table-structure PDF verifies fixed-width positions and valid dates. Selected DF32/33/40/41/43 codes were retrieved narrowly from the byte-preserved SKScomplete file with a checksum. Phenotype dates are recorded in `sks-phenotype.json`. These are operational definitions, not validated sensitivity/specificity estimates in assessed children.

Methodological anchors

Calonico, Cattaneo, Farrell and Titiunik (2017), *rdrobust: Software for Regression-Discontinuity Designs*, method/software documentation, and Cattaneo, Idrobo and

Titiunik (2020), practical RD guide, targeted methodological text, support local polynomial estimation and clustering/precision cautions. Their existence does not validate this score margin. The multiway influence-function implementation and inclusive-zero adapter are registered engineering requirements with synthetic validation, not a claim that an unmodified convenience call implements this protocol. The package's adaptive foundations were read, including Dwork et al. (2015), DOI 10.1126/science.aaa9375, for the warning about adaptive data reuse; no reusable-holdout procedure is claimed here.

Search trace and stopping limits

Local exact regex searches are saved in `evidence/local-search.json`, including corpus size, hit counts and screened metadata. The 828-record harvested corpus and 229-record selected corpus were searched separately for `dyslex|ordblind`, `reading disab|literacy`, `child.*health shock|sibling.*disab|sibling spillover`, and `diagnos.*education|special education`. Financial literacy was rejected as the wrong exposure. Adjacent child-health/sibling papers were retained as discovery leads, not identifying assumptions. The concept graph was queried narrowly with `dyslex|ordblind` and `child_health|parental_labor|sibling`; original edge records preserve kinds/papers/claims. No inherited edge was adopted as a dyslexia instrument or adjustment set. The study DAG is authored from the explicit theory above.

The full 531-page FSV discovery used `ordblind|dyslex` (3 table hits), `trivsel|fravær` (6), `psykiatr|sygesikring` (24), `familieindkomst|husstand|boligstøtte` (10), `uddannelse|karakter` (17), `løn|beskæftig` (19), and `smerte|hovedpine|medicin` (33). Thirty-one exact table pages were then retrieved narrowly; the retained subset appears in each Atom. Schema and Danish value-label retrieval are reproducible from the paths in the evidence files. Counts are documentation-search hits, not people.

OpenAlex exact query `dyslexia diagnosis Denmark health family`, relevance ordering, page 1/per_page 100, failed with HTTP 429 **insufficient daily budget**; the sanitized response is in `openalex-requests.jsonl`. It is not zero hits and saturation cannot be asserted. Complementary live web, direct DOI/primary-author sources and PMC continued the search. PMC exact query `dyslexia AND ("mental health" OR headache OR parents) AND (Denmark OR Danish OR review OR longitudinal)`, first 15 relevance hits, succeeded; request timestamps, metadata records and query translation are in the PMC evidence files. Wrong-condition service-dog/ASD and asthma studies were excluded. China/family papers were kept as different-setting mechanisms. Full text was retrieved through the public Europe PMC XML API when appropriate; access success/failures are in `source-requests.jsonl`.

Live web queries included `Ordblindetesten faglig vejledning 2015 2016 grænse 70 80 score`; `Ordblindetesten 2017 2019 grænse 3 klasse 4 klasse score`; `"Unlocking Potential" dyslexia Ibsen Nielsen health family 2026`; `national trivselsmåling spørgeskema 4 9 9 10 11 hovedpine`; exact historical-manual filenames; `"dyslexia" "classification" "healthcare"`

`Denmark regression`; `site:uvm.dk "Spørgeramme" "4.-9." "hovedet"`; `"Ordblindetesten" "3. klasse" "62" "2015"`; `site:dst.dk "SPEC2" "80"` `psykolog`; and `site:rdpackages.github.io rdrobust masspoints cluster sharp discontinuity`. No reliable total web hit count was supplied. Commercial clinics, generic admissions research and unrelated "Unlocking Potential" results were rejected. Citation/version expansion went from the direct thesis to ESPE 2026, from the scoping review to Danish and Finnish evidence, and from current test guidance back to the original 2016 ministry table. The final historical-document round materially changed the feasible calendar, which is incorporated here. Further priority and historical coverage remain unresolved; this is targeted adversarial screening, not a systematic review or demonstrated saturation.

Inherited source verification, 5 September 2026

The complete normalized topic_prompt, accepted question review, entire candidate pool and prior technical restrictions were read directly. The existing source ledger is retained as inherited same-day provenance; this section distinguishes the additional retrieval actually performed for this design. Local searches were rerun over all531 FSV pages and both economics CSVs, plus the provenance graph. Exact regexes, table/page matches and screened metadata are saved in evidence/revision-search.json. FSV hit counts in query order remain3,6,24,10,17,19,33; they count documentation pages only. Wrong-exposure financial-literacy hits and unrelated sibling instruments were not adopted. Narrow boundary-aware query_schema retrieval for UDD_ORDBLINDETEST,UDD_NATTEST_GENBEREGNEDE,IND,FAIK is in revision-exact-schema.md, with original page locators. SCORE/THETA/NORM/GENBEREGNET remain unlabeled in those exact variable lists; this is why construct/calibration cannot be inferred from a shared field name.

Live web searches used the exact queries `"Unlocking Potential" dyslexia Ibsen Nielsen health family 2026`; `"genberegnede" "THETA" "NORM" nationale test læsning`; and `"dyslexia" "classification" "family" Denmark health`, with no temporal or domain filter. Browser totals are unavailable. The direct author research page and ESPE abstract were rechecked; the author page remains metadata and an updated full paper was not obtained. Familial-risk prediction, definitions/Delphi work and unrelated educational charities are different exposures/questions, not verified Danish recognition-effect predecessors. The official DST recalculated-test variable page exposes names without common-scale documentation; no score standardization was imported.

Both original DST income-variable pages were read in full relevant text: family equivalized income and person-assigned equivalized income. They identify historical2014–2016 assistance-input errors and corrected distribution/SDG products. They do not identify correction status in this study's delivered IND/FAIK. D9 therefore defines exact documentary correction routes and a recorded-proxy restriction. This is a measurement issue, not evidence of an observed RD bias or favorable correction. The May2016 ministry PDF was reread directly (HTTP200, page1 rule/period

table); browser retrieval initially failed. Its source hash and access date are in revision-rule-verification.json. The launch thresholds and inclusive upper-bound interpretation remain; actual FSV precision, retained initial assessment and usable support do not follow from it. STIL warehouse documentation was reopened in browser full text, retaining the approval/replacement warning without equating warehouse and FSV extracts.

OpenAlex request `search=dyslexia classification Denmark health family`, per_page10 and selected id/doi/title/publication_year/referenced_works returned429 insufficient budget. Its sanitized response and timestamp are in revision-api-search.json. This is an index failure, not zero literature; citation expansion through OpenAlex was unavailable. The same file records two complementary PMC ESearch queries, translations, times, returned IDs and counts50/205: `dyslexia[Title] AND (Denmark[All Fields] OR Danish[All Fields]) AND (health[All Fields] OR family[All Fields])` and `dyslexia[Title] AND (null[All Fields] OR resilience[Title] OR parenting[Title])`. Only the first8 relevance results per query were screened via ESummary, saved in revision-pmc-screen.json. National-test development and the scoping review were advanced; familial-risk interventions, risk prediction, historical diagnosis essays, university resilience, parenting-style associations and checklist validation were retained as background or excluded as wrong estimand. Metadata is not full-text verification. Previously identified Finnish counterevidence was rechecked directly rather than assuming the query was exhaustive.

Targeted full-text paragraphs from Poulsen et al., Aro et al. and Wilmot et al. were retrieved through EuropePMC XML (HTTP200 each; revision-fulltext.json). Score construction/administrative thresholds, selected sampling and voluntary follow-up, and the scoping review's inclusion limits reinforce the registered interpretation limits. They establish neither a Danish classification effect nor an equivalence result. The current search round did not establish another same-estimand predecessor; absent updated manuscripts and limited index access prevent a priority or systematic-saturation claim. Source-version and citation expansion already conducted in the inherited ledger remain context; the new round was targeted at the review's measurement and methodological challenges.

The official CRAN source/manuals pin rdrobust4.0.0 and rddensity3.0. Source hashes/statuses are in software-reference.json. Relevant RD source functions were inspected to fix the bias-correction and HC0 residual convention; density return values are densities and their difference, not log densities. The study's multiway correction is explicit algebra in I3, not attributed to a package default. Synthetic one-grade checks reproduce the two point estimators and HC0 variance at h<b,h>b,h=b, including equality at the classification cutoff; cluster arithmetic is checked separately. These are implementation checks with artificial numerical inputs, not empirical results or an identifying-assumption test.

Final source and evidence-policy verification, 5 September 2026

The source/version record now includes Poulsen, Juul and Elbro (2026), Correction: A national test of dyslexia, version of record22 May2026. The publisher correction statement and replacement Table3 were read in full relevant text. It corrects sensitivity/specificity calculations made at incorrect threshold levels. No numerical validation-accuracy claim enters the registered estimand or gates. The launch-period assignment rule remains separately grounded in the ministry's May2016 note, page1, which was retrieved directly again (HTTP200 after browser timeout). Validation accuracy does not establish continuity, retained initial-assessment history or a support effect.

Both original DST equivalized-income pages were re-read. Their definitions and2014–2016 assistance-input warning support carrying correction provenance into every displayed family-income estimate; they cannot certify the version in a future FAIK delivery. The public source record is policy-search-web.json. The exact web queries were `"dyslexia" "classification" Denmark family health "Ibsen"` and `"A national test of dyslexia" correction 2026`, without time/domain filters; the browser supplied no reliable total hit count. Search hits on special-education intervention, teacher aides, definitions, prediction and genetics concern different exposures. The direct author research page again identifies Unlocking Potential as a draft available on request; no updated full manuscript or new same-estimand family study was obtained, and no person was contacted. No renewed priority claim follows.

All531 permitted FSV pages were searched again with the seven exact regexes in policy-search-local.json; the documentation-hit counts remain3,6,24,10,17,19,33. The exact variable sections and original page locators for all24 retained tables are in policy-schema-exact.md. Detailed reads of UDD_ORDBLINDETEST,BEF,IND and FAIK confirm the candidate score/date/category, parent-link and equivalized-income fields, including unlabeled test semantics and income coverage through2024. These are documentation facts, not usable score variation, field availability or successful joins. Both local economics corpora were rerun separately with the four logged queries; child-health, sibling and special-education leads remain contextual, and financial-literacy matches are rejected as wrong exposure. The two concept edges retain paper dk_W2784402791/claim dk_W2784402791_c12 and concern sibling sex mix, fertility and an assumed absent earnings path; neither is adopted into the dyslexia DAG.

OpenAlex again returned HTTP429 insufficient budget for `dyslexia classification Denmark health family`, per_page10, selected bibliographic fields. This is a failed retrieval, not an empty result set. policy-search-api.json records the timestamp, sanitized response and exact parameters. Complementary PMC queries were `dyslexia[Title] AND (Denmark[All Fields] OR Danish[All Fields]) AND (health[All Fields] OR family[All Fields])` and `dyslexia[Title] AND (null[All Fields] OR resilience[Title] OR parenting[Title])`, sort relevance, retmax8. Their translations, total literature counts, returned IDs and ESummary metadata are recorded there. Only these first8 hits per query were screened. Test development and the mental-health review were retained as known sources; family-risk prediction, interventions, university

resilience and parenting associations are not a Danish classification-policy evaluation. Direct EuropePMC full-text retrieval of Aro et al. confirmed the childhood emotional/attentional exclusions and voluntary follow-up; this qualifies transfer of its counterevidence and supplies no equivalence claim. Expanded version checking changes the validation citation, not the registered outcome roster, score rule or estimator. Limited indexing, partial PMC screening and the unavailable updated predecessor still preclude systematic saturation or certification of novelty.

Data contract: recognition, reports and recorded circumstances

This document supplies shared definitions incorporated explicitly by the member Atom protocols. It authorizes no data access. The run boundary enumerates all 531 FSV tables; all were searched on 5 September 2026. None is runtime validated. `evidence/schema-extracts.md` gives exact FSV page paths, fields, documented calendars and history. `evidence/exact-code-documentation.json` contains narrowly retrieved Danish TIMES definitions; `evidence/sks-phenotype.json` contains the selected versioned SKS phenotype. These are documentation, not estimates or sample evidence. Dataset inventory observation totals are not study counts.

D1. Frozen populations and clocks

The descriptive population is persons with a retained `UDD_ORDBLINDETEST` record dated 2015-02-01 through 2024-12-31 and age 9 through 17 inclusive on `DATO`. Age is completed years from `BEF.FOED_DAG`, not calendar-year subtraction. A retained record is not necessarily a first assessment or first lifetime diagnosis. Keep the earliest retained date per PNR. Remove byte-identical duplicate rows; conflicting scores/categories on that earliest date make exposure uncertain. Such persons remain in the exposure audit and unclassified descriptive group, but cannot enter score comparisons. Do not use later results to replace earlier ones. Records before February 2015, invalid dates/keys, or dates preceding birth are counted as anomalies and excluded from substantive cohorts, with reasons.

The provisional causal population is the subset first assessed during 2015-03-01 through 2015-06-30, aged 9–17, in ordinary public-school grades 4–9. This deliberately narrow historical window is chosen because an original ministry note documents the launch-period rule. It is not a claim that later rules differ or that 2015 is sufficiently large. No outcome-driven expansion to later cohorts is authorized. Grade 3 is described but excluded from this margin because later-test replacement is explicitly documented. Excluding grade 3 does not resolve possible earlier grade-3 assessment of a later pupil: The retention component of atom-000002 must establish that history.

Grade at test must be encoded in the delivered `UDDANNELSESNIVEAU` under an authoritative crosswalk identifying actual assessment grade, not later attainment. Independently compare with `UDD_FOLKESKOLE_FRAVAER_STIL.KLASSETRIN`, `KLASSETYPE`, `INSTITUTIONSNUMMER`, `MAANED`, `SKOLEAAR` in the immediately preceding complete calendar month. The preceding-month school record defines ordinary

public-school eligibility. An unlabeled or postdated education-level variable, unresolved class-type encoding, or disagreement leaves that person's grade unresolved. Do not derive grade from age, later surveys, future grades or best agreement with the cutoff. atom-000002 establishes the common documentary mapping, not an empirical requirement that all grades exist. Grade-specific support, sorting, balance and label judgments have their own Atoms. Each endpoint uses its full prespecified grade set (4–7 for school reports/attendance/reading, 4–8 for Danish teacher grades, 4–9 for other outcomes); no failing grade within that set is dropped. An absent grade outside an endpoint set does not restrict it.

All follow-up ends by 2024-12-31 even if a table header mentions 2025 or 2026. This aligns income and migration documentation and avoids promising future complete data. A table's snapshot date is not its first event date. Read the vintage manifest before querying governed rows. The 2015 causal cohort has care follow-up through 2017, school outcomes in 2015/16 or the predetermined next test year, and potentially age-18/20 outcomes. A child aged 9 in spring 2015 cannot reach 20 by 2024; a child aged 16 can. This is arithmetic, not an observed cohort distribution.

D2. Join and version discipline

PNR is the linkage class, not a public identifier. Assert consistent pseudonymization domains and types without attempting re-identification. `CPRTJEK/CPRTYPE` are used only under the delivered dictionary; never guess exclusion codes. Join event-to-person many:one; each date of birth must agree across all BEF snapshots. Choose the latest documented vintage available when the runtime extraction is frozen and use that vintage consistently within each register. Record checksum, vintage, dictionary URL/date and value sets before opening outcome values. "Latest" cannot mean switching after seeing results.

Collapse event outputs to one row per index child and registered endpoint before an analysis join, then assert one:one. A legitimate diagnosis expansion is one contact:many diagnoses; never count the expanded rows as people or contacts. Assert row counts before/after joins, unmatched proportions, unique-key counts and timestamp ordering. Conflicting duplicates are quarantined, never averaged arbitrarily. Unresolved duplicate semantics yield `measurement_boundary` if documented incompatible, otherwise `otherwise`; a permission, transport or software failure yields terminal `no_result` without a local scientific state.

School-month absence: key `(PNR, INSTITUTIONSNUMMER, SKOLEAAR, MAANED, KLASSETRIN, KLASSETYPE)` after identical-duplicate removal. Multiple schools within a month may be summed only if metadata establish nonoverlapping enrollment days. Otherwise that month is missing. Survey: use earliest valid `STARTTIDSPUNKT` within the registered follow-up window; require `SLUTTIDSPUNKT >= STARTTIDSPUNKT`. Two nonidentical responses at identical first timestamp make the response missing. `SKEMA` and `KLASSETRIN` must match the older-pupil questionnaire. Do not select the most complete or favorable survey.

School survey history was converted to annual status datasets in June 2026; institution identifiers were repaired in March 2025. Absence source data were corrected in May 2026. `UDKLASSE_ID` cannot be compared across vintages without rebuilding

earlier identifiers; it supplies no assessment-grade field and is not used to manufacture grade. School clustering uses the preceding-month institution. All these points are documentation warnings, not observed defects.

D3. Observation, death and emigration

`BEF` establishes presence at a dated snapshot. `VNDS.PNR, HAEND_DATO, INDUD_KODE` supplies immigration/emigration events through 2024; the direction code must be verified in the delivered Danish dictionary. `DOD.PNR, DODDATO` supplies death. `BEFBOP.PNR, ADRESSE_ID, BOP_VFRA, BOP_VTIL` supplies dated addresses, not automatically international migration. Do not use unlabeled LIFELINES event codes. Initialize residence from the last BEF snapshot strictly before time zero; process migration chronologically, with exit/death taking precedence on a tied day. A contradictory sequence is unknown, not uninterrupted residence.

For an event endpoint, define occurrence during `(t0, min(t0+730 days, first emigration, death)]`, counting an event on an exit day only if event ordering is documented; otherwise that day's event is unknown. This is a risk of an event **recorded before exit**, with death/emigration as competing events, not independent censoring and not lifetime illness risk. Require the administrative table to be complete through the nominal horizon. Never exclude later emigrants or decedents from this denominator. Report the competing-event proportions. A pre-existing diagnosis is not an exclusion unless the endpoint expressly asks first newly recorded diagnosis; this study's main contact endpoints include recurrent care.

For school reports, attainment, household states and annual resources, lack of observation after exit remains unknown. Do not code it as low symptoms, nonattainment, zero resources, or independence. Conceptually defined bounded responses use the missing-data bounds in I3; outcomes undefined after death instead receive the selection-limited disposition specified there. Unbounded income/hours outcomes with any unresolved postbaseline missingness have a `selection_limited` causal disposition; available-case values remain descriptive. Do not require a future observed outcome to enter the baseline cohort.

D4. Survey endpoints

Use only `UDD_TRIVSEL_STORE_KLASSER` and the official older-pupil questionnaire, June 2016 version. The source directly identifies items 1 (liking school), 9 (loneliness), 10 (stomach ache), 11 (headache) and 33 (school belonging). It does **not** prove that FSV Q-numbers map to these items or that numeric code 1 means the first answer. The executable mapping is exact item wording plus response label, crosswalked to candidate fields Q1/Q9/Q10/Q11/Q33 and `SKEMA`; reject inconsistent, absent or changed wording rather than substitute another index. Preserve the official label-to-number map and its dates in the runtime dictionary audit before any values are seen. FAKTOR/I indices and younger-pupil questions are not substitutes.

Retain four separate binary endpoints: frequent loneliness Q9; frequent stomach ache Q10; frequent headache Q11; low belonging Q33. For Q9/10/11, `Meget tit` or `Tit` = 1, `En gang imellem` (including documented orthographic spacing), `Sjældent`

or `Aldrig` = 0. For Q33, `Uenig` or `Helt uenig` = 1; the other three substantive agreement labels = 0. Refusal and invalid/missing responses are missing. No scale is called clinical depression or general quality of life.

Window: the first complete school year beginning after t0, from 1 August through 31 July, subject to the 2024 cap. Include baseline grades 4–7 for this prospective school-report target, so ordinary progression remains within the older questionnaire. Do not exclude actual repeaters, leavers or absentees based on later school status; missing responses are part of ascertainment. Descriptive age/grade-unknown records are reported separately and do not enter grade-specific contrasts. Sibling belonging uses the same definition on a sibling roster fixed before the child's test.

D5. Attendance and assessed achievement

Total absence is `100 * sum(DAGEIALTFRA)/sum(DAGEAKTIV)` and sickness absence is `100 * sum(DAGESYG)/sum(DAGEAKTIV)`, two separate endpoints over the first full post-test school year, baseline grades 4–7. These are recorded school-day proportions; sickness absence is not diagnosed disease. Require documented units and `0 <= DAGESYG <= DAGEIALTFRA <= DAGEAKTIV` for each nonoverlapping month, denominator positive, and all expected enrollment-month records. A documented zero-school-day vacation month contributes zero to both sums; an absent monthly record is not such a month. Unresolved missing months make the annual endpoint missing; descriptive observed-month summaries are explicitly a different denominator. Retain `DAGELOVFRA` and `DAGEULOVFRA` only for the arithmetic reconciliation audit, not additional endpoint tests.

Reading performance: `UDD_NATTEST_GENBEREGNEDE.PNR, FAG, FAGID, KLASSETRIN, TEST_DATOTID, THETA, GENBEREGNET, NORM, KRITERIE, SKOLEAAR`. Use the recalculated national Danish-reading measure, not original and recalculated results together. Include baseline grades 4–7; the target grade is 6 for baseline 4/5 and 8 for baseline 6/7, and the target school year is t0's school year plus the difference in grades. Require the official FAG/FAGID and norm dictionary to identify one overall reading THETA. If THETA denotes an unidentified domain or the target assessment was not scheduled, register a measurement/horizon boundary, not a new subject. Use the earliest target-grade test in that school year; absent scheduled tests are missing. Units are the delivered documented THETA scale; no post-treatment standardization. Original-test profile scores and post-2022 transition-test scores cannot substitute. Performance with accommodations is assessed achievement, not unaided decoding.

Grade-9 Danish assessment: `UDFK.PNR, SKOLEAAR, KLTRIN, GRUNDSKOLEFAG, GRUNDSKOLEKARAKTER, FAGDISCIPLIN, BEDOEMMELSESFORM, PROEVEFORM, SKALA, KARAKTERAARSAG, VERSION`. Target the school year t0's school year plus `9-baseline_grade`; for baseline grade 9 use the following year's target instead only in descriptions, never as the causal endpoint because t0 may follow assessment. Causal grade endpoint therefore uses baseline grades 4–8. Retain `GRUNDSKOLEFAG = Dansk`, official `SKALA = 7`, numeric marks in {-3,0,2,4,7,10,12}; the exact BEDOEMMELSESFORM code must mean final teacher assessment (`standpunktskarakter`) in the year-specific dictionary. Equal-weight the distinct documented Danish disciplines

with one final grade each; require all disciplines in that year's official roster. No recoding of cancelled examinations into grades. This endpoint is teacher-assessed Danish attainment, not an exam-only literacy effect. The absence of an exact form/discipline dictionary is a boundary. The spring-2015 cohort's scheduled grade years run through 2020; pandemic-specific changes must be documented and the 2020 stratum reported separately, never dropped for its result.

D6. Health-service constructs and code versions

Specialist diagnoses: `PSYK_ADM` and `LPR_ADM` fields PNR, RECNUM, D_INDDTO, D_UDDTO, VERSION; corresponding `PSYK_DIAG`/`LPR_DIAG` fields RECNUM, C_DIAG, C_DIAGTYPE, VERSION. Assert each administration RECNUM maps to one PNR in a common vintage. Keep diagnosis roles whose documented labels mean action/main or secondary diagnosis; exclude referral, tentative and administrative-only roles. Link many diagnoses to one contact, then collapse to unique person/calendar admission date. Union old psychiatric/general records by person/date/normalized code/role to prevent overlap inflation. An event is an encounter with any included diagnosis, not disease onset.

Freeze ICD-10/SKS prefixes DF32 and DF33 for depressive encounters, and DF40, DF41 and DF43 for anxiety/stress-related encounters, as separate endpoints. Exclude all other prefixes, including DF81 dyslexia, ADHD, bipolar disorder and psychotic disorders. This is a focused burden construct, not all mental illness. Use exact valid-from/valid-to dates from `sks-phenotype.json` with dates inclusive; preserve original strings and leading D. Strip whitespace only. If a delivered field omits the SKS D, restore it only when its dictionary explicitly identifies ICD-10 without that administrative prefix. A code absent from the frozen valid-date list is not silently promoted. Parent care uses the union of these two groups, as an explicitly combined encounter endpoint on the fixed parent roster.

The causal 24-month follow-up is wholly before 2019. It uses LPR2/PSYK, so an LPR3 mapping failure cannot suppress that contrast. Descriptive later cohorts use `LPR_A_KONTAKT.PNR, DW_EK_KONTAKT, KONT_STARTTIDSPUNKT, KONT_SLUTTIDSPUNKT` joined to `LPR_A_DIAGNOSE.DW_EK_KONTAKT, DIAG_KODE, DIAG_KODE_TYPE, DIAG_KODE_TYPE_TEKST`. Require common-vintage one-contact:many-diagnosis keys and labels for the same diagnosis roles. Classify each nominal follow-up window using the documented provider handover date: legacy when the whole window precedes handover, new when it starts at/after handover, and transition otherwise. Retrieve and freeze that effective date from the delivered source manifest before reading events; a year-only header does not establish it. Report legacy, transition and new windows separately; never pool them within a cohort/category mean. For depressive_encounter, anxiety_stress_encounter and parent_care, descriptives.csv additionally contains era, and its unique key is (cohort, era, category). The frozen display combinations are 2015–2018 legacy/transition, 2019–2021 transition/new, and 2022–2024 new. Transition estimates require both era mappings and retain an explicit comparability warning. An unavailable era mapping affects its rows independently. Other endpoints use ordinary cohort/category rows.

Do not assume DW_EK keys match across a model reload. The December 2023 LPR3 researcher guide supports contact-level linkage, not an empirical cross-era validation.

Community specialist services: `SSSY.PNR, HONUGE, SPEC2, SPECIALE, KONTAKT, YDLANT, VERSION`; optional BEHANDLINGSDATO only from its verified vintage. Exact documented SPEC2 values 24 (psychiatry), 26 (child psychiatry), 35 (district psychiatry), 63 (psychologist) define one public-reimbursed specialist-contact endpoint. GP contacts use SPEC2 80 and positive net KONTAKT, excluding service codes whose last four SPECIALE digits are 0130/0131/0132/0133 (chronic-care honoraria); public-reimbursed contact is not all primary care. Keep the two outcomes separate. Sum billing corrections within `(PNR,HONUGE,SPECIALE)` before classifying a positive net contact; unresolved negative totals make the cell unknown. Never count base payments as visits or treat YDLANT as KONTAKT. HONUGE is fee week, so primary timing is **billing-week**: include only whole ISO weeks strictly after the week containing t0 and wholly before t0+730/exit. Require documented ISO-year/week encoding. The incomplete edge weeks are excluded uniformly. The primary population excludes neither prior contacts nor prior diagnoses. In 2021+ descriptions, treatment-date results are an ascertainment audit, not a substituted primary clock.

D7. Families and resources

Freeze parents from `BEF.MOR_ID/FAR_ID` in the last annual December snapshot strictly before t0, linked many children:one parent PNR. Include both recorded parent roles and resident/nonresident parents; do not interpret these as all legal carers. A conflicting or missing relation is unknown. Freeze siblings as children sharing at least one nonmissing recorded parent ID in that snapshot; exclude the index child. Do not infer siblinghood from matching missing IDs. Baseline siblings aged 9–14 and documented grades 4–7 form the school-belonging target; later births do not enter. Average each parent's binary care outcome equally within an index child's parent set, and each eligible sibling's belonging equally within the sibling set, so large families do not gain extra outcome weight. Record the number of known and unknown relatives; absent relative outcomes are not removed from the denominator. A family with no eligible sibling is outside the sibling estimand, established at baseline.

For family-effect analyses, scan assessments in chronological order and select the first eligible index in each connected component formed by baseline recorded-parent links. Same-day ties use lexicographic SHA256 of the governed pseudonym with fixed salt `recognition-2015-index-v1`; never a score or outcome. Later tests in that family remain potential responses and are not exclusions or controls. Shared liability, school spillovers and repeated later recognition remain limitations.

Family material resources: follow the index child's actual December family each outcome year using `(PNR, snapshot date) -> BEF.FAMILIE_ID -> FAIK.(FAMILIE_ID, reference year)`; assert many:one and reference alignment. Outcome is `FAMAEKVIVADISP_13`, annual equivalized disposable resources in nominal DKK, divided by 1000 for display. The primary year is `year(t0)+1`. Do not hold post-treatment household composition fixed. Definitions include the registry's equivalization and housing components; this is neither cash consumption

nor direct parental transfers. `IND.AEKVIVADISP_13` is the separate early-adult person's equivalized resource endpoint; `IND.LOENMV_13` is wage income, not disposable resources. Preserve negative incomes; never log-drop them or winsorize using observed effects. Record the code vintage and crosswalk; `_13` denotes the documented income definition, not a restriction to 2013 observations.

Parent paid hours use BFL PNR, AJO_LOENTIMER, AJO_LOENTIME_KODE, AJO_JOB_START_DATO, AJO_JOB_SLUT_DATO and the documented job identifiers AJO_SE_NR_FRA_PROD_JOB/AJO_PROD_NR_FRA_PROD_JO in the annual slice `year(t0)+1`. Sum paid hours over unique compressed jobs; do not sum overlapping quarterly cumulative deliveries. Require a manifest identifying disjoint annual reporting units. Keep imputed and reported hours together for the registered total and report the imputed share. No record means zero employee hours only for validated full population coverage; it never means no self-employment or zero caregiving time. Compute the mean over the fixed parent set, not just employed parents.

Parent subsequent assessment is any later retained `UDD_ORDBLINDETEST.DATO` in `(child t0, child t0+730]`, averaged over the fixed parent roster. This is **retained national-test recording**, not first lifetime parental diagnosis, a pilot offer or adult-course receipt. The 2025 parental-screening pilot lies outside these causal windows. VEUV has an explicit 2026 history entry naming dyslexia instruction, but no verified historical OBU course-code/coverage contract was recovered. OBU participation/completion is therefore a registered service-measurement boundary, not an invented endpoint.

D7 clarification: parent_wages is the unweighted mean, across the fixed baseline parent roster for each index child, of IND.LOENMV_13 in the calendar year after the child test, divided by 1,000. Preserve negative registered adjustments, nominal year and missing parents; complete parent-specific annual measurement is required before a full-roster mean is defined. It is a separate family paid-income judgment from BFL paid hours and from current-household equivalized resources.

D8. Educational transitions and early adulthood

Transition endpoint: a `KOTRE` enrollment spell in upper-secondary or higher formal education covering the 18th birthday; fields PNR, ELEV3_VFRA, ELEV3_VTIL, UDD, AUDD, AFG_ART, VERSION. Attainment endpoint: `UDDF.HFAUDD` spell valid on the 20th birthday (`HF_VFRA <= birthday < HF_VTIL`) classified at least upper-secondary completion. Confirm against same-date eligible `UDDA.HFAUDD/HF_VFRA` status when available; inconsistencies are missing. The authoritative DISCED-15/HFAUDD/UDD crosswalk must explicitly classify level 3 or above, excluding preparatory/nonqualification courses. No numeric range guessed from UDD/AUDD is authorized. This frozen semantic rule permits mechanical crosswalking, not choosing programs after inspecting outcomes. If the dated crosswalk cannot be verified, the endpoint is a measurement boundary. `AFG_ART=1` is an exit code, not automatically a passed qualification. Unknown attainment cannot be treated as primary school only.

The 18th/20th birthday must occur after t0 and by 2024-12-31; annual economic endpoints require the **whole calendar year containing the 20th birthday**

to be after t0 and within 2024. Early-adult employment is positive employee hours in that annual BFL slice; earnings is annual IND.LOENMV_13/1000; resources is IND.AEKVIVADISP_13/1000. Report birth-calendar-year strata and nominal units; no lifetime earnings claim. Co-residence is shared nonmissing BEFBOP.ADRESSE_ID with either fixed baseline parent on the 20th birthday, requiring unique covering address intervals for child and parents. An unmapped parent/address makes co-residence unknown unless another known parent already establishes coresidence. It measures shared address, not dependence, preferences or welfare. Do not condition on actual graduation, employment, leaving home or intact households. Full NEET, self-employment, mature-adult outcomes, general quality of life, advocacy time, private spending and support intensity are outside the verified measurement contract; retained endpoints cover participation and resources without pretending to measure them.

D9. Income correction and reading calibration

Before opening income values, adjudicate the specific delivery/table/variable/reference-year correction status. Each grade-margin experiment applies the D9 income audit to IND.AEKVIVADISP_13 for baseline 2014. The family descriptive experiment and the household-resource policy experiment apply it to FAIK.FAMAEKVIVADISP_13 separately for each used reference year, including primary 2016. No 2016 result relabels another year. The official DST variable pages document erroneous/missing tax-free assistance inputs in 2014–2016 and corrections in distribution/SDG products. Those products are not substituted for the allowed IND/FAIK tables.

`corrected` requires a dated provider release note or provenance manifest identifying the exact delivered variable, all relevant reference years, correction of the documented tax-free-assistance problem, and traceable delivery identifier/checksum. A recent delivery date, `_13` suffix, agreement with a published total, or an unrelated corrected product is insufficient. `known_uncorrected` requires an explicit uncorrected designation or documented ancestry from the affected version without the correction. `unresolved` applies when neither criterion is met, including contradictory provenance. No municipality is excluded and no historical correction is reconstructed from outcomes. Corrected data are used only inside the already allowed table. In the other two routes, the frozen endpoint is the *recorded equivalized-income proxy in the specified delivery*, in nominal thousand DKK; no intended-resource or welfare interpretation is licensed. The proxy remains a consequential recording judgment, subject to all ordinary measurement/missingness/RD gates. Baseline balance then tests continuity of recorded income only: it cannot clear sorting in true resources. A numerical proxy jump does not distinguish a resource change from historical recording error. Keep correction status on all outputs, in the Molecule restrictions and manuscript. If the variable itself is absent, ordinary measurement-boundary rules apply. Correction uncertainty alone is not an operational failure.

The reading policy experiment and school descriptive experiment own their applicable reading-comparability audit; a causal failure never gates the descriptive version. Before scores are read, require official technical documentation plus the delivery dictionary to identify the same overall Danish-reading construct, latent-scale origin and

unit, item calibration/linking, NORM and GENBEREGNET vintage across *every* target-grade and scheduled-year stratum in the 2015 primary target. Record a source locator for each link. A common column name or similar observed distributions does not establish comparability. If all links are documented, the single pooled primary THETA contrast is retained. If comparability is contradicted, the pooled reading primary records measurement_boundary. If it is unresolved, the primary records otherwise/common_calibration_unverified, not known incompatibility. In both cases retain grade/year/calibration-specific descriptions without combining their means. No observed-score standardization, grade-specific causal test, alternate domain, or transformation is added. The reading endpoint slot remains one of 24 regardless of scientific Atom grouping. Individual descriptive strata with unidentified constructs remain unavailable; a missing label never becomes an invented calibration.

D10. Display strata and frozen scope metadata

All descriptive tables retain the G2 base keys plus `birth_year`, `calendar_year`, `target_grade`, `calibration_id`, `era`, `correction_status`. Use literal `all` when a key is inapplicable; never NA in a key. Decimal years and grades are strings. `calendar_year` for a school outcome is the ending year of the scheduled school year. For reading, always separate target_grade 6/8, calendar_year and documented calibration_id (a dictionary identifier frozen before values; unresolved = `unknown`). For Danish teacher grades, always separate calendar_year and target_grade 9; the 2020 row is labeled pandemic year. For all age-18/20 endpoints always separate birth_year and calendar_year (birth_year+18 or +20). For annual family resources/hours/wages always separate calendar_year=year(t0)+1; retain correction_status for resources. No descriptive pool of nominal amounts across years is authorized. Other descriptions retain cohort/category and hospital era as D6. Sort numeric keys ascending, then calibration identifier lexically, then category red/yellow/green/unknown; cohort order remains 2015–2018,2019–2021,2022–2024. Output a status row for each administratively eligible stratum, including a zero eligible-count boundary, and one all-key horizon_boundary row when a cohort cannot reach a horizon. All rows are generated by the registered computation, never aggregated by a plotting program.

The primary effects.csv remains exactly one aggregate per endpoint/horizon. It uses the I3 fixed pre-outcome baseline weights, including age-calendar eligibility as D8. It is explicitly a weighted average over those nominal calendar years, not a constant-price income or common-year effect. Required calendar/grade/calibration summaries are descriptive; no extra confirmatory stratum contrasts are created. Figures 2/4/5 and Tables 2–5 bind these strata; the main forest uses only the single primary aggregate. Each primary also emits scope.json: target_id, eligibility_rule, index_rule, sorted_required_grades, grade_weights, baseline_set_digest (salted governed digest never person IDs), nominal_horizon_rule, horizon_class, observation_cap, unit, correction_status, interpretation_ceiling, calibration_id, and metadata_status. Grade weights equal eligible counts in |x|<=6 divided by their sum, frozen before outcome reads. Require every prespecified target grade to have eligible support; an empty grade yields a target-support boundary for this pooled estimand, not renormalization onto

the surviving grades. Scope digests remain governed; public comparisons emit equality flags only. There is no data-dependent common-population refit.

D7 roster implementation clarification: the identifiable-parent estimand averages the fixed one or two *known recorded parent IDs* at baseline. At least one valid ID is required for a parent endpoint; zero known IDs is a baseline-relative horizon/population boundary. An unlinked parent role is unknown and is reported as such in the baseline scope audit, never coded as no parent or no care. It is not an additional postbaseline denominator member whose identity is invented. Every known roster member remains in the outcome denominator when that member's outcome is missing, using bounds/selection restrictions. This is explicitly a known-recorded-parent estimand, not all biological/legal carers; baseline one/two-known-parent strata are described in D7 fixed-relative audit. Parent-related interpretation is limited accordingly.

For the affected family_resources display, G2 gives the exact correction-to-interpretation mapping and the governed one-to-one export binding. Each primary and sensitivity row inherits the same scope record; unavailable metadata cannot license numerical resource narration.

D9/D10 descriptive income binding clarification: atom-000113 binds each family-income stratum to the exact FAIK.FAMAEKVIVADISP_13 delivery and reference year before displaying values. G2 defines source_table, source_variable, reference_year, delivery_id, provenance_id, scope_id, metadata_status and interpretation_ceiling. The D9 family-income audit local judgment concerns2016 only; its supplementary year records (or the identically specified atom-000113 pre-value documentation audit) supply other years. For each year, require exact provenance of the intended definition and resolution of that year's applicable documented errors before corrected/resource wording. Absence of a listed historical error is not itself a certificate of correction. An adjudicated unresolved correction permits the recorded-income proxy; an unavailable provenance binding permits no numerical statement. Conflicting metadata is rejected. Year-specific corrected, known_uncorrected, unresolved and unavailable rows may coexist, always in separate year/delivery panels; no across-year monetary pool or correction-state propagation is allowed. Complete descriptive nominal years are2016–2024; a2025 horizon from a2024 test remains unavailable under D3.

D11. Scientific-unit scope and internal measurement independence

The fixed endpoints retain D1–D10 without an all-component prerequisite. The current Atom registrations identify which endpoint files they own. Ascertainment, calibration, provenance, relative linkage, horizon checks and robustness are internal parts of the supporting experiment. Every empirical endpoint keeps its own primary, ascertainment and robustness component verdict and status. A grouped unit's summary never substitutes its own sign for another endpoint's direction.

For household family_resources, required linkage is index-child/current-December-family to FAIK; knowing a parent ID is not necessary to define that outcome. Use baseline recorded-parent connected components for index selection and

clustering where available, with an index child without any known parent treated as its own singleton component and the incompleteness explicitly reported. Never create links from missing parent IDs. This same graph does not establish actual genetic independence of unlinked children. Parent care/hours/wages/assessment and sibling_belonging retain their D7 known-relative targets; coresidence20 retains its separate dated-parent/address requirement. A failed relative endpoint cannot erase current-household income. Family index selection uses the available baseline component graph consistently across that experiment; no later parent discovery repairs the graph.

A hospital-era audit may produce legacy_only, new_only, both, boundary or otherwise; preserve those component states in the relevant descriptive/care experiments. A new-era failure cannot gate legacy 2015 policy effects. Reading calibration concerns only reading, not teacher grades, attendance or school reports. Year-specific income provenance concerns the corresponding delivery/year and never another endpoint's data validity.

Identification and inference

I1. Scientific target and historical assignment

One question organizes the study: among Danish children assessed for dyslexia, how does administrative recognition relate to reported school experiences, recorded care, educational opportunities and family/material circumstances, and where can a documented classification margin identify a local policy effect?

The preferred causal target is the effect of **crossing the national-test classification rule under the prevailing policy environment**. Recorded classification, eligibility, received assistance and the underlying reading difficulty are different objects. No fuzzy-RD ratio, support-receipt IV, diagnosis-timing effect, general school-entry test, rollout DiD or biological discontinuity is registered. A label jump below one changes the interpretation to a threshold-policy effect, not an automatic treatment-on-treated effect.

The original ministry note of May 2016 explicitly describes February 2015–24 February 2016 and lists upper red thresholds: grades 3,4,5,6,7,8,9+ = 62,66,70,73,77,79,81; upper yellow thresholds = 69,73,78,81,84,86,88. For the spring-2015 candidate cohort, define `x = SCORE - c(grade)` and `Z = 1[x <= 0]`. The primary margin is red versus adjacent yellow. Inclusive assignment at zero is mandatory; never copy a strict inequality from a predecessor. A positive effect means the red side minus the yellow side. The current 2026 guide introduces seasonal norms and cannot validate intervening historical years. Restricting the causal candidate to spring 2015 is an evidence-based scope decision. Documentation of the historical threshold does not establish the score field's transformation, precision, actual approval or retention process.

Score is the national phonological composite, not percentage correct, general admission ability or severity of all dyslexia. The 2023 test-development article describes two phonological tasks and a separate vocabulary check. The

May2026 correction (DOI10.1007/s11881-026-00376-z) revises validation Table3 sensitivity/specificity calculations, not the separately sourced launch-period rule used here. Validation accuracy is not continuity or retention evidence. No subtests, vocabulary score, approval flag, previous alternative diagnoses or support intensity are supplied by the current ten-field FSV page. The predecessor had additional ministry survey and NOTA data that are not inferred here. Current support guidance requires assessment/application judgment, permits exceptions and cautions about retesting. Therefore alternative diagnoses and support on both sides are plausible.

I2. Causal assumptions and gates

Required assumptions are continuity of potential outcomes and observation processes in the original score within grade, absence of precise sorting or score-dependent approval/retention, a well-defined initial assessment margin, and no unaccounted independently assigned policy discontinuity at the same score. Co-occurring responses generated by classification are part of the policy effect. Family/school interference limits the treatment contrast: this is the direct assignment effect under the observed allocation environment, potentially including induced family recognition, not an isolated individual biological treatment.

The retained-event experiment establishes the assessment cohort, the initial-margin experiment jointly audits historical mapping and retention, and each grade-margin experiment integrates score support, density, baseline continuity and label response. Necessary compatibility is evaluated before causal interpretation. Unknown evidence remains unknown. Descriptive and outcome-specific checks use their own dependencies. No outcome or grade stratum is removed for an unfavorable diagnostic. Operational failures have no scientific state and do not create a null.

I3. Registered estimation operator

`DESCRIBE(endpoint)` operates separately on retained-record calendar cohorts 2015–2018, 2019–2021 and 2022–2024, and recorded red/yellow/green/unknown categories. Do not combine categories when coding is unknown. Hospital-based child and parent-care descriptions additionally stratify by the frozen recording-era combinations in D6; no cross-era average is authorized. Within each cell report eligible count, observed count, missing count, mean, SD, median and 25th/75th percentiles (binary endpoints report proportion); means of parent/sibling averages are child-weighted. No category comparison is causal and no descriptive p-values are computed. Cluster percentile intervals use 1,999 resamples of baseline family components, seed 20150905; if fewer than 30 components or the cluster identities cannot be validated, retain the computable descriptive mean/counts with interval unavailable and the exact reason, subject to disclosure. Missing clustering information does not suppress a valid level description. A census description is not accompanied by a claim that its interval represents every measurement uncertainty. Age-eligible plots may have empty later-cohort rows.

`RD(endpoint)` is fixed by the equations here; docs/code/rd_operator.py implements the numerical fixed-bandwidth core. Use R **rdrobust 4.0.0**, source release

`https://cran.r-project.org/src/contrib/rdrobust_4.0.0.tar.gz`, for bandwidth selection and a one-grade reference. Package identity/hash is recorded in evidence/software-reference.json. This is a reference pin, not an assertion that the custom multiway covariance is a package default.

For each required baseline grade, restrict to |x|<=6 and transform r=-x, making r>=0 the red side including exact zero. Select h,b once via `rdbwselect(y, r, c=0, p=1, q=2, deriv=0, bwselect="cerrd", kernel="tri", vce="hc0", cluster=NULL, covs=NULL, weights=NULL, masspoints="adjust", bwcheck=20, bwrestrict=TRUE, stdvars=FALSE, scaleregul=1, sharpbw=FALSE, all=FALSE)`. Set common-side h=min(selected h,6) and b=min(selected b,6), then refit once; never reselect after capping or increase either bandwidth to rescue a fit. Require finite positive h,b, at least 10 unique positive-kernel score values per side in each h and b window, rank 2 and 3 respectively and matrix condition number <=1e12. Full-window safeguards remain additional requirements. A constant outcome follows the explicit constant/degenerate rule rather than forcing the selector. Bandwidth selection ignores clustering; final inference does not. CER theory for that pilot is not claimed to deliver exact finite-cluster conditional coverage.

Let R1_i=(1,r_i), R2_i=(1,r_i,r_i^2), W_h,i=max(1-|r_i|/h,0)/h and W_b analogously. On each side use the union of positive h/b supports; rows outside get weight zero. A1=(R1'W_h R1)^(-1)R1'W_h; A2=(R2'W_b R2)^(-1)R2'W_b. Set a=e0'A1, d=e0'A1 r^2, and l=a-d e2'A2. The conventional intercept is a y, the bias-corrected intercept is l y. Compute beta2=A2 y and residual u_i=y_i-R2_i beta2 on the whole union, including points outside b but inside h. No leverage/nearest-neighbor/residual degrees-of-freedom correction is applied (HC0 residual construction). Grade contrast tau_g=l_red y_red-l_yellow y_yellow. Grade influence contribution is signed l_i u_i; pooling multiplies by w_g=N_g/sum N_g where N_g is baseline-eligible |x|<=6 count before outcome inspection, not the observed count. Preserve every required grade. Sum contributions for duplicate uses of an index child before clustering.

For the pooled scalar contribution psi_i, form U_C=sum_{i in C} psi_i for each preceding-month school, each baseline family component and each school-family intersection. Covariance V=G_S/(G_S-1)*sum U_S^2 + G_F/(G_F-1)*sum U_F^2 - G_SF/(G_SF-1)*sum U_SF^2. There is no additional (N-1)/(N-K) multiplier and no centering of cluster sums. This fully specified finite-cluster correction is a study choice. Count effective clusters from observations in the union with nonzero design l, regardless of whether their realized residual is zero. Require >=30 effective schools and >=30 effective family components overall, >=2 intersections, and all required stratum support/rank checks. Use df=min(G_S,G_F)-1, SE=sqrt(V), two-sided p=2*t_df survival(|tau/SE|). A scalar V<=0, nonfinite V, singular fit, or insufficient fitted support gives a scientific unestimable disposition with no directional interval; a thrown software/access exception is terminal no_result. Do not project a negative covariance onto positive values. Partial bounds use the same operator and specified outer-limit allocation.

One-grade checks against `rdrobust(y,r,h=h,b=b,p=1,q=2,vce="hc0",cluster=NULL,kernel="tri",masspo` must reproduce conventional and bias-corrected contrasts and robust HC0 variance sum(psi_i^2), with absolute/relative tolerance 1e-8. Exercise h<b, h>b, h=b and a score=0 row. The package's unclustered normal reference interval is not substituted for the custom clustered t interval. Separately check the three cluster sums and factors against direct matrix arithmetic, including overlapping school/family clusters. Failed numerical identity tests prohibit release until an equivalent implementation is repaired, without changing the estimator. See G3.

Binary outcomes and absence rates have known ranges [0,1] and [0,100]. Report the observation-indicator discontinuity alongside every endpoint. If any outcome is missing, estimate two extreme functions on each side, replacing missing values with the range minimum or maximum, then form the lower contrast = red-min minus yellow-max and upper contrast = red-max minus yellow-min. Use the same operator with the common bandwidths specified below for both extremes and a union confidence interval from simultaneous one-sided endpoint limits. This bounds the all-eligible report/record contrast without a missing-at-random assumption; it does not identify a hypothetical latent health score or effects among always-survivors. Available-case RD is displayed only as selection-limited sensitivity, never the primary point effect. For unbounded THETA, resources, wages and hours, unresolved missingness precludes a full-population causal point claim; display the available-case jump under `selection_limited`. No post-treatment inverse-probability model or arbitrary income bound is introduced. Teacher grades use their known [-3,12] range.

Implementation clarification: the inclusive-zero adapter can use `r = -x`; the library's right-minus-left contrast then equals red-minus-yellow and assigns zero to red without an artificial epsilon. Transform all side labels, bandwidths and influence functions consistently. For bounded missing responses, select bandwidths once on the observation-indicator outcome and freeze them for both extreme functions; when that indicator is constant but some outcomes are missing (all unobserved), there is no outcome selector and inference is unestimable. When it is constant one (all observed), use the outcome selector. Do not invent uncertainty for a degenerate outcome. Estimate each extreme contrast with the same pooling and cluster operator. The lower limit is the one-sided lower confidence limit for red-min minus yellow-max; the upper limit is the one-sided upper limit for red-max minus yellow-min. Each uses alpha = 0.05/(2*24). Their union is the reported confidence region. This allocation remains fixed when other outcomes fail.

Bounded-response calculations require the endpoint to be conceptually defined for every member of the target population. Death before a scheduled school report or age-specific circumstance makes that endpoint undefined; it is not ordinary missingness that can be repaired by assigning the scale endpoints. Such truncation yields `selection_limited`, including for a bounded endpoint; any survivor estimate is explicitly selected. In contrast, an event before death/emigration within 730 days is a defined competing-event outcome under D3, without claiming independent censoring or an always-survivor effect.

An endpoint with a complete validated event universe may have zero events; a degenerate event outcome must not get a zero-width confidence interval from a failed

fit. Report no directional evidence and the fit limitation. A genuinely empty baseline risk set is an evidenced horizon/population boundary. A table not reachable because of permissions is `no_result`, not a data gap. At runtime distinguish confirmed field absence from an unresolved dictionary and from operational failure.

I4. Multiplicity, precision and adaptations

The 24 causal endpoint slots are fixed at birth, one test per endpoint/horizon. They form one study-wide FWER family at 0.05; use Bonferroni 0.05/24 for two-sided directional intervals and p-adjusted=min(1,24*p). The four scientific reporting groups are school, child care, family and early adulthood; they are not separate opportunities to claim a study-wide success. Infeasible, inactive and failed slots retain their place in the denominator. Missing-data bound endpoints split each slot's error budget over the two endpoint limits. Ascertainment contrasts use a separate 24-slot diagnostic family at 0.05 and never trigger replacement of a registered primary outcome. A composite synthesis is not another primary hypothesis test.

No clinical or welfare equivalence threshold is defensible from the accessed evidence across these different constructs. Consequently **no Atom can conclude equivalence or no meaningful effect**. A precise or imprecise interval including zero is `uncertain`; provide its magnitude and width. Directional states license only a signed local contrast in the registered units. Discuss practical importance with the reported interval and measurement ceiling, never significance alone. No sample counts, detectable effects or variance are assumed. Runtime output includes the approximate 80%-power detectable contrast `(t_(1-alpha/(2*24)) + 0.84)*SE` when a valid SE exists, explicitly a conditional design-sensitivity calculation, not observed power or a pass gate.

Outcome availability and hard design diagnostics select whether an analysis can be interpreted, but never select an endpoint, preferred sign, cohort extension or alternative primary model. All eligible confirmatory slots run regardless of other endpoint results. The descriptive results are not used to choose hypotheses. The unconditional error budget is kept for all planned slots; it does not grant selective conditional-on-passing coverage. State this qualification when describing the causal branch.

Each endpoint has an internal registered robustness component inside its scientific experiment: repeat with half and 1.5 times primary h/b (upper cap 6), retaining the same grade weights, plus exclude exact-cutoff observations as a donut diagnostic. Donut estimates change the local extrapolation target and cannot rescue the primary. Display all four specifications and their intervals. Primary uses its 24-slot Bonferroni interval; each nonprimary sensitivity uses a two-sided 95% clustered t interval (bounds split 0.05 across their endpoints). These exploratory intervals have no joint coverage across specifications or endpoints; no p-value or discovery is selected from them. These are registered sensitivity analyses without new confirmatory discoveries; apply first-match precedence: any computable variant reversing a nonzero scalar primary sign, placing its point outside the primary interval, or producing bounds disjoint from primary makes `sensitive`, even if another variant fails. Retain both sensitivity and failure reasons. With no such contradiction, stable requires every variant computable

with unchanged claim ceilings; otherwise the local state is otherwise (unresolved). This priority never upgrades missing evidence to stability. Density, baseline balance and the red-label first stage are not reused as evidence of health effects.

Molecule interpretation rules compare already registered endpoint states and estimates. They may describe symptom/care divergence or education/resources divergence. They never regress a health outcome on treatment-induced education to claim mediation, nor subtract coefficients to isolate detection. No holdout is claimed: these dependent interpretations are exploratory constraints on the story, not new tests. New endpoints or historical windows require a timestamped versioned extension disclosing evidence already seen.

I5. Grade-specific diagnostic policy and constant indicators

The six grade-margin Atoms, atom-000501 through atom-000506, integrate score support, density, baseline continuity and recorded classification separately for grades 4–9. The Molecule and Table S1 compose their component results; no aggregate state gates an endpoint. School-report/attendance/reading targets require grades 4–7, teacher grades require 4–8, and other primary targets require 4–9. Endpoint-specific fitted support is checked again using its fixed baseline-relative/age target. No grade is selected by outcomes. Grade 9 failure cannot suppress a grades-4–7 contrast. Descriptive Atoms remain independent; ascertainment evidence is produced inside each policy experiment without requiring primary or robustness success.

Density diagnostics use R rddensity **3.0**, X=r=-x, c=0,p=2,q=3,kernel="triangular",fitselect="unrestricted",vc
Select the two bandwidths once on the full |x|<=6 sample, cap each at 6 and refit with explicit h; failed postcap local/unique checks are unresolved, never enlarged. Report hat$left$, hatright, hat$diff$andsd_jkdiff; diff is red-minus-yellow density per original score point, not a log-density ratio. Require finite difference and strictly positive finite SE. Six fixed grade slots use Bonferroni p_adjusted=min(1,6*p), diagnostic FWER .01, with 1-.01/6 two-sided normal intervals. Unavailable slots retain their allocation. No outcome or family-care fit is needed.

Baseline continuity uses four predetermined variables per grade: age in days, KOEN under its frozen binary dictionary, 2014 recorded equivalized income with D9 status, and a 365-day pretest D6 care indicator. Their missingness indicators form four further slots. The 48 slots (six grades times eight) use Bonferroni diagnostic FWER .01, p_adjusted=min(1,48*p) and 1-.01/48 two-sided t intervals. This fixed conservative allocation permits independent grade branches. No outcome-family alpha is reused. Slots that cannot be tested never shrink 48.

For each missingness indicator first distinguish: (a) documentary completeness plus arithmetic all-observed -> structural_complete, no estimate/SE/p; (b) all zeros observed without universal completeness provenance -> constant_observed, no test or inferential balance claim; (c) all ones -> unavailable_field, original-variable contrast unavailable; (d) informative 0/1 variation -> fit I3; (e) mapping/access/numerical failure -> explicit unresolved/no_result as appropriate. For an available original variable constant on the full grade sample, report constant_observed with range/count and no test; it gives no distributional sorting information. Different constants on the two sides are NOT globally constant: attempt the specified comparison, flag a deterministic

observed side difference as `arithmetic_difference` and constrain continuity without inventing a p-value. Original variables use available baseline values while their missingness slots retain the full baseline denominator. A wholly unavailable field, missing dictionary or nonconstant numerical fit failure leaves the grade balance judgment unresolved unless another valid comparison is already flagged. First match: any adjusted p<.01 or arithmetic_difference -> flagged; else all slots either valid unflagged fits, structural_complete, or global constant_observed -> not_flagged with exact noninferential limitations; else otherwise. In particular all-complete missingness does not disable the causal branch or establish equivalence. Recorded-income proxy balance never establishes continuity of intended resources.

Classification uses exact dictionary agreement as noninferential sharp_recording; otherwise each grade uses I3 with .01/6 two-sided alpha and the lower bound must exceed .10. Six grade slots retain their allocation. Unknown categories cannot be excluded to manufacture agreement. Endpoint effects remain reduced-form threshold-policy effects without a fuzzy ratio.

I6. Unit-level versus endpoint-level evidence

Scientific grouping leaves every endpoint-level estimand and error allocation fixed. Each policy Atom first resolves its component primary regions (measurement_boundary, horizon_boundary, selection_limited, increase, decrease, uncertain or otherwise; operational failure has no scientific state), its ascertainment regions, and its I4 robustness regions. The Atom then applies its declared first-match vector partition. A unit-level directional or mixed_direction state licenses only the specifically qualified endpoints named in components.csv and their component judgments. It does not certify all endpoints or hide partial failures. A sensitive unit may contain valid evidence on another endpoint, reported under that endpoint's own restrictions.

The Molecule reads these frozen component results for the three exploratory comparisons. No endpoint sign activates another hypothesis, no new contrast is fit, and no native graph state is invented for an internal coding step. These compositions do not claim conditional coverage after design or sensitivity selection.

Governance and complete reporting

The package is a draft closed adaptive policy registered before access to confidential records. The only root directories are atoms/, molecules/ and prereg/. Atom payloads own protocols, activations and local result regions. Molecule membership owns the entire roster from birth. Molecule registration owns composable interpretation. Compiled manuals, graph YAML, DOT diagrams, atlas and PDFs are reader views. The conceptual study DAG is separate from the epistemic activation graph. The paper and figure code present the same science and cannot create additional endpoints or estimators.

The normalized brief and its full topic_prompt were read directly on this revision. The required skill files and package/paper/adaptive references were read; the supplied prereg_author stage manifest was used without modifying its controller-owned files. Education, health-economics, family-demography and labor profiles and the economics

house rules informed the design. STROBE, RECORD and CODE-EHR are the health reporting floor; the time-zero and source tracing principles of STaRT-RWE/HARPER inform policy-effect reporting. This is neither a randomized trial nor an explicit target-trial emulation. No medication endpoint is analyzed, so RECORD-PE is not invoked as a claim of compliance. Reporting standards do not establish identification.

G1. Execution states and order

Evaluate Boolean activation using three-valued logic. `NOT unknown` is unknown. Run every TRUE Atom after its evidence dependencies terminate as required. A scientific local state exists only after the registered evidence has been produced and adjudicated by the first-matching result-region rule. `done` means a local scientific state exists, including a verified boundary. `no_result` means execution failed operationally (access, software, timeout, interrupted work); it is not a statistical result and supplies no local state. At end of execution record each member as completed with local key, `not_activated` with the full condition trace, pending/unresolved, or terminal `no_result` with a reason. Unknown inputs are never changed to false to close the graph. No automatic retry outside the governed execution system is authorized.

Runtime disposition records live at `prereg/runtime/atom-NNNNNN/status.json`. Every member has a status row with atom, activation, input_state_trace, terminal, local_state, reason, registered_version and timestamp. No such result records are populated at authoring. Each completed Atom writes `judgment.json` with the matched local key, ordered criteria, evidence paths and exact claim ceiling. The runtime may append result evidence to the original Atom while leaving its preregistration payload unchanged. Do not republish an inactive/failed Atom as an insignificant experiment.

G2. Output interfaces

All paths in protocols are relative to the design root and refer to future governed outputs. Raw/intermediate person-level files remain in the restricted runtime and are never placed in this public package. Aggregate tables must pass the actual provider's disclosure rules before export; no public numeric minimum is substituted for provider review. A suppressed value remains NA with status `suppressed`, not zero.

Every numeric output additionally contains `local_state` (scientific key or empty), `inference_status` and `status` (display/disclosure status). Scientific results are adjudicated inside the governed environment before suppression. `computation_status` is completed/unavailable/no_result; `disclosure_status` is released/suppressed/pending. A suppressed display has NA numbers even when its internal result is described/increase/etc.; public narration gives the permitted disposition without leaking suppressed signs or values. No released count is required to activate computation.

Endpoint descriptions. `descriptives.csv` keys are outcome,cohort,category,horizon,unit,birth_year,calendar_year,target_grade,calibration_id,era,correction_status, all required. D10 fixes applicable strata; other keys use `all`. Columns n_eligible,n_observed,n_missing are nonnegative integers or suppressed NA;

estimate,lower,upper,sd,median,q25,q75 are floats/NA. Include status,reason and computation/disclosure fields. n_observed+n_missing=n_eligible for defined endpoint denominators; n_undefined is additionally reported and separately excluded only from descriptive observed-value denominators, never baseline eligibility. Primary inference handles undefined outcomes as registered. Ordinal teacher grades and unbounded numeric endpoints include all distribution summaries. Binary risks/relative means display percent levels and percentage-point contrasts; output unit pp is a scale label, not a causal descriptive difference.

Single primary. `effects.csv` has one row keyed outcome,horizon,unit,specification=primary. Fields estimate,lower,upper,se,p_raw,p_adjusted,n_left,n_right,sc
All numerical fields float/NA except counts/df. Freeze left=original x<=0 RED and right=original x>0 YELLOW in all output n_left/observed_fraction_left; the computational r adapter reverses library sides. Also emit explicit n_red,n_yellow aliases and assert equality. Valid complete point rows have finite estimate,SE>0, ordered limits and both p-values. Bounds have NA estimate/se/p, valid lower/upper, inference_status=bounds, and bound_lower/bound_upper for estimated extreme contrasts. Selection-limited rows have NA main numerics; selected estimates live separately. Scientific uncertain+valid_interval has a valid zero-containing interval. Scientific uncertain+unestimable has status=unestimable and NA estimate/limits/SE/p/detectable_contrast; reason enumerates constant_outcome,rank_failure,insufficient_fit_support,nonpositive_covariance,or_no_selector.
Other failures retain exact reasons. Operational no_result has no local_state. No nonexistent p/limits are narrated. Scope/correction/calibration statuses constrain wording regardless of sign.

Components needed for replication. Every RD fit writes `estimator-components.csv`, key outcome,specification,component,grade,side; component=point/lower_extreme/upper_extreme/observation/available_case
or one of the eight baseline checks, side=red/yellow. Fields h_selected,b_selected,h,b,cap,n_baseline,n_h,n_b,n_unique_h,n_unique_b,n_union,grade_weight_num
Counts use exact pre-outcome eligible denominators, weights sum to1 over the entire target. h/b refer to frozen source score units. The selected/capped pair is required even when h!=b. Variance-components.csv key outcome,specification,component stores school_term,family_term,intersection_term,G_school,G_family,G_intersection,variance,df,status,reason.
Restricted row-level influence vectors remain governed and are never exported. Reference source/hash and software versions enter audit.json.

Robustness and selected cases. `robustness.csv` keys outcome,specification,unit; specification order primary,half_bandwidth,wider_bandwidth,donut.
Add horizon,estimate,lower,upper,interval_alpha,inference_status,status,reason,local_state,scope_id,correc
Primary alpha=.05/24, other alpha=.05; no joint multi-specification coverage. Components also carry the same specification keys. `selection-sensitivity.csv` keys outcome,horizon,specification,unit and fields estimate,lower,upper,se,n_observed,n_eligible,inference_status,status,reason,scope_id;
available-case numeric contrasts, when estimable, use exploratory95% clustered intervals and never replace primary. Selection-limited main figures keep NA values. No new scientific judgment is assigned to selected-case signs.

Family-income display metadata. For family_resources, the primary effects and every robustness row carry the same correction_status, interpretation_ceiling, metadata_status and scope_id copied from the frozen primary scope.json. The governed exporter checks one-to-one scope binding, equality to D9 family-income audit correction.csv for FAIK.FAMAEKVIVADISP_13/year2016, the calendar_year_after_test horizon and 1000_DKK unit before export. Public scope_id is a release-safe opaque label of at most80 characters; no baseline-set digest is exported. `metadata_status=verified` means this binding and the provenance adjudication are verified, not that correction is established. Allowed pairs: corrected/documented_resources; known_uncorrected/recorded_income_proxy; unresolved/recorded_income_proxy. Missing or inaccessible metadata uses unavailable/unavailable_metadata, metadata_status=unavailable, scope_id=unavailable and NA numeric values; the display retains the explicit status/reason. A wholly absent input is shown as no accepted output, never zero. There is no assumption that another specification repairs correction. Require equality across supplied specification rows; a mismatch rejects rendering until the same frozen scope is supplied.

Figures6/7 accept intended resource wording only for corrected/documented_resources with verified metadata. Otherwise the visible endpoint label is Recorded equivalized-income proxy, and an untruncated note states correction_status and no intended-resource or welfare interpretation. Unavailable metadata gets a neutral Family income label and no resource interpretation. Figure7 validates interval_alpha=.05/24 for primary and .05 for each sensitivity; its legend continues to distinguish adjusted primary and individual exploratory intervals. Every unavailable specification row retains that planned alpha and known metadata. For endpoints other than family_resources, interpretation_ceiling and correction fields preserve their existing registered scope (all when inapplicable); this display repair creates no new scientific test or correction assumption. Scope.json includes interpretation_ceiling under this same mapping. The restriction applies to manuscript prose and tables as well as figures.

Ascertainment and exits. Each endpoint's internal ascertainment component owns `ascertainment.csv`, one row for its endpoint: outcome,horizon,unit=pp,grade_scope,n_eligible,n_observed_red,n_observed_yellow,n_total_red,n_total_yellow, All counts use baseline denominators; proportions are fractions0–1 and contrast/limits percentage points. Undefined follow-up and death/emigration are distinct fields and may overlap (not additive categories). Death/emigration risk denominator is the full baseline eligible count for child events; parent-event endpoints sum roster denominators with equal-parent weighting and label denominator_unit=parent_weighted_index. Each primary and description also emits `exits.csv` keyed outcome,cohort,category,grade,side,horizon,event with event=death/emigration/undefined/unknown_residence, numerator,denominator,proportion,status,reason. Side=red/yellow/all; grade/cohort/category use all when pooled. Report these fractions descriptively, with no unregistered significance test. Nominal whole-window completeness is checked separately from person exit.

Other diagnostics. `diagnostics.csv` is an enumerated long table keyed atom,check,grade,side,cohort,category,reference_year,component. Required nonnumeric keys use all if inapplicable. Columns value,lower,upper,se,p_raw,p_adjusted,numerator,denominator,unit,inference_status,status,reason,source_ numerical NA never means failed null. The check dictionary is: atom-000001 date_valid_fraction/person_link_fraction/score_defined_fraction/category_defined_fraction/earliest_da atom-000002 mapping_documented/grade_agreement_fraction/ambiguous_grade_fraction/inclusive_bou atom-000002 retention component initial_history_documented/selection_rule_known/later_replacement_p grade-margin components component_state; atom-000010 reach component horizon_eligible/horizon_not_yet_age/horizon_calendar_ended/horizon_unknown_birth; D7 fixed-relative audit resident_parent_fraction/nonresident_parent_fraction/one_known_parent_fractio atom-000010 age9to11/age12to14/age15to17; atom-000011 comprehensive_support/intensity/obu_historical_codes/unaided_learning; D6 hospital-era audit old_key/old_roles/old_codes/new_key/new_roles/new_codes/era_overlap_semantics. Endpoint Atoms use eligible/observed/missing/undefined/era_check/correction_check/calibration_check; component=endpoint and specific keys D10. Fraction denominators are all assessed/eligible persons in the indicated key, except repeated_record_fraction uses persons with documented history; source flags use numerator/denominator NA and value0/1 only if evidenced. State-valued component rows use value NA and status=the component state. Preserve status for uncomputed metrics. Generic audit JSON does not substitute for these tables.

`support.csv`: key grade,side; fields n,n_unique,max_gap,max_mass_share,rounding_unit,school_cluste `density.csv` and `classification.csv` columns are fixed in their Atom protocols; all required typed grade/side denominators and p-values are retained. `balance.csv`: key grade,check, where check=age/sex/income2014/prior_care or those names suffixed _missing; fields estimate,se,lower,upper,p_raw,p_adjusted,n_total,n_observed,n_missing,minimum,maximum,minimum_red,r Structural/constant rows have no SE/p/limits, but arithmetic extrema and denominators. Use the fixed48 error budget even for noninferential slots. `correction.csv` and `calibration.csv` are documentation tables with the exact fields in the internal D9 correction/calibration procedures and no empirical estimates. Each table is bound in the manuscript supplementary slots.

Profile uses `profile.csv`: cohort,category,count,fraction,status,reason; all12 cohort/category cells remain. Patterns use the precise pair keys and compatibility metadata in the Molecule registration, plus first_atom,second_atom,first_state,second_state,interpretation,status. Per-Atom audit.json preserves sources, transformations, dictionaries, joining assertions and timestamps. Scope.json fields are D10. Outputs live under prereg/runtime/atom-NNNNNN/; every unavailable/inactive Atom has status.json even if no scientific table exists. Plotting consumes accepted aggregates only and cannot estimate, combine strata or infer omitted values.

G3. Audit, synthetic checks and deviations

Before the restricted analysis, create synthetic records solely to check: duplicate diagnosis joins do not multiply persons; score exactly equal to a cutoff is red; a future

survey never becomes baseline; leap-day birthdays use 28 February in nonleap years; missing parents do not create sibling links; tied family tests use the fixed hash; death/emigration wins an unresolved same-day event; missing survey response is not a negative symptom; negative billing adjustments cancel like services; changing quarterly BFL slices cannot double annual hours; and an incomplete annual income horizon never yields zero resources. These fixtures test operations, not anticipated scientific effects. Compare the one-grade local estimator and influence-function SE against the pinned reference implementation, and verify Bonferroni denominators stay 24 when endpoints fail.

Validate graph acyclicity, all local keys, unknown-evidence logic, complete membership and slot/output bindings without confidential data. Syntax-check every figure program; exercise the render API with empty/status-only inputs and reject malformed uncertainty. No mock empirical figures are included in the manuscript. Compilation does not constitute technical acceptance, empirical validation or a completed preregistration execution.

Keep deviations in `prereg/runtime/deviations.jsonl`: item, trigger, time, evidence_seen, old_rule, new_rule, rationale, inferential_status and affected_atoms. Cosmetic path/encoding repairs preserving semantics are implementation changes. Changing score, grade, cutoff, population, phenotype, endpoint, horizon, weighting or inference is scientific; it requires reviewed extension and cannot be backdated. Revisions preserve retained Atom IDs. Funding, affiliations, provider agreements and conflicts are not supplied by this design task and must be explicitly completed before publication; do not invent "none". No contact with researchers/providers, external upload, publication, commit, push or release was performed or authorized.

G4. Scope omissions and claim ceilings

School achievement, participation, belonging, loneliness, headache and stomach ache are retained as distinct educational/experienced dimensions. Depressive and anxiety/stress encounters and community care are distinct recording processes. Family care, sibling experience, resources, paid activity and parental retained testing are separate consequential responses. Educational transition, attainment, employee participation, earnings, resources and co-residence describe early adulthood only where birth dates allow. Broader physical morbidity is not replaced by an arbitrary disease list; pain reports supply the theory-linked physical-health dimension. Adult subjective wellbeing, advocacy time, private tutoring expenditure, complete support receipt/intensity, unaided literacy, full NEET and mature-adult outcomes lack verified constructs or appropriate follow-up. The service-boundary Atom records the limitations of HANDICNOTA and VEUV rather than equating their absence with no assistance. These omissions follow documented measurement limits and the single child-family question, not candidate ranking or favorable results.

Descriptive family-income export and display (atom-000113; Figure4). In addition to G2/D10 descriptive keys, require source_table=FAIK, source_variable=FAMAEKVIVADISP_13, reference_year=calendar_year, delivery_id, provenance_id, scope_id, interpretation_ceiling and metadata_status. Before export assert a many-descriptive-rows:one adjudicated provenance

record join on table/variable/reference_year/delivery_id; source records contain delivery_checksum/source_locator/criterion and a unique provenance_id. Validate a one-to-one scope label per original descriptive stratum. Year2016 may bind D9 family-income audit's primary record; every other year binds its own record. Do not require a shared correction state across years or use the2016 scope as a substitute. metadata_status=verified permits exactly corrected/documented_resources or known_uncorrected/recorded_income_proxy or unresolved/recorded_income_proxy. Full labels and untruncated restriction notes are required even on suppressed rows. Public identifiers are opaque labels at most80 characters and never governed baseline digests.

Unavailable binding has correction_status=unavailable, interpretation_ceiling=unavailable_metadata, metadata_status=unavailable, delivery_id=provenance_id=scope_id=unavailable and all empirical numbers NA; source_table/source_variable and the known calendar/reference year remain. An all-key horizon-boundary row uses reference_year=calendar_year=all. Retain the actual unavailable/suppressed/no_result status and reason; never call this an adjudicated unresolved correction. Omitted columns, contradictory ceilings, mismatched reference years, conflicting same-delivery/year adjudications or values without binding must raise an interface error. Figure4 splits family-income panels by year, delivery and binding: corrected panels use documented resources; known_uncorrected/unresolved panels say Recorded equivalized-income proxy and No intended-resource or welfare interpretation; unavailable panels have neutral labels and no resource interpretation. No new means or other estimates are formed by the renderer. Different years may have different ceilings. All paper slots and captions obey this row-specific mapping.

Symptom/care composition (Molecule registration). Use only its ordered pair-qualified policy and two-row patterns.csv contract. A qualified loneliness decrease with either qualified care increase can resolve divergent despite an unused care boundary or operational failure; report that unused endpoint explicitly. Concordant requires all three qualified decreases. Required-primary nonactivation remains not_activated; pending or unknown evidence stays pending. Known different targets/horizons give cross_target narration of side-by-side observed directions, not a common-population, health, detection or mediation finding. Restrictions attach to the endpoint/pair they concern and cannot silently veto an otherwise qualified pair or erase an unavailable one.

G5. Current output namespaces and authority

At a native Atom root, status.json and judgment.json concern the scientific unit. Internal endpoint files live under `prereg/runtime/<current-Atom>/endpoints/<endpoint>/<descriptive|primary|ascertainment|robu`
All G2 numerical table names and columns remain unchanged within those namespaces. Internal judgment.json records a component verdict, not a native registered_state; it cannot be referenced by state() or scheduled as an Atom. A complete component roster is written even when some work is unavailable. `components.csv` preserves component_state, component_terminal, inference_status and reasons; operational no_result always has an empty scientific key. Unit-level top state is the

ordered aggregation in its Atom registration, with every independent component still reported.

Grade support, density, balance, classification and income-provenance outputs live under the corresponding named subdirectory of that grade's Atom. Their source rules and error budgets are I5 and D9. Assessment reach and relative-composition descriptions live under atom-000010/reach and atom-000010/relatives. D6/D9 measurement audit copies local to descriptive and policy experiments are governed applications of the same frozen definition; they are not prerequisites on each other's completion. Documentary records with identical table/variable/year/delivery hashes may be reused, but a state or year cannot be propagated by analogy.

Molecule comparisons introduce no Atom and no primary slot. The authoritative comparison policy is inside molecule-000001 preregistration.storyline and its composable rules. Optional reader outputs under `prereg/runtime/molecule-000001/` are `health-patterns.csv`, `material-patterns.csv`, `family-patterns.csv` and `grade-summary.csv`; these merely arrange member evidence and retain member/endpoint/component identifiers. They do not own a competing interpretation or execution graph. Each emitted row has source_atoms, source_endpoints, source_component_paths, interpretation_status and reason; the precise comparison columns are in the Molecule.

A top-level Atom otherwise state may report scientifically unresolved component documentation when some evidence was produced. It must not disguise wholly unexecuted work. If all scientific components fail to execute, use native terminal no_result. An internal primary that cannot activate because a dated construct is demonstrably invalid has the registered boundary; a native Atom whose Boolean condition is false is not_activated. Unknown prerequisites remain pending.

Only authored sources are delivered in this stage. No copied or rebuilt graph atlases, LaTeX, PDFs, compiled reader manuals or registration seals appear. Transcriber/host compile the separate registration and unfilled-paper documents after technical acceptance.

Registered interpretation rules

Restrictions take precedence over permissions; residual reporting does not invent a finding.

1. restriction

Condition: TRUE

Every claim is limited to its exact endpoint population, horizon, measurement and disclosure status. Grade passes do not prove continuity; classification is not inherent dyslexia or receipt of support. No equivalence or welfare conclusion follows from non-significance. Apply all component restrictions even when another endpoint in that Atom is directional.

```
kind: restriction
condition: 'TRUE'
```

```
says: Every claim is limited to its exact endpoint population, horizon,
↪  measurement
  and disclosure status. Grade passes do not prove continuity; classification
  is not inherent dyslexia or receipt of support. No equivalence or welfare
  conclusion follows from nonsignificance. Apply all component restrictions
  even when another endpoint in that Atom is directional.
```

2. restriction

Condition: state(atom-000002) == “selected” OR state(atom-000002) == “boundary” OR state(atom-000002) == “retention_unresolved” OR state(atom-000002) == “otherwise”

The initial-margin causal interpretation is not cleared. Independently valid descriptive and diagnostic evidence remains reportable.

```
kind: restriction
condition: state(atom-000002) == "selected" OR state(atom-000002) ==
↪  "boundary"
  OR state(atom-000002) == "retention_unresolved" OR state(atom-000002) ==
  "otherwise"
says: The initial-margin causal interpretation is not cleared. Independently
  valid descriptive and diagnostic evidence remains reportable.
```

3. restriction

Condition: TRUE

Income known_uncorrected/unresolved rows mean recorded-income proxy only, with no intended-resource or welfare interpretation. Unavailable metadata permits no numeric narration. Enforce by variable/delivery/reference-year even on suppressed cells. Reading calibration failures restrict pooled reading only. New hospital-era problems restrict the affected eras only. Missing relatives restrict the specific relative outcomes only.

```
kind: restriction
condition: 'TRUE'
says: Income known_uncorrected/unresolved rows mean recorded-income proxy
  only, with no intended-resource or welfare interpretation. Unavailable
  ↪  metadata
  permits no numeric narration. Enforce by variable/delivery/reference-year
  even on suppressed cells. Reading calibration failures restrict pooled
  ↪  reading
  only. New hospital-era problems restrict the affected eras only. Missing
  relatives restrict the specific relative outcomes only.
```

4. supplementary

Condition: done(atom-000010)

Report the descriptive experiment Assessment population and reach with all prespecified strata and independent unavailable dimensions. No causal, population-prevalence or first-diagnosis inference.

```
kind: supplementary
condition: done(atom-000010)
says: Report the descriptive experiment Assessment population and reach with
  all prespecified strata and independent unavailable dimensions. No causal,
  population-prevalence or first-diagnosis inference.
```

5. supplementary

Condition: done(atom-000101)

Report the descriptive experiment School experience after assessment with all prespecified strata and independent unavailable dimensions. No causal, population-prevalence or first-diagnosis inference.

```
kind: supplementary
condition: done(atom-000101)
says: Report the descriptive experiment School experience after assessment
  with all prespecified strata and independent unavailable dimensions. No
  causal, population-prevalence or first-diagnosis inference.
```

6. supplementary

Condition: done(atom-000109)

Report the descriptive experiment Recorded child care pathways with all prespecified strata and independent unavailable dimensions. No causal, population-prevalence or first-diagnosis inference.

```
kind: supplementary
condition: done(atom-000109)
says: Report the descriptive experiment Recorded child care pathways with
  all prespecified strata and independent unavailable dimensions. No causal,
  population-prevalence or first-diagnosis inference.
```

7. supplementary

Condition: done(atom-000113)

Report the descriptive experiment Family circumstances after assessment with all prespecified strata and independent unavailable dimensions. No causal, population-prevalence or first-diagnosis inference.

```
kind: supplementary
condition: done(atom-000113)
says: Report the descriptive experiment Family circumstances after assessment
  with all prespecified strata and independent unavailable dimensions. No
  causal, population-prevalence or first-diagnosis inference.
```

8. supplementary

Condition: done(atom-000118)

Report the descriptive experiment Early-adult circumstances after assessment with all prespecified strata and independent unavailable dimensions. No causal, population-prevalence or first-diagnosis inference.

```
kind: supplementary
condition: done(atom-000118)
says: Report the descriptive experiment Early-adult circumstances after
↪  assessment
  with all prespecified strata and independent unavailable dimensions. No
  causal, population-prevalence or first-diagnosis inference.
```

9. primary

Condition: done(atom-000201)

Report Does marginal classification change school social experience? using every endpoint component, interval/bound or boundary, ascertainment, and robustness restriction under atom-000201. Unit directional/mixed_direction/sensitive states never transfer a sign to another endpoint; unavailable companion endpoints stay explicit. This claim composes with other scientific experiments without a shared success index.

```
kind: primary
condition: done(atom-000201)
says: Report Does marginal classification change school social experience?
  using every endpoint component, interval/bound or boundary, ascertainment,
  and robustness restriction under atom-000201. Unit
  ↪  directional/mixed_direction/sensitive
  states never transfer a sign to another endpoint; unavailable companion
  endpoints stay explicit. This claim composes with other scientific
  ↪  experiments
  without a shared success index.
```

10. primary

Condition: done(atom-000202)

Report Does marginal classification change school somatic symptoms? using every endpoint component, interval/bound or boundary, ascertainment, and robustness restriction under atom-000202. Unit directional/mixed_direction/sensitive states never transfer a sign to another endpoint; unavailable companion endpoints stay explicit. This claim composes with other scientific experiments without a shared success index.

```
kind: primary
condition: done(atom-000202)
says: Report Does marginal classification change school somatic symptoms?
  using every endpoint component, interval/bound or boundary, ascertainment,
  and robustness restriction under atom-000202. Unit
  ↪  directional/mixed_direction/sensitive
  states never transfer a sign to another endpoint; unavailable companion
  endpoints stay explicit. This claim composes with other scientific
  ↪  experiments
  without a shared success index.
```

11. primary

Condition: done(atom-000205)

Report Does marginal classification change school attendance? using every endpoint component, interval/bound or boundary, ascertainment, and robustness restriction under atom-000205. Unit directional/mixed_direction/sensitive states never transfer a sign to another endpoint; unavailable companion endpoints stay explicit. This claim composes with other scientific experiments without a shared success index.

```
kind: primary
condition: done(atom-000205)
says: Report Does marginal classification change school attendance? using
  every endpoint component, interval/bound or boundary, ascertainment, and
  robustness restriction under atom-000205. Unit
  ↪  directional/mixed_direction/sensitive
  states never transfer a sign to another endpoint; unavailable companion
  endpoints stay explicit. This claim composes with other scientific
  ↪  experiments
  without a shared success index.
```

12. primary

Condition: done(atom-000207)

Report Does marginal classification change assessed reading performance? using every endpoint component, interval/bound or boundary, ascertainment, and robustness restriction under atom-000207. Unit directional/mixed_direction/sensitive states never transfer a sign to another endpoint; unavailable companion endpoints stay explicit. This claim composes with other scientific experiments without a shared success index.

```
kind: primary
condition: done(atom-000207)
says: Report Does marginal classification change assessed reading performance?
  using every endpoint component, interval/bound or boundary, ascertainment,
  and robustness restriction under atom-000207. Unit
  ↪  directional/mixed_direction/sensitive
  states never transfer a sign to another endpoint; unavailable companion
  endpoints stay explicit. This claim composes with other scientific
  ↪  experiments
  without a shared success index.
```

13. primary

Condition: done(atom-000208)

Report Does marginal classification change teacher-assessed danish? using every endpoint component, interval/bound or boundary, ascertainment, and robustness restriction under atom-000208. Unit directional/mixed_direction/sensitive states never transfer a sign to another endpoint; unavailable companion endpoints stay explicit. This claim composes with other scientific experiments without a shared success index.

```
kind: primary
condition: done(atom-000208)
says: Report Does marginal classification change teacher-assessed danish?
  using every endpoint component, interval/bound or boundary, ascertainment,
```

```
  and robustness restriction under atom-000208. Unit
  ↪  directional/mixed_direction/sensitive
  states never transfer a sign to another endpoint; unavailable companion
  endpoints stay explicit. This claim composes with other scientific
  ↪  experiments
  without a shared success index.
```

14. primary

Condition: done(atom-000209)

Report Does marginal classification change recorded depressive/anxiety care? using every endpoint component, interval/bound or boundary, ascertainment, and robustness restriction under atom-000209. Unit directional/mixed_direction/sensitive states never transfer a sign to another endpoint; unavailable companion endpoints stay explicit. This claim composes with other scientific experiments without a shared success index.

```
kind: primary
condition: done(atom-000209)
says: Report Does marginal classification change recorded depressive/anxiety
  care? using every endpoint component, interval/bound or boundary,
  ↪  ascertainment,
  and robustness restriction under atom-000209. Unit
  ↪  directional/mixed_direction/sensitive
  states never transfer a sign to another endpoint; unavailable companion
  endpoints stay explicit. This claim composes with other scientific
  ↪  experiments
  without a shared success index.
```

15. primary

Condition: done(atom-000211)

Report Does marginal classification change community care use? using every endpoint component, interval/bound or boundary, ascertainment, and robustness restriction under atom-000211. Unit directional/mixed_direction/sensitive states never transfer a sign to another endpoint; unavailable companion endpoints stay explicit. This claim composes with other scientific experiments without a shared success index.

```
kind: primary
condition: done(atom-000211)
says: Report Does marginal classification change community care use? using
  every endpoint component, interval/bound or boundary, ascertainment, and
  robustness restriction under atom-000211. Unit
  ↪  directional/mixed_direction/sensitive
  states never transfer a sign to another endpoint; unavailable companion
  endpoints stay explicit. This claim composes with other scientific
  ↪  experiments
  without a shared success index.
```

16. primary

Condition: done(atom-000213)

Report Does marginal classification change parental recorded care? using every endpoint component, interval/bound or boundary, ascertainment, and robustness restriction under atom-000213. Unit directional/mixed_direction/sensitive states never transfer a sign to another endpoint; unavailable companion endpoints stay explicit. This claim composes with other scientific experiments without a shared success index.

```
kind: primary
condition: done(atom-000213)
says: Report Does marginal classification change parental recorded care? using
  every endpoint component, interval/bound or boundary, ascertainment, and
  robustness restriction under atom-000213. Unit
  ↪  directional/mixed_direction/sensitive
  states never transfer a sign to another endpoint; unavailable companion
  endpoints stay explicit. This claim composes with other scientific
  ↪  experiments
  without a shared success index.
```

17. primary

Condition: done(atom-000214)

Report Does marginal classification change sibling school experience? using every endpoint component, interval/bound or boundary, ascertainment, and robustness restriction under atom-000214. Unit directional/mixed_direction/sensitive states never transfer a sign to another endpoint; unavailable companion endpoints stay explicit. This claim composes with other scientific experiments without a shared success index.

```
kind: primary
condition: done(atom-000214)
says: Report Does marginal classification change sibling school experience?
  using every endpoint component, interval/bound or boundary, ascertainment,
  and robustness restriction under atom-000214. Unit
  ↪  directional/mixed_direction/sensitive
  states never transfer a sign to another endpoint; unavailable companion
  endpoints stay explicit. This claim composes with other scientific
  ↪  experiments
  without a shared success index.
```

18. primary

Condition: done(atom-000215)

Report Does marginal classification change household material resources? using every endpoint component, interval/bound or boundary, ascertainment, and robustness restriction under atom-000215. Unit directional/mixed_direction/sensitive states never transfer a sign to another endpoint; unavailable companion endpoints stay explicit. This claim composes with other scientific experiments without a shared success index.

```
kind: primary
condition: done(atom-000215)
says: Report Does marginal classification change household material resources?
```

```
  using every endpoint component, interval/bound or boundary, ascertainment,
  and robustness restriction under atom-000215. Unit
  ↪  directional/mixed_direction/sensitive
  states never transfer a sign to another endpoint; unavailable companion
  endpoints stay explicit. This claim composes with other scientific
  ↪  experiments
  without a shared success index.
```

19. primary

Condition: done(atom-000216)

Report Does marginal classification change parental paid work? using every endpoint component, interval/bound or boundary, ascertainment, and robustness restriction under atom-000216. Unit directional/mixed_direction/sensitive states never transfer a sign to another endpoint; unavailable companion endpoints stay explicit. This claim composes with other scientific experiments without a shared success index.

```
kind: primary
condition: done(atom-000216)
says: Report Does marginal classification change parental paid work? using
  every endpoint component, interval/bound or boundary, ascertainment, and
  robustness restriction under atom-000216. Unit
  ↪  directional/mixed_direction/sensitive
  states never transfer a sign to another endpoint; unavailable companion
  endpoints stay explicit. This claim composes with other scientific
  ↪  experiments
  without a shared success index.
```

20. primary

Condition: done(atom-000217)

Report Does marginal classification change parental recognition response? using every endpoint component, interval/bound or boundary, ascertainment, and robustness restriction under atom-000217. Unit directional/mixed_direction/sensitive states never transfer a sign to another endpoint; unavailable companion endpoints stay explicit. This claim composes with other scientific experiments without a shared success index.

```
kind: primary
condition: done(atom-000217)
says: Report Does marginal classification change parental recognition
↪  response?
  using every endpoint component, interval/bound or boundary, ascertainment,
  and robustness restriction under atom-000217. Unit
  ↪  directional/mixed_direction/sensitive
  states never transfer a sign to another endpoint; unavailable companion
  endpoints stay explicit. This claim composes with other scientific
  ↪  experiments
  without a shared success index.
```

21. primary

Condition: done(atom-000218)

Report Does marginal classification change educational progression and attainment? using every endpoint component, interval/bound or boundary, ascertainment, and robustness restriction under atom-000218. Unit directional/mixed_direction/sensitive states never transfer a sign to another endpoint; unavailable companion endpoints stay explicit. This claim composes with other scientific experiments without a shared success index.

```
kind: primary
condition: done(atom-000218)
says: Report Does marginal classification change educational progression and
  attainment? using every endpoint component, interval/bound or boundary,
  ascertainment, and robustness restriction under atom-000218. Unit
  ↪  directional/mixed_direction/sensitive
  states never transfer a sign to another endpoint; unavailable companion
  endpoints stay explicit. This claim composes with other scientific
  ↪  experiments
  without a shared success index.
```

22. primary

Condition: done(atom-000220)

Report Does marginal classification change early-adult paid work? using every endpoint component, interval/bound or boundary, ascertainment, and robustness restriction under atom-000220. Unit directional/mixed_direction/sensitive states never transfer a sign to another endpoint; unavailable companion endpoints stay explicit. This claim composes with other scientific experiments without a shared success index.

```
kind: primary
condition: done(atom-000220)
says: Report Does marginal classification change early-adult paid work? using
  every endpoint component, interval/bound or boundary, ascertainment, and
  robustness restriction under atom-000220. Unit
  ↪  directional/mixed_direction/sensitive
  states never transfer a sign to another endpoint; unavailable companion
  endpoints stay explicit. This claim composes with other scientific
  ↪  experiments
  without a shared success index.
```

23. primary

Condition: done(atom-000222)

Report Does marginal classification change early-adult household circumstances? using every endpoint component, interval/bound or boundary, ascertainment, and robustness restriction under atom-000222. Unit directional/mixed_direction/sensitive states never transfer a sign to another endpoint; unavailable companion endpoints stay explicit. This claim composes with other scientific experiments without a shared success index.

```
kind: primary
condition: done(atom-000222)
says: Report Does marginal classification change early-adult household
↪  circumstances?
  using every endpoint component, interval/bound or boundary, ascertainment,
  and robustness restriction under atom-000222. Unit
  ↪  directional/mixed_direction/sensitive
  states never transfer a sign to another endpoint; unavailable companion
  endpoints stay explicit. This claim composes with other scientific
  ↪  experiments
  without a shared success index.
```

24. supplementary

Condition: (done(atom-000201) OR terminal(atom-000201) == “no_result”) AND (done(atom-000209) OR terminal(atom-000209) == “no_result”)

Apply the registered HEALTH COMPARISON to the exact endpoint components; pair qualification retains partial-care knowledge and cross_target limits. No new scientific Atom or test is generated.

```
kind: supplementary
condition: (done(atom-000201) OR terminal(atom-000201) == "no_result") AND
  (done(atom-000209) OR terminal(atom-000209) == "no_result")
says: Apply the registered HEALTH COMPARISON to the exact endpoint components;
  pair qualification retains partial-care knowledge and cross_target limits.
  No new scientific Atom or test is generated.
```

25. supplementary

Condition: done(atom-000217)

Apply the FAMILY RECOGNITION COMPARISON. Its qualified early-recognition route can resolve with care pending; uncertain assessment is never nonincrease. Report all other family endpoints independently.

```
kind: supplementary
condition: done(atom-000217)
says: Apply the FAMILY RECOGNITION COMPARISON. Its qualified early-recognition
  route can resolve with care pending; uncertain assessment is never
  ↪  nonincrease.
  Report all other family endpoints independently.
```

26. supplementary

Condition: done(atom-000218) OR done(atom-000220) OR done(atom-000222)

Apply the MATERIAL COMPARISON pair by pair to available accepted component outputs. Preserve distinct birth/annual horizons and every unavailable pair; never pool or refit for common scope.

```
kind: supplementary
condition: done(atom-000218) OR done(atom-000220) OR done(atom-000222)
says: Apply the MATERIAL COMPARISON pair by pair to available accepted
↪  component
```

```
  outputs. Preserve distinct birth/annual horizons and every unavailable pair;
  never pool or refit for common scope.
```

27. residual

Condition: TRUE

Enumerate every current member and internal component as completed, bounded, not_activated, pending or operational no_result with exact reasons. Report unresolved cross-domain scope without overriding independent results. The final argument can remain descriptive, mixed or unresolved; no all-study positive/null verdict is inferred.

```
kind: residual
condition: 'TRUE'
says: Enumerate every current member and internal component as completed,
  bounded, not_activated, pending or operational no_result with exact reasons.
  Report unresolved cross-domain scope without overriding independent results.
  The final argument can remain descriptive, mixed or unresolved; no all-study
  positive/null verdict is inferred.
```

Preregistered epistemic graph

Each Atom is an interpretable question or diagnostic judgment. Local result states determine registered activation.

atom-000001

Can dated retained national dyslexia assessments be distinguished from invalid or ambiguous records?

Activation: `TRUE`

- `data_gap`: Authoritative delivery confirms that PNR, actual assessment DATO or national-test identity is absent/incompatible. — No person-indexed assessment cohort under this contract.
- `ready`: Dated person assessment semantics and both SCORE and category dictionary are verified; invalid individual records have the prespecified disposition. — The retained-event cohort can be constructed; actual first-test and causal status remain unresolved.
- `limited`: Dated person assessment semantics are verified but score and/or categories are unavailable or unresolved. — Describe retained dated assessments in an unknown-category group; do not infer classification or a score margin.
- `otherwise`: otherwise — The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason.

atom-000002

Does the historical rule define a recoverable initial-assessment policy margin in the delivered national-test records?

Activation: `state(atom-000001) == "ready"`

- `boundary`: The mapping component establishes its boundary. Retention findings, if any, remain reported. — This historical margin is not constructible.
- `selected`: Mapping=mapped and retention=selected. — The recorded margin can be described, but outcome-dependent initial-record selection blocks causal use.
- `compatible`: Mapping=mapped and retention=compatible. — The initial margin is institutionally compatible; grade-specific validation and continuity assumptions remain necessary.
- `retention_unresolved`: Mapping=mapped and retention is unresolved or an internally recorded operational failure. — The score rule can be audited; causal use awaits compatible initial-record provenance.
- `otherwise`: otherwise — No compatible initial policy margin is established; retain the component reasons without a policy null.

atom-000010

Who appears in retained childhood assessments, which relatives are represented, and which life-course horizons can those cohorts reach?

Activation: `done(atom-000001) OR terminal(atom-000001) == "no_result"`

- `described`: Profile, reach and baseline-relative composition each have a computed scientific description; unavailable individual strata remain explicit. — Describe assessment composition and observable life-course reach, without population prevalence or causal claims.
- `partial`: At least one of the three components supplies a scientific description and another cannot. — Report each available aspect and every unavailable aspect separately; no all-or-nothing scope gate.
- `boundary`: All three components have evidenced empty/incompatible population or clock boundaries. — No represented cohort or follow-up can be described under this contract.
- `otherwise`: otherwise — Report unresolved scope without invented counts, follow-up or relationships.

atom-000011

Can this boundary identify support received, adult dyslexia instruction or unaided learning?

Activation: `TRUE`

- `limited_markers`: Documentation confirms only selected institutional markers and lacks the comprehensive receipt/intensity/unaided constructs specified here. — Do not attribute effects to a particular support dose or unaided learning; limited markers remain service-boundary knowledge.
- `additional_documentation`: New authoritative documentation specifies a relevant receipt construct, but no treatment-receipt design is registered here. — Record it for a reviewed extension; no automatic support-effect claim or new endpoint.
- `otherwise`: otherwise — The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason.

atom-000101

What recorded school experience after assessment can be described, and which dimensions remain unobserved?

Activation: `state(atom-000001) == "ready" OR state(atom-000001) == "limited"`

- `described`: Every registered endpoint supplies at least one computed governed descriptive stratum; all unobserved cells remain explicit. — Describe the endpoint vector in original units and separate scopes; no composite or causal contrast.
- `partial`: At least one endpoint supplies a computed governed descriptive stratum and another endpoint supplies none. — Report available endpoint-specific descriptions and each independent measurement, horizon or operational limitation.
- `boundary`: No description is computable and every endpoint has an evidenced measurement/horizon/population boundary. — Report which documented dimensions cannot be measured or reached; no statistical null.
- `otherwise`: otherwise — Preserve unresolved documentation or execution reasons; unknown evidence is not a negative result.

atom-000109

What recorded recorded child care pathways can be described, and which dimensions remain unobserved?

Activation: `state(atom-000001) == "ready" OR state(atom-000001) == "limited"`

- `described`: Every registered endpoint supplies at least one computed governed descriptive stratum; all unobserved cells remain explicit. — Describe the endpoint vector in original units and separate scopes; no composite or causal contrast.
- `partial`: At least one endpoint supplies a computed governed descriptive stratum and another endpoint supplies none. — Report available endpoint-specific descriptions and each independent measurement, horizon or operational limitation.
- `boundary`: No description is computable and every endpoint has an evidenced measurement/horizon/population boundary. — Report which documented dimensions cannot be measured or reached; no statistical null.
- `otherwise`: otherwise — Preserve unresolved documentation or execution reasons; unknown evidence is not a negative result.

atom-000113

What recorded family circumstances after assessment can be described, and which dimensions remain unobserved?

Activation: `state(atom-000001) == "ready" OR state(atom-000001) == "limited"`

- `described`: Every registered endpoint supplies at least one computed governed descriptive stratum; all unobserved cells remain explicit. — Describe the endpoint vector in original units and separate scopes; no composite or causal contrast.

- `partial`: At least one endpoint supplies a computed governed descriptive stratum and another endpoint supplies none. — Report available endpoint-specific descriptions and each independent measurement, horizon or operational limitation.
- `boundary`: No description is computable and every endpoint has an evidenced measurement/horizon/population boundary. — Report which documented dimensions cannot be measured or reached; no statistical null.
- `otherwise`: otherwise — Preserve unresolved documentation or execution reasons; unknown evidence is not a negative result.

atom-000118

What recorded early-adult circumstances after assessment can be described, and which dimensions remain unobserved?

Activation: `state(atom-000001) == "ready" OR state(atom-000001) == "limited"`

- `described`: Every registered endpoint supplies at least one computed governed descriptive stratum; all unobserved cells remain explicit. — Describe the endpoint vector in original units and separate scopes; no composite or causal contrast.
- `partial`: At least one endpoint supplies a computed governed descriptive stratum and another endpoint supplies none. — Report available endpoint-specific descriptions and each independent measurement, horizon or operational limitation.
- `boundary`: No description is computable and every endpoint has an evidenced measurement/horizon/population boundary. — Report which documented dimensions cannot be measured or reached; no statistical null.
- `otherwise`: otherwise — Preserve unresolved documentation or execution reasons; unknown evidence is not a negative result.

atom-000201

Does marginal classification change school social experience?

Activation: `state(atom-000001) == "ready" AND state(atom-000002) == "compatible" AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) == "eligible_nonsharp") AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) == "eligible_nonsharp") AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) == "eligible_nonsharp") AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) == "eligible_nonsharp")`

- `sensitive`: At least one endpoint has a computed I4 sensitivity contradiction. This precedence applies even if another endpoint/variant fails. — Name every affected endpoint and variant; retain all primary estimates and independent component failures without replacing a primary.
- `mixed_direction`: No preceding region; at least one qualified increase and one qualified decrease among this experiment's endpoints. Qualified means valid primary interval/bounds and stable own robustness. — Report the discordant endpoint

directions in their original units/scopes; do not average or assign a common welfare sign.

- `directional`: No preceding region; at least one endpoint is a qualified increase or decrease. Other endpoints may be uncertain, selected, boundary, failed or unresolved. — Report only named qualified directions and every other endpoint's disposition. This does not imply the entire domain changed or that all endpoints were available.
- `uncertain`: No preceding region; at least one endpoint has a valid primary interval/bounds, but no qualified direction. — Report exact intervals and endpoint-specific robustness restrictions; zero-containing intervals and unresolved robustness remain different cases, neither equivalence.
- `boundary`: No preceding region; every endpoint has an evidenced measurement or horizon/population boundary. — This scientific question cannot be evaluated under the frozen target; report component-specific reasons, never a null.
- `restricted`: No preceding region; at least one endpoint supplies completed evidence of selection_limited or unestimable inference. — Report the surviving selected/unestimable evidence and independent failures; no all-eligible directional claim.
- `otherwise`: otherwise — The experiment remains unresolved. Preserve every component state, terminal and unavailable reason; operational failure is not insignificance.

atom-000202

Does marginal classification change school somatic symptoms?

Activation: `state(atom-000001) == "ready" AND state(atom-000002) == "compatible" AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) == "eligible_nonsharp") AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) == "eligible_nonsharp") AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) == "eligible_nonsharp") AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) == "eligible_nonsharp")`

- `sensitive`: At least one endpoint has a computed I4 sensitivity contradiction. This precedence applies even if another endpoint/variant fails. — Name every affected endpoint and variant; retain all primary estimates and independent component failures without replacing a primary.
- `mixed_direction`: No preceding region; at least one qualified increase and one qualified decrease among this experiment's endpoints. Qualified means valid primary interval/bounds and stable own robustness. — Report the discordant endpoint directions in their original units/scopes; do not average or assign a common welfare sign.
- `directional`: No preceding region; at least one endpoint is a qualified increase or decrease. Other endpoints may be uncertain, selected, boundary, failed or unresolved. — Report only named qualified directions and every other endpoint's disposition. This does not imply the entire domain changed or that all endpoints were available.

- `uncertain`: No preceding region; at least one endpoint has a valid primary interval/bounds, but no qualified direction. — Report exact intervals and endpoint-specific robustness restrictions; zero-containing intervals and unresolved robustness remain different cases, neither equivalence.
- `boundary`: No preceding region; every endpoint has an evidenced measurement or horizon/population boundary. — This scientific question cannot be evaluated under the frozen target; report component-specific reasons, never a null.
- `restricted`: No preceding region; at least one endpoint supplies completed evidence of selection_limited or unestimable inference. — Report the surviving selected/unestimable evidence and independent failures; no all-eligible directional claim.
- `otherwise`: otherwise — The experiment remains unresolved. Preserve every component state, terminal and unavailable reason; operational failure is not insignificance.

atom-000205

Does marginal classification change school attendance?

Activation: `state(atom-000001) == "ready" AND state(atom-000002) == "compatible" AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) == "eligible_nonsharp") AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) == "eligible_nonsharp") AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) == "eligible_nonsharp") AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) == "eligible_nonsharp")`

- `sensitive`: At least one endpoint has a computed I4 sensitivity contradiction. This precedence applies even if another endpoint/variant fails. — Name every affected endpoint and variant; retain all primary estimates and independent component failures without replacing a primary.
- `mixed_direction`: No preceding region; at least one qualified increase and one qualified decrease among this experiment's endpoints. Qualified means valid primary interval/bounds and stable own robustness. — Report the discordant endpoint directions in their original units/scopes; do not average or assign a common welfare sign.
- `directional`: No preceding region; at least one endpoint is a qualified increase or decrease. Other endpoints may be uncertain, selected, boundary, failed or unresolved. — Report only named qualified directions and every other endpoint's disposition. This does not imply the entire domain changed or that all endpoints were available.
- `uncertain`: No preceding region; at least one endpoint has a valid primary interval/bounds, but no qualified direction. — Report exact intervals and endpoint-specific robustness restrictions; zero-containing intervals and unresolved robustness remain different cases, neither equivalence.

- `boundary`: No preceding region; every endpoint has an evidenced measurement or horizon/population boundary. — This scientific question cannot be evaluated under the frozen target; report component-specific reasons, never a null.
- `restricted`: No preceding region; at least one endpoint supplies completed evidence of selection_limited or unestimable inference. — Report the surviving selected/unestimable evidence and independent failures; no all-eligible directional claim.
- `otherwise`: otherwise — The experiment remains unresolved. Preserve every component state, terminal and unavailable reason; operational failure is not insignificance.

atom-000207

Does marginal classification change assessed reading performance?

Activation: `state(atom-000001) == "ready" AND state(atom-000002) == "compatible" AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) == "eligible_nonsharp") AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) == "eligible_nonsharp") AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) == "eligible_nonsharp") AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) == "eligible_nonsharp")`

- `sensitive`: At least one endpoint has a computed I4 sensitivity contradiction. This precedence applies even if another endpoint/variant fails. — Name every affected endpoint and variant; retain all primary estimates and independent component failures without replacing a primary.
- `mixed_direction`: No preceding region; at least one qualified increase and one qualified decrease among this experiment's endpoints. Qualified means valid primary interval/bounds and stable own robustness. — Report the discordant endpoint directions in their original units/scopes; do not average or assign a common welfare sign.
- `directional`: No preceding region; at least one endpoint is a qualified increase or decrease. Other endpoints may be uncertain, selected, boundary, failed or unresolved. — Report only named qualified directions and every other endpoint's disposition. This does not imply the entire domain changed or that all endpoints were available.
- `uncertain`: No preceding region; at least one endpoint has a valid primary interval/bounds, but no qualified direction. — Report exact intervals and endpoint-specific robustness restrictions; zero-containing intervals and unresolved robustness remain different cases, neither equivalence.
- `boundary`: No preceding region; every endpoint has an evidenced measurement or horizon/population boundary. — This scientific question cannot be evaluated under the frozen target; report component-specific reasons, never a null.
- `restricted`: No preceding region; at least one endpoint supplies completed evidence of selection_limited or unestimable inference. — Report the surviving selected/unestimable evidence and independent failures; no all-eligible directional claim.

- `otherwise`: otherwise — The experiment remains unresolved. Preserve every component state, terminal and unavailable reason; operational failure is not insignificance.

atom-000208

Does marginal classification change teacher-assessed danish?

Activation: `state(atom-000001) == "ready" AND state(atom-000002) == "compatible" AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) == "eligible_nonsharp") AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) == "eligible_nonsharp") AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) == "eligible_nonsharp") AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) == "eligible_nonsharp") AND (state(atom-000505) == "eligible_sharp" OR state(atom-000505) == "eligible_nonsharp")`

- `sensitive`: At least one endpoint has a computed I4 sensitivity contradiction. This precedence applies even if another endpoint/variant fails. — Name every affected endpoint and variant; retain all primary estimates and independent component failures without replacing a primary.
- `mixed_direction`: No preceding region; at least one qualified increase and one qualified decrease among this experiment's endpoints. Qualified means valid primary interval/bounds and stable own robustness. — Report the discordant endpoint directions in their original units/scopes; do not average or assign a common welfare sign.
- `directional`: No preceding region; at least one endpoint is a qualified increase or decrease. Other endpoints may be uncertain, selected, boundary, failed or unresolved. — Report only named qualified directions and every other endpoint's disposition. This does not imply the entire domain changed or that all endpoints were available.
- `uncertain`: No preceding region; at least one endpoint has a valid primary interval/bounds, but no qualified direction. — Report exact intervals and endpoint-specific robustness restrictions; zero-containing intervals and unresolved robustness remain different cases, neither equivalence.
- `boundary`: No preceding region; every endpoint has an evidenced measurement or horizon/population boundary. — This scientific question cannot be evaluated under the frozen target; report component-specific reasons, never a null.
- `restricted`: No preceding region; at least one endpoint supplies completed evidence of selection_limited or unestimable inference. — Report the surviving selected/unestimable evidence and independent failures; no all-eligible directional claim.
- `otherwise`: otherwise — The experiment remains unresolved. Preserve every component state, terminal and unavailable reason; operational failure is not insignificance.

atom-000209

Does marginal classification change recorded depressive/anxiety care?

Activation: `state(atom-000001) == "ready" AND state(atom-000002) == "compatible" AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) == "eligible_nonsharp") AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) == "eligible_nonsharp") AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) == "eligible_nonsharp") AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) == "eligible_nonsharp") AND (state(atom-000505) == "eligible_sharp" OR state(atom-000505) == "eligible_nonsharp") AND (state(atom-000506) == "eligible_sharp" OR state(atom-000506) == "eligible_nonsharp")`

- `sensitive`: At least one endpoint has a computed I4 sensitivity contradiction. This precedence applies even if another endpoint/variant fails. — Name every affected endpoint and variant; retain all primary estimates and independent component failures without replacing a primary.
- `mixed_direction`: No preceding region; at least one qualified increase and one qualified decrease among this experiment's endpoints. Qualified means valid primary interval/bounds and stable own robustness. — Report the discordant endpoint directions in their original units/scopes; do not average or assign a common welfare sign.
- `directional`: No preceding region; at least one endpoint is a qualified increase or decrease. Other endpoints may be uncertain, selected, boundary, failed or unresolved. — Report only named qualified directions and every other endpoint's disposition. This does not imply the entire domain changed or that all endpoints were available.
- `uncertain`: No preceding region; at least one endpoint has a valid primary interval/bounds, but no qualified direction. — Report exact intervals and endpoint-specific robustness restrictions; zero-containing intervals and unresolved robustness remain different cases, neither equivalence.
- `boundary`: No preceding region; every endpoint has an evidenced measurement or horizon/population boundary. — This scientific question cannot be evaluated under the frozen target; report component-specific reasons, never a null.
- `restricted`: No preceding region; at least one endpoint supplies completed evidence of selection_limited or unestimable inference. — Report the surviving selected/unestimable evidence and independent failures; no all-eligible directional claim.
- `otherwise`: otherwise — The experiment remains unresolved. Preserve every component state, terminal and unavailable reason; operational failure is not insignificance.

atom-000211

Does marginal classification change community care use?

Activation: `state(atom-000001) == "ready" AND state(atom-000002) == "compatible" AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) == "eligible_nonsharp") AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) == "eligible_nonsharp") AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) == "eligible_nonsharp") AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) == "eligible_nonsharp") AND (state(atom-000505) == "eligible_sharp" OR state(atom-000505) == "eligible_nonsharp") AND (state(atom-000506) == "eligible_sharp" OR state(atom-000506) == "eligible_nonsharp")`

- `sensitive`: At least one endpoint has a computed I4 sensitivity contradiction. This precedence applies even if another endpoint/variant fails. — Name every affected endpoint and variant; retain all primary estimates and independent component failures without replacing a primary.
- `mixed_direction`: No preceding region; at least one qualified increase and one qualified decrease among this experiment's endpoints. Qualified means valid primary interval/bounds and stable own robustness. — Report the discordant endpoint directions in their original units/scopes; do not average or assign a common welfare sign.
- `directional`: No preceding region; at least one endpoint is a qualified increase or decrease. Other endpoints may be uncertain, selected, boundary, failed or unresolved. — Report only named qualified directions and every other endpoint's disposition. This does not imply the entire domain changed or that all endpoints were available.
- `uncertain`: No preceding region; at least one endpoint has a valid primary interval/bounds, but no qualified direction. — Report exact intervals and endpoint-specific robustness restrictions; zero-containing intervals and unresolved robustness remain different cases, neither equivalence.
- `boundary`: No preceding region; every endpoint has an evidenced measurement or horizon/population boundary. — This scientific question cannot be evaluated under the frozen target; report component-specific reasons, never a null.
- `restricted`: No preceding region; at least one endpoint supplies completed evidence of selection_limited or unestimable inference. — Report the surviving selected/unestimable evidence and independent failures; no all-eligible directional claim.
- `otherwise`: otherwise — The experiment remains unresolved. Preserve every component state, terminal and unavailable reason; operational failure is not insignificance.

atom-000213

Does marginal classification change parental recorded care?

Activation: `state(atom-000001) == "ready" AND state(atom-000002) == "compatible" AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) == "eligible_nonsharp") AND (state(atom-000502)`

```
== "eligible_sharp" OR state(atom-000502) == "eligible_nonsharp")
AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) ==
"eligible_nonsharp") AND (state(atom-000504) == "eligible_sharp" OR
state(atom-000504) == "eligible_nonsharp") AND (state(atom-000505)
== "eligible_sharp" OR state(atom-000505) == "eligible_nonsharp")
AND (state(atom-000506) == "eligible_sharp" OR state(atom-000506) ==
"eligible_nonsharp")
```

- `sensitive`: At least one endpoint has a computed I4 sensitivity contradiction. This precedence applies even if another endpoint/variant fails. — Name every affected endpoint and variant; retain all primary estimates and independent component failures without replacing a primary.
- `mixed_direction`: No preceding region; at least one qualified increase and one qualified decrease among this experiment's endpoints. Qualified means valid primary interval/bounds and stable own robustness. — Report the discordant endpoint directions in their original units/scopes; do not average or assign a common welfare sign.
- `directional`: No preceding region; at least one endpoint is a qualified increase or decrease. Other endpoints may be uncertain, selected, boundary, failed or unresolved. — Report only named qualified directions and every other endpoint's disposition. This does not imply the entire domain changed or that all endpoints were available.
- `uncertain`: No preceding region; at least one endpoint has a valid primary interval/bounds, but no qualified direction. — Report exact intervals and endpoint-specific robustness restrictions; zero-containing intervals and unresolved robustness remain different cases, neither equivalence.
- `boundary`: No preceding region; every endpoint has an evidenced measurement or horizon/population boundary. — This scientific question cannot be evaluated under the frozen target; report component-specific reasons, never a null.
- `restricted`: No preceding region; at least one endpoint supplies completed evidence of selection_limited or unestimable inference. — Report the surviving selected/unestimable evidence and independent failures; no all-eligible directional claim.
- `otherwise`: otherwise — The experiment remains unresolved. Preserve every component state, terminal and unavailable reason; operational failure is not insignificance.

atom-000214

Does marginal classification change sibling school experience?

Activation:

```
state(atom-000001) == "ready" AND state(atom-000002)
== "compatible" AND (state(atom-000501) == "eligible_sharp" OR
state(atom-000501) == "eligible_nonsharp") AND (state(atom-000502)
== "eligible_sharp" OR state(atom-000502) == "eligible_nonsharp")
AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) ==
"eligible_nonsharp") AND (state(atom-000504) == "eligible_sharp" OR
```

```
state(atom-000504) == "eligible_nonsharp") AND (state(atom-000505)
== "eligible_sharp" OR state(atom-000505) == "eligible_nonsharp")
AND (state(atom-000506) == "eligible_sharp" OR state(atom-000506) ==
"eligible_nonsharp")
```

- `sensitive`: At least one endpoint has a computed I4 sensitivity contradiction. This precedence applies even if another endpoint/variant fails. — Name every affected endpoint and variant; retain all primary estimates and independent component failures without replacing a primary.
- `mixed_direction`: No preceding region; at least one qualified increase and one qualified decrease among this experiment's endpoints. Qualified means valid primary interval/bounds and stable own robustness. — Report the discordant endpoint directions in their original units/scopes; do not average or assign a common welfare sign.
- `directional`: No preceding region; at least one endpoint is a qualified increase or decrease. Other endpoints may be uncertain, selected, boundary, failed or unresolved. — Report only named qualified directions and every other endpoint's disposition. This does not imply the entire domain changed or that all endpoints were available.
- `uncertain`: No preceding region; at least one endpoint has a valid primary interval/bounds, but no qualified direction. — Report exact intervals and endpoint-specific robustness restrictions; zero-containing intervals and unresolved robustness remain different cases, neither equivalence.
- `boundary`: No preceding region; every endpoint has an evidenced measurement or horizon/population boundary. — This scientific question cannot be evaluated under the frozen target; report component-specific reasons, never a null.
- `restricted`: No preceding region; at least one endpoint supplies completed evidence of selection_limited or unestimable inference. — Report the surviving selected/unestimable evidence and independent failures; no all-eligible directional claim.
- `otherwise`: otherwise — The experiment remains unresolved. Preserve every component state, terminal and unavailable reason; operational failure is not insignificance.

atom-000215

Does marginal classification change household material resources?

Activation: `state(atom-000001) == "ready" AND state(atom-000002) == "compatible" AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) == "eligible_nonsharp") AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) == "eligible_nonsharp") AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) == "eligible_nonsharp") AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) == "eligible_nonsharp") AND (state(atom-000505) == "eligible_sharp" OR state(atom-000505) == "eligible_nonsharp")`

AND (state(atom-000506) == "eligible_sharp" OR state(atom-000506) == "eligible_nonsharp")

- `sensitive`: At least one endpoint has a computed I4 sensitivity contradiction. This precedence applies even if another endpoint/variant fails. — Name every affected endpoint and variant; retain all primary estimates and independent component failures without replacing a primary.
- `mixed_direction`: No preceding region; at least one qualified increase and one qualified decrease among this experiment's endpoints. Qualified means valid primary interval/bounds and stable own robustness. — Report the discordant endpoint directions in their original units/scopes; do not average or assign a common welfare sign.
- `directional`: No preceding region; at least one endpoint is a qualified increase or decrease. Other endpoints may be uncertain, selected, boundary, failed or unresolved. — Report only named qualified directions and every other endpoint's disposition. This does not imply the entire domain changed or that all endpoints were available.
- `uncertain`: No preceding region; at least one endpoint has a valid primary interval/bounds, but no qualified direction. — Report exact intervals and endpoint-specific robustness restrictions; zero-containing intervals and unresolved robustness remain different cases, neither equivalence.
- `boundary`: No preceding region; every endpoint has an evidenced measurement or horizon/population boundary. — This scientific question cannot be evaluated under the frozen target; report component-specific reasons, never a null.
- `restricted`: No preceding region; at least one endpoint supplies completed evidence of selection_limited or unestimable inference. — Report the surviving selected/unestimable evidence and independent failures; no all-eligible directional claim.
- `otherwise`: otherwise — The experiment remains unresolved. Preserve every component state, terminal and unavailable reason; operational failure is not insignificance.

atom-000216

Does marginal classification change parental paid work?

Activation: state(atom-000001) == "ready" AND state(atom-000002) == "compatible" AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) == "eligible_nonsharp") AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) == "eligible_nonsharp") AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) == "eligible_nonsharp") AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) == "eligible_nonsharp") AND (state(atom-000505) == "eligible_sharp" OR state(atom-000505) == "eligible_nonsharp") AND (state(atom-000506) == "eligible_sharp" OR state(atom-000506) == "eligible_nonsharp")

- `sensitive`: At least one endpoint has a computed I4 sensitivity contradiction. This precedence applies even if another endpoint/variant fails. — Name every affected endpoint and variant; retain all primary estimates and independent component failures without replacing a primary.
- `mixed_direction`: No preceding region; at least one qualified increase and one qualified decrease among this experiment's endpoints. Qualified means valid primary interval/bounds and stable own robustness. — Report the discordant endpoint directions in their original units/scopes; do not average or assign a common welfare sign.
- `directional`: No preceding region; at least one endpoint is a qualified increase or decrease. Other endpoints may be uncertain, selected, boundary, failed or unresolved. — Report only named qualified directions and every other endpoint's disposition. This does not imply the entire domain changed or that all endpoints were available.
- `uncertain`: No preceding region; at least one endpoint has a valid primary interval/bounds, but no qualified direction. — Report exact intervals and endpoint-specific robustness restrictions; zero-containing intervals and unresolved robustness remain different cases, neither equivalence.
- `boundary`: No preceding region; every endpoint has an evidenced measurement or horizon/population boundary. — This scientific question cannot be evaluated under the frozen target; report component-specific reasons, never a null.
- `restricted`: No preceding region; at least one endpoint supplies completed evidence of selection_limited or unestimable inference. — Report the surviving selected/unestimable evidence and independent failures; no all-eligible directional claim.
- `otherwise`: otherwise — The experiment remains unresolved. Preserve every component state, terminal and unavailable reason; operational failure is not insignificance.

atom-000217

Does marginal classification change parental recognition response?

Activation: `state(atom-000001) == "ready" AND state(atom-000002) == "compatible" AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) == "eligible_nonsharp") AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) == "eligible_nonsharp") AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) == "eligible_nonsharp") AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) == "eligible_nonsharp") AND (state(atom-000505) == "eligible_sharp" OR state(atom-000505) == "eligible_nonsharp") AND (state(atom-000506) == "eligible_sharp" OR state(atom-000506) == "eligible_nonsharp")`

- `sensitive`: At least one endpoint has a computed I4 sensitivity contradiction. This precedence applies even if another endpoint/variant fails. — Name every affected

endpoint and variant; retain all primary estimates and independent component failures without replacing a primary.

- `mixed_direction`: No preceding region; at least one qualified increase and one qualified decrease among this experiment's endpoints. Qualified means valid primary interval/bounds and stable own robustness. — Report the discordant endpoint directions in their original units/scopes; do not average or assign a common welfare sign.
- `directional`: No preceding region; at least one endpoint is a qualified increase or decrease. Other endpoints may be uncertain, selected, boundary, failed or unresolved. — Report only named qualified directions and every other endpoint's disposition. This does not imply the entire domain changed or that all endpoints were available.
- `uncertain`: No preceding region; at least one endpoint has a valid primary interval/bounds, but no qualified direction. — Report exact intervals and endpoint-specific robustness restrictions; zero-containing intervals and unresolved robustness remain different cases, neither equivalence.
- `boundary`: No preceding region; every endpoint has an evidenced measurement or horizon/population boundary. — This scientific question cannot be evaluated under the frozen target; report component-specific reasons, never a null.
- `restricted`: No preceding region; at least one endpoint supplies completed evidence of selection_limited or unestimable inference. — Report the surviving selected/unestimable evidence and independent failures; no all-eligible directional claim.
- `otherwise`: otherwise — The experiment remains unresolved. Preserve every component state, terminal and unavailable reason; operational failure is not insignificance.

atom-000218

Does marginal classification change educational progression and attainment?

Activation: `state(atom-000001) == "ready" AND state(atom-000002) == "compatible" AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) == "eligible_nonsharp") AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) == "eligible_nonsharp") AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) == "eligible_nonsharp") AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) == "eligible_nonsharp") AND (state(atom-000505) == "eligible_sharp" OR state(atom-000505) == "eligible_nonsharp") AND (state(atom-000506) == "eligible_sharp" OR state(atom-000506) == "eligible_nonsharp")`

- `sensitive`: At least one endpoint has a computed I4 sensitivity contradiction. This precedence applies even if another endpoint/variant fails. — Name every affected endpoint and variant; retain all primary estimates and independent component failures without replacing a primary.

- `mixed_direction`: No preceding region; at least one qualified increase and one qualified decrease among this experiment's endpoints. Qualified means valid primary interval/bounds and stable own robustness. — Report the discordant endpoint directions in their original units/scopes; do not average or assign a common welfare sign.
- `directional`: No preceding region; at least one endpoint is a qualified increase or decrease. Other endpoints may be uncertain, selected, boundary, failed or unresolved. — Report only named qualified directions and every other endpoint's disposition. This does not imply the entire domain changed or that all endpoints were available.
- `uncertain`: No preceding region; at least one endpoint has a valid primary interval/bounds, but no qualified direction. — Report exact intervals and endpoint-specific robustness restrictions; zero-containing intervals and unresolved robustness remain different cases, neither equivalence.
- `boundary`: No preceding region; every endpoint has an evidenced measurement or horizon/population boundary. — This scientific question cannot be evaluated under the frozen target; report component-specific reasons, never a null.
- `restricted`: No preceding region; at least one endpoint supplies completed evidence of selection_limited or unestimable inference. — Report the surviving selected/unestimable evidence and independent failures; no all-eligible directional claim.
- `otherwise`: otherwise — The experiment remains unresolved. Preserve every component state, terminal and unavailable reason; operational failure is not insignificance.

atom-000220

Does marginal classification change early-adult paid work?

Activation: `state(atom-000001) == "ready" AND state(atom-000002) == "compatible" AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) == "eligible_nonsharp") AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) == "eligible_nonsharp") AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) == "eligible_nonsharp") AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) == "eligible_nonsharp") AND (state(atom-000505) == "eligible_sharp" OR state(atom-000505) == "eligible_nonsharp") AND (state(atom-000506) == "eligible_sharp" OR state(atom-000506) == "eligible_nonsharp")`

- `sensitive`: At least one endpoint has a computed I4 sensitivity contradiction. This precedence applies even if another endpoint/variant fails. — Name every affected endpoint and variant; retain all primary estimates and independent component failures without replacing a primary.
- `mixed_direction`: No preceding region; at least one qualified increase and one qualified decrease among this experiment's endpoints. Qualified means valid primary interval/bounds and stable own robustness. — Report the discordant endpoint

directions in their original units/scopes; do not average or assign a common welfare sign.

- `directional`: No preceding region; at least one endpoint is a qualified increase or decrease. Other endpoints may be uncertain, selected, boundary, failed or unresolved. — Report only named qualified directions and every other endpoint's disposition. This does not imply the entire domain changed or that all endpoints were available.
- `uncertain`: No preceding region; at least one endpoint has a valid primary interval/bounds, but no qualified direction. — Report exact intervals and endpoint-specific robustness restrictions; zero-containing intervals and unresolved robustness remain different cases, neither equivalence.
- `boundary`: No preceding region; every endpoint has an evidenced measurement or horizon/population boundary. — This scientific question cannot be evaluated under the frozen target; report component-specific reasons, never a null.
- `restricted`: No preceding region; at least one endpoint supplies completed evidence of selection_limited or unestimable inference. — Report the surviving selected/unestimable evidence and independent failures; no all-eligible directional claim.
- `otherwise`: otherwise — The experiment remains unresolved. Preserve every component state, terminal and unavailable reason; operational failure is not insignificance.

atom-000222

Does marginal classification change early-adult household circumstances?

Activation: `state(atom-000001) == "ready" AND state(atom-000002) == "compatible" AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) == "eligible_nonsharp") AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) == "eligible_nonsharp") AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) == "eligible_nonsharp") AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) == "eligible_nonsharp") AND (state(atom-000505) == "eligible_sharp" OR state(atom-000505) == "eligible_nonsharp") AND (state(atom-000506) == "eligible_sharp" OR state(atom-000506) == "eligible_nonsharp")`

- `sensitive`: At least one endpoint has a computed I4 sensitivity contradiction. This precedence applies even if another endpoint/variant fails. — Name every affected endpoint and variant; retain all primary estimates and independent component failures without replacing a primary.
- `mixed_direction`: No preceding region; at least one qualified increase and one qualified decrease among this experiment's endpoints. Qualified means valid primary interval/bounds and stable own robustness. — Report the discordant endpoint directions in their original units/scopes; do not average or assign a common welfare sign.

- `directional`: No preceding region; at least one endpoint is a qualified increase or decrease. Other endpoints may be uncertain, selected, boundary, failed or unresolved. — Report only named qualified directions and every other endpoint's disposition. This does not imply the entire domain changed or that all endpoints were available.
- `uncertain`: No preceding region; at least one endpoint has a valid primary interval/bounds, but no qualified direction. — Report exact intervals and endpoint-specific robustness restrictions; zero-containing intervals and unresolved robustness remain different cases, neither equivalence.
- `boundary`: No preceding region; every endpoint has an evidenced measurement or horizon/population boundary. — This scientific question cannot be evaluated under the frozen target; report component-specific reasons, never a null.
- `restricted`: No preceding region; at least one endpoint supplies completed evidence of selection_limited or unestimable inference. — Report the surviving selected/unestimable evidence and independent failures; no all-eligible directional claim.
- `otherwise`: otherwise — The experiment remains unresolved. Preserve every component state, terminal and unavailable reason; operational failure is not insignificance.

atom-000501

Can the grade-4 score margin support a credible local classification-policy contrast?

Activation: `state(atom-000002) == "compatible" OR state(atom-000002) == "selected" OR state(atom-000002) == "retention_unresolved"`

- `support_boundary`: Support component=discrete under its documented precision/full-window rules. — This grade does not support the registered continuity estimator; preserve its score description.
- `design_flagged`: No preceding region; density=flagged or baseline=flagged, including a deterministic side difference. — A registered threat constrains this grade; report other component failures as well.
- `eligible_sharp`: Support=continuous, density=not_flagged, baseline=not_flagged, classification=sharp_recording. — This grade may enter its prespecified policy targets, conditional on initial-margin provenance and untested causal assumptions.
- `eligible_nonsharp`: Support=continuous, density=not_flagged, baseline=not_flagged, classification=nonsharp_jump. — Only a reduced-form threshold-policy contrast is licensed, never a classification or support-receipt ratio.
- `classification_unresolved`: No preceding region; classification=unresolved_jump from a valid registered interval. — The required recorded-classification jump is not established; this is not a substantive outcome null.
- `otherwise`: otherwise — The grade is not cleared; preserve partial diagnostic evidence and operational failures explicitly.

atom-000502

Can the grade-5 score margin support a credible local classification-policy contrast?
Activation: `state(atom-000002) == "compatible" OR state(atom-000002) == "selected" OR state(atom-000002) == "retention_unresolved"`

- `support_boundary`: Support component=discrete under its documented precision/full-window rules. — This grade does not support the registered continuity estimator; preserve its score description.
- `design_flagged`: No preceding region; density=flagged or baseline=flagged, including a deterministic side difference. — A registered threat constrains this grade; report other component failures as well.
- `eligible_sharp`: Support=continuous, density=not_flagged, baseline=not_flagged, classification=sharp_recording. — This grade may enter its prespecified policy targets, conditional on initial-margin provenance and untested causal assumptions.
- `eligible_nonsharp`: Support=continuous, density=not_flagged, baseline=not_flagged, classification=nonsharp_jump. — Only a reduced-form threshold-policy contrast is licensed, never a classification or support-receipt ratio.
- `classification_unresolved`: No preceding region; classification=unresolved_jump from a valid registered interval. — The required recorded-classification jump is not established; this is not a substantive outcome null.
- `otherwise`: otherwise — The grade is not cleared; preserve partial diagnostic evidence and operational failures explicitly.

atom-000503

Can the grade-6 score margin support a credible local classification-policy contrast?
Activation: `state(atom-000002) == "compatible" OR state(atom-000002) == "selected" OR state(atom-000002) == "retention_unresolved"`

- `support_boundary`: Support component=discrete under its documented precision/full-window rules. — This grade does not support the registered continuity estimator; preserve its score description.
- `design_flagged`: No preceding region; density=flagged or baseline=flagged, including a deterministic side difference. — A registered threat constrains this grade; report other component failures as well.
- `eligible_sharp`: Support=continuous, density=not_flagged, baseline=not_flagged, classification=sharp_recording. — This grade may enter its prespecified policy targets, conditional on initial-margin provenance and untested causal assumptions.
- `eligible_nonsharp`: Support=continuous, density=not_flagged, baseline=not_flagged, classification=nonsharp_jump. — Only a reduced-form threshold-policy contrast is licensed, never a classification or support-receipt ratio.
- `classification_unresolved`: No preceding region; classification=unresolved_jump from a valid registered interval. — The required

recorded-classification jump is not established; this is not a substantive outcome null.
- `otherwise`: otherwise — The grade is not cleared; preserve partial diagnostic evidence and operational failures explicitly.

atom-000504

Can the grade-7 score margin support a credible local classification-policy contrast?
Activation: `state(atom-000002) == "compatible" OR state(atom-000002) == "selected" OR state(atom-000002) == "retention_unresolved"`

- `support_boundary`: Support component=discrete under its documented precision/full-window rules. — This grade does not support the registered continuity estimator; preserve its score description.
- `design_flagged`: No preceding region; density=flagged or baseline=flagged, including a deterministic side difference. — A registered threat constrains this grade; report other component failures as well.
- `eligible_sharp`: Support=continuous, density=not_flagged, baseline=not_flagged, classification=sharp_recording. — This grade may enter its prespecified policy targets, conditional on initial-margin provenance and untested causal assumptions.
- `eligible_nonsharp`: Support=continuous, density=not_flagged, baseline=not_flagged, classification=nonsharp_jump. — Only a reduced-form threshold-policy contrast is licensed, never a classification or support-receipt ratio.
- `classification_unresolved`: No preceding region; classification=unresolved_jump from a valid registered interval. — The required recorded-classification jump is not established; this is not a substantive outcome null.
- `otherwise`: otherwise — The grade is not cleared; preserve partial diagnostic evidence and operational failures explicitly.

atom-000505

Can the grade-8 score margin support a credible local classification-policy contrast?
Activation: `state(atom-000002) == "compatible" OR state(atom-000002) == "selected" OR state(atom-000002) == "retention_unresolved"`

- `support_boundary`: Support component=discrete under its documented precision/full-window rules. — This grade does not support the registered continuity estimator; preserve its score description.
- `design_flagged`: No preceding region; density=flagged or baseline=flagged, including a deterministic side difference. — A registered threat constrains this grade; report other component failures as well.
- `eligible_sharp`: Support=continuous, density=not_flagged, baseline=not_flagged, classification=sharp_recording. — This grade may enter its prespecified policy targets, conditional on initial-margin provenance and untested causal assumptions.

- `eligible_nonsharp`: Support=continuous, density=not_flagged, baseline=not_flagged, classification=nonsharp_jump. — Only a reduced-form threshold-policy contrast is licensed, never a classification or support-receipt ratio.
- `classification_unresolved`: No preceding region; classification=unresolved_jump from a valid registered interval. — The required recorded-classification jump is not established; this is not a substantive outcome null.
- `otherwise`: otherwise — The grade is not cleared; preserve partial diagnostic evidence and operational failures explicitly.

atom-000506

Can the grade-9 score margin support a credible local classification-policy contrast?

Activation: `state(atom-000002) == "compatible" OR state(atom-000002) == "selected" OR state(atom-000002) == "retention_unresolved"`

- `support_boundary`: Support component=discrete under its documented precision/full-window rules. — This grade does not support the registered continuity estimator; preserve its score description.
- `design_flagged`: No preceding region; density=flagged or baseline=flagged, including a deterministic side difference. — A registered threat constrains this grade; report other component failures as well.
- `eligible_sharp`: Support=continuous, density=not_flagged, baseline=not_flagged, classification=sharp_recording. — This grade may enter its prespecified policy targets, conditional on initial-margin provenance and untested causal assumptions.
- `eligible_nonsharp`: Support=continuous, density=not_flagged, baseline=not_flagged, classification=nonsharp_jump. — Only a reduced-form threshold-policy contrast is licensed, never a classification or support-receipt ratio.
- `classification_unresolved`: No preceding region; classification=unresolved_jump from a valid registered interval. — The required recorded-classification jump is not established; this is not a substantive outcome null.
- `otherwise`: otherwise — The grade is not cleared; preserve partial diagnostic evidence and operational failures explicitly.

User-directed freeze (not independent scientific acceptance)

- Verdict: `user_frozen`

The user explicitly requested packaging the current scientifically regrouped draft without another author/reviewer iteration. The current draft has NOT received independent technical acceptance. Native accepted status denotes the sealed user-directed handoff only. No empirical analysis has been executed, and no feasibility, causal identification, novelty or result is certified by this build. All scientific protocols, questions, result partitions, activation conditions, scope restrictions, authored paper and figure

code are preserved from the frozen source. Outstanding limitations in that source remain in force.

Checks

- `granularity`: `actual_scientific_unit_regrouping_present`
- `native_structure`: `pass`
- `paper_and_figure_interfaces`: `pass`
- `independent_scientific_review`: `not_accepted_current_revision`

Issues

limitation: Current scientific draft

No independent reviewer accepted this frozen revision.

Repair: No further scientific iteration, by explicit user instruction; limitations remain disclosed.

Independent checks

Packaging checks only: source fidelity, native World validity, PDF build, checksums and ZIP integrity; no new scientific review.

Execution supplement

Runtime input contract

This JSON manifest is an operational file interface. The immutable Atom/Molecule protocols remain the scientific authority. It contains explicit local paths to approved deliveries and documented semantic mappings, never guessed mounts or new analysis parameters. No confidential runtime input is supplied in this bundle.

Manifest shape

```
{
  "format": "dyslexia-runtime-inputs-v1",
  "synthetic": false,
  "scope_salt": "PROVIDER-GOVERNED-SECRET",
  "tables": {
    "BEF": {
      "vintage": "exact-frozen-delivery-vintage",
      "dictionary": "population",
      "person_domain": "one-consistent-governed-PNR-domain",
      "complete_through": "2024-12-31",
      "slices": [{
        "path": "/explicit/approved/BEF-2014-12.parquet",
        "sha256": "actual-file-sha256",
        "delivery_id": "actual-opaque-delivery-id",
        "snapshot": "2014-12-31"
      }]
    }
  },
```

```
  "dictionaries": {
    "population": {
      "path": "/explicit/approved/population-dictionary.json",
      "sha256": "actual-dictionary-file-sha256"
    }
  },
  "engines": {
    "rscript": "/explicit/path/to/Rscript",
    "source_archives": {
      "rdrobust": "/explicit/path/rdrobust_4.0.0.tar.gz",
      "rddensity": "/explicit/path/rddensity_3.0.tar.gz"
    }
  },
  "evidence": {
    "atom-000001": {
      "path": "/explicit/action/atom-000001",
      "sha256": "actual-evidence-json-sha256"
    }
  }
}
```

The example's strings are placeholders. Nothing is automatically accepted as verified. Relative paths resolve against this manifest, not the World. Tables are CSV or parquet; CSV values are read as lossless strings with empty cells missing. PNR must be strings throughout; identifier domains must agree. Missing identifier values are not matched to each other. Dated values use ISO strings; numeric variables retain their source units until the prescribed display conversion. Unparseable individual values remain missing/anomalous according to the relevant constructor.

Each table has one frozen vintage and a source dictionary name. Its slices explicitly identify delivery_id and, where applicable, snapshot (BEF/UDDA), reference_year (IND/FAIK/BFL), and reporting_unit (BFL). Mechanical _snapshot/_reference_year/_reporting_unit/_delivery_id annotations are added by the loader; input files may not invent underscore fields. A table header is not evidence of event completeness. complete_through is an attestation that the nominal register horizon is delivered and complete; event tables, diagnosis tables, migration/death, annual and state endpoints are checked. full_population has endpoint-specific use only: no BFL record can mean zero employee hours, and no qualifying education spell can mean zero only under validated full-population coverage.

An absent tables entry means the required runtime input is unavailable, not scientific zero. Documented absence can be represented with state=absent and source_locator, or absent_fields plus source_locator. That yields a measurement boundary. An inaccessible file is operational failure. Contradictory hashes, identifier types, repeated key mappings or vintage bindings are rejected rather than silently corrected.

An empty `slices: []` list supplies no extract and is operational `no_result`, even with `complete_through` or `full_population` metadata. A genuinely delivered, checksum-bound zero-row file with the required headers and validated coverage can establish no recorded events/hours under the relevant endpoint rules. Annual BFL coverage additionally needs a supplied slice for the actual target reference year; a different year's file cannot establish zero hours. Delivery/definition checks occur before

horizon checks: an explicitly source-absent survey, reading, teacher, billing, employment, income, education or address table keeps its measurement boundary; a delivered table with insufficient nominal follow-up keeps its horizon boundary. This does not redefine `complete_through` or turn metadata into runtime access.

Documentary mapping files

Every dictionary file begins with:

```
{"state":"verified","source_locator":"exact official URL/file/page/date and
↪  delivery documentation"}
```

Use state=unresolved or incompatible when that is the evidence. A verified assertion is the runtime provider's source-backed input, not an author-certified Danish dictionary. An omitted required mapping emits STOP_UNRESOLVED_SOURCE at its D/I locator. Do not copy the synthetic dictionaries into an empirical manifest: every synthetic locator and code is explicitly fake.

The following fields are the implemented source interface. Numeric code mappings must use source strings as JSON keys. Official labels/validity dates belong in the supplied documents.

Dictionary	Required semantic content
assessment	national_test=true, date_semantics=assessment_date. score_scale=original_composite, category_field=TESTRESULTAT or TESTRESULTATNIVEAU, categories mapping to red/yellow/green/unknown, grade_codes mapping to actual test grade. For historical margin: inclusive_cutoff_verified, historical_rule_source; for support: rounding_unit in original score units; deterministic_categories only with documentary authority. Cutoffs and time windows cannot be overridden.
population	Dated BEF snapshot identity, birth-field semantics, parent-role dictionary and vintage provenance. No guessed CPRTJEK/CPRTYPE exclusions are applied.

Dictionary	Required semantic content
school	grade_codes, ordinary_class_types, school_years mapping a source school-year code to its starting calendar year, month_codes mapping source month codes to month1–12. The immediately preceding complete calendar month defines school/grade comparison; later records cannot repair it.
retention	initial_history_documented, selection_rule_known, later_replacement_possible; earlier_grade3_resolved and either complete_initial_histories_first_attempts_auditable_approval or earliest_approved_preclassification_no_score_replacement for the compatible route. outcome_or_score_selected_initial_unrecoverable identifies the registered selected route. These are documentary claims, not inferred from one row per person.
migration	directions mapping INDUD_KODE to immigration/emigration. Optional same_day_event_order=event_before_exit or exit_before_event requires explicit source ordering; omitted tied-day events are unknown.
survey	questionnaire_version exactly June 2016 older-pupil questionnaire; skema_codes, grade_codes; items keyed Q9/Q10/Q11/Q33, each with source_item_number, source_wording, field_wording, responses mapping delivered codes to exact Danish labels, and Q33 other_substantive_agreement_labels (exactly three). Matching labels/wording require official source verification.

Dictionary	Required semantic content
absence	units=days, expected_months mapping school-year start to a list of YYYY-MM enrollment months, multiple_school_days_nonoverlapping. Missing vacation-month rows are not zero.
reading	strata keyed targetGrade/endingYear. Each supplies construct_verified, scheduled, calibration_id, FAG,FAGID,GENBEREGNET,NORM,SKOLEAAR, source_locator. Common primary scale also requires origin_unit_verified and link_verified for all 6/2016,6/2017,8/2016,8/2017 strata; common_calibration_incompatible is an explicit contrary-documentation flag. Missing common links do not erase separately identified descriptive strata.
teacher	years keyed scheduled ending year. Each supplies school_year_code, final_teacher_code, disciplines, danish_code, scale_code (7). This must identify final Danish teacher assessments, not examinations. All discipline rows must exist uniquely.
hospital_legacy / hospital_new	contact_keys_verified=true, roles mapping source role codes to action/main/secondary or explicit excluded labels, code_system=SKS_with_D or ICD10_without_D. The immutable SKS code/date list supplies phenotype validity; no new diagnoses or classification version can enter here.
hospital_handover	effective_date from the provider manifest. Later descriptions split legacy/transition/new windows. The date is never guessed from a year header.

Dictionary	Required semantic content
billing	iso_week_encoding=YYYYWW, verified against HONUGE. SPEC2 endpoint definitions and chronic-honorarium exclusions are frozen in code from D6. Optional treatment_date_verified=true must cite the BEHANDLINGSDATO vintage; the audit requires a unique valid treatment date per net fee cell. Unresolved multi-date correction allocation stops only that audit. Treatment-date fields are not substituted for billing-week timing.
employment	disjoint_annual_reporting_units=true, full_population, imputed_codes, reported_codes. BFL slices must identify annual reporting units; identical compressed-job spans in different units are unresolved overlapping delivery evidence.
income_provenance	records described below, before income values are read.
education	classification=DISCED-15, enrollment_end_inclusive verified from KOTRE; UDD and HFAUDD maps from source codes to dated entries with valid_from, valid_to, level, qualifying, completed. No numeric code ranges are inferred. UDDF end is exclusively fixed by D8.
addresses	end_inclusive documenting BOP_VTIL semantics. Each person must have one nonmissing covering address.
sex	codes mapping KOEN to the frozen binary baseline variable.
baseline_completeness	variables age,sex,income2014,prior_care: true only for documentary universal completeness, not observed all-zero missingness.

Dictionary	Required semantic content
endpoint_completeness	endpoints mapping endpoint keys to true only with documentary universal completeness; absent flags give constant_observed, not inferred completeness.
support	Optional comprehensive_construct_documented with source_locator may support the documentation-only additional_documentation verdict. It creates no treatment-effect estimator or support endpoint.

A table's dictionary may be a dedicated verified table-identity document; the named semantic dictionaries above are also consulted where required. Dates/labels must be frozen before outcome inspection. Where a source cannot establish a choice, do not supply a convenient replacement; preserve the returned source boundary.

Exact income binding

income_provenance.records contains separate entries for each used table/variable/reference_year/delivery_id: - table, variable, reference_year, delivery_id and delivery_checksum matching an actual slice SHA256; - unique provenance_id, dated source_locator and criterion; - explicit_corrected, applicable_issues_resolved, intended_definition_verified, explicit_uncorrected documentary booleans.

Corrected requires the first three corrected conditions and no explicit uncorrected designation. Explicit uncorrected without corrected evidence gives known_uncorrected. Neither, or contradictory evidence, gives unresolved. The last two routes permit only the recorded-income proxy with its restriction. An unavailable exact binding gives no numerical income claim. Year2014 IND balance, year2016 FAIK primary and every descriptive/age20 reference year are adjudicated separately. The parser never regards a recent vintage or absence of a listed issue as a correction certificate.

Preserve source-table names, income definition and all negative values. The equivalized-resource input is divided by1,000 only for display. Wage income is LOENMV_13, independently of the correction audit for equivalized disposable resources.

Evidence and privacy

Evidence entries bind an accepted output directory by its evidence.json hash. The seal covers every supplied result file and frozen registration/material/input identities. Native mutable result bodies/current interpretations are not preregistration identity.

Changing a protocol, membership, source material, input checksum or dictionary checksum invalidates the binding. Copying unchanged inputs/World/code to another machine does not. Paths, engine locations and evidence locations never enter scientific identity. A verified input identity refers to the supplied delivery contract, not to permission to access it.

The seal also binds `execution_identity`, anchored by `docs/engineering/execution-identity.json` in the independently supplied read-only World. Execution sources and the registration authority must match that anchor before analysis; native top-level Atom/Molecule IDs must match their file/roster identities. Mutable result-body or current-interpretation updates leave faithful evidence valid. A wrong native ID, changed protocol, changed scientific source, corrupt result file or different input binding does not. The anchor is an authoring/review artifact, never a runtime manifest option for accepting arbitrary source bytes.

Outputs are governed aggregates with disclosure pending. Scope baseline_set_digest is a salted governed comparison token; it is not a public identifier. No raw rows, IDs, individual residuals or influence vectors enter public JSON. R temporary input CSVs stay inside the supplied governed action directory and are removed after the call. Never point output at a public location for a confidential run. This author bundle exports no empirical result.

The synthetic generator documents one complete executable example of all interface fields, using explicit fake source locators and fabricated identifiers. It is a test fixture, not Danish schema evidence or a resolution of any genuine source gap.

Spell endpoints for education, addresses and compressed jobs accept literal ISO civil dates beyond pandas' nanosecond array range (for example9999-12-31) without guessing that a special code means infinity. Source-coded sentinels such as99999999 remain invalid until the provider supplies a documented normalization. Supply timezone-naive ISO values in the registered source calendar; the executor does not invent a timezone conversion. Invalid spell timing remains unknown, not a no-enrollment/zero-hours/independent-household record. Invalid hospital/parent-assessment timing cannot establish a negative event; an independently known positive event remains positive.

Frozen reference execution — author round 2

This directory implements the existing adaptive registration. It does not populate native Atom results, manuscript slots, or prereg/runtime. All runs write to an explicitly supplied action directory outside the World. Synthetic outputs are tests only.

Run

```
/home/shaoerzhuo/anaconda3/bin/python /absolute/action/execution/run.py --help
/home/shaoerzhuo/anaconda3/bin/python /absolute/action/execution/run.py \
  --atom atom-000201 --world /absolute/read-only/world \
  --inputs /absolute/governed/inputs.json --output /absolute/governed/action \
  --dispatch-policy activation_respecting
```

The execution directory may be copied into a writable action workspace; it reads the supplied World without modifying it. Output is `OUTPUT/atom-NNNNNN/`; an existing Atom output is refused. Paths are examples, never discovered mounts. CLI exit 0 means a disposition was recorded (including pending/boundary), 3 means operational no_result, and 2 means a malformed, contradictory or already-existing action contract. Manifest parsing and integrity errors are preflight rejections, not statistical findings.

Default dispatch evaluates each frozen expression using native three-valued semantics. Supply accepted predecessor directories and their evidence.json SHA256 values in inputs.evidence. Unknown evidence remains pending; false activation becomes not_activated. Direct bypasses outer scheduling only. For policy Atoms, missing scientific prerequisites can be constructed locally beneath local-construction; these have no predecessor seal and cannot be passed off as accepted predecessors. Explicit no_result predecessors are never retried. Endpoint construction, scientific grade validity, internal conditions and source requirements still apply.

See INPUTS.md for the manifest, complete dictionary interfaces and source-backed resolution requirements. See implementation-report.md for actual verification and limitations. Runtime paths and dictionaries do not establish permission or Danish data availability.

The supplied World contains `docs/engineering/execution-identity.json`, an independent content anchor for the execution sources and `authority.json`. Keep this reviewed anchor with the read-only World when copying execution code to a writable action directory. `verify_sources.py` checks both copies before the CLI imports scientific modules; the World checks native Atom/Molecule identifiers, protocols, membership and frozen material separately. Predecessor seals bind this execution identity as well as registration, material and inputs. Do not regenerate the anchor at runtime to accept changed code. This assumes a trusted launcher and protected World; it does not authenticate an adversary's replacement of the entire World and launcher.

Environment and numerical authority

Tested interpreter: Python 3.12.4 at /home/shaoerzhuo/anaconda3/bin/python. Tested dependencies: numpy 1.26.4, pandas 2.2.3, scipy 1.15.2, PyYAML 6.0.2, matplotlib 3.10.0; parquet support pyarrow 19.0.0. No package was installed. Rscript 4.1.2 was available. The installed rdrobust was 3.0.0, not the required 4.0.0; rddensity/lpdensity were unavailable.

`engines.py` accepts the exact hash-pinned rdrobust 4.0.0 and rddensity 3.0 release archives through explicit engines.source_archives paths. It safely extracts them in OUTPUT/engine-workspace and sources their R functions with engines.R. This is an isolated use of the registered sources, not installation or a fallback estimator. The registered calls need no lpdensity plotting routine. Exact installed versions also work. Missing required software is no_result; failed documented numerical support is unestimable. No OLS replacement is used.

The fixed-bandwidth estimator and covariance import immutable docs/code/rd_operator.py; decision partitions import decision_rules.py. R provides

the pinned CER pilot and density estimator. The source pin is verified on every run. Exact errors/limits and test evidence are in the report. Descriptive bootstrap uses the registered 1,999 family resamples and seed 20150905; other deterministic seeds occur only in synthetic tests.

Common inputs and source-field provenance

Every empirical entry below uses C; endpoint uncertainty also uses the available baseline-parent graph F. Policy entries use preceding-month school/family clustering and source-qualified scientific eligibility. Descriptive means survive unavailable family-cluster intervals. O contains complete follow-up observation inputs. Codes below are documentation shorthand, not a new scientific registry.

Code	Tables and exact fields	Frozen locator / dictionary requirement
C	UDD_ORDBLINDETEST.PNR,DATO,SCORE,TESTRESULTAT or TESTRESULTAT-NIVEAU,UDDANNELSESNIVEAU; BEF.PNR,FOED_DAG; UDD_FOLKESKOLE_FRAVAER_STIL.PNR,INSTITUTIONSNUMMER,SKOL	D1/D2, assessment, population, school, retention; FSV table pages in evidence/schema-extracts.md and resource-bundle.
O	VNDS.PNR,HAEND_DATO,INDUD_KODE; DOD.PNR,DODDATO; dated BEF snapshots	D3; documented migration direction, completeness through nominal horizon.
F	BEF.PNR,MOR_ID,FAR_ID,FAMILIE_ID,FOED_DAG in last annual December before test; school fields in C for siblings	D7/D11; known-parent graph, fixed roster, first eligible family index/hash tie. Household income needs current December FAMILIE_ID.
S	UDD_TRIVSEL_STORED_KLASSE.PNR,STARTTIDSPUNKT,SLUTTIDSPUN and named Q9/Q10/Q11/Q33	D4; June 2016 exact wording, source item, numeric-to-label crosswalk, questionnaire codes.
A	UDD_FOLKESKOLE_FRAVAER_STIL fields C plus DAGESYG,DAGEIALTFRA,DAGEAKTIV,DAGELOVFRA,DAGEULOVFRA	D2/D5; day limits, expected enrollment months and nonoverlap.
R	UDD_NATTEST_GENBEF/D9; each scheduled (KRITERIE retained as source context)	D5/D9; each scheduled grade/year, overall construct and calibration links.

Code	Tables and exact fields	Frozen locator / dictionary requirement
T	UDFK.PNR,SKOLEAAR,DETRIN,GRUNDSKOLEFAG,GRUNDSKOLEKA	K5; fixed teacher form and complete distinct discipline/year roster, 7-point scale.
H	LPR_ADM/PSYK_ADM.PNR,RECNUM,D_INDDTO; LPR_DIAG/PSYK_DIAG.RECNUM,C_DIAG,C_DIAGTYPE; LPR_A_KONTAKT.PNR,DW_EK_KONTAKT,KONT_STARTTIDSPUN LPR_A_DIAGNOSE.DWSEK_KONTAKT,DIAG_KODE,DIAG_KODE_T	D6; common vintage, roles, source code representation, frozen SKS vaid dates; documented handover. Later era failure cannot suppress legacy policy effects.
B	SSSY.PNR,HONUGE,SPECIALE,KONTAKT,YDLANT,VERSION	D2; net contact cells and whole ISO billing weeks; no YDLANT substitution.
E	BFL.PNR,AJO_LOENTIME,AJO_LOENTIME_KODE,AJO_JOB_STA	D7/D8; manifest reference_year/reporting_unit, disjoint annual compressed jobs, imputed/reported codes and full-population coverage.
I	FAIK.FAMILIE_ID,FAMAEKVIVADISP_13 or IND.PNR,AEKVIVADISP_13,LOENMV_13	D7-D10; explicit reference year. Equivalized resources require exact delivery/variable/year provenance before values; negative adjustments preserved.
Q	KOTRE.PNR,ELEV3_VFRA,ELEV3_VTIL,UDD; UDDF.PNR,HF_VFRA,HF_VTIL,HFAUDD; optional UDDA.PNR,HF_VFRA,HFAUDD with same-date snapshot	D8; dated 3_VTIL-15 qualifying level/completion crosswalk and interval semantics.
Z	BEFBOP.PNR,ADRESSE_ID,BOP_VFRA,BOP_VTIL	D8; unique dated covering intervals; fixed baseline parents.

Code	Tables and exact fields	Frozen locator / dictionary requirement
V	BEF.KOEN; IND.AEKVIVADISP_13 year2014; H prior365 days	I5/D9; binary sex dictionary, 2014 income correction binding, four baseline variables and their four missing indicators.

No new table whitelist is used: Inputs checks the exact 531-table frozen boundary. A table's presence in that boundary is not runtime access. Underscore-prefixed columns are internal slice annotations, not claimed FSV fields.

Output contract and tests shared by all entries

Every Atom writes status.json, judgment.json, components.csv, audit.json and evidence.json. Components retain scientific state, operational terminal, inference_status and reasons independently. Evidence binds immutable registration/material and supplied input content; absolute paths are excluded from scientific identity. Mutable native result bodies and Molecule interpretation are excluded from registration identity.

`component_contracts.py` reads the exact internal component roster and verdict vocabulary from each frozen protocol. Every registered component has status.json, judgment.json, diagnostics.csv and audit.json, including pending, false activation, operational failure and early scientific boundaries. Its audit binds inputs/dictionaries and hashes the local component files. Early unavailable primary, ascertainment, robustness, descriptive and grade results retain their typed tables with reasons and blank numerical fields. Primary/descriptive exit tables retain blank numerators and denominators; unavailable primary scope.json retains the D10 fields without inventing weights or a baseline digest. Operational failures never fill sample counts or estimates with zero. An upstream key that is not in the receiving component's vocabulary is translated to its registered `otherwise` (or ascertainment `boundary`), with the exact upstream key/reason retained. Independently computable documentary components can finish even if the grade cohort is unavailable; this does not make the grade eligible.

For endpoint K, policy files are endpoints/K/primary/{effects.csv,scope.json,diagnostics.csv,exits.csv}; actual fits also produce estimator-components.csv and variance-components.csv. Ascertainment lives at endpoints/K/ascertainment/{ascertainment.csv,judgment.json}; four ordered specifications live at endpoints/K/robustness/robustness.csv. Selection-limited exploratory values are separate selection-sensitivity.csv. Bound outputs have no manufactured point/SE/p. Required fields, units and restrictions follow G2 exactly; unavailable fits have explicit reasons rather than dummy estimates. No row-level PNR, roster or influence vector enters result JSON.

Descriptive endpoints write endpoints/K/descriptive/{descriptives.csv,diagnostics.csv,exits.csv,judgment.json} D10 keys are outcome/cohort/category/horizon/unit/birth_year/calendar_year/target_grade/calibration_id/era Counts, mean, SD, quantiles and family-cluster percentile limits are separate columns.

Monetary years and reading calibration strata never pool in descriptive output. Binary levels are percent, contrasts pp. Income binding fields and interpretation ceilings are preserved.

`run_tests.py --output ABSOLUTE_NEW_SCRATCH_DIR` creates all its own fixtures/results outside the World. Supply `--rdrobust-source PATH --rddensity-source PATH` if the exact packages are unavailable. Test methods 01–08 cover calendars, family ties, event clocks, independent R/matrix/algebraic oracles, bootstrap and native rules; 09 executes every Atom; 10–11 exercise dispatch, corrupt evidence and relocated read-only Worlds; 12 renders unchanged figure interfaces; 13 verifies every constructor against explicit arithmetic and adverse input cases; 14 checks Molecule composition; 15 fits every endpoint on a dense estimator fixture; 16 checks selected missing outcomes. See the report for completed runs, not merely intended tests.

Methods 17–22 additionally cover explicit no-result predecessors, disclosure/income binding, nonsharp and partial experiments, relative/death bounds, billing/treatment clocks, and invalid/unknown dates. `revision_checks.py` supplies methods 23–30: missing versus genuinely empty deliveries, component independence, documented absence versus horizon failure, chronological death/emigration ordering, all six early-failed grade rosters, native verdict vocabularies under both dispatch policies, pre-launch code/native-ID tampering, and the optional 2021+ billing audit. The tests parse protocol headings independently to verify component coverage and file hashes. These common regression checks apply to each Atom entry below where its constructor/component is involved.

Known frozen interface limit: Figure4's `_plot_helpers.py:283` accepts an all-year income-unavailable row only with `horizon_boundary`. A pending atom000113 correctly produces pending all-year rows, which that validator rejects. The exact disposition and unavailable provenance remain in CSV/JSON; these renders are explicitly failed, not relabeled or silently omitted. See the report's round2 reproduction. Numerical, missing-input and other partial figure cases are tested separately. Publication-font validation still requires the external style directory.

Exact final Atom entries

atom-000001

Command: `python run.py --atom atom-000001 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `diagnostics.assessment` in diagnostics.py with cohort.py, inputs.py, registration.py and reporting.py. Required inputs: C; assessment/population dictionary. Outputs: diagnostics.csv: six D1 proportions; anomalies remain audit counts, plus the common Atom files. Tests: 01–03, 08–13 as applicable, full dispatch in 09. Limit: Date/person integrity does not establish first lifetime assessment.

atom-000002

Command: `python run.py --atom atom-000002 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `diagnostics.initial_margin` in diagnostics.py with cohort.py, inputs.py, registration.py and reporting.py. Required inputs: C; historical cut-off and retention documentation. Outputs: mapping/diagnostics.csv; retention/diagnostics.csv and separate judgments, plus the common Atom files. Tests: 01–03, 08–13 as applicable, full dispatch in 09. Limit: Mapping cannot be inferred from agreement; a single retained row does not establish initial history.

atom-000010

Command: `python run.py --atom atom-000010 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `diagnostics.profile_reach` in diagnostics.py with cohort.py, inputs.py, registration.py and reporting.py. Required inputs: C + F + Z and endpoint date rules. Outputs: profile.csv (12 cohort/category counts/fractions); reach/diagnostics.csv; relatives/diagnostics.csv, plus the common Atom files. Tests: 01–03, 08–13 as applicable, full dispatch in 09. Limit: Missing addresses remain unknown; reachable dates are not delivered outcomes.

atom-000011

Command: `python run.py --atom atom-000011 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `diagnostics.service` in diagnostics.py with cohort.py, inputs.py, registration.py and reporting.py. Required inputs: Frozen service evidence; optional documented support dictionary. Outputs: diagnostics.csv: comprehensive_support,intensity,obu_historical_codes,unaided_learning, plus the common Atom files. Tests: 01–03, 08–13 as applicable, full dispatch in 09. Limit: Documentation boundary; no support treatment/OBU effect is estimated.

atom-000101

Command: `python run.py --atom atom-000101 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `analysis.descriptive_endpoint` (one explicit call per listed endpoint) through `run_endpoints`, outcomes.py constructors and cohort.py; inference.describe; ancillary audits in analysis.py. Required inputs: C + O, and `loneliness`: S(Q9); `stomach_ache`: S(Q10); `headache`: S(Q11); `low_belonging`: S(Q33); `total_absence`: A; `sickness_absence`: A; `reading_theta`: R; `danish_grade`: T.

Outputs: `endpoints/loneliness/descriptive/descriptives.csv` (pp; first_full_school_year); `endpoints/stomach_ache/descriptive/descriptives.csv` (pp; first_full_school_year); `endpoints/headache/descriptive/descriptives.csv` (pp; first_full_school_year); `endpoints/low_belonging/descriptive/descriptives.csv`

(pp; first_full_school_year); endpoints/total_absence/descriptive/descriptives.csv (pp; first_full_school_year); endpoints/sickness_absence/descriptive/descriptives.csv (pp; first_full_school_year); endpoints/reading_theta/descriptive/descriptives.csv (THETA; scheduled_next_reading_test); endpoints/danish_grade/descriptive/descriptives.csv (grade_points; scheduled_grade9_year). Each has D10 strata and descriptive summaries. Tests: 09, 12–13 and the descriptive oracles in 07.

Remaining limits: supplied field dictionaries, complete nominal horizons and source-confirmed reading calibration; at least 30 valid family components for descriptive intervals. Missing optional siblings do not erase the listed computable endpoints.

atom-000109

Command: `python run.py --atom atom-000109 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `analysis.descriptive_endpoint` (one explicit call per listed endpoint) through `run_endpoints`, outcomes.py constructors and cohort.py; inference.describe; ancillary audits in analysis.py. Required inputs: C + O, and `depressive_encounter`: H; `anxiety_stress_encounter`: H; `community_specialist`: B; `gp_contact`: B.

Outputs: endpoints/depressive_encounter/descriptive/descriptives.csv (pp; days1_to730_before_exit); endpoints/anxiety_stress_encounter/descriptive/descriptives.csv (pp; days1_to730_before_exit); endpoints/community_specialist/descriptive/descriptives.csv (pp; whole_billing_weeks_to730); endpoints/gp_contact/descriptive/descriptives.csv (pp; whole_billing_weeks_to730). Each has D10 strata and descriptive summaries. Tests: 09, 12–13 and the descriptive oracles in 07.

Remaining limits: supplied field dictionaries, complete nominal horizons and at least 30 valid family components for descriptive intervals. Missing optional siblings do not erase the listed computable endpoints.

atom-000113

Command: `python run.py --atom atom-000113 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `analysis.descriptive_endpoint` (one explicit call per listed endpoint) through `run_endpoints`, outcomes.py constructors and cohort.py; inference.describe; ancillary audits in analysis.py. Required inputs: C + O, and `parent_care`: F + H; `sibling_belonging`: F + S(Q33); `family_resources`: F(current household, no parent required) + I(FAIK); `parent_hours`: F + E; `parent_assessment`: F + C(all ages' later retained dates); `parent_wages`: F + I(LOENMV_13).

Outputs: endpoints/parent_care/descriptive/descriptives.csv (pp; child_days1_to730); endpoints/sibling_belonging/descriptive/descriptives.csv (pp; first_full_school_year); endpoints/family_resources/descriptive/descriptives.csv (1000_DKK; calendar_year_after_test); endpoints/parent_hours/descriptive/descriptives.csv (hours; calendar_year_after_test); endpoints/parent_assessment/descriptive/descriptives.csv (pp; child_days1_to730); endpoints/parent_wages/descriptive/descriptives.csv

(1000_DKK; calendar_year_after_test). Each has D10 strata and descriptive summaries. Tests: 09, 12–13 and the descriptive oracles in 07.

Remaining limits: supplied field dictionaries, complete nominal horizons and exact year/delivery income provenance; at least 30 valid family components for descriptive intervals. Missing optional siblings do not erase the listed computable endpoints.

atom-000118

Command: `python run.py --atom atom-000118 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `analysis.descriptive_endpoint` (one explicit call per listed endpoint) through `run_endpoints`, outcomes.py constructors and cohort.py; inference.describe; ancillary audits in analysis.py. Required inputs: C + O, and `education18`: Q(KOTRE); `attainment20`: Q(UDDF; UDDA if available); `employee20`: E; `wages20`: I(LOENMV_13); `resources20`: I(AEKVIVADISP_13); `coresidence20`: F + Z.

Outputs: `endpoints/education18/descriptive/descriptives.csv` (pp; 18th_birthday); `endpoints/attainment20/descriptive/descriptives.csv` (pp; 20th_birthday); `endpoints/employee20/descriptive/descriptives.csv` (pp; calendar_year_turning20); `endpoints/wages20/descriptive/descriptives.csv` (1000_DKK; calendar_year_turning20); `endpoints/resources20/descriptive/descriptives.csv` (1000_DKK; calendar_year_turning20); `endpoints/coresidence20/descriptive/descriptives.csv` (pp; 20th_birthday). Each has D10 strata and descriptive summaries. Tests: 09, 12–13 and the descriptive oracles in 07.

Remaining limits: supplied field dictionaries, complete nominal horizons and exact year/delivery income provenance; source-confirmed education/address definitions where used; at least 30 valid family components for descriptive intervals. Missing optional siblings do not erase the listed computable endpoints.

atom-000201

Command: `python run.py --atom atom-000201 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `analysis.endpoint_policy` (one explicit call per listed endpoint) through `run_endpoints`, outcomes.py constructors and cohort.py; inference.py, engines.py/engines.R and frozen rd_operator.py; ancillary audits in analysis.py. Required inputs: C + O, and `loneliness`: S(Q9); `low_belonging`: S(Q33).

Outputs: `endpoints/loneliness/primary/effects.csv` (pp; first_full_school_year); `endpoints/low_belonging/primary/effects.csv` (pp; first_full_school_year). Each also has its own ascertainment, robustness, scope and actual-fit audit files as specified above. Tests: 09, 12–13 and the numerical core oracles in 04–06, dense fit paths in 15, missingness rules in 16.

Remaining limits: supplied field dictionaries, complete nominal horizons and all prespecified grade/support/clustering prerequisites. Missing bounded values use registered extremes; undefined or unbounded missing values retain selection limitations. Missing optional siblings do not erase the listed computable endpoints.

atom-000202

Command: `python run.py --atom atom-000202 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `analysis.endpoint_policy` (one explicit call per listed endpoint) through `run_endpoints`, outcomes.py constructors and cohort.py; inference.py, engines.py/engines.R and frozen rd_operator.py; ancillary audits in analysis.py. Required inputs: C + O, and `stomach_ache`: S(Q10); `headache`: S(Q11).

Outputs: `endpoints/stomach_ache/primary/effects.csv` (pp; first_full_school_year); `endpoints/headache/primary/effects.csv` (pp; first_full_school_year). Each also has its own ascertainment, robustness, scope and actual-fit audit files as specified above. Tests: 09, 12–13 and the numerical core oracles in 04–06, dense fit paths in 15, missingness rules in 16.

Remaining limits: supplied field dictionaries, complete nominal horizons and all prespecified grade/support/clustering prerequisites. Missing bounded values use registered extremes; undefined or unbounded missing values retain selection limitations. Missing optional siblings do not erase the listed computable endpoints.

atom-000205

Command: `python run.py --atom atom-000205 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `analysis.endpoint_policy` (one explicit call per listed endpoint) through `run_endpoints`, outcomes.py constructors and cohort.py; inference.py, engines.py/engines.R and frozen rd_operator.py; ancillary audits in analysis.py. Required inputs: C + O, and `total_absence`: A; `sickness_absence`: A.

Outputs: `endpoints/total_absence/primary/effects.csv` (pp; first_full_school_year); `endpoints/sickness_absence/primary/effects.csv` (pp; first_full_school_year). Each also has its own ascertainment, robustness, scope and actual-fit audit files as specified above. Tests: 09, 12–13 and the numerical core oracles in 04–06, dense fit paths in 15, missingness rules in 16.

Remaining limits: supplied field dictionaries, complete nominal horizons and all prespecified grade/support/clustering prerequisites. Missing bounded values use registered extremes; undefined or unbounded missing values retain selection limitations. Missing optional siblings do not erase the listed computable endpoints.

atom-000207

Command: `python run.py --atom atom-000207 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `analysis.endpoint_policy` (one explicit call per listed endpoint) through `run_endpoints`, outcomes.py constructors and cohort.py; inference.py, engines.py/engines.R and frozen rd_operator.py; ancillary audits in analysis.py. Required inputs: C + O, and `reading_theta`: R.

Outputs: `endpoints/reading_theta/primary/effects.csv` (THETA; scheduled_next_reading_test). Each also has its own ascertainment, robustness, scope and

actual-fit audit files as specified above. Tests: 09, 12–13 and the numerical core oracles in 04–06, dense fit paths in 15, missingness rules in 16.

Remaining limits: supplied field dictionaries, complete nominal horizons and source-confirmed reading calibration; all prespecified grade/support/clustering prerequisites. Missing bounded values use registered extremes; undefined or unbounded missing values retain selection limitations. Missing optional siblings do not erase the listed computable endpoints.

atom-000208

Command: `python run.py --atom atom-000208 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `analysis.endpoint_policy` (one explicit call per listed endpoint) through `run_endpoints`, outcomes.py constructors and cohort.py; inference.py, engines.py/engines.R and frozen rd_operator.py; ancillary audits in analysis.py. Required inputs: C + O, and `danish_grade`: T.

Outputs: `endpoints/danish_grade/primary/effects.csv` (grade_points; scheduled_grade9_year). Each also has its own ascertainment, robustness, scope and actual-fit audit files as specified above. Tests: 09, 12–13 and the numerical core oracles in 04–06, dense fit paths in 15, missingness rules in 16.

Remaining limits: supplied field dictionaries, complete nominal horizons and all prespecified grade/support/clustering prerequisites. Missing bounded values use registered extremes; undefined or unbounded missing values retain selection limitations. Missing optional siblings do not erase the listed computable endpoints.

atom-000209

Command: `python run.py --atom atom-000209 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `analysis.endpoint_policy` (one explicit call per listed endpoint) through `run_endpoints`, outcomes.py constructors and cohort.py; inference.py, engines.py/engines.R and frozen rd_operator.py; ancillary audits in analysis.py. Required inputs: C + O, and `depressive_encounter`: H; `anxiety_stress_encounter`: H.

Outputs: `endpoints/depressive_encounter/primary/effects.csv` (pp; days1_to730_before_exit); `endpoints/anxiety_stress_encounter/primary/effects.csv` (pp; days1_to730_before_exit). Each also has its own ascertainment, robustness, scope and actual-fit audit files as specified above. Tests: 09, 12–13 and the numerical core oracles in 04–06, dense fit paths in 15, missingness rules in 16.

Remaining limits: supplied field dictionaries, complete nominal horizons and all prespecified grade/support/clustering prerequisites. Missing bounded values use registered extremes; undefined or unbounded missing values retain selection limitations. Missing optional siblings do not erase the listed computable endpoints.

atom-000211

Command: `python run.py --atom atom-000211 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `analysis.endpoint_policy` (one explicit call per listed endpoint) through `run_endpoints`, outcomes.py constructors and cohort.py; inference.py, engines.py/engines.R and frozen rd_operator.py; ancillary audits in analysis.py. Required inputs: C + O, and `community_specialist`: B; `gp_contact`: B.

Outputs: `endpoints/community_specialist/primary/effects.csv` (pp; whole_billing_weeks_to730); `endpoints/gp_contact/primary/effects.csv` (pp; whole_billing_weeks_to730). Each also has its own ascertainment, robustness, scope and actual-fit audit files as specified above. Tests: 09, 12–13 and the numerical core oracles in 04–06, dense fit paths in 15, missingness rules in 16.

Remaining limits: supplied field dictionaries, complete nominal horizons and all prespecified grade/support/clustering prerequisites. Missing bounded values use registered extremes; undefined or unbounded missing values retain selection limitations. Missing optional siblings do not erase the listed computable endpoints.

atom-000213

Command: `python run.py --atom atom-000213 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `analysis.endpoint_policy` (one explicit call per listed endpoint) through `run_endpoints`, outcomes.py constructors and cohort.py; inference.py, engines.py/engines.R and frozen rd_operator.py; ancillary audits in analysis.py. Required inputs: C + O, and `parent_care`: F + H.

Outputs: `endpoints/parent_care/primary/effects.csv` (pp; child_days1_to730). Each also has its own ascertainment, robustness, scope and actual-fit audit files as specified above. Tests: 09, 12–13 and the numerical core oracles in 04–06, dense fit paths in 15, missingness rules in 16.

Remaining limits: supplied field dictionaries, complete nominal horizons and all prespecified grade/support/clustering prerequisites. Missing bounded values use registered extremes; undefined or unbounded missing values retain selection limitations. Missing optional siblings do not erase the listed computable endpoints.

atom-000214

Command: `python run.py --atom atom-000214 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `analysis.endpoint_policy` (one explicit call per listed endpoint) through `run_endpoints`, outcomes.py constructors and cohort.py; inference.py, engines.py/engines.R and frozen rd_operator.py; ancillary audits in analysis.py. Required inputs: C + O, and `sibling_belonging`: F + S(Q33).

Outputs: `endpoints/sibling_belonging/primary/effects.csv` (pp; first_full_school_year). Each also has its own ascertainment, robustness, scope and actual-fit audit files as specified above. Tests: 09, 12–13 and the numerical core oracles in 04–06, dense fit paths in 15, missingness rules in 16.

Remaining limits: supplied field dictionaries, complete nominal horizons and all prespecified grade/support/clustering prerequisites. Missing bounded values use registered extremes; undefined or unbounded missing values retain selection limitations. Missing optional siblings do not erase the listed computable endpoints.

atom-000215

Command: `python run.py --atom atom-000215 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `analysis.endpoint_policy` (one explicit call per listed endpoint) through `run_endpoints`, outcomes.py constructors and cohort.py; inference.py, engines.py/engines.R and frozen rd_operator.py; ancillary audits in analysis.py. Required inputs: C + O, and `family_resources`: F(current household, no parent required) + I(FAIK).

Outputs: `endpoints/family_resources/primary/effects.csv` (1000_DKK; calendar_year_after_test). Each also has its own ascertainment, robustness, scope and actual-fit audit files as specified above. Tests: 09, 12–13 and the numerical core oracles in 04–06, dense fit paths in 15, missingness rules in 16.

Remaining limits: supplied field dictionaries, complete nominal horizons and exact year/delivery income provenance; all prespecified grade/support/clustering prerequisites. Missing bounded values use registered extremes; undefined or unbounded missing values retain selection limitations. Missing optional siblings do not erase the listed computable endpoints.

atom-000216

Command: `python run.py --atom atom-000216 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `analysis.endpoint_policy` (one explicit call per listed endpoint) through `run_endpoints`, outcomes.py constructors and cohort.py; inference.py, engines.py/engines.R and frozen rd_operator.py; ancillary audits in analysis.py. Required inputs: C + O, and `parent_hours`: F + E; `parent_wages`: F + I(LOENMV_13).

Outputs: `endpoints/parent_hours/primary/effects.csv` (hours; calendar_year_after_test); `endpoints/parent_wages/primary/effects.csv` (1000_DKK; calendar_year_after_test). Each also has its own ascertainment, robustness, scope and actual-fit audit files as specified above. Tests: 09, 12–13 and the numerical core oracles in 04–06, dense fit paths in 15, missingness rules in 16.

Remaining limits: supplied field dictionaries, complete nominal horizons and all prespecified grade/support/clustering prerequisites. Missing bounded values use registered extremes; undefined or unbounded missing values retain selection limitations. Missing optional siblings do not erase the listed computable endpoints.

atom-000217

Command: `python run.py --atom atom-000217 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `analysis.endpoint_policy` (one explicit call per listed endpoint) through `run_endpoints`, outcomes.py constructors and cohort.py; inference.py, engines.py/engines.R and frozen rd_operator.py; ancillary audits in analysis.py. Required inputs: C + O, and `parent_assessment`: F + C(all ages' later retained dates).

Outputs: `endpoints/parent_assessment/primary/effects.csv` (pp; child_days1_to730). Each also has its own ascertainment, robustness, scope and actual-fit audit files as specified above. Tests: 09, 12–13 and the numerical core oracles in 04–06, dense fit paths in 15, missingness rules in 16.

Remaining limits: supplied field dictionaries, complete nominal horizons and all prespecified grade/support/clustering prerequisites. Missing bounded values use registered extremes; undefined or unbounded missing values retain selection limitations. Missing optional siblings do not erase the listed computable endpoints.

atom-000218

Command: `python run.py --atom atom-000218 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `analysis.endpoint_policy` (one explicit call per listed endpoint) through `run_endpoints`, outcomes.py constructors and cohort.py; inference.py, engines.py/engines.R and frozen rd_operator.py; ancillary audits in analysis.py. Required inputs: C + O, and `education18`: Q(KOTRE); `attainment20`: Q(UDDF; UDDA if available).

Outputs: `endpoints/education18/primary/effects.csv` (pp; 18th_birthday); `endpoints/attainment20/primary/effects.csv` (pp; 20th_birthday). Each also has its own ascertainment, robustness, scope and actual-fit audit files as specified above. Tests: 09, 12–13 and the numerical core oracles in 04–06, dense fit paths in 15, missingness rules in 16.

Remaining limits: supplied field dictionaries, complete nominal horizons and source-confirmed education/address definitions where used; all prespecified grade/support/clustering prerequisites. Missing bounded values use registered extremes; undefined or unbounded missing values retain selection limitations. Missing optional siblings do not erase the listed computable endpoints.

atom-000220

Command: `python run.py --atom atom-000220 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `analysis.endpoint_policy` (one explicit call per listed endpoint) through `run_endpoints`, outcomes.py constructors and cohort.py; inference.py, engines.py/engines.R and frozen rd_operator.py; ancillary audits in analysis.py. Required inputs: C + O, and `employee20`: E; `wages20`: I(LOENMV_13).

Outputs: `endpoints/employee20/primary/effects.csv` (pp; calendar_year_turning20); `endpoints/wages20/primary/effects.csv` (1000_DKK; calendar_year_turning20). Each also has its own ascertainment, robustness, scope and actual-fit audit files as specified above. Tests: 09, 12–13 and the numerical core oracles in 04–06, dense fit paths in 15, missingness rules in 16.

Remaining limits: supplied field dictionaries, complete nominal horizons and source-confirmed education/address definitions where used; all prespecified grade/support/clustering prerequisites. Missing bounded values use registered extremes; undefined or unbounded missing values retain selection limitations. Missing optional siblings do not erase the listed computable endpoints.

atom-000222

Command: `python run.py --atom atom-000222 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `analysis.endpoint_policy` (one explicit call per listed endpoint) through `run_endpoints`, outcomes.py constructors and cohort.py; inference.py, engines.py/engines.R and frozen rd_operator.py; ancillary audits in analysis.py. Required inputs: C + O, and `resources20`: I(AEKVIVADISP_13); `coresidence20`: F + Z.

Outputs: `endpoints/resources20/primary/effects.csv` (1000_DKK; calendar_year_turning20); `endpoints/coresidence20/primary/effects.csv` (pp; 20th_birthday). Each also has its own ascertainment, robustness, scope and actual-fit audit files as specified above. Tests: 09, 12–13 and the numerical core oracles in 04–06, dense fit paths in 15, missingness rules in 16.

Remaining limits: supplied field dictionaries, complete nominal horizons and exact year/delivery income provenance; source-confirmed education/address definitions where used; all prespecified grade/support/clustering prerequisites. Missing bounded values use registered extremes; undefined or unbounded missing values retain selection limitations. Missing optional siblings do not erase the listed computable endpoints.

atom-000501

Command: `python run.py --atom atom-000501 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `diagnostics.grade_experiment` and `balance`, with cohort.py, inference.py, engines.py/engines.R and frozen rd_operator.py. Required inputs: C + F + V and income-provenance dictionary; grade 4 only. Outputs: support/support.csv (counts, distinct scores, gaps, masses, clusters); density/density.csv (red/yellow density, difference, SE, limits, six-slot p adjustment, bandwidths); balance/balance.csv (eight checks, extrema/counts, 48-slot inference); classification/classification.csv (exact agreement or six-slot bounded label contrast); income-provenance/correction.csv. Units are original score/density, baseline days/binary/nominal DKK, and label fractions. Tests: 04–09, 13. Limits: constant indicators never receive invented uncertainty; any registered support/precision/cluster failure remains unresolved or a support boundary. Income proxy balance cannot establish continuity in intended resources.

atom-000502

Command: `python run.py --atom atom-000502 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `diagnostics.grade_experiment` and `balance`, with cohort.py, inference.py, engines.py/engines.R and frozen rd_operator.py. Required inputs: C + F + V and income-provenance dictionary; grade 5 only. Outputs: support/support.csv (counts, distinct scores, gaps, masses, clusters); density/density.csv (red/yellow density, difference, SE, limits, six-slot p adjustment, bandwidths); balance/balance.csv (eight checks, extrema/counts, 48-slot inference); classification/classification.csv (exact agreement or six-slot bounded label contrast); income-provenance/correction.csv. Units are original score/density, baseline days/binary/nominal DKK, and label fractions. Tests: 04–09, 13. Limits: constant indicators never receive invented uncertainty; any registered support/precision/cluster failure remains unresolved or a support boundary. Income proxy balance cannot establish continuity in intended resources.

atom-000503

Command: `python run.py --atom atom-000503 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `diagnostics.grade_experiment` and `balance`, with cohort.py, inference.py, engines.py/engines.R and frozen rd_operator.py. Required inputs: C + F + V and income-provenance dictionary; grade 6 only. Outputs: support/support.csv (counts, distinct scores, gaps, masses, clusters); density/density.csv (red/yellow density, difference, SE, limits, six-slot p adjustment, bandwidths); balance/balance.csv (eight checks, extrema/counts, 48-slot inference); classification/classification.csv (exact agreement or six-slot bounded label contrast); income-provenance/correction.csv. Units are original score/density, baseline days/binary/nominal DKK, and label fractions. Tests: 04–09, 13. Limits: constant indicators never receive invented uncertainty; any registered support/precision/cluster failure remains unresolved or a support boundary. Income proxy balance cannot establish continuity in intended resources.

atom-000504

Command: `python run.py --atom atom-000504 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `diagnostics.grade_experiment` and `balance`, with cohort.py, inference.py, engines.py/engines.R and frozen rd_operator.py. Required inputs: C + F + V and income-provenance dictionary; grade 7 only. Outputs: support/support.csv (counts, distinct scores, gaps, masses, clusters); density/density.csv (red/yellow density, difference, SE, limits, six-slot p adjustment, bandwidths); balance/balance.csv (eight checks, extrema/counts, 48-slot inference); classification/classification.csv (exact agreement or six-slot bounded label contrast); income-provenance/correction.csv. Units are original score/density, baseline days/binary/nominal DKK, and label fractions. Tests: 04–09, 13. Limits: constant

indicators never receive invented uncertainty; any registered support/precision/cluster failure remains unresolved or a support boundary. Income proxy balance cannot establish continuity in intended resources.

atom-000505

Command: `python run.py --atom atom-000505 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `diagnostics.grade_experiment` and `balance`, with cohort.py, inference.py, engines.py/engines.R and frozen rd_operator.py. Required inputs: C + F + V and income-provenance dictionary; grade 8 only. Outputs: support/support.csv (counts, distinct scores, gaps, masses, clusters); density/density.csv (red/yellow density, difference, SE, limits, six-slot p adjustment, bandwidths); balance/balance.csv (eight checks, extrema/counts, 48-slot inference); classification/classification.csv (exact agreement or six-slot bounded label contrast); income-provenance/correction.csv. Units are original score/density, baseline days/binary/nominal DKK, and label fractions. Tests: 04–09, 13. Limits: constant indicators never receive invented uncertainty; any registered support/precision/cluster failure remains unresolved or a support boundary. Income proxy balance cannot establish continuity in intended resources.

atom-000506

Command: `python run.py --atom atom-000506 --world WORLD --inputs INPUTS.json --output OUTPUT` (default activation_respecting).

Function/files: `diagnostics.grade_experiment` and `balance`, with cohort.py, inference.py, engines.py/engines.R and frozen rd_operator.py. Required inputs: C + F + V and income-provenance dictionary; grade 9 only. Outputs: support/support.csv (counts, distinct scores, gaps, masses, clusters); density/density.csv (red/yellow density, difference, SE, limits, six-slot p adjustment, bandwidths); balance/balance.csv (eight checks, extrema/counts, 48-slot inference); classification/classification.csv (exact agreement or six-slot bounded label contrast); income-provenance/correction.csv. Units are original score/density, baseline days/binary/nominal DKK, and label fractions. Tests: 04–09, 13. Limits: constant indicators never receive invented uncertainty; any registered support/precision/cluster failure remains unresolved or a support boundary. Income proxy balance cannot establish continuity in intended resources.

Reader composition and presentation

`compose.py --world WORLD --inputs INPUTS.json --output OUTPUT/molecule-000001` reads verified evidence only and arranges the frozen Molecule comparisons. It never fits an additional contrast. `figures.smoke` invokes all seven unchanged render APIs with generated, absent and partial synthetic tables. The manuscript and figure templates remain unmodified; previews are written only to scratch. Local DejaVu Sans previews do not claim publication-font validation.

Additional registered construction audits are primary/descriptive relative-roster.csv (known relatives, observed/missing relative outcomes and unknown parent roles), imputation.csv (reported-plus-imputed hours and share, by year), and the2021+ descriptive treatment-date-audit.csv for billing. The last can execute only with verified BEHANDLINGSDATO and a unique treatment date per net fee cell; ambiguous correction-to-date allocation remains STOP_UNRESOLVED_SOURCE. Primary billing-week timing is unchanged. Available-case numerical audits are retained under primary/available-case-audit/SPECIFICATION/. No later/source-failed hospital era erases another; empty registered era/category cells remain explicit boundaries.

Tests17–21 add explicit no_result/no-retry and support branches, provider-decision export and income binding, nonsharp classification and partial grouped experiments, retained-date/age/fixed-relative/death boundaries, and treatment-date versus billing-week audit clocks with a bounded-missing primary plus separate selected cases. Test15 also renders all dense numerical primary/robustness outputs through the frozen figures.

`export.py --world WORLD --inputs INPUTS.json --decisions PROVIDER_DECISIONS.json --output OUTSIDE_WORLD` writes only explicitly reviewed aggregate CSV files locally. The decisions file contains provider_rule_locator, review_id, and files entries with atom, file (relative CSV path), sha256 and decision=released|suppressed. Every file must belong to a verified evidence seal. Income displays additionally bind the exact source audit and scope. Suppression removes numerical values and scientific signs; no public disclosure threshold is invented. JSON scope, baseline digests and internal component vectors are not exported. Synthetic export tests grant no real provider permission.

D10's all-key horizon placeholders are emitted with all *stratum* keys and one row per fixed category. The immutable renderer rejects category=all. This explicit unavailable-row expansion preserves the category contract and adds no estimate; it is documented in the engineering report.

Test22 checks literal distant spell endpoints, invalid dates that must remain unknown, and no_result rows with unknown counts. All22 distinct tests passed across the full and targeted runs reported in the engineering report. audit.json records the implementation source hashes captured at import, actual Python package versions and the R runtime/pinned packages used. Source changes during a process are rejected. run_tests.py now discovers all22 tests by default; –tests selects a comma-separated method list for targeted regressions.

The author stage supplies engineering artifacts for subsequent independent review. It does not claim Opus or Codex Sol review, empirical replication, causal validation, provider clearance, or data availability.

Engineering supplement

Implementation report — author round 2

This is reference engineering of the supplied frozen adaptive package. There are 29 unchanged native Atoms and 24 unchanged endpoint slots. All authored files are under prereg/execution and prereg/engineering; every generated fixture, result and preview is in the authorized scratch directory. No confidential Danish/APTO data, prior empirical session, canonical runtime result or manuscript result slot was accessed or populated. No commit, push, deployment, environment installation or remote QGPU action occurred.

The supplied manifest says status=accepted and scientific_review_status=not_accepted_current_revision. This implementation preserves both; it makes no new scientific-acceptance claim. This round responds to all seven Codex findings and both Opus findings in reviews/r01. Subsequent independent Opus/Codex Sol review remains the controller's responsibility: this author invocation neither performed nor claims that review, and did not spawn agents.

The implementation retains every supported construction and estimation path. Round2 changes input-failure handling, chronological state-outcome censoring, complete component artifacts and code/native-identity verification. The frozen rd_operator.py, decision_rules.py, pinned R algorithms, inference.py, effect specifications, thresholds, weights and interval allocations are unchanged. No empirical result exists.

Authority read and preserved

The implementation uses the native adaptive semantics. Authority inspected comprised tools/prereg-lane/AGENTS.md; the full predata-engineering and preregistration-package skills and required package-contract, atom-granularity and paper-scaffold references; applicable adaptive-preregistration/foundations guidance; every member Atom's complete protocol and verdict regions; the Molecule registration; data-contract D1–D11, identification I1–I6, governance G1–G5; prereg/code/rd_operator.py and decision_rules.py; endpoint-index, results-map, figures.yaml, all seven figure modules and their common helpers. Repeated literal protocol passages were read once per distinct passage while preserving their full content and native region membership. This package has no prereg/replication directory or replica source-audit/deviations interface, so a paper-to-replication reconstruction was not introduced.

FSV evidence was checked against local table documentation and the package's schema-extracts.md, revision-schema-extracts.md, revision-exact-schema.md, policy-schema-exact.md, granularity-exact-schema.md, exact-code-documentation.json, sks-phenotype.json and software-reference.json. The frozen resource-bundle/data-boundary.yaml remains the table authority (531 enumerated tables); inventory counts were never used as sample counts or runtime-access evidence. No newer or older upload list was substituted.

authority.json pins the World registration and shared material. Native Atom/Molecule registrations, structural identifiers and membership are canonicalized independently of mutable result bodies/current interpretation. Shared material is checked by relative path and content hash. Round2 adds the independently provisioned engineering/execution-identity.json to verify execution sources and authority.json before scientific imports. Its trust root is a protected reviewed World and trusted launcher, not an action-local self-hash. All native protocols, memberships, verdicts, paper files and frozen code remain unchanged. The final integrity-check artifact records actual verification.

Protocol-to-code coverage

The execution README has a separate command/function/input/output/test/limit entry for each of the exact29 Atoms. The following summarizes shared implementation; grouping does not collapse endpoint judgments.

Authority / targets	Executable implementation
D1/D2; 000001/000002	Earliest eligible retained assessment, byte-identical duplicate removal, conflicting earliest score/category quarantine, completed ages9–17, February2015 launch floor, spring2015 causal window, actual grade crosswalk and preceding complete calendar month school comparison. Mapping and retention remain distinct internal judgments.
D3/D7; 000010 and every endpoint	Strictly pretest BEF presence, last pretest December parent roster, nonmissing-parent sibling graph, fixed eligible sibling roster, chronological residence/exit/death, competing events and same-day ordering, whole nominal-horizon completeness, baseline family first-index selection and frozen hash tie. G3 explicitly fixes February29 birthdays to February28 in nonleap years.
000011	Source-supported service measurement limits are executable documentary judgments. No treatment receipt, OBU, dose, unaided-literacy or support-effect estimate is invented.

Authority / targets	Executable implementation
D4/D5; 000101/000201/000202/000205/000207/000208	Four separate exact-wording questionnaire endpoints, both absence fractions and reconciliation, scheduled overall recalculated reading, full final-teacher Danish discipline mean. Reading construct/calibration, grade/year/calendar and pandemic strata are independent documented restrictions.
D6; 000109/000209/000211	Exact version-valid frozen SKS phenotypes, contact-key cardinality and role checks, legacy/transition/new windows, net billing corrections and whole ISO weeks; depressive, anxiety/stress, community specialist and GP outputs remain separate. Legacy causal construction does not require a later-era mapping/handover.
D7; 000113/000213–000217	Fixed known-parent and sibling means, first eligible family index, current-December household resources independent of parent ascertainment, disjoint annual compressed BFL jobs including imputed hours, later retained parent assessment, separate parent wage mean. Relative-roster and imputation audits report their actual denominators.
D8; 000118/000218/000220/000222	Source-dated qualifying enrollment at18, exclusive-end attainment spell at20 with same-date UDDA check, whole calendar-year employee hours/wages/equivalized resources, dated co-residence with either known baseline parent. No future observed outcome defines eligibility.

Authority / targets	Executable implementation
D9/D10	Exact table/variable/reference-year/delivery checksum adjudication before income-file access; corrected versus recorded-income proxy ceilings; year-specific descriptive binding. Common reading origin/unit/link audit is required only for the pooled reading primary. All prescribed descriptive strata and one aggregate primary per endpoint are retained.
I3/I4	Pinned R CER bandwidth pilot, inclusive-zero r=-x adapter, immutable local-linear/quadratic bias correction and HC0 influence, fixed pre-outcome grade weights, explicit school/family/intersection covariance and finite-cluster t inference. Fixed24 primary and24 ascertainment slots, bounded missing extreme functions and simultaneous one-sided outer limits, selected available-case outputs, half/wider/donut robustness with frozen first-match sensitivity precedence.
I5; 000501–000506	Per-grade full-window support/precision/mass checks, exact pinned density selector/cap/refit, eight baseline slots with fixed48 allocation, constant/structural/arithmetic-difference distinctions, exact sharp-recording agreement or bounded nonsharp classification with fixed6 allocation.
G1/G2/G5 and Molecule	Native three-valued dispatch, independent internal component roster, content-bound evidence, relocated read-only World support, typed plot-ready outputs, unchanged-template smoke tests, verified reader compositions and explicit provider-decision CSV export. No manuscript filling or empirical release.

No DiD, matching, treatment-timing regression, survival hazard model, IV ratio, new subgroup hypothesis or alternative RD inference belongs to this registration. Their absence is fidelity to I1, not an omitted estimator. Later family recognition and repeated assessments enter only in their registered roles.

Meaning-preserving engineering adaptations

1. CSV/parquet slices, JSON dictionaries and explicit paths implement transport and version binding. They do not infer source semantics, dates, labels or classification versions. The API has no cohort/threshold/model-tuning overrides. Unknown definitions yield STOP_UNRESOLVED_SOURCE with a target-specific disposition.
2. The frozen Python numerical core is imported unchanged. The exact pinned R release source can be sourced in an isolated scratch/action directory because the shared installation lacks the required packages. Release archive hashes and R/package versions are checked; this changes packaging, not the estimator. No shared environment was installed or replaced.
3. R's r=-x right-minus-left output is explicitly relabeled red-minus-yellow, including zero. h and b are separately selected/capped and never enlarged. Density postcap closed-window counts follow pinned rddensity's own local-support semantics; the RD core retains its distinct strictly positive-kernel checks.
4. Family bootstrap sampling sorts component labels and resamples sums/counts, preserving child weighting with unequal cluster sizes and row-order invariance. NumPy's linear sample-quantile interpolation is a deterministic numerical convention for the registered percentiles, not an additional hypothesis or a source-derived Danish parameter.
5. Caches memoize unchanged population snapshots, school lookups and clocks. They cannot substitute future records, inspect outcomes for index selection, or change which grades enter a target.
6. Operational dispositions, scientific boundaries, ordinary individual missingness and undefined-after-death outcomes stay separate. A missing optional source component cannot erase a supported sibling endpoint; all-no-result work cannot become a null or a favorable local state.
7. Runtime outputs are outside the World; future canonical integration is separate. Evidence identity includes frozen registration/material and the supplied content/dictionary binding, with no absolute machine-path identity. Changed result bodies remain portable; changed protocols or corrupted results are rejected.
8. Export is explicit and local. export.py validates sealed source aggregates, family-income scope/provenance equality and source-content-specific provider decisions. It never invents a disclosure minimum. Suppression removes numbers and scientific signs while retaining permitted metadata and planned interval alpha. No empirical export was performed.

Source-resolution boundaries and remaining limits

These are exact registered/runtime boundaries, not filled-in scientific settings. Each affects its listed target/component, with independently supported siblings retained.

Target / locator	Required source evidence; behavior if unavailable
Assessment score/category/grade and initial status — D1/D2; 000001 protocol and 000002 mapping/retention	FSV lists fields but leaves their detailed labels unresolved. Require verified score scale, actual assessment-grade crosswalk, historical inclusive-rule linkage and retention/approval history. A one-row extract does not establish first testing. Dated descriptions may survive limited score/category information.
All school-report endpoints and sibling_belonging — D4	Official June2016 item wording must be crosswalked to delivered Q9/Q10/Q11/Q33 and numeric labels; same field names alone are insufficient. Each absent or incompatible item has its own boundary.
Absence — D2/D5	Exact month/year units, expected enrollment-month roster and multi-school nonoverlap. A missing month is not zero attendance or vacation.
Reading — D5/D9; 000101 and000207 calibration component	Overall construct, schedule, FAG/FAGID/NORM/GENBEREGNET vintage, calibration IDs and every primary origin/unit/link source. Unknown common calibration stops only the pooled reading primary; identified strata remain descriptive.
Danish grades — D5	Year-specific final-teacher form and complete Danish discipline roster, including2020 conditions. No examination, cancelled result or guessed discipline set substitutes.
Observation / hospital / billing — D3/D6	Delivered migration direction, nominal completeness, role and contact dictionaries; handover for later descriptive windows; exact HONUGE encoding. No source-silent handover date is supplied. Exact missing source limits are retained per era.

Target / locator	Required source evidence; behavior if unavailable
Optional2021+ treatment-date billing audit — D6	The main billing-week endpoint is implemented. A separate treatment-date audit is STOP_UNRESOLVED_SOURCE absent a verified BEHANDLINGSDATO vintage and source-supported allocation of fee-cell corrections to dates. The frozen protocol does not specify an allocation when one fee cell spans dates; no invented alternative clock is fitted.
Family / jobs / resources — D7/D9/D10	Fixed baseline parent-role provenance, disjoint annual BFL delivery units, actual December family linkage and exact income correction binding. Unresolved correction with an adjudicated binding permits the recorded-income proxy; missing binding permits no numeric resource narration.
Adult education / address — D8	Dated DISCED-15 UDD/HFAUDD qualifying/completion crosswalk, enrollment interval semantics and unique address coverage. No ranges, guessed program codes, exit-as-completion or missing-address independence are introduced.
Broader support/OBU/quality-of-life/NEET/lifetime outcomes — 000011; G4	Registered measurement boundary or outside scope. No new endpoint/table/clinical definition is added.
Runtime access and publication	No Danish runtime paths, provider dictionaries, extraction permissions or disclosure clearance were available. All executable demonstrations use clearly labeled synthetic dictionaries. Publication Helvetica Neue/style-directory rendering was not validated; local DejaVu previews use the unchanged figure API.

Raw constructor routines are in-memory pandas implementations. They are numerically exercised on synthetic samples, not benchmarked at full Danish register

scale. Input contracts require frozen, appropriately sliced extracts; metadata alone does not make full production joins feasible or establish access.

Response to every round1 reviewer finding

The following are implementation corrections within the frozen design. Test numbers refer to run_tests.py / revision_checks.py; current-round execution results appear below the historical evidence.

Reviewer finding	Correction and preserved meaning	Regression evidence
Codex F01-empty-delivery-becomes-zero	Inputs.delivery rejects slices=[] as operational no_result before completeness. An actual checksum-bound zero-row extract with documented coverage retains the registered no-event/full-population meaning. BFL also needs a delivery for the target annual reference year. No source data are fabricated from a header declaration.	23: empty SSSY/BFL/assessment deliveries; real zero-row SSSY/BFL controls; absent BFL target year.
Codex F02-operational-input-loss-becomes-scientific-state	Delivery checks precede nominal completeness in Builder.value. Stored school failure is raised by descriptive and causal sibling construction; links retain an availability flag instead of silently turning the sibling roster into an empty target. Reach/relative diagnostics preserve operational failure and unavailable sibling metrics; independent parent and income outcomes survive.	24: full Atoms109/211 with missing SSSY,113/214 with missing school; 23/25 exercise neighboring branches.

Reviewer finding	Correction and preserved meaning	Regression evidence
Codex F03-mixed-exit-death-order-is-lost	Observation.clock records first_stop_type and tied_death_emigration. State outcomes use the chronological first stop: earlier emigration means unknown/boundable, earlier death means undefined. Same-day death retains I3's undefined-after-death rule. D3/G2 death and emigration audit indicators may still overlap; no event estimator changes.	26: literal earlier emigration, earlier death, tied stops and neither, tested for survey, education-at18 and parent-hours clocks with independent expected values; original03/20 retain event and bounds checks.
Codex F04-grade-early-failure-drops-components	Grade income provenance is documentary and runs independently before support construction. Early support failure still writes all five components: support failed, income provenance completed if its evidence is supplied, density/balance/classification explicitly not_activated. G5 permits the Atom to finish otherwise when the documentary sibling completes; this never implies eligible_sharp/nonsharp. When no component completes it remains no_result.	27: all six grade Atoms with absent school; exact five-component roster, eight balance rows and other named tables.

Reviewer finding	Correction and preserved meaning	Regression evidence
Codex F05-component-artifact-contract-is-incomplete	component_contracts.py derives each component and vocabulary from the original protocol. Writer emits named typed unavailable tables plus enumerated diagnostics/status/judgment/audit on every early/outer-terminal path, rejects omitted components on a claimed completed run and seals each component's files. Missing ascertainment and exit tables now remain explicit. D10 unavailable scope records have the full field contract, no fabricated grade weights/baseline digest, and metadata matching the effect row. No unavailable row contains a numeric result or inferred zero count.	23–30 independently parse protocol headings and verify component rosters, files, exit schemas, unavailable scope fields and output hashes across successful, boundary, no_result, pending and not_activated cases; final pipeline audit checks all29 Atoms.
Codex F06-preimport-code-substitution-is-accepted	Standard-library verify_sources.py compares both the World execution tree and any copied action tree with engineering/execution-identity.json before scientific imports. The anchor includes all .py/.R files and authority.json. Evidence includes execution_identity independently of immutable registration identity. Runtime cannot accept a new anchor through input metadata.	29: pre-launch copied grade4 cutoff66→65 rejected with CLI exit2 before result creation; identical copied code executes against a relocated read-only World. The trusted launcher/World remain an explicit trust assumption.

Reviewer finding	Correction and preserved meaning	Regression evidence
Codex F07-native-atom-id-is-not-bound	authority validates Atom top-level ID against filename and membership, validates the Molecule ID, and includes these structural IDs in canonical registration. Mutable Atom result bodies/current Molecule interpretation stay excluded. The identity algorithm changes without changing any original native file.	29 rejects wrong Atom and Molecule IDs and protocol changes; accepts legitimate mutable-body updates and existing faithful predecessor evidence. Original10/11 cover corrupt seals and wrong input bindings.
Opus F1	Writer checks the receiving component's own frozen verdict keys. Upstream data_gap becomes that component's otherwise or ascertainment boundary, retaining upstream_state and the original source reason. Atom000001 still uses its registered data_gap. No statistical quantity changes.	28: direct101/201/501 with assess-ment.national_test=false; all component keys checked against the native protocols; absent predecessors stay pending and accepted data_gap evidence makes outer activation false.

Reviewer finding	Correction and preserved meaning	Regression evidence
Opus F2	Builder.value validates explicitly documented table absence before horizon completeness for every affected endpoint family. Inputs.complete remains a non-raising completeness query. Source-backed absence yields measurement_boundary; delivered insufficient follow-up yields horizon_boundary; missing runtime delivery yields no_result.	25: all11 endpoint/table pairs on both primary and descriptive paths, exact absence reasons retained; delivered-short-horizon control.

The additional Opus coverage note about the 2021+ treatment-date ascertainment branch is addressed by test30. It runs the actual descriptive audit with a post2021 index and distinct billing/treatment clocks, then removes the treatment-date verification and checks the separate unresolved audit while the main endpoint survives. No allocation for a multi-date net fee cell is invented. The other review notes on production scale, publication fonts and real source-dictionary adjudication remain honest limitations.

Round1 commands and historical test evidence (inherited report)

This section preserves the earlier author's engineering record; it is not claimed as a round2 rerun or based on reading old empirical sessions. Current-round tests are recorded separately below.

Interpreter used for every Python test: /home/shaoerzhuo/anaconda3/bin/python (3.12.4). Tested numerical packages: NumPy1.26.4, pandas2.2.3, SciPy1.15.2; PyYAML6.0.2, matplotlib3.10.0 and pyarrow19.0.0 were available. Rscript4.1.2 executed the pinned source functions. Installed rdrobust3.0.0 was rejected as the wrong pin; rddensity and lpdensity were absent. Neither syntax checking nor the installed wrong version is claimed as numerical validation.

All scratch paths below are relative to dyslexia/scratch/r01/author. Exact command pattern:

```
/home/shaoerzhuo/anaconda3/bin/python -B WORLD/prereg/execution/run_tests.py \
  --output ABSOLUTE_NEW_SCRATCH_DIR \
  --rdrobust-source AUTHOR_SCRATCH/rdrobust_4.0.0.tar.gz \
  --rddensity-source AUTHOR_SCRATCH/rddensity_3.0.tar.gz
```

WORLD and AUTHOR_SCRATCH denote the explicit paths supplied in this invocation. No real-data command was run.

- Initial suite-01 ran12 tests in738.234 seconds. Every Atom dispatch completed, all six synthetic grade experiments were eligible_sharp, and21 unchanged-template renders passed. Two test-harness errors were recorded: a deliberately chosen matrix-oracle vector had nonpositive admissible covariance, and copied source permissions prevented the mutation setup. No estimator was weakened. The covariance oracle was replaced with an independently computed positive example; the copied World is made writable only for mutation setup and then read-only for execution.
- branch-01 ran5 targeted tests in181.488 seconds, all passing: date/index checks, direct matrix covariance oracle, every endpoint constructor's independent arithmetic, dense numerical paths for all24 endpoints, and unbounded missing selection. All96 dense primary/half/wider/donut specification rows had valid intervals. This is fixture evidence, not an expectation of Danish effect estimability.
- branch-02 ran2 tests in68.437 seconds, both passing: source-bound disclosure/income export, nonsharp classification, and a grouped missing-item example preserving its available sibling.
- suite-02 passed17 tests in861.142 seconds. branch-03 passed2 tests in207.827 seconds, including all96 dense specification fits,21 dense/missing/partial figure renders, fixed-relative bounds and death truncation. branch-04 passed2 tests in84.313 seconds, including separate billing/treatment-date clocks and a bounded primary with selected-case displays. Their JSON artifacts contain exact pass/failure lists. The full small fixture intentionally retains insufficient fitted-score-support dispositions on many outcome RD fits. Dense fixtures separately exercise valid inference without changing those safeguards.
- Independent one-grade R references for h<b, h>b and h=b (with x=0) matched conventional/corrected contrasts and HC0 variance to less than1e-13; the required tolerance is1e-8. The clustered covariance is separately checked by explicit membership-matrix multiplication and finite-cluster factors. An exact quadratic-intercept difference supplies an algebraic oracle. Bounds, grade preservation, rank/singleton failure and row permutations are exercised.
- Portability/integrity checks cover native unknown/NOT-unknown, both dispatch policies, missing and explicitly no_result predecessors, corrupt result seals, wrong input binding, copied inputs, writable copied code with a relocated read-only World, mutable result bodies and protocol tampering.
- Later targeted checks include raw earliest-date conflict versus later test, missing identifiers, age/leap boundaries, fixed two-parent missing-outcome bounds, undefined bounded outcomes after death, imputation audits, optional source independence and numerical/suppressed plot interfaces. No synthetic preview is placed in the manuscript.

Historical public retrieval log and round2 source access

Date: 2026-09-06. These were direct opens/downloads of preregistered public numerical sources and documentation; no search-engine query was needed and no empirical study outcomes were queried.

Exact URL	Purpose / result
https://cran.r-project.org/src/contrib/rdrobust_4.0.0.tar.gz	Pinned source archive downloaded only to author scratch. SHA25678f0d6b4bdec4091cc8f42f6f1598704747f95926446d3aaee38 matched software-reference.json.
https://cran.r-project.org/src/contrib/rddensity_3.0.tar.gz	Pinned source archive downloaded only to author scratch. SHA256a9c45ab0f6b86ead4d91084db16513d4156b7f59b0472510b matched software-reference.json.
https://cran.r-project.org/web/packages/rdrobust/rdrobust.pdf	Official interface documentation; exact source code remains numerical authority.
https://cran.r-project.org/web/packages/rddensity/rddensity.pdf	Official interface documentation; source confirmed postcap local-count semantics.

Public retrieval succeeded for these artifacts in the inherited author record. In round2 no web query or network retrieval was used: the same exact public archives were copied from scratch/r01/codex/software into this author's round2 scratch and independently hash-checked. Local FSV documentation was re-read for UDD_ORDBLINDETEST, school absence, VNDS, DOD, SSSY and BFL, together with the package's frozen evidence. This did not resolve Danish delivery dictionaries, confidential runtime access or provider clearance. Existing citations remain documentary evidence, not newly verified runtime contracts.

Round1 historical verification supplement

- **Full run:** suite-verified passed all21 then-existing tests in998.857 seconds, including every29-Atom default dispatch, all24 dense primary and all96 primary/sensitivity fits, independent numerical oracles, relocated read-only execution, component independence, disclosure binding and frozen figure interfaces. An earlier suite-final run was deliberately interrupted before completion to retain failed hospital-era labels and explicit empty registered era cells; it is not counted as a passed run.
- **Date/unknown-value regression:** a new22nd test reproduced and then verified fixes for valid distant literal interval ends, malformed education spells, uncertain hospital/parent-assessment dates, and inaccessible-cohort count/status propagation. date-regression passed8 targeted tests in116.394 seconds, rerunning all24 constructor arithmetic oracles, family ties, nonsharp classification, partial experiments, fixed-relative/death bounds, the billing audit and the new cases. Ordinary nanosecond date parsing was not changed: interval endpoints use lossless scalar

civil dates, without substituting a guessed open-ended sentinel. Unknown timings remain unknown; an independently known positive event remains positive. Malformed source role/person identifiers cannot become zero encounters.

- **Final audit checks:** provenance-regression passed4 tests in36.723 seconds: the independent pinned R reference, evidence integrity, relocated read-only execution and the new invalid-date/no-result cases. The final CLI direct run of synthetic atom-000501 completed eligible_sharp and recorded Python3.12.4, NumPy1.26.4, pandas2.2.3, SciPy1.15.2, PyYAML6.0.2, R4.1.2 and the exact rddensity3.0 source hash. Runtime versions are in audit.json; unused R is explicitly not_used. Across these runs, all22 distinct test methods have passed. There was no subsequent scientific/numerical model change.
- **Interfaces:** the seven unchanged figure APIs each rendered generated, absent and partial tables (21 PDFs per smoke call); the dense run repeats those21 with actual numerical fits. Additional local tests rendered synthetic suppressed/released Figure4 inputs and known-uncorrected income-proxy Figures6/7. Extracted PDF text retained the required proxy/no-welfare restriction. Visual inspection covered the synthetic primary forest and family descriptions. No preview was placed in the World or a manuscript slot. These are interface checks, not provider publication approval.
- **D10 placeholder ambiguity:** its "one all-key" wording cannot literally use category=all because the immutable descriptive renderer rejects that category. The executor emits all stratum keys with one unavailable row for each of red/yellow/green/unknown; it computes no extra estimate. Empty registered hospital-era cells are likewise explicit. This is an unavailable-row presentation expansion, not a scientific regrouping. The fixed plots were not edited to conceal the issue.
- **Integrity:** integrity-check.json confirms all30 native Atom/Molecule files byte-identical to the immutable source, all frozen shared-material pins valid, exactly29 README Atom entries, and no canonical prereg/runtime directory. The final verification.json records source hashes and pass-artifact hashes. Python source compilation and CLI –help succeeded without data; numerical-inference claims above rely on the executed R/matrix/algebraic tests, not compilation.

The preceding outcomes refer to round1 author scratch. Original protocol, result regions, roster, manifest, scientific-review status, paper prose, figure templates and frozen numerical core were not amended. Actual Danish paths/dictionaries and empirical execution remain unavailable. The next section records the separate round2 evidence.

Round2 verification and frozen interface limitation

All generated files in this round are under dyslexia/scratch/r02/author. revision-01 executed the eight new test groups23–30 in46.515 seconds: seven passed, and test25 exposed loss of the exact absence reason in the descriptive summary even though the measurement-boundary state was correct. analysis.py now retains the exact per-construction failure reasons. A pandas dtype warning in vocabulary normalization

was also corrected without changing values. suite-02 was deliberately interrupted during the full pipeline when the output audit identified missing early-path exits/scope records; it is not counted as a passed run. revision-02 was a mistyped test-selector invocation that failed before executing tests. revision-03 then passed all eight new groups in65.568 seconds, including the expanded artifact checks. The final complete30-test run is suite-final; its result and artifact identities are recorded in verification.json after completion.

The additional scratch command `python -B interface_extra.py` exercised pending atom000113 through every unchanged figure API. It produced19 PDFs and two explicit errors for Figure4 generated/partial inputs: `ValueError: family_resources: all-year row must be a horizon boundary`. The exact frozen locator is prereg/paper/figures/_plot_helpers.py:283 in descriptive_income_panels (called by figure4.py). The executor correctly preserves pending, blank numbers, reference_year=all and unavailable income provenance when outer activation is unknown. Assigning horizon_boundary or inventing an available year would change the disposition or source evidence. No plot template was changed, no row was silently dropped and these two renders are not claimed as passing. The final-code reproduction and returned Atom status are in interface-final/pending-income-interface-report.json (interface-extra is the earlier reproduction). This is a registered presentation-interface limitation, not an unresolved estimator.

Other unchanged plot interfaces are exercised on generated, missing and partial tables in the main suite. Local previews use DejaVu Sans at the registered130.7 mm width; Helvetica Neue and the external publication style directory were not available. No preview is a manuscript result or canonical Atom.

The independent scratch all_missing_checks.py run also completed58 executions: every Atom under both dispatch policies with no runtime deliveries or dictionaries. All component rosters, registered keys and artifact contracts passed. Unknown documentation remains otherwise; absent predecessor evidence remains pending; the service-measurement documentation retains its independently supported limited_markers state. These are absence/disposition checks, not numerical estimates. The exact outcomes are in all-missing/all-missing-report.json.

PyMuPDF1.24.9 verified all seven generated revision-preview PDF page widths as130.7 mm (within.001 mm). Visual inspection of Figures4/6 confirmed unavailable rows and neutral income restrictions without numbers. The frozen tall Figure4 also has a visible overlap between its overall title and first panel title in this local preview (_plot_helpers.py:180–234); its long canvas is unchanged. This layout and the unavailable publication fonts are not claimed as publication-render validation. Images and geometry checks are in visual-checks/.

Final round2 results

The final source snapshot passed **all30 tests in1094.796 seconds**, with zero failures/errors. Exact command executed:

```
/home/shaoerzhuo/anaconda3/bin/python -B \
  /home/shaoerzhuo/Bolero-denmark/.prereg-runs/denmark-reference-code-2026090
  ↪  6/dyslexia/v002/world/prereg/execution/run_tests.py
  ↪  \
  --output /home/shaoerzhuo/Bolero-denmark/.prereg-runs/denmark-reference-cod
  ↪  e-20260906/dyslexia/scratch/r02/author/suite-final
  ↪  \
  --rdrobust-source /home/shaoerzhuo/Bolero-denmark/.prereg-runs/denmark-refe
  ↪  rence-code-20260906/dyslexia/scratch/r02/author/rdrobust_4.0.0.tar.gz
  ↪  \
  --rddensity-source /home/shaoerzhuo/Bolero-denmark/.prereg-runs/denmark-ref
  ↪  erence-code-20260906/dyslexia/scratch/r02/author/rddensity_3.0.tar.gz
```

This run includes all29 default-dispatch Atom pipelines, all24 dense endpoint paths and all96 primary/half/wider/donut interval rows, independent pinned-R/matrix/algebraic oracles, all constructor and adverse-date tests, both dispatch policies, absent/explicit-no-result predecessors, relocation, result/protocol/source/native-ID tampering, component independence, disclosure binding and all eight revision groups. The R engines were numerically executed from the exact registered archives; no shared package installation or numerical substitution occurred. The suite's three figure-interface calls produced63 successful renders across the seven unchanged APIs. The separately reproduced two pending-income Figure4 errors remain limitations rather than passed cases.

`check_interfaces.py` checked129 direct CSV result-map bindings and all148 finalized component audits across the29 Atom outputs, with no missing columns or mismatched file hashes. `semantic_interfaces.py` separately checked12 long-form diagnostic/calibration tables,24 conditional numerical fit-audit bundles and all four Molecule tables against the frozen interfaces. Selected-case output conditions are exercised by methods16/20/21; nonexistent fits are not required to invent estimator components. The dense Figure6 preview was also inspected at the registered width, with the required income restriction visible. These scripts and their JSON results remain in author scratch.

`integrity_check.py` confirmed all178 original package files byte-identical to the immutable source, including all30 native Atom/Molecule files. Exactly29 README Atom entries and24 endpoint slots remain. The World has no canonical prereg/runtime or generated bytecode. The CLI help works without data, and all18 authored Python sources compile in memory. Numerical validity claims above rely on executed numerical tests, not compilation.

The final verification.json records tested source/artifact hashes, software versions, commands' results, earlier failed/interrupted attempts, all reviewer-response IDs and the remaining limits. Registration identity is906de9c564b3846761f40a0fbe6b5853431ac4e1b383ebeea180affe16bf90d5; material identity remains6037edf38eed3a38fc446bb61dd6f666d54d58f3aeeb1ef1289abb5a828e2215; the separate execution identity is87fca9793af1abefb4538dd61d1ed6db72e54390c2d23e7790a838e771ce7a3a. Structural-ID binding explains the canonical-identity change from round1; no original registration bytes changed.

Author engineering is complete for the source-supported design. Genuine dictionary/coverage/correction/calibration boundaries, production-scale performance, publication styling and governed data/disclosure access remain unresolved as described above. No Danish/APTO observations, empirical result, canonical result body or manuscript slot was accessed or populated. Synthetic success is not empirical replication, causal validation or scientific acceptance. Independent round2 Opus/Codex Sol review remains for the controller; this author did not perform or claim it.

Reference implementation review

Engineering status: REVIEW INCOMPLETE. Review rounds: 3. Revision slots used: 2 (initial draft excluded).

User-directed bounded handoff: no more than two author revisions. Proceeding to formatting is not reviewer acceptance. Failed/missing reviewer calls have no scientific verdict; original records remain available below.

This augmentation used schemas, documentation and synthetic fixtures only. Code review and package compilation do not establish scientific validity, empirical replication, data availability or independent acceptance of the original science. Original registrations, manuscript sources and scientific review remain unchanged. Unresolved source definitions remain unresolved; runnable components and blocked targets must be distinguished in prereg/execution/README.md.

The host checks prose Atom coverage, Python syntax and synthetic commands. These are engineering checks, not a scientific verdict.

Controller checks and review dispositions


```
{
  "round": 3,
  "accepted": false,
  "host": {
    "status": "revise",
    "findings": [
      "run_tests.py host check failed:
      ↪  /home/shaoerzhuo/Bolero-denmark/.prereg-runs/denmark-reference-code
      ↪  -20260906/dyslexia/logs/r03-host-run_tests-a01.log"
    ],
    "processes": [
      {
        "label": "r03-host-run",
        "command": [
          "/home/shaoerzhuo/anaconda3/bin/python",
          "/home/shaoerzhuo/Bolero-denmark/.prereg-runs/denmark-reference-cod
          ↪  e-20260906/dyslexia/scratch/r03/host/attempt-01/world/prereg/ex
          ↪  ecution/run.py",
          "--help"
        ],
        "model": null,
        "cwd": "/home/shaoerzhuo/Bolero-denmark/.prereg-runs/denmark-referenc
        ↪  e-code-20260906/dyslexia/scratch/r03/host/attempt-01",
        "log": "/home/shaoerzhuo/Bolero-denmark/.prereg-runs/denmark-referenc
        ↪  e-code-20260906/dyslexia/logs/r03-host-run-a01.log",
        "created_at": "2026-09-06T12:18:56.026047+00:00",
        "status": "finished",
```

```
        "pid": 2432658,
        "start_ticks": "83521094",
        "state": "R",
        "started_at": "2026-09-06T12:18:56.035672+00:00",
        "returncode": 0,
        "completed_at": "2026-09-06T12:18:56.958057+00:00"
      },
      {
        "label": "r03-host-run_tests",
        "command": [
          "/home/shaoerzhuo/anaconda3/bin/python",
          "/home/shaoerzhuo/Bolero-denmark/.prereg-runs/denmark-reference-cod
          ↪  e-20260906/dyslexia/scratch/r03/host/attempt-01/world/prereg/ex
          ↪  ecution/run_tests.py",
          "--output",
          "/home/shaoerzhuo/Bolero-denmark/.prereg-runs/denmark-reference-cod
          ↪  e-20260906/dyslexia/scratch/r03/host/attempt-01/output"
        ],
        "model": null,
        "cwd": "/home/shaoerzhuo/Bolero-denmark/.prereg-runs/denmark-referenc
        ↪  e-code-20260906/dyslexia/scratch/r03/host/attempt-01",
        "log": "/home/shaoerzhuo/Bolero-denmark/.prereg-runs/denmark-referenc
        ↪  e-code-20260906/dyslexia/logs/r03-host-run_tests-a01.log",
        "created_at": "2026-09-06T12:18:56.972093+00:00",
        "status": "finished",
        "pid": 2432663,
        "start_ticks": "83521188",
        "state": "R",
        "started_at": "2026-09-06T12:18:56.980103+00:00",
        "returncode": 1,
        "completed_at": "2026-09-06T12:26:38.749011+00:00"
      }
    ],
    "completed_at": "2026-09-06T12:26:38.762516+00:00",
    "scope": "Structural coverage, syntax and synthetic execution; not
    ↪  scientific validation."
  },
  "reviews": {
    "opus": {
      "status": "complete",
      "verdict": "revise",
      "report": "/home/shaoerzhuo/Bolero-denmark/.prereg-runs/denmark-referen
      ↪  ce-code-20260906/dyslexia/reviews/r03/opus.yaml"
    },
    "codex": {
      "status": "failed",
      "verdict": null,
      "error": "FileNotFoundError: [Errno 2] No such file or directory:
      ↪  '/home/shaoerzhuo/Bolero-denmark/.prereg-runs/denmark-reference-cod
      ↪  e-20260906/dyslexia/reviews/r03/codex.yaml'"
    }
  },
  "review_status": "incomplete",
  "revision_slots_used": 2,
  "continuation": "package_current_draft_with_unresolved_findings"
}
```

Codex independent engineering review — round 1

Verdict: **revise**.

This is a source-fidelity and engineering verdict on the exact reference-code snapshot under the frozen **adaptive** policy. It is not scientific acceptance of the preregistration, an empirical replication, or approval of any numerical result. I did not access real data, old empirical sessions, QGPU, or the other round-1 reviewer.

The strongest positive evidence is substantial: I independently ran the entire supplied synthetic suite, and all 22 tests passed in 1024.583 seconds. The run completed every one of the 29 native Atom pipelines; exercised all 24 causal endpoints on dense numerical paths; ran the hash-verified `rdrobust` 4.0.0 and `rddensity` 3.0 sources; compared the one-grade estimator to the independent R reference; checked the independent cluster-matrix oracle, fixed missingness bounds, 24-slot correction, unknown activation, direct dispatch, evidence integrity, copied/read-only layout, Molecule rules, disclosures, and figure interfaces. This supports the core RD/kernel/bias-correction and crossed-cluster implementation on the advertised synthetic domain. It does not cover the counterexamples below.

Required fixes

F01 — An empty input delivery becomes observed scientific zeroes (high)

`Inputs.table()` requires a `slices` key but permits `slices=[]`, manufacturing a header-only DataFrame at line 98. `Inputs.complete()` separately trusts `complete_through`. `Builder.billed()` then interprets the absence of qualifying rows as zero.

My synthetic SSSY manifest retained `complete_through`, declared fields, and supplied no slices. Direct atom-000109 execution completed as `described`; the community-specialist output contained red and yellow rows with `n_eligible=n_observed=192` and `estimate=0.0`. That violates the input contract: INPUTS.md says a header is not evidence of event completeness and a missing input is unavailable, not zero.

Narrow fix: reject zero slices. If zero-row extracts are genuinely supported, require a checksum-bound zero-row file plus the registered complete-universe attestation. Otherwise require documented `state=absent` with a source locator. Add event-table and full-population regressions.

F02 — Required-input loss can become a scientific state (high)

Two independent paths reproduce this problem.

First, the SSSY branch checks `complete()` before requesting the table in `Builder.value()`. A wholly absent manifest therefore produces a `SourceBoundary`, which `source_disposition()` converts to a completed scientific state. My missing-SSSY case recorded `horizon_boundary`, not terminal `no_result`.

Second, `Population.retained()` stores a school-source `OperationalError`, but `Population.links()` catches and discards it while assigning prospective siblings `grade=None`. The descriptive sibling path does not call `require_school()` in `Builder.construct()`. With the school table removed, construction returned zero rows, an empty failure list, and a stored `OperationalError`—an operational failure converted to an empty scientific target.

This contradicts G1, which reserves `no_result` for access/software/operation failure. Narrow fix: have the input API distinguish a missing manifest from a delivered-but-incomplete horizon, and propagate the school failure through sibling construction. Test full atom-000109/000211 and atom-000113/000214 paths while preserving unaffected sibling components.

F03 — Mixed exit/death order is discarded before state-outcome disposition (medium)

`Observation.clock()` correctly chooses the earliest stop date but sets both booleans whenever death and emigration occur anywhere in the nominal horizon. `Builder.value()` then tests `death` first without consulting event order.

In my case, emigration occurred on 2015-07-24 and death later on 2015-11-01. The clock ended on the emigration date but returned both booleans true, and the school outcome was marked `undefined=1`. This lets a later death override the earlier-emigration unknown/bounds route. D3 requires chronological competing-event handling and distinguishes unknown after exit from undefined after death. G2 permits overlapping descriptive counts, but does not authorize discarding order for the scientific disposition. The supplied exit oracle only tests a manually constructed same-day clock at run_tests.py.

Narrow fix: retain `first_stop_type` with the frozen tie policy and use dates/order for state-outcome disposition. Keep overlapping descriptive counts if desired. Regress emigration-before-death, death-before-emigration, ties, and neither.

F04 — Early grade failure drops four registered components (medium)

All grade Atoms register support, income-provenance, density, balance, and classification. `grade_experiment()` returns after writing only support when initial cohort/school construction fails. Removing the school table and executing atom-000501 produced `no_result`, but `components.csv` contained only support; balance, classification, density, and income-provenance were missing. That violates G5's complete-roster rule and the grade protocol.

Narrow fix: emit the exact five-component roster on every terminal path, with justified `no_result`/`not_activated` dispositions and typed placeholders. Execute any independent documentary sibling that remains possible. Apply the regression to atoms 000501–000506.

F05 — Component artifact contracts are incomplete (medium)

On an endpoint early boundary, `endpoint_policy()` writes primary `effects.csv` and unavailable `robustness.csv`, but no `ascertainment.csv` or ascertainment diagnostics. The missing-SSSY case confirmed that exact partial interface.

Separately, `Writer.component()` writes component status/judgment only; `Writer.finish()` writes one root audit. A recursive scan of the successful pipeline found 29 root Atom `audit.json` files and zero component-level audits. Yet, for example, the atom-000201 ascertainment protocol requires `ascertainment.csv`, diagnostics, audit, and judgment at the component path; grade component contracts do likewise.

Narrow fix: centralize a terminal component writer that always emits the registered typed table, diagnostics, status, judgment, and component audit for success, boundary, operational failure, and nonactivation. Add recursive artifact-contract assertions rather than checking only selected figure inputs.

F06 — Code substituted before import is accepted (high)

`registration.py` defines expected execution hashes from the bytes present at module import, so it detects only later edits. The pinned `authority.json` covers World material, not the execution directory; the audit merely records current hashes.

In a copied action directory, I changed the grade-4 cutoff in `cohort.py` from 66 to 65 before launching a new Python process. Atom-000002 returned exit code 0 and `local_state=compatible`, recording the changed hash rather than rejecting it. The supplied tests at run_tests.py cover evidence tampering, protocol mutation, and path relocation, not pre-import code substitution.

Narrow fix: bind all execution `.py`/`.R` hashes in a separately anchored execution identity and verify raw bytes before scientific imports. Keep this separate from registration identity so reviewed implementation changes and legitimate realized-body/interpretation changes remain possible. Regress copied-layout pre-launch mutation and unchanged relocation.

F07 — Native Atom identity is not bound (medium)

`authority()` keys Atoms by filename and retains only the nested preregistration payload. It neither includes nor validates the native top-level `id`. `World` pins the checksum-file bytes but does not verify each entry listed within that file.

In a copied World, I changed the top-level ID in `atoms/atom-000001.md` to `atom-999999`, leaving its filename and preregistration block untouched. The World loaded successfully and retained exactly the baseline registration identity `af87a3a42000d69961c8c64fee07baca9b2e2dc1a4c58c84a0375a4489ecf0c5`.

Narrow fix: assert every top-level Atom ID equals its path stem and membership ID, validate the Molecule structural ID, and include structural IDs in canonical authority. Preserve the intended exclusion of mutable realized result bodies and current interpretation. Test both mismatch rejection and legitimate in-place mutations.

Per-Atom coverage

All and only the requested roster was reviewed. “Pipeline result” below is synthetic and is not a scientific result.

Atom	Protocol/result coverage and targeted execution	Full-suite pipeline result
atom-000001	Retention, dated index selection, DOB/age, duplicate/conflict, exposure and diagnostic branches	`completed / ready`
atom-000002	Grade mapping, prior-month school match, inclusive cutoff, retention/history components	`completed / compatible`
atom-000010	Cohort/category profile, reach and fixed-relative composition	`completed / described`
atom-000011	HANDICNOTA/VEUV service-marker boundaries	`completed / limited_markers`
atom-000101	Eight registered school descriptive endpoints and strata	`completed / described`
atom-000109	Billing and hospital descriptive endpoints; empty-delivery counterexample	`completed / described`
atom-000113	Six family descriptive endpoints, fixed parents/siblings, income provenance	`completed / described`
atom-000118	Six adulthood descriptive endpoints, birthday/year and cap rules	`completed / described`
atom-000201	Loneliness and belonging pri- mary/ascertainment/robustness; dense RD paths	`completed / restricted`
atom-000202	Stomach-ache and headache component paths	`completed / restricted`

Atom	Protocol/result coverage and targeted execution	Full-suite pipeline result
atom-000205	Total and sickness absence units/month completeness	`completed / restricted`
atom-000207	Reading target grade/year/calibration and RD path	`completed / restricted`
atom-000208	Danish teacher-grade form/year/discipline path	`completed / restricted`
atom-000209	Depressive and anxiety/stress hospital-event paths	`completed / restricted`
atom-000211	Community-specialist and GP billing; missing-SSSY counterexample	`completed / restricted`
atom-000213	Fixed-parent care event averaging and denominator	`completed / restricted`
atom-000214	Fixed-sibling belonging; swallowed-school-failure counterexample	`completed / restricted`
atom-000215	Family-resource year/provenance/scope and selection ceiling	`completed / restricted`
atom-000216	Parent hours and wages, annual delivery and fixed-parent weighting	`completed / restricted`
atom-000217	Parent retained-assessment event path	`completed / restricted`
atom-000218	Education at 18 and attainment at 20 spell/date paths	`completed / restricted`
atom-000220	Employee participation and wages at 20	`completed / restricted`
atom-000222	Resources and co-residence at 20	`completed / restricted`
atom-000501	Grade-4 support/density/balance/classification/provenance; missing-roster case	`completed / eligible_sharp`
atom-000502	Same full grade-local protocol for grade 5	`completed / eligible_sharp`

Atom	Protocol/result coverage and targeted execution	Full-suite pipeline result
atom-000503	Same full grade-local protocol for grade 6	`completed / eligible_sharp`
atom-000504	Same full grade-local protocol for grade 7	`completed / eligible_sharp`
atom-000505	Same full grade-local protocol for grade 8	`completed / eligible_sharp`
atom-000506	Same full grade-local protocol for grade 9	`completed / eligible_sharp`

I also reviewed the complete Molecule membership, activation/storyline/composable interpretation rules, shared D1–D11/I1–I6/G1–G5 definitions, native result regions, manuscript slots, endpoint index, figures and their bindings, existing code, immutable-source comparison, and the supplied engineering report. No prior engineering review or author response existed. The World differs from the immutable original package only by its added `prereg/execution` and `prereg/engineering` trees.

Commands and evidence

Author-supplied suite, independently executed:

```
/home/shaoerzhuo/anaconda3/bin/python -B action/execution/run_tests.py
↪  --world /home/shaoerzhuo/Bolero-denmark/.prereg-runs/denmark-reference-co⌋
↪  de-20260906/dyslexia/v001/world --output
↪  /home/shaoerzhuo/Bolero-denmark/.prereg-runs/denmark-reference-code-20260⌋
↪  906/dyslexia/scratch/r01/codex/full-suite --rdrobust-source
↪  /home/shaoerzhuo/Bolero-denmark/.prereg-runs/denmark-reference-code-20260⌋
↪  906/dyslexia/scratch/r01/codex/software/rdrobust_4.0.0.tar.gz
↪  --rddensity-source
↪  /home/shaoerzhuo/Bolero-denmark/.prereg-runs/denmark-reference-code-20260⌋
↪  906/dyslexia/scratch/r01/codex/software/rddensity_3.0.tar.gz
```

Result: 22 tests, zero failures/errors, 1024.583 seconds. The machine-readable result is test-summary.json. The author-derived suite is useful coverage, not an independent oracle for all branches.

Reviewer-authored adversarial cases:

```
/home/shaoerzhuo/anaconda3/bin/python -B review_tests.py
```

Result: diagnostic runner exited 0 and reproduced every reported condition. Code and exact outputs are review_tests.py and review-test-report.json. These tests use synthetic data only.

Exact source archives were checked with `sha256sum`: `rdrobust_4.0.0.tar.gz` matched `78f0d6b4bdec4091cc8f42f6f1598704747f95926446d3aaee381ea1d613a36f`; `rddensity_3.0.tar.gz` matched `a9c45ab0f6b86ead4d91084db16513d4156b7f59b0472510b63deb5dee6f305d`.

They came from the registered CRAN archive locators for rdrobust 4.0.0 and rddensity 3.0. Installed software was R 4.1.2, `rdrobust` 3.0.0, and no installed `rddensity`; the reference adapter successfully loaded the exact hash-checked sources without installing or substituting packages.

Unresolved limits and untested components

No confidential delivery, governed dictionaries, access environment, or disclosure review was available. Consequently, every real descriptive count, causal estimate/state, and final empirical figure remains unavailable. The synthetic results must never be reported as Danish findings.

The frozen documentary gaps remain boundaries unless exact source evidence resolves them: assessment identity/score/category/grade/retention; questionnaire wording and response mappings; absence units and complete months; reading calibration; teacher forms; billing/treatment-date and hospital-era coding; fixed relations; income-correction provenance; education/address/employment coverage. This review does not invent definitions or infer that another source fixes them.

Real-data execution, production-scale performance, provider access/disclosure, every historical dictionary/vintage, and truth against the Danish registers were untested. DiD, matching, survival, and modeled competing-risk estimators are not registered components here, so I did not substitute-test or demand them. The RD and missingness machinery was tested only on synthetic and independent-library/hand-matrix oracles.

r01 / opus.md

Independent engineering review — Opus, round 1

World reviewed: `.prereg-runs/denmark-reference-code-20260906/dyslexia/v001/world`
Mode: adaptive, frozen (`manifest.yaml: status=accepted`, `scientific_review_status=not_accepted_current_revision`, `publication_basis=user_directed_freeze`). **Scope of this review:** source fidelity and executable engineering of `prereg/execution/` against the 29 frozen Atom protocols, the Molecule registration, D1–D11, I1–I6, G1–G5, and the frozen paper/figure interfaces. This is **not** scientific acceptance of the frozen draft, not a replication, and not evidence that any Danish datum was read. No empirical result exists.

Verdict: revise — two confirmed, narrow defects in how registered boundary *dispositions* are labelled (F2, F1). Neither fabricates a number, creates a scientific null, or changes any estimate; both are bounded code fixes with regression tests. Everything else I tested passes: the reference implementation is complete for every Atom, the whole advertised synthetic suite is green once the registered pinned R sources are supplied, and source fidelity is exact.

The controller's round-1 `revise` is for a different and invalid reason. `.controller/r01-host.json` blames a `run_tests.py` failure that is purely an environment artifact (§1). My `revise` is not that: it is F2 and F1 below. Once those two are patched with their tests I would expect to accept.

F1 and F2 need two separate patches. Clamping component states to the registered region vocabulary (F1) does **not** fix F2, because `horizon_boundary` *is* in the vocabulary — F2 is a wrong choice among registered keys, not an out-of-vocabulary key.

---

1. Why the controller's `revise` signal is an environment artifact

`.controller/r01-host.json` records `run_tests.py host check failed`. I reproduced the cause and it is **not** a code defect.

`execution/engines.R:6-13` (`load_engine`) accepts a package only from a hash-checked release archive or from an installed copy at the exact pin. The pins are `rdrobust 4.0.0` and `rddensity 3.0` (`engines.py:11-12`), which is what `identification.md` I3/I5 register verbatim. This machine has `R 4.1.2` with `rdrobust 3.0.0` installed and **no** `rddensity`. The host invoked `run_tests.py` without `--rdrobust-source/--rddensity-source`, so every R call raised `OperationalError('Pinned R … failed')`, producing 1 error and 5 failures in tests 04/09/15/17/19/21.

I downloaded both pinned sources **myself** from the preregistered CRAN locators and verified them against `engines.py:PINS`:

```
a9c45ab0f6b86ead4d91084db16513d4156b7f59b0472510b63deb5dee6f305d
↪  rddensity_3.0.tar.gz
78f0d6b4bdec4091cc8f42f6f1598704747f95926446d3aaee381ea1d613a36f
↪  rdrobust_4.0.0.tar.gz
```

Both match the frozen pins exactly, so my suite run does not depend on any author artifact. With the archives supplied the advertised suite is green:

```
Ran 22 tests in 1055.341s
OK
```

(`out/suite-full/test-summary.json`: `tests_run=22, failures=[], errors=[], passed=true`.)

Refusing to fall back to an installed wrong version is the registered behaviour ("No installation, network access, or fallback estimator", `engines.py:1`), and I3 explicitly forbids a substitute estimator. I therefore record the missing pinned R packages as an **environment limitation with a verified workaround**, not an engineering blocker. The only thing I would change here is documentation, not code: `execution/README.md` already documents the `--rdrobust-source/--rddensity-source` flags, so an unaided `run_tests.py --output DIR` invocation on a machine without the pins will always fail rather than

skip. That is defensible (a silent skip would hide the fact that the registered estimator never ran), and I do not request a change.

2. Integrity and source fidelity (all verified by me)

Check	Result
Every file in `.controller/source` vs `v001/world`	**byte-identical, 0 differences**
Files added by the author	only `prereg/engineering/{implementation-report.md,verificat` and the 19 `prereg/execution/*` files
`execution/authority.json` `material` pins	**148/148 verified**
`manifest.yaml` `files:` map	**146/146 verified**
`manifest.yaml` own hash vs authority pin	`18f8120859ec…` = `18f8120859ec…`
`CHECKSUMS.sha256`	**177/177 verified**
`engineering/verification.json` `implementation_sources`	**16/16 match the shipped execution sources**

Files not covered by `CHECKSUMS.sha256` are exactly `CHECKSUMS.sha256` itself plus the newly authored `engineering/` and `execution/` files. That is correct and not a finding: the manifest and CHECKSUMS were sealed at the 2026-09-05 freeze and `manifest.yaml` is itself pinned in `authority.json`, so the author could not have added entries without breaking registration identity. Execution sources are instead bound two ways — statically in `engineering/verification.json`, and dynamically per process by `registration.py:47` (`EXECUTION_SOURCES`) / `verify_execution_sources()`, which is called on every R call and in `Writer.finish`.

Three distinct identity layers exist and I checked each separately:

- **registration identity** = `digest({atoms' preregistration front matter, molecule preregistration, membership})` (`registration.py:70-73`);
- **material identity** = the 148 pinned World files;
- **implementation binding** = `EXECUTION_SOURCES` (process-local).

Registration-identity triad (my test `test_o02`, 8 mutations of a writable World copy):

- appending a realized-result body **below** the front matter of `atoms/atom-000205.md`, and appending a new interpretation paragraph to `molecules/molecule-000001.md` → `World()` still constructs and `registration_identity` is unchanged (in-place realized interpretation survives, as the contract requires);
- tampering with a verdict `says`, a verdict `region`, the `activation` expression, the `question`, or the Molecule `membership` role → each raises `ContractError('Frozen registration or Molecule membership was altered')` ;

- tampering with `prereg/code/rd_operator.py` or `prereg/paper/endpoint-index.json` → `ContractError('Frozen material was altered: …')` .

Evidence sealing (my test `test_o08`, 8 forgeries): mutating a sealed result file without resealing, resealing a fabricated `local_state`, inventing an unregistered `local_state`, corrupting `matched_rule`, rewriting the stored `activation`, renaming the `atom` field, substituting a wrong `registration_identity`, and dropping a required sealed output — **all eight are rejected** by `load_evidence`. Evidence from a non-member Atom is refused. Path relocation of both the World and the input manifest does **not** change identity (`Inputs.identity` excludes `path/rscript/source_archives/evidence`), which is the correct "content-bound, not machine-path-bound" behaviour.

3. Per-Atom coverage — implemented, not wrappers

`execution/README.md` has exactly **29** `### atom-NNNNNN` entries. I executed all 29 twice: once through the shipped suite (`test_09`) and once myself from a **copied** action directory (`scratch/r01/opus/action/`) against the read-only original World (`test_o16`). Every Atom completed with a **registered** local state; none returned `no_result`; every component carrying a scientific state had `component_terminal=completed`.

Atom	Entry point	Result on my run	Notes
atom-000001	`diagnostics.assess`	`completed / ready`	six D1 fractions written to `diagnostics.csv`; `limited` branch exercised by `test_21` (SCORE column dropped)
atom-000002	`diagnostics.initialize`	`completed / compatible`	`mapping` + `retention` components; ordered root aggregation matches the registered regions exactly
atom-000010	`diagnostics.profile`	`completed / described`	`profile.csv` emits all 12 cohort×category cells; `reach` and `relatives` diagnostics present

Atom	Entry point	Result on my run	Notes
atom-000011	`diagnostics.service`	`completed / limited_markers`	see §4 — reads no register rows **by protocol**
atom-000101	`analysis.run_endpoints(causal=False)`	`completed / described`	8 descriptive endpoints + internal reading-calibration
atom-000109	`run_endpoints(causal=False)`	`completed / described`	4 endpoints + internal hospital-era; frozen era display grid implemented
atom-000113	`run_endpoints(causal=False)`	`completed / described`	6 endpoints + hospital-era + relatives + income-provenance (per-year)
atom-000118	`run_endpoints(causal=False)`	`completed / described`	6 endpoints + relatives
atom-000201/000202/000205/000207/000208	`run_endpoints(causal=True)`	`completed / restricted` on the small fixture	all endpoints reach `valid_interval` on the dense fixture (`test_15`)
atom-000209/000211/000213/000214/000215/000216/000217	`run_endpoints(causal=True)`	`completed / restricted`	ditto
atom-000218/000220/000222	`run_endpoints(causal=True)`	`completed / restricted`	ditto
atom-000501…000506	`diagnostics.grade_experiment`	`completed / eligible_sharp` (all six)	support + density + balance(8 slots) + classification + income-provenance

`restricted` on the 32-per-side fixture is the honest disposition: the fixture fails I3's fitted-support/cluster gates, so the primaries are `unestimable` rather than fabricating an interval. The shipped dense fixture (`test_15`, 160 per side × 6 grades) drives all **24** primaries to `valid_interval` and all 96 primary/half/wider/donut rows to valid intervals — I re-ran that test and it passes.

I also mapped every declared internal component heading in every Atom protocol to its writer, and found no orphan on either side:

- `## Internal reading-calibration` → atom-000101, atom-000207 → `analysis.ancillary`

- `## Internal hospital-era` → atom-000109/000113/000209/000213 → `ancillary`
- `## Internal income-provenance` → atom-000113 (all years), atom-000215 (2016) → `ancillary`
- `## Internal relatives` → atom-000113/000118/000213/000214/000216/000217/000222 → `ancillary`
- `profile|reach|relatives` → atom-000010 → `profile_reach`
- `mapping|retention` → atom-000002 → `initial_margin`
- `income-provenance|support|density|balance|classification` → atom-000501…506 → `grade_experiment`
- every `<endpoint> / {ascertainment,primary,robustness}` section → `endpoint_policy`

4. Alleged source gaps — are they genuine and narrow?

I checked each declared boundary against the frozen text rather than accepting the author's summary.

atom-000011 is not a wrapper. It registers four tables (`HANDICNOTA, UDD_ORDBLINDETEST, UDFK, VEUV`) and `diagnostics.service` (`diagnostics.py:69-77`) reads none of them. That is exactly what the protocol instructs: *"Read actual field definitions and the official application/OBU guidance;* ***no row query is needed for a documentary absence****… Output diagnostics.csv rows comprehensive_support, intensity, obu_historical_codes, unaided_learning with evidenced/unresolved flags."* The code emits precisely those four rows and cannot ever set `comprehensive_support=1`, which is the protocol's own synthetic check. Faithful.

The support thresholds are registered, not invented. `diagnostics.py:149` gates on `n_unique<20`, `school_clusters<30`, `family_clusters<30`, `max_mass_share>.2`, plus `precision>0.5`. atom-000501's `## support` section states verbatim: *"precision <=0.5 original point; >=20 distinct scores on each side of |x|<=6; >=30 schools and >=30 family components in this grade; largest side mass-point fraction <=.20."* Exact match, including the first-match order discrete → continuous → otherwise.

`coresidence20` returning unknown for a one-known-parent child is correct. `outcomes.py:379-383` returns `NaN` when `len(row.parents)<2` and no address match was found. D8 says: *"Co-residence is shared nonmissing BEF-BOP.ADRESSE_ID with either fixed baseline parent…* ***An unmapped parent/address makes co-residence unknown unless another known parent already establishes co-residence.****"* D7 adds *"A conflicting or missing relation is unknown."* A missing `MOR_ID`/`FAR_ID` is an unmapped parent, so unknown is the registered disposition; a positive match still returns 1. D11 confirms the asymmetry with the other parent endpoints ("coresidence20 retains its separate dated-parent/address requirement"). Faithful.

The D10 "one all-key row" deviation is real and its premise is verified. D10 requires *"one all-key horizon_boundary row when a cohort cannot reach a horizon"*, but the frozen renderer `paper/figures/_plot_helpers.py:160-161` raises `ValueError('unregistered cohort/category')` for any category outside

('red','yellow','green','unknown'). I confirmed that constraint in the pinned file. analysis.descriptive_endpoint:315-324 therefore emits one unavailable row per registered category with every other key all. No number, estimate or stratum is created — estimate/lower/upper stay None and the status/reason are preserved. This is a presentation expansion forced by a frozen interface, it is pre-disclosed in engineering/implementation-report.md, and I accept it as meaning-preserving.

Unavailable data never becomes a scientific null (my test test_o18). I drove five separate unavailability modes through endpoint_policy: an inaccessible runtime table → component_terminal=no_result, state=None, all numerics NA; a documented absent table → measurement_boundary / completed / inference_status=unavailable; an unresolved dictionary → otherwise (never uncertain); a claimed absence with no source locator → ContractError (malformed contract, not science); a table outside data-boundary.yaml → refused at Inputs() construction. None of these produced a directional or equivalence state.

5. Estimator and inferential fidelity

Independent library oracle (my test test_o03). The author's oracle uses three (h,b) pairs on one design. I added two reviewer-chosen designs — a heavy mass-point design with an asymmetric number of repeats per side, and a dense 211/1/137 design with an exact x=0 row — crossed with four (h,b) pairs including h<b, h>b, h=b and the cap. All 8 comparisons of rd_operator.grade against pinned rdrobust 4.0.0 (conventional, corrected, hc0_variance) agree to better than 1e-8·max(1,|x|); artifacts in out/opus-checks/opus-rd-oracle.json.

Algebraic oracles (my test test_o04), independent of both R and the code. For the bias-corrected equivalent kernel l = e0'A1 − (e0'A1 r²)·e2'A2 I verified Σl = 1, l·r = 0 and l·r² = 0 on each side, and that l = 0 outside the union of the h/b supports (I3: *"rows outside get weight zero"*). With a side-specific exactly-quadratic outcome the bias-corrected contrast reproduces the true 2.5 jump to 10 decimals while the conventional contrast retains a visible bias; with an exactly linear outcome conventional = corrected = the true jump and the HC0 variance is exactly 0.

Clustered covariance (my test test_o05). I recomputed V = G_S/(G_S−1)ΣU_S² + G_F/(G_F−1)ΣU_F² − G_SF/(G_SF−1)ΣU_SF² by hand from the influence vector, restricted to rows with nonzero **design** weight, and matched rd_operator.multiway to 12 decimals including G_school/G_family/G_intersection and df = min(G_S,G_F)−1. The registered gates fire correctly: 29 effective schools or 29 effective families raises; and a constructed 30×30 alternating-sign design with V<0 raises rather than being projected onto a positive value (I3: *"Do not project a negative covariance onto positive values"*).

Multiplicity arithmetic recomputed from se/df (my test test_o06). Every registered critical value is reproduced independently: primary t_{1−(0.05/24)/2} with p_adjusted=min(1,24p) and detectable_contrast=(q+0.84)·se; sensitivity t_{0.975}; bounds where each one-sided limit uses t_{1−(0.05/24)/2} = the I3 = 0.05/(2·24) allocation (the code comment is correct — no spurious extra factor of two); balance slots t_{1−(0.01/48)/2} with min(1,48p); density/classification

0.01/6 with min(1,6p). The bounds path returns estimate=None, se=None, p=None, inference_status='bounds' and lower upper, and its limits equal the lower-extreme lower limit and upper-extreme upper limit exactly.

Extreme-value bounds direction. inference.numeric_result:104-119 fills missing red-side values with the row's lower_possible and missing yellow-side values with upper_possible for the lower contrast, and vice versa — literally I3's *"lower contrast = red-min minus yellow-max and upper contrast = red-max minus yellow-min"*. Because outcomes.construct:430-432 computes lower_possible/upper_possible as **per-index relative-set means**, a partially observed two-parent index correctly contributes (y_obs+low)/2 rather than low (checked by test_20 and reproduced in my run). I initially flagged the fact that bias-corrected local-polynomial weights can be negative, which makes the extreme fill a non-conservative bound in general — but I3 prescribes the extreme fill literally, so this is a property of the frozen protocol, not an implementation defect, and it is out of scope for this review.

Grade weights are pre-outcome and fixed (my test test_o15). baseline_weights counts grade==g & |x|<=6 **without** inspecting y; I confirmed the weights are unchanged by introducing missingness, that an |x|>6 row is excluded, that a required grade with zero support raises Unestimable instead of renormalizing onto surviving grades (D10: *"an empty grade yields a target-support boundary … not renormalization"*), that the donut keeps the same weights while dropping exactly the x==0 rows from each fitted side, that half→3.0 and wider is capped at 6.0, and that a duplicated index row is rejected before clustering.

Bandwidth policy. select_bandwidths calls the pinned rdbwselect with the exact I3 argument list (engines.R:16-22, including bwselect='cerrd', p=1,q=2,masspoints='adjust',bwcheck=20,bwrestrict=TRUE), verifies the common-side property, caps at 6 and never reselects or enlarges. Bounded endpoints select once on the observation indicator and freeze it for both extreme functions; all-observed uses the outcome selector; all-unobserved is Unestimable('all_unobserved_no_selector') — exactly the I3 clause.

Estimators that are deliberately absent. I1 registers no fuzzy-RD ratio, no IV, no staggered DiD, no matching and no survival hazard model. Their absence is fidelity, not an omission, and I found no substitute model anywhere in prereg/execution/. The only numerically runnable substitutes I looked for — an unclustered normal interval from rdrobust, or a fallback OLS when the R engine is unavailable — do not exist.

6. Cohorts, time zero, censoring and leakage

Index selection vs event time zero (my test test_o10). I injected a prelaunch record (2015-01-05), a strictly pre-birth record (1990-01-05) and a *later, more favourable* record (2016-09-09, SCORE 3) for one child. The index stayed 2015-04-15, the later score never replaced it, both invalid records were counted as anomalies and excluded, and exactly one row survived per PNR. D1's "Do not use later results to replace earlier ones" holds.

Immortal time and competing events. `Observation.event` counts only `x > t0`; an event exactly at `t0` is 0; an event after the truncated horizon is 0; an event on the exit day is `NaN` unless `same_day_order` is documented, and 1/0 under the two documented orders. `unknown_residence` poisons the indicator to `NaN` rather than 0. A death or emigration **before** `t0` sets `unknown_residence`, and an emigration after `t0` truncates `clock['end']` to the exit date. All verified directly.

Calendar/age boundaries (my test `test_o11`). Leap-day birthdays map to 28 February in non-leap years and to 29 February in leap years (G3); `age_at` is exact on the birthday and one day before; completed ages 9 and 17 are **inclusive** and one day outside on either side is excluded; `first_school_year` is the first full 1 Aug–31 Jul year *strictly after* `t0` (31 Jul → same year, 1 Aug → next year); `reading_theta` targets grade 6 for baseline 4/5 and 8 for 6/7; `danish_grade` targets grade 9 with the D5 "baseline grade 9 uses the following year, descriptions only" rule and `grades_for('danish_grade') = (4,…,8)` for the causal slot.

Duplicates and joins (my test `test_o12`). Byte-identical duplicates collapse; conflicting same-date scores set `exposure_conflict`, blank the score, force `category='unknown'` and drop the child from `causal` (D1); conflicting dates of birth across BEF snapshots raise `SourceBoundary`; `unique()` distinguishes a missing join key (`ContractError`) from a conflicting duplicate (`SourceBoundary`). Diagnosis expansion is `validate='many_to_one'` and collapsed on `(PNR,date,code)` so expanded rows can never be counted as contacts.

Exposure assignment. `Z = 1[x  0]` with `x = SCORE - c(grade)` and `c = {4:66, 5:70, 6:73, 7:77, 8:79, 9:81}` — the I1 upper red thresholds for grades 4–9. Inclusive assignment at zero is preserved through the `r = -x` adapter (`rd_operator.grade`: `red = r >= 0`), which is exactly the I3 implementation clarification.

Activation semantics (my test `test_o07`). Fourteen three-valued cases plus six malformed expressions: `NOT` of unknown stays unknown, `NOT` of a known value negates, `unknown AND FALSE = FALSE`, `unknown OR TRUE = TRUE`, `unknown AND TRUE = unknown`, `done` is `False` only for `no_result`/`not_activated` and unknown while pending, an unregistered local key in an activation raises rather than silently evaluating `False`, and every malformed grammar (unknown Atom, `===`, unbalanced parens, a raw p-value condition) raises `ContractError`. The graph is acyclic and the membership is the exact 29-Atom roster (`World.validate_graph`).

Direct dispatch bypasses only outer activation (my test `test_o09`). Running `atom-000201 --dispatch-policy direct` with no predecessor evidence constructs its prerequisites under `local-construction/`, and I confirmed that **no `evidence.json` seal is ever written there** — locally computed prerequisites cannot be laundered into accepted predecessor evidence. The recorded `status.json` keeps the real `activation` string and `dispatch_policy=direct`. Under `activation_respecting` the same inputs give `terminal=pending` with `local_state=None` on the Atom **and** on every endpoint component — unknown stays unknown, it is never closed to false. The shipped `test_17` additionally shows an explicit `no_result` predecessor is never retried (`ContractError`) and is not silently converted.

7. Output, figure and result-slot interfaces

- All **162** unique `[[RESULT:…]]` slots in `paper/paper.md` appear in the `results-map.md` slot table (194 rows: 162 slots + 32 per-Atom dispositions); all 29 Atom IDs and all 24 endpoint keys are narrated.
- Every `prereg/runtime/…` output path named in `results-map.md` is produced by the executor at the same relative path under its action directory (checked mechanically against my own run — see `test_commands`).
- `figures.yaml` binds 7 figures to 47 named inputs; every binding resolves to an actual executor output (`profile.csv`, `endpoints/<key>/descriptive/descriptives.csv`, `.../primary/effects.csv`, `.../robustness/robustness.csv`).
- Every `prereg/runtime/…` path in `results-map.md` was checked mechanically against my own 29-Atom run (`verify_slots.py`): 192 targets, 168 present. The 24 absent ones are all `primary/estimator-components.csv`, correctly not written because every primary was `unestimable` on the 32-per-side fixture — no RD fit ran. On the dense fixture all 24 endpoints have all 7 artifacts, and `estimator-components.csv`, `variance-components.csv` and `effects.csv` carry the complete G2 column sets, with exactly one primary row, `n_left == n_red`, `n_right == n_yellow`, and `interval_alpha [0.05/24, .05, .05, .05]` across the four specifications.
- `figures.smoke` rendered **21 PDFs** (7 figures × generated/missing/partial) with **zero errors** on the small fixture and again on the dense fixture in my own run, and I re-rendered them from *my* pipeline outputs rather than the author's.
- `Writer.component` refuses to attach a scientific state to a non-completed terminal (`reporting.py:60`), and `Writer.finish` refuses an unregistered **Atom-level** local state (`reporting.py:71-72`). See F1 for the one place this guard is missing.
- `export.py` requires an explicit released/suppressed provider decision per file, refuses `components.csv` and non-CSV files, checks the disclosure decision against the sealed content hash, and validates the `correction_status → interpretation_ceiling` mapping one-to-one against `income-provenance/correction.csv`. Suppression blanks every non-metadata column and sets `inference_status=suppressed` while retaining the planned `interval_alpha` — no invented disclosure minimum anywhere.

8. Findings

Two findings, both minor, both confirmed by reproduction, both requiring their own patch.

F2 (minor, confirmed) — a documented absent table is labelled `horizon_boundary`, not `measurement_boundary`

`execution/INPUTS.md` states verbatim:

> An absent `tables` entry means the required runtime input is unavailable, not scientific zero. Documented absence can be represented with `state=absent` and `source_locator`, or `absent_fields` plus `source_locator`. **That yields a measurement boundary.**

It does not, on most endpoints. A `state=absent` entry legitimately carries no `complete_through` (`Inputs.table` checks `state=='absent'` *before* the required-key check, so `state` + `source_locator` is the whole entry). So `Inputs.complete()` returns `False`, and `outcomes.Builder.value:359-361` — and the billing pre-check at `:354` — raise `SourceBoundary('Incomplete nominal <T> horizon', 'D3', 'horizon_boundary')` *before* `Inputs.table()` can raise `SourceBoundary('Documented absent table <T>', locator, 'measurement_boundary')`. The hospital constructor (`outcomes.py:88-123`) and `parent_assessment` (`:350-352`) touch the table first and therefore get it right.

I built exactly the documented absent entry and ran every endpoint family (`scratch/r01/opus/out/absent`, `out/absent2`):

endpoint	absent table	component_state	correct?
loneliness	`UDD_TRIVSEL_STORE_KLASSER`	`horizon_boundary`	
reading_theta	`UDD_NATTEST_GENBEREGNEDE`	`horizon_boundary`	
danish_grade	`UDFK`	`horizon_boundary`	
community_specialist	`SSSY`	`horizon_boundary`	
parent_hours	`BFL`	`horizon_boundary`	
family_resources	`FAIK`	`horizon_boundary`	
education18	`KOTRE`	`horizon_boundary`	
coresidence20	`BEFBOP`	`horizon_boundary`	
total_absence	`UDD_FOLKESKOLE_FRAVAER_STIL`	`measurement_boundary`	
depressive_encounter	`LPR_ADM`	`measurement_boundary`	
parent_assessment	`UDD_ORDBLINDETEST`	`measurement_boundary`	

The descriptive path shares `Builder.value` and behaves identically (verified: `loneliness` and `education18` → `horizon_boundary`; `parent_assessment` → `measurement_boundary`).

This is what carries the verdict. It is not merely a cosmetic mislabel:

- I3 requires *"At runtime distinguish confirmed field absence from an unresolved dictionary and from operational failure."*
- `results-map.md` §Universal rules requires *"Evidence-backed measurement or horizon boundaries receive their exact names."*
- It is **internally inconsistent** — the same manifest state yields two different registered keys depending on which constructor happens to reach the table first. That makes it an ordering accident rather than a design choice.
- A documented absent table is a realistic runtime condition for this study (§9 lists several unresolved deliveries), so this fires on the ordinary path, not an exotic one.

Impact is **non-numerical**: both keys are registered endpoint regions, both aggregate to `boundary` at the Atom root, `inference_status` stays `unavailable`, and every estimate/limit is NA. Only the recorded disposition name and reason are wrong — which is exactly what the manuscript and the Molecule narrate.

Requested fix (narrow, one place): in `outcomes.Builder.value`, raise the documented-absence boundary before the completeness attestation. The loop

at `outcomes.py:359-361` already special-cases a table missing from the manifest (`OperationalError`); add a `state == 'absent'` check right there (and at the `:354` billing pre-check) and raise the same `SourceBoundary(..., 'measurement_boundary')` that `Inputs.table()` raises. **Do not** put this inside `Inputs.complete()` — `complete()` is also called from `Observation.clock` (VNDS/DOD) and from the hospital-era loop in `value`, and making it raise would change behaviour at those sites too. No estimator, threshold, cohort or protocol changes.

Requested regression test: for one endpoint per affected family (survey, reading, teacher, billing, hours, family income, education, address), replace that family's table entry with exactly `{"state": "absent", "source_locator": "..."}` and assert the primary **and** descriptive `component_state` is `measurement_boundary` with a reason naming the documented absence — and that `total_absence`, `depressive_encounter` and `parent_assessment`, which already behave correctly, still do. My reproduction can be lifted directly.

F1 (minor, confirmed) — `data_gap` leaks into components that do not register it

`cohort.Population.retained` raises `SourceBoundary(..., 'atoms/atom-000001.md verdict data_gap', 'data_gap')` (`execution/cohort.py:101`) when the delivered assessment dictionary denies national-test identity or assessment-date semantics. `data_gap` is a verdict key of **atom-000001 only**. `run.execute:88-89` already clamps an out-of-vocabulary state at the Atom root (`if s not in {v['key'] for v in world.atoms[atom]['verdicts']}: s='otherwise' …`), but there is no equivalent guard where component states are written (`analysis.py:148-150`, `analysis.py:370`, `diagnostics.py:164`).

Reproduced (`scratch/r01/opus/out/datagap`, one dictionary flag changed to `national_test: false`, direct dispatch):

```
atom-000101 root: completed otherwise
   endpoints/loneliness/descriptive   state=data_gap   (declared:
   ↪  described|horizon_boundary|measurement_boundary|otherwise)
atom-000201 root: completed otherwise
   endpoints/loneliness/primary       state=data_gap   (declared:
   ↪  measurement_boundary|horizon_boundary|selection_limited|increase|decre⌋
   ↪  ase|uncertain|otherwise)
   endpoints/loneliness/ascertainment state=data_gap   (declared: differentia⌋
   ↪  l|structural_complete|constant_observed|not_flagged|boundary|otherwise)
atom-000501 root: completed otherwise
   support                            state=data_gap   (declared:
   ↪  discrete|continuous|otherwise)
```

Impact is **narrow and non-numerical**: the Atom root state is still a registered key, `inference_status` stays `unavailable/descriptive`, and every estimate/limit is NA — nothing is fabricated and no direction is implied. But `components.csv` / component `judgment.json` then carry a local key outside the component's registered ordered regions, which contradicts each protocol's "Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive" and the package contract's

rule that local keys come from the registered partition. It is only reachable under `--dispatch-policy direct`, because under `activation_respecting` those Atoms would be `not_activated`.

Requested fix (narrow): apply the same clamp already used at the Atom root to component writes — map a state that is not among that component's registered region keys to the component's residual key (`otherwise`, or `boundary` for ascertainment components, which is what the code already does for `measurement_boundary`/`horizon_boundary`). Keep the exact original reason string so the `data_gap` origin remains auditable.

Requested regression test: add a case to `run_tests.py` that builds inputs with `assessment.national_test = false`, runs `atom-000101`, `atom-000201` and `atom-000501` with `--dispatch-policy direct`, and asserts for every row of `components.csv` that `component_state` is either empty or a member of that component's declared `- key:` list parsed from the Atom protocol. (My `opus_checks.py` reproduction can be lifted directly.)

Non-findings I explicitly checked and rejected

(Recorded so a round-2 reviewer does not re-litigate them.)

- **Untested `pandas` grouper alignment** at `analysis.py:346` (`f[f.t0.dt.year>=2021].groupby([f.t0.dt.year,'category'])` uses the *unfiltered* year Series). I verified on `pandas 2.2.3` that the Series grouper is aligned by index, and I exercised the whole 2021+ treatment-date audit branch end-to-end (`test_o14`) with both `treatment_date_verified` false (→ `otherwise`, `treatment_date_mean` all NA) and true (→ `described`, `calendar_year=2021`). **Correct — but see "untested components": the shipped fixture has no index date after 2016, so no author test reaches this branch.**
- **Cluster bootstrap** — I re-derived the 1,999-replicate cluster-sum/count bootstrap with seed 20150905 outside the code and matched `describe`'s percentile limits to 12 decimals, confirmed row-order invariance, and confirmed that <30 family components or unvalidated clustering keeps the level description while suppressing only the interval (I3).
- **Bonferroni denominators** stay 24/48/6 regardless of which endpoints fail — they are fixed defaults on `pooled`, not derived from surviving slots.
- `terminal(atom) == "pending"` can never evaluate true (it returns unknown). Not a defect: the only `terminal(...)` comparison in all 29 activations is `terminal(atom-000001) == "no_result"`.

9. Unresolved source limits (numerical results that remain unavailable)

These are registered boundaries, not engineering failures. **No numerical result of this study exists**, and none can exist until the Danish runtime supplies the following. Each is scoped to its own target; independently supported siblings are retained.

1. Assessment score scale, category dictionary, assessment-grade crosswalk and retention/approval history (D1/D2; atom-000001 `limited` vs `ready`, atom-000002 mapping/retention).
2. June-2016 questionnaire item wording crosswalked to Q9/Q10/Q11/Q33 and its numeric label map (D4; all survey endpoints and `sibling_belonging`).
3. Absence month/year units, expected enrollment-month roster and multi-school non-overlap (D2/D5).
4. Reading construct/schedule/FAG/FAGID/NORM/GENBEREGNET vintage and the common calibration for every primary stratum (D5/D9). Unknown calibration stops only the pooled reading primary.
5. Year-specific final-teacher form and complete Danish discipline roster, including 2020 (D5).
6. Hospital migration direction codes, contact/role dictionaries, the LPR2→LPR3 handover date and the exact `HONUGE` encoding (D3/D6).
7. The optional 2021+ `BEHANDLINGSDATO` treatment-date audit: implemented but `STOP_UNRESOLVED_SOURCE` absent a verified vintage **and** a source-supported allocation of net fee-cell corrections to dates. The main billing-week endpoint is fully implemented and does not depend on it.
8. Baseline parent-role provenance, disjoint annual BFL delivery units, actual December family linkage, and the exact income correction binding (D7/D9/D10).
9. Dated DISCED-15 UDD/HFAUDD crosswalk, enrollment-interval semantics and unique address coverage (D8).
10. Comprehensive support receipt / OBU / unaided literacy — a registered measurement boundary (atom-000011; G4), not an omitted endpoint.
11. Runtime mounts, provider dictionaries, extraction permissions and disclosure clearance: none available. Every execution in this review used clearly labelled synthetic fixtures written outside the World.

10. My own test bugs, corrected

For transparency: my first `opus_checks.py` pass reported 4 problems, of which **three were my own test-design errors**, not code defects — an rdrobust design whose 0.25 grid left fewer than 10 unique positive-kernel values inside the `h=2.5` window (the code was correctly enforcing I3's own support rule); a mis-specified "just over 17" birth date that was in fact still 17 on the index date; and a Molecule membership tamper written at 4-space indentation when the file uses 2, so no tamper was actually applied. The fourth surfaced F2. After correcting my three bugs and recording F2's actual behaviour, the re-run (`--tests test_o02,test_o03,test_o11,test_o18`) gives `Ran 4 tests in 82.119s - OK`. Net: **19/19 reviewer checks pass**.

11. Untested components / limits of this review

- **Publication rendering** was not validated: `figures.smoke` passes `style_dir=None`, so all previews use the local DejaVu font, not the publication Helvetica Neue style directory. Export dimensions were exercised only at `width_mm=130.7`.

- **Scale.** Every constructor is an in-memory `pandas` implementation exercised on 2,000 synthetic rows. No full-register join, memory or runtime behaviour was benchmarked.
- **LaTeX/PDF rebuild** of `paper.tex` / `prereg.tex` was not attempted; those are host-compiled derived views and byte-identical to the frozen source.
- **`compose.py` under partially failed evidence**: I ran the reader over a fully completed 29-Atom evidence set; `health_pattern`'s `pending` / `not_activated` branches are covered by the shipped `test_14` and by the frozen `decision_rules.py`, but I did not construct every pair-qualification permutation myself.
- **`export.py`** was exercised through the shipped `test_18` (released + suppressed + a deliberately contradictory income ceiling) and not extended by me.
- **The 2021+ treatment-date audit branch** (`analysis.py:343-358`) is not reached by any shipped test because `synthetic.make_fixture` dates every index at 2015-04-15; it is now covered by my `test_o14` only.
- **R availability.** `rdrobust 4.0.0` and `rddensity 3.0` are absent from the shared installation (`rdrobust 3.0.0` present, `rddensity` absent). I did not install or modify the shared R environment; I supplied the hash-verified CRAN source archives to the runner as the code's own documented mechanism.
- No real data, no prior empirical session, no QGPU, no commit/push/release, and no subagents were used. All artifacts I produced live in `scratch/r01/opus/` and none were written into the World.

r02 / opus.md

Independent adversarial reference-code review — Opus, round 2

Verdict: revise — one narrow, reproducible registered-key inconsistency with a ready regression test. Everything else I exercised is faithful, and both round-1 Opus findings plus all seven round-1 Codex findings are confirmed fixed by my own independent counterexamples, not by the author's tests.

This is an engineering and source-fidelity judgment on the exact `v002/world` snapshot. It is **not** scientific acceptance of the user-frozen draft, not a replication, and not evidence of Danish data access. **No empirical result of this study exists or was produced.** Every number in this review comes from clearly labelled synthetic fixtures written outside the World, under `scratch/r02/opus/`.

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1. What I did

- Re-read `tools/prereg-lane/AGENTS.md`, the complete `predata-engineering` and `preregistration-package` skills with `package-contract.md`, and the frozen `adaptive-preregistration` mode skill and `references/foundations.md` (`prereg/manifest.yaml: mode: adaptive`). This package has no

`prereg/replication/` directory and is not a replica, so `paper-to-replication` does not apply; I confirmed that from the World tree.

- Read every one of the 29 Atom registrations (question, tables, activation, ordered verdict regions, component sections and protocol bodies), the whole Molecule registration and its interpretation rules, `data-contract.md`, `identification.md`, `governance.md`, `epistemic-graph.yaml`, `paper/results-map.md`, `paper/figures.yaml`, `paper/endpoint-index.json`, the frozen `prereg/code/rd_operator.py` and `decision_rules.py`, the frozen figure modules and `_plot_helpers.py`, and all 22 files of `prereg/execution/` plus `prereg/engineering/`.
- Diffed `v001/world` against `v002/world` line by line to isolate exactly what the author changed in response to round 1, then attacked each change.
- Ran the complete advertised synthetic suite, re-ran my own 19 round-1 adversarial checks against `v002`, and wrote 11 **new** round-2 counterexamples aimed specifically at the round-2 fixes.
- Verified source fidelity, registration/material/execution identity, paper slot and figure bindings against actual reference-code outputs.

Everything ran from a **copied action directory** against the **read-only World**, with the hash-pinned CRAN sources supplied through the code's own documented `engines.source_archives` mechanism. Nothing was installed, and no shared environment was replaced.

Headline numbers. The complete advertised suite passes **30/30 in 1099.9 s** (`out/suite-rw/test-summary.json`, `passed: true`) once the pinned archives are supplied and the action copy is writable — including the six tests (04/09/15/17/19/21) that fail for the controller host, which confirms the host's round-2 `revise` is the missing R engines and nothing else. My own 11 round-2 counterexamples run in 100.4 s with **10 passing and 1 failing**; the single failure *is* the finding below. My 19 round-1 checks re-run **19/19** against `v002` after updating the one assertion that had recorded the round-1 bug.

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2. The finding

F1 (minor, carries the verdict) — the same component, same condition, two different registered keys

`relatives` is a registered internal component of `atom-000010` **and** of `atom-000113`, `atom-000118`, `atom-000213`, `atom-000214`, `atom-000216`, `atom-000217`, `atom-000222`. I compared the region blocks programmatically: the `usable` and `boundary` region/says text is **byte-identical** across `atom-000010`, `atom-000113` and `atom-000118`.

Two different modules write that component and they disagree:

- `prereg/execution/diagnostics.py:141` (`cohort_experiment`, atom-000010): `s,t,r=source_disposition(e); writer.component('relatives',s,...)` —

the raw `measurement_boundary` is not a registered key of `relatives`, so `reporting.Writer.component` clamps it to **`otherwise`**.

- `prereg/execution/analysis.py:444` (`ancillary`, the family/adult Atoms): `writer.component('relatives','boundary' if s=='measurement_boundary' else s,...)` — the same upstream state is hard-mapped to **`boundary`**.

Reproduced end to end (`out/relatives`, and `test_p11` in `opus_r02_checks.py`, 2.6 s):

manifest condition	atom-000010 `relatives`	atom-000113	atom-000118
`UDD_ORDBLINDETES` documented absent	`otherwise` / completed	`boundary` / completed	`boundary` / completed
`BEF` documented absent	`otherwise` / completed	`boundary` / completed	`boundary` / completed
`population` dictionary `state: incompatible`	`otherwise` / completed	`boundary` / completed	`boundary` / completed
`BEF` missing from the manifest (operational)	`None` / no_result	`None` / no_result	`None` / no_result

The operational row is consistent and correct — that part of the round-1 F02 fix holds. The three scientific-boundary rows are not: for one and the same input manifest and one and the same frozen region text, at most one of `otherwise` and `boundary` can be the registered first-matching region, and which one is recorded is decided by **which module caught the exception**, not by evidence.

I deliberately do not adjudicate which key is correct. The `boundary` region reads "Documentation establishes no dated parental linkage or incompatible key classes, so no baseline family target can be constructed"; the `otherwise` region is the exhaustive catch-all. Choosing between them for an absent *index* table versus an absent *BEF* table is a reading of the frozen protocol that belongs to the author, not to me. What I can establish is that the code currently gives both answers for the same evidence.

Impact is **non-numerical**. Every estimate, count and limit stays NA in both branches, both keys are registered members of the component's own partition, and no statistical null or equivalence is created. But `components.csv` and `judgment.json` are what the Molecule composition rules and the manuscript narrate, and this is the same class of defect as my round-1 F2 (a wrong choice *among* registered keys, decided by an implementation accident rather than by the protocol).

Requested fix (narrow, no protocol change): route both call sites through one shared helper that decides the `relatives` key from the cause, and state in `README.md` which registered region a documented-absent index table versus a documented-absent parental-linkage source matches. Keep the existing operational `no_result` behaviour and the `upstream_state` audit field untouched.

Requested regression: the failing case is already written — `scratch/r02/opus/opus_r02_checks.py::test_p11_same_component_same_condition_same_registered_key` asserts that `atom-000010`, `atom-000113` and `atom-000118` report the same `relatives` key under the same manifest, after first asserting their registered region lists are equal. Lift it into `revision_checks.py` as-is.

Related, explicitly NOT adjudicated and NOT part of the requested fix — do not patch these on my say-so; they are recorded only as context for deciding F1. `diagnostics.py:95` (`profile`) and `diagnostics.py:113` (`reach`) pass a raw `measurement_boundary` through the same generic clamp to `otherwise`, even though both components register a `boundary` key. Their region texts are much more specific ("a verified empty eligible retained cohort or incompatible required dates"; "no registered follow-up horizon can be defined") and I cannot rule on them without supplying a scientific reading the protocol does not state. I record the behaviour so the author can decide it together with F1, not as a separate defect claim.

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3. Round-1 findings: independently confirmed fixed

I re-verified every round-1 finding with my own counterexamples rather than the author's tests.

round-1 finding	my independent verification	result
Opus F2 — documented absence reported as `horizon_boundary`	My r01 `test_o18`, which recorded the buggy behaviour, now fails on `horizon_boundary` and passes once flipped to `measurement_boundary`. My `test_p01` runs six **whole Atoms** (000101/000109/000113/000118 descriptive, 000201/000211 causal) end to end with a documented-absent table and asserts `measurement_boundary` plus the exact reason on every affected primary/descriptive component, and that no outcome number is emitted.	fixed

round-1 finding	my independent verification	result
Opus F1 — `data_gap` leaked into components that do not register it	`test_p02` runs **all 29 Atoms** with `assessment.national_test=false` under direct dispatch and asserts, against a reviewer-side protocol parser, that every `component_state` is in that component's own frozen region list, that no component CSV retains `data_gap` outside a component that registers it, and that at least one clamp actually fired with `upstream_state` preserved. atom-000001 correctly keeps its registered `data_gap`.	fixed
Codex F01 — empty delivery becomes an observed zero	`test_p03` sweeps **every** table in the manifest with `slices: []` and asserts `Inputs.delivery`/`Inputs.table` raise `OperationalError`; then runs four Atoms end to end and asserts every stratum with `n_eligible > 0` is `no_result` with NA estimate, NA `n_observed` and NA `local_state`. Only genuinely empty strata carry an arithmetic zero count, which is correct.	fixed

round-1 finding	my independent verification	result
Codex F02 — operational input loss becomes a scientific state	`test_p04` sweeps 11 atom/table/endpoint triples (survey, absence, reading, teacher, billing, hospital, jobs, family income, education, attainment, address) with the manifest entry removed and asserts `terminal == no_result` and `local_state is None`, never a boundary. `test_p11`'s `missing-bef` row confirms the same for the shared cohort path.	fixed
Codex F03 — mixed exit/death order discarded	`test_p05` is a **hand oracle** over a 12-point grid I wrote from D3 and the Atom text alone — including events at `t0`, on the nominal end, after the cap, and both orders and the tie — and independently recomputes `end`, `death`, `emigration` and `first_stop_type` before comparing. Emigration-then-death gives `emigration` with `undefined = 0`; death-then-emigration and a same-day tie give `death` with `undefined = 1`.	fixed

round-1 finding	my independent verification	result
Codex F04 — grade early failure drops components	`test_p06` runs **all six** grade Atoms with the school source removed and asserts the exact five-component roster, `support` = no_result, `density`/`balance`/`classification` = `not_activated` with empty state and their named tables present, and that the root is never `eligible_sharp`/`eligible_nonsharp`. It also runs the doubly-degraded case. The `otherwise`/completed root is protocol-faithful: atom-000501 states "When no scientific component completes because execution fails, set terminal no_result … Otherwise aggregate only by the ordered registered regions", and `not_activated` is the protocol's own word ("their numerical fits are internally not_activated for that exact reason").	fixed

round-1 finding	my independent verification	result
Codex F05 — incomplete component artifact contract	`test_p07` walks every component of five runs spanning success, missing input, documented absence, outer `pending` and a documentary Atom, asserting `judgment.json`, `status.json`, `audit.json` and `diagnostics.csv` everywhere; `effects.csv`+`exits.csv`+`scope.json` for primaries; `ascertainment.csv`, `robustness.csv`, `descriptives.csv`, `support/density/balance/classification.csv`, `correction.csv`; that every `audit['outputs']` digest matches the file on disk; that each component audit binds the World `execution_identity` and `registration_identity` and the run's `input_identity`; and that no non-completed terminal carries a scientific state. `test_p10` repeats the roster/artifact check on the outer non-activation path for four Atoms.	fixed

round-1 finding	my independent verification	result
Codex F06 — pre-launch code substitution accepted	`test_p08`: byte-identical relocation runs (exit 0); a one-character cutoff change (`4:66.`→`4:65.`) in the copied action directory is rejected with exit 2 and `Execution source differs from reviewed World anchor` **before any output directory is created**; a whitespace-only edit is rejected; adding an unreviewed `.py` module to the action layout is rejected; editing the World copy's execution source without the anchor is rejected.	fixed
Codex F07 — native Atom id not bound	`test_p09`: appending a realized result body to `atoms/atom-000001.md` and a current-interpretation paragraph to the Molecule leaves `registration_identity` unchanged; changing the Atom `id`, the Molecule `id`, the activation expression, a verdict key, the membership roster, or adding an extra Atom file are each rejected with `ContractError`. My r01 `test_o02` (eight mutations) and `test_o08` (eight predecessor-evidence forgeries) also still pass.	fixed

4. Per-Atom coverage

All 29 Atoms are covered. Every Atom has a real entry point in `prereg/execution/README.md` with command, function/files, required inputs, outputs, tests and limits; none is a wrapper that only reports missing inputs.

Atom(s)	implementation	how I exercised it this round
atom-000001	`diagnostics.assessment`	full run in `test_p02`; registered `data_gap` retained; identity mutations in `test_p09` target this Atom's file
atom-000002	`diagnostics.initial_margin`	full run in `test_p02`; `test_p08` uses it as the CLI subject for all five source-substitution cases
atom-000010	`diagnostics.profile_reach`	full run in `test_p02`; **F1 reproduced here** (`test_p11`); `profile.csv` 12 cohort/category rows verified through figure1
atom-000011	`diagnostics.service`	full run in `test_p02` and `test_p07`; documentary boundary, four registered diagnostics rows, no support/OBU estimate invented
atom-000101	`analysis.descriptive_endpoint` ×8	`test_p01` (absent survey table), `test_p03` (empty slices), `test_p04` (four tables removed), `test_p07` (success path), `test_p10` (pending roster), `test_p02`
atom-000109	×4 care endpoints	`test_p01` (absent SSSY), `test_p03`, `test_p04` (SSSY and LPR_ADM), `test_p07` (missing SSSY), `test_p02`

Atom(s)	implementation	how I exercised it this round
atom-000113	×6 family endpoints + 3 internal components	`test_p01` (absent BFL), `test_p03`, `test_p04` (BFL, FAIK), `test_p11` (**F1**), figure-interface probes, `test_p02`
atom-000118	×6 adulthood endpoints + relatives	`test_p01` (absent KOTRE), `test_p03`, `test_p04` (KOTRE, UDDF, BEFBOP), `test_p11` (**F1**), `test_p02`
atom-000201, 000202, 000205, 000207, 000208	`analysis.endpoint_policy` school family	`test_p01`/`test_p07` on 000201; `test_p02` on all; dense numerical paths and all 96 specification rows via the author suite's `test_15`, which I ran; `test_p10` on 000201
atom-000209, 000211	care causal	`test_p01`/`test_p02` on 000211; `test_p10` on 000209; hospital-era component checked in `test_p02`
atom-000213, 000214, 000215, 000216, 000217	family causal	`test_p02` on all; `relatives` component divergence (**F1**) applies to 000213/000214/000216/000217/000222 through `analysis.ancillary`
atom-000218, 000220, 000222	adulthood causal	`test_p02` on all; income-provenance and relatives components checked

Atom(s)	implementation	how I exercised it this round
atom-000501–000506	`diagnostics.grade_experiment`	`test_p06` runs **all six** with the school source removed and asserts the five-component roster, terminals and named tables; `test_p02` and `test_p10` on 000501; the author suite's `test_09` reaches `eligible_sharp` on all six with the pinned R engines

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5. Estimator and inferential fidelity

Re-run this round against `v002` and all passing:

- **Independent pinned-R oracle** on reviewer-chosen designs with unequal sides, mass points and `x = 0` (`test_o03`) — conventional/corrected contrasts and HC0 variance agree with `rdrobust 4.0.0` to $<$ 1e-13 against a 1e-8 requirement.
- **Algebraic equivalent-kernel identities** for the local-linear/quadratic bias-corrected operator (`test_o04`).
- **Hand-built multiway cluster covariance** with its school/family/intersection gates and finite-cluster factors (`test_o05`), plus an independent cluster-bootstrap replication (`test_o13`).
- **Independent recomputation of every registered Bonferroni critical value** from `se`/`df` (`test_o06`), and the fixed 24/48/6 slot allocations.
- **`aggregate_policy` vs the frozen ordered regions**: I checked `reporting.py:aggregate_policy` line by line against `atom-000201`'s registered regions. sensitive → mixed_direction → directional → uncertain → boundary → restricted → otherwise matches the registered first-match order, including "qualified means valid primary interval/bounds **and** stable own robustness" and "boundary requires **every** endpoint to have an evidenced boundary". I additionally confirmed by execution (`out/boundary`) that a whole-cohort measurement boundary reaches the registered `boundary` key at the root of atom-000101/000109/000113/000118/000201/000211, rather than falling through to `otherwise`.
- **No substitute model exists.** There is no DiD, staggered-treatment, matching, IV, fuzzy-RD ratio, survival or competing-risk estimator anywhere in `prereg/execution`, and no OLS or unclustered-normal fallback. Their absence is fidelity to I1, not an omission; they are not registered components of this package, so I neither demanded nor substitute-tested them.

- **Index date vs event time zero vs later timestamps**, immortal time, leap/age and horizon boundaries, duplicate joins and conflicting keys, and pre-outcome grade weights are covered by my r01 `test_o10`–`test_o12` and `test_o15`, all re-run and passing on `v002`.

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6. Source fidelity and identity

`probe_integrity.py`, executed this round:

- `.controller/source` vs `v002/world`: **zero** byte differences on shared files; the World adds only `prereg/engineering/` (3 files) and `prereg/execution/` (22 files). No native Atom, Molecule, manifest, paper or frozen-code byte changed.
- `authority.json` material **148/148** verified; `manifest.yaml` files **146/146** verified and its own hash equals the authority pin; `CHECKSUMS.sha256` **177/177** verified; `engineering/verification.json` `implementation_sources` **19/19** verified.
- `engineering/execution-identity.json` matches the World's execution tree (19 `.py`/`.R` files), matches `authority.json`'s hash, and is self-consistent: `execution_identity = 87fca9793af1abefb4538dd61d1ed6db72e54390c2d23e7790a838e771ce7a3a`. Registration identity `906de9c5…bf90d5`, material identity `6037edf3…8e2215`.
- **Trust-root limitation, verified rather than assumed.** The anchor is deliberately outside `CHECKSUMS/authority.json/manifest.yaml`. I built a World whose execution source *and* anchor were rewritten consistently; it runs, but its recorded `execution_identity` changes (`b44666eb…`), so the substitution is detectable by comparing against the reviewed value, and predecessor seals reject any mixing because `load_evidence` now binds `execution_identity` (`registration.py:212-217`). `README.md` states this assumption explicitly ("a trusted launcher and protected World"). I consider that the correct design and an honest disclosure, not a defect.

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7. Paper slots and figure interfaces, against actual outputs

- **162/162** `[[RESULT:…]]` slots in `paper/paper.md` + `figures.yaml` have a `results-map.md` row (195 map rows = 162 slots + per-Atom dispositions).
- **73/73** `figures.yaml` input bindings resolve to real executor outputs in my own 29-Atom run.
- **168/192** `results-map` runtime targets are present on the sparse 32-per-side fixture. The 24 absent ones are all `primary/estimator-components.csv`, correctly not written because no RD fit ran at that sample size. On the dense fixture all **192** causal artifacts (24 endpoints × effects/scope/diagnostics/ exits/estimator-components/variance-components/robustness/ascertainment) are present and the dense figure-interface report has zero errors.
- **Figure renders.** 19 of 21 render from a pending-atom tree; the two failures are the disclosed Figure 4 limitation (below).

8. Unresolved limits and things I did not test

Numerical results that remain unavailable, and why. *Every* numerical result of this study. No Danish mount, provider dictionary, extraction permission or disclosure clearance exists or was attempted. All 24 endpoints, all six grade diagnostics, all descriptive strata, every figure and every manuscript slot are empty by design. The frozen documentary gaps below are faithfully *blocked*: the code stops at `STOP_UNRESOLVED_SOURCE` or a registered boundary and substitutes no default.

- D1/D2 assessment score scale, category dictionary, assessment-grade crosswalk, retention/approval history — gates atom-000001 `ready/limited` and atom-000002.
- D4 June-2016 questionnaire exact item wording and numeric label map for Q9/Q10/Q11/Q33 — each absent or incompatible item has its own boundary.
- D2/D5 absence month/year units, expected enrollment-month roster, multi-school non-overlap. A missing month is never zero attendance.
- D5/D9 reading construct, schedule, FAG/FAGID/NORM/GENBEREGNET vintage and the common calibration — stops only the pooled reading primary.
- D5 year-specific final-teacher form and complete Danish discipline roster including 2020 conditions.
- D3/D6 migration direction codes, hospital contact/role dictionaries, the LPR2→LPR3 handover date, exact `HONUGE` encoding.
- D6 optional 2021+ `BEHANDLINGSDATO` audit — implemented but `STOP_UNRESOLVED_SOURCE` absent a verified vintage and a source-supported allocation of net fee-cell corrections to dates. The main billing-week endpoint is fully implemented and independent of it.
- D7/D9/D10 baseline parent-role provenance, disjoint annual BFL delivery units, December family linkage, exact income correction binding.
- D8 dated DISCED-15 UDD/HFAUDD crosswalk, enrollment interval semantics, unique address coverage.
- atom-000011 / G4 comprehensive support receipt, intensity, historical OBU codes, unaided literacy — a registered measurement boundary, not an omitted endpoint.

Frozen Figure 4 interface — disclosure is accurate, its scope is one word too narrow. `prereg/paper/figures/_plot_helpers.py:283` requires an all-year `family_resources` row to carry `horizon_boundary`. I reproduced the failure: with `atom-000113` **pending**, `figures.smoke` produces 19 renders and two `ValueError: family_resources: all-year row must be a horizon boundary` errors (figure4 `generated` and `partial`). `README.md` and `verification.json` disclose this. I additionally established two things the disclosure does not say: (a) the identical failure occurs when `atom-000113` is `not_activated` (I built a genuine sealed `atom-000001 = data_gap` predecessor to force false activation), so the wording "a pending atom000113" understates the scope; and (b) the limitation does **not** extend to any delivered-FAIK disposition — with FAIK documented-absent, missing from the manifest, empty-sliced, or short-horizon, figure4 renders cleanly. No code change is licensable here: the renderer is frozen material pinned in `authority.json`, and

relabelling `pending/not_activated` as `horizon_boundary` would be exactly the prohibited conversion of a non-activation into a scientific boundary. One sentence of documentation and a `not_activated` figure-interface case would close it.

Suite portability note (not a finding). `revision_checks.py:176-177` `shutil.copytree`s the execution directory and then writes to `action/cohort.py` without making the copy writable. The World is sealed at mode 0444, so running the documented `run_tests.py --output …` **from the World** (or from a `cp -r` copy of it) errors: `PermissionError: … reviewed-action/cohort.py`. Reproduced twice. The test already chmods the copied *World* files at line 185; the action copy needs the same. The behaviour under test is fine — my `test_p08` verifies the tamper rejection independently — and the author's recorded suite-final is 30/30 from a writable layout, which matches the skill's "writable action workspace". One `chmod` at line 176 would make the suite invocation-independent. I raise it as a robustness note, not as a defect carrying the verdict.

Not tested / not possible:

- Any real-data execution. Not performed, not authorized, not attempted.
- Publication `style_dir` rendering, Helvetica Neue font binding, and any export width other than 130.7 mm.
- Full-register scale, memory and runtime behaviour. Every constructor is an in-memory pandas implementation exercised on 2000 synthetic rows.
- Provider access control, disclosure adjudication and suppression review.
- Source-dictionary adjudication for the frozen unresolved locators above.
- LaTeX rebuild of `paper.tex` / `template/prereg.tex` — host-compiled derived views, verified byte-identical to the frozen source instead.
- DiD, staggered-timing, matching, survival and competing-risk estimators — not registered components of this package.
- `export.py` beyond the author's `test_18`; I added no provider-decision counterexamples of my own this round.
- `compose.py` writes an `audit.json` without `execution_identity` / `material_identity` (`compose.py:112`), unlike the Atom-level audits. The reader produces no evidence consumed by any Atom, so I record this as an observation rather than a defect.

Software. `Rscript 4.1.2` is present; the *installed* `rdrobust` is **3.0.0** (the code pins 4.0.0) and `rddensity` is **absent**. `engines.R` correctly refuses both. I supplied the hash-verified public CRAN sources through the code's own `--rdrobust-source`/`--rddensity-source` mechanism — `rdrobust_4.0.0.tar.gz` = `78f0d6b4bdec4091cc8f42f6f1598704747f95926446d3aaee381ea1d613a36f`, `rddensity_3.0.tar.gz` = `a9c45ab0f6b86ead4d91084db16513d4156b7f59b0472510b63deb5dee6f305d`, both matching `engines.py PINS` exactly. **Nothing was installed and no shared environment was modified.** The round-2 controller host failure (tests 04/09/15/17/19/21, all `OperationalError('Pinned R … failed')`) is an environment artifact of invoking `run_tests.py` without those flags — identical to round 1 — and **not** a code defect. In particular `test_17`'s `'not_activated' != 'pending'`

assertion, which looks unrelated to R, is downstream of the same engine failure; it passes once the archives are supplied.

---

9. What `revise` means here

Two things: (1) route `relatives` through one shared key mapping so `atom-000010` and the `analysis.ancillary` Atoms cannot disagree, and say in `README.md` which registered region each cause matches; (2) lift `test_p11` into `revision_checks.py`. Optionally the one-line `chmod` at `revision_checks.py:176` and one sentence extending the Figure 4 disclosure to `not_activated`.

It is **not** a rejection of the engineering, not a request for new experiments, new research questions or new defaults, and not any change to the frozen protocol, roster, result regions or manifest — `scientific_review_status` remains `not_accepted_current_revision` and is untouched by this review. The round-1 defects are genuinely fixed, the estimator core is faithful under independent oracles, source and registration identity are exact, and the blocked targets are blocked honestly. With F1 patched and its regression added, I would expect to accept.

r03 / opus.md

Round-3 independent engineering review (Opus) — dyslexia reference code

Verdict: revise. One carried, freshly re-verified minor defect (F1) plus one documentation-only minor item (F2). This is an engineering and source-fidelity review of `v003/world`. It is not scientific acceptance of the user-frozen draft, not a replication, not approval of the original protocol, and not evidence of Danish data access. Every number below comes from clearly labelled synthetic fixtures written under `scratch/r03/opus`, outside the World.

0. The decisive fact: nothing changed between round 2 and round 3

`v003/world` is byte-identical to `v002/world`:

```
diff -r v002/world v003/world           -> exit 0, no output
find . -type f | sort | xargs sha256sum | sha256sum
  v002 7a325a73840b4593f455e2c1fc23becd3c399e240cbd556654a70f8d52c11720
  v003 7a325a73840b4593f455e2c1fc23becd3c399e240cbd556654a70f8d52c11720
  ↪  (203 files each)
```

The cause is external, not scientific: `logs/r03-author-a01.log` ends with `ERROR: You've hit your usage limit ... try again at Sep 12th, 2026`, and `.controller/r03-author.json` records `returncode: 1` after 3.5

s. `prereg/engineering/verification.json` still says `round: 2` and its `review_response` still lists only the round-1 findings (codex F01–F07, opus F1–F2).

So **my round-2 F1 is unfixed by non-action, not by a rejected or failed fix**, and this review is explicitly *not* a judgement on an author response — there was none. Severity therefore stays at **minor**; I did not escalate it for being raised twice. Round 2 also had no Codex review at all (`.controller/r02-codex.json` records `FileNotFoundError` for `reviews/r02/codex.yaml`), so there was no second round-2 opinion to challenge. I did not read `reviews/r03/codex.*`.

Because the bytes are identical, re-running my round-1 and round-2 suites would have produced zero new information. I spent that budget on **new** counterexamples instead — export disclosure, the Molecule narration truth table, a full copied-layout CLI sweep, a full CLI evidence chain, and direct-dispatch integrity — and I re-derived F1 from scratch rather than citing round 2.

1. F1 — I tried to dissolve my own finding first

My round-2 F1 rests on one inference: *identical registered region text obliges an identical first match.* The way to kill it would be a differing order, or a region preceding `boundary` whose condition legitimately matches a documented-absent index table. I checked exactly that.

Premise, re-derived this round. My own parser extracted the registered `relatives` block from `atoms/atom-000010.md` (`## relatives`) and `atoms/atom-000113.md` / `atoms/atom-000118.md` (`## Internal relatives`). All three hash to `f6e1ea5fdfb57b2a…` over 674 bytes, with the identical ordered key list `[usable, boundary, otherwise]`. The premise holds.

A stronger, project-wide invariant (new this round). Parsing all 29 protocols through `component_contracts.components_for` gives **110 unique component names and 148 component instances, and no component name has more than one distinct registered region list anywhere in the World.** A shared component name therefore has exactly one registered partition, so "identical registered regions + identical cause identical registered first match" is a *consistency* claim that needs no scientific reading. I deliberately do **not** adjudicate which key is correct.

The violation. `opus_r03_checks.py::test_q01` (8.7 s) runs three Atoms through four manifest conditions under direct dispatch on `v003/world`:

condition	atom-000010	atom-000113	atom-000118
documented-absent `UDD_ORDBLINDETEST`	`otherwise` / completed	`boundary` / completed	`boundary` / completed
(`upstream_state=measurement_boundary`)			
documented-absent `BEF`	`otherwise` / completed	`boundary` / completed	`boundary` / completed
`population` dictionary `state=incompatible`	`otherwise` / completed	`boundary` / completed	`boundary` / completed

condition	atom-000010	atom-000113	atom-000118
BEF removed from manifest (operational)	None / no_result	None / no_result	None / no_result

The last row matters: a genuinely operational loss stays `no_result` in all three, so the round-1 Codex F02 fix is intact and this is not a boundary/operational confusion. The code sites are exactly two:

- `prereg/execution/diagnostics.py:141` — `s,t,r=source_disposition(e); writer.component('relatives',s,…)`, handing the raw upstream state to the generic vocabulary clamp at `prereg/execution/reporting.py:66-67`, which rewrites it to `otherwise`.
- `prereg/execution/analysis.py:444` — `writer.component('relatives','boundary' if s=='measurement_boundary' else s,…)`, mapping it explicitly.

New impact evidence. The divergence is not confined to the component. The Atom **root** `local_state` diverges too — `atom-000010 completed/otherwise` vs `atom-000113/atom-000118 completed/boundary` — under a byte-identical `components.csv` reason string (`Documented absent table UDD_ORDBLINDETEST […]`). `prereg/paper/results-map.md` gives every Atom the disposition "all component statuses retained", so under one cause the manuscript would carry the `otherwise` ceiling ("The evidence is unresolved under the frozen rule … report the exact reason") for atom-000010 and the `boundary` ceiling ("Family outcomes cannot be attributed to the index child under this delivery; child outcomes remain eligible") for the other seven Atoms that register `relatives` (atom-000113, 000118, 000213, 000214, 000216, 000217, 000222).

New evidence that this is an accident, not a registered distinction. The *other* component shared between the same two modules is handled consistently: `income-provenance` maps a `SourceBoundary` to the registered `unresolved` in both `diagnostics.py:167` and `analysis.py:423`; `analysis.py:406` likewise maps an upstream `measurement_boundary` explicitly to the internal per-era label `incompatible`, which `analysis.py:410` resolves to the registered `hospital-era` key `boundary` — the generic clamp is never reached. Only `diagnostics.py`'s profile/reach/relatives path leans on it.

Impact is non-numerical. Every estimate, count and limit stays NA on both branches, and both keys are registered members of the partition. No activation expression anywhere references atom-000010/000113/000118 — grepping all 29 activations yields only atom-000001 (26×), atom-000002 (33×) and atom-000501 (15×) — and the Molecule uses only `done()` for them. Nothing is scheduled differently. What changes is the recorded evidence interface.

Requested fix (narrow). One shared helper mapping an upstream `SourceBoundary` to the `relatives` key implied by its cause, used at both call sites, plus a sentence in `prereg/execution/README.md` stating which registered region a documented-absent index table, a documented-absent parental-linkage source and an incompatible population dictionary each match. Keep the

operational `no_result` behaviour and the `upstream_state` audit field. No estimator, threshold, cohort, protocol, region, roster or manifest change. **Regression test:** lift `test_q01_relatives_same_condition_same_registered_key` into `revision_checks.py` as written.

Explicitly not adjudicated. `diagnostics.py:95` (profile) and `:113` (reach) pass a raw `measurement_boundary` through the same clamp even though both register a `boundary` key, and because `diagnostics.py:143` aggregates the clamped states, atom-000010's registered root `boundary` region is reached only through the genuinely-empty-cohort path. I verified the reachable half by execution: with a real zero-row, checksum-bound `UDD_ORDBLINDETEST` slice, `probe_empty_r03.py` gives profile/reach/relatives all `boundary` and the root `completed/boundary` — the region is live, no zero count is invented, and `relatives` agrees with the other seven Atoms on that non-exception path. Deciding whether a documented-absence or incompatible-dictionary cause matches that region text is a reading of the frozen protocol that belongs to the author. Recorded so it can be settled alongside F1; **not** claimed as a defect and not tested as one.

2. F2 — a documentation-only gap in an otherwise honest disclosure

`prereg/execution/README.md` and `verification.json` disclose that Figure 4's frozen validator (`prereg/paper/figures/_plot_helpers.py:282-283`) rejects an all-year family-income row unless its status is `horizon_boundary`, and they attribute this to "a pending atom000113". `probe_fig_r03.py` shows the wording understates the scope:

- pending `atom-000113` → 19 renders, 2 errors (`figure4` generated and partial): `ValueError: family_resources: all-year row must be a horizon boundary`;
- genuinely `not_activated` `atom-000113`, forced by a **real sealed** `atom-000001=data_gap` predecessor (`completed/data_gap` → `atom-000113` `not_activated/None`) → identical 19 renders, identical 2 errors.

The behaviour is *correct*: the renderer refuses rather than relabelling a non-activation as a scientific boundary, which is what G1/G5 demand, and the exact disposition stays in the CSV/JSON. Only the disclosure is narrow. Fix: one sentence saying "pending **or not_activated**". Do **not** relabel those rows — that would be exactly the prohibited conversion of a non-activation into a boundary. Regression test: the probe above, asserting exactly those two errors and no others. F2 alone would not have blocked acceptance.

3. What I executed this round

check	result
Author suite, pinned R sources supplied	**30 tests, 0 failures, 0 errors, 1083.704 s**, `test-summary.json passed=true`
`test_q01` relatives consistency	**FAILS — this is F1** (8.7 s)
`test_q02` disclosure export, 13 adversarial cases	PASS, 39.4 s
`test_q03` Molecule narration truth table, 19 permutations	PASS, 0.8 s
`test_q05` all-29 copied-layout CLI, unknown activation	PASS, 58.4 s
`test_q06` all-29 CLI chain with sealed evidence + reader	PASS, 668.0 s
`test_q07` direct dispatch on a false activation	PASS, 23.6 s
`probe_fig_r03.py` figure interface, pending vs not_activated	reproduced — F2
`probe_empty_r03.py` empty-cohort boundary reachability	root `completed/boundary`, no invented zero
`probe_integrity_r03.py` four hash layers	all exact
`probe_slots_r03.py` slots and figure bindings	162/162, 73/73, 21 renders, 0 errors

Disclosure export (`export.py`, untested by me in round 2). A released+suppressed export succeeds; the suppressed file retains no non-metadata value (12 rows, every numeric column blank, `status=suppressed`, `disclosure_status=suppressed`) while the released file carries `disclosure_status=released`. `ContractError` is raised for: missing `provider_rule_locator`; missing `review_id`; exporting `components.csv`; a decision that is neither `released` nor `suppressed`; a sha256 that does not match the file; evidence from an Atom outside the verified evidence set; a `../..` path escaping the sealed evidence root; a real CSV inside the root that `evidence.json` does not seal; a destination inside the World (and no directory is created); **numeric values carried on rows whose `metadata_status` is `unavailable`**; and a descriptive `reference_year` disagreeing with `calendar_year`. A wholly consistent unavailable row with all numbers blank is accepted. `income_binding` validates `family_resources` only — which is exactly what G2 and G4 register.

Molecule narration (`decision_rules.py`, written from the storyline and G4, not from the code). `divergent` with one qualified care increase; **still `divergent` when the unused care endpoint is an operational `no_result` and when it is a measurement boundary** — the G4 "an unused care boundary … does not veto a qualified pair" rule, which the author's own `test_14` does not exercise; `concordant` only with three qualified decreases; `otherwise` for partial care plus one decrease; unknown scope disqualifies only its own pair; a known `cross_target`

pair still narrates side by side; `not_activated` on a required primary yields status `not_activated` with `local_state None`; a pending primary and an unknown robustness both stay `pending`; sensitive robustness restricts only its own endpoint; a directional state contradicting its interval raises `ValueError` rather than becoming a boundary; bounds may qualify. `family_pattern` gives `recognition_response` only for a valid **point** interval strictly above zero with stable robustness (bounds, sensitive robustness and a zero-containing interval all give `otherwise`), and `family_response` only with a directional point interval on care **and** `scope_compatible is True`.

Direct dispatch (charge item 5). `atom-000201` with `--dispatch-policy direct` against a fixture that makes `atom-000001 limited`, so the registered activation is genuinely FALSE: `scientific-validity.json` records `value=false`; the locally constructed predecessor lands under `local-construction/` labelled "local construction only; not accepted predecessor evidence"; both primaries reach the registered `otherwise` with `estimate/lower/upper/se/p_raw/p_adjusted` all NA; robustness is `not_activated`; and the **ascertainment component still executes and writes `ascertainment.csv`**, which is the I5 requirement that ascertainment not depend on primary success. Outer scheduling was bypassed; nothing was invented.

Native unknown semantics. In the no-evidence CLI sweep, atom-000001 and atom-000011 complete (activation `TRUE`) and every other Atom is terminal `pending` with `local_state None`. Unknown is never closed to false.

4. Per-Atom coverage

All 29 Atoms were executed twice this round through the **copied action layout** against the read-only `v003/world`: once with no predecessor evidence (`test_q05`) and once as a dependency-ordered chain with accumulating sealed `evidence.json` (`test_q06`). In both sweeps `components.csv` contains exactly the roster parsed from that Atom's frozen protocol, every component directory carries its own `judgment.json` and `audit.json`, no non-completed component carries a scientific state, and no completed state is outside its registered vocabulary. No Atom reached `no_result` in the chain.

Atom	components	chain state	notes from this round
atom-000001	1	completed / `ready`	`data_gap` reachable and exercised as a real sealed predecessor in F2
atom-000002	2	completed / `compatible`	mapping+retention both written; drives 33 activation references

Atom	components	chain state	notes from this round
atom-000010	3	completed / `described`	**F1 site** — `relatives` diverges from the other seven
atom-000011	1	completed / `limited_markers`	registered G4 support boundary; no IV anywhere
atom-000101	9	completed / `described`	includes `reading-calibration`; calibration failure restricts reading only
atom-000109	5	completed / `described`	`hospital-era` resolves an incompatible era pair to the registered `boundary`, not via the clamp
atom-000113	9	completed / `described`	**F1 and F2 site**; `income_family` provenance per year
atom-000118	7	completed / `described`	**F1 site**; `resources20` D9 audit noted as an observation
atom-000201	6	completed / `restricted`	**q07 direct-dispatch site**; health comparison source
atom-000202	6	completed / `restricted`	bounded [0,1] symptom endpoints
atom-000205	6	completed / `restricted`	absence bounded [0,100]; missing month zero (`outcomes.py:167`)
atom-000207	4	completed / `restricted`	reading primary gated on D9 common calibration

Atom	components	chain state	notes from this round
atom-000208	3	completed / `restricted`	causal grades 4–8; the grade-9 “+1 year” shift is descriptive-only, exactly as D5 registers
atom-000209	7	completed / `restricted`	health comparison source
atom-000211	6	completed / `restricted`	whole ISO billing weeks strictly inside the window
atom-000213	5	completed / `restricted`	**F1 site**; family recognition comparison source
atom-000214	4	completed / `restricted`	**F1 site**; sibling estimand established at baseline
atom-000215	4	completed / `restricted`	family-income display contract enforced by `export.income_binding`
atom-000216	7	completed / `restricted`	**F1 site**; BFL disjoint annual units required
atom-000217	4	completed / `restricted`	**F1 site**; point-interval-only recognition route verified
atom-000218	6	completed / `restricted`	material comparison; `birthday18` horizon class
atom-000220	6	completed / `restricted`	`annual20` horizon class
atom-000222	7	completed / `restricted`	**F1 site**; `annual20`; resources20 observation

Atom	components	chain state	notes from this round
atom-000501–000506	5 each	completed / `eligible_sharp`	five-component roster retained; density .01/6, balance .01/48, classification .01/6 with lower > .10

Totals: **110 unique component names, 148 component instances, all written in every run.**

5. Estimator and inferential fidelity (line-by-line against I3/I4/I5)

- Bandwidths: `rdbwselect(..., bwselect="cerrd", kernel="tri", vce="hc0", masspoints="adjust", bwcheck=20, bwrestrict=TRUE, ...)` — `engines.R:18-20` reproduces the I3 argument list exactly; `engines.R:22` additionally asserts common-side bandwidths.
- Cap then refit **once**, never reselect: `inference.py:39` (`min(6.,h)`) and `:58`.
- Support/rank/conditioning gates: 10 unique positive-kernel values per side per window, rank 2/3, cond 1e12 — `rd_operator.py:18-22`.
- Bias correction: `l = a - d·e2'A2`, HC0 residuals from the p=2 fit on the whole union — `rd_operator.py:23-31`.
- Pre-outcome grade weights `N_g/ΣN_g` from `|x| 6` counts before any outcome read — `inference.py:19-24`; a missing required grade raises `Unestimable` rather than renormalising.
- Multiway covariance `V = V_S + V_F - V_SF` with `G/(G-1)` per term, no centering, 30 schools, 30 families, 2 intersections, `df = min(G)-1` — `rd_operator.py:48-72`.
- Multiplicity: primary = .05/24 with `p_adjusted = min(1,24p)`; ascertainment its own 24-slot family; robustness sensitivities two-sided .05; density .01/6; balance .01/48; classification .01/6 with the registered lower-bound > .10. The denominators are constants in code and never shrink when endpoints fail.
- Partial-response bounds: each one-sided limit uses `t.ppf(1- /2, df)` with = .05/24, i.e. exactly I3's = $0.05/(2 \cdot 24)$ one-sided critical value — `inference.py:88, 109-119`. No extra factor of two is invented, and `bounds` rows carry NA estimate/se/p.
- Bandwidth selector choice for partially observed bounded outcomes is the observation indicator, frozen for both extreme functions; all-observed uses the outcome; all-unobserved is `Unestimable('all_unobserved_no_selector')` — `analysis.py:219-224`, matching I3's implementation clarification word for word.
- One-grade identity against the pinned library to 1e-8 (`h<b`, `h>b`, `h=b`, and a `score=0` row) is suite `test_04`, which **passed here** with the hash-verified sources.

`engines.py` refuses a wrong R pin outright rather than falling back; there is no substitute or numerically runnable stand-in estimator anywhere in the package. No DiD, staggered-timing, matching, IV, fuzzy-RD ratio, survival or competing-risk estimator appears — and I1 explicitly registers none of them, so their absence is fidelity, not a gap.

6. Cohort, clock and leakage checks

Index selection is separated from time zero throughout: grade and school come from the **preceding complete month** (`cohort.py:95`, `prior_month`); the parent roster comes from the last **December BEF snapshot strictly before t0** (`cohort.py:63-72`, `links`); horizon eligibility is a baseline calendar rule applied **before** the D7 first-eligible family index (`outcomes.py:400-407` with `first_family`'s fixed `recognition-2015-index-v1` SHA-256 tie); duplicate diagnosis rows are deduplicated on (PNR, date, code) so joins cannot multiply persons; `pooled` refuses a frame with duplicated PNR so repeated uses cannot be counted as clusters. The exit clock records `first_stop_type` and `tied_death_emigration` and I re-confirmed its behaviour through suite `test_03`/`test_26`, both passing. `retained()` keeps the earliest dated record per person and marks same-date score/category conflicts as `exposure_conflict` rather than choosing one.

7. Source identity

layer	result
`v002/world` vs `v003/world`	0 differing files
`.controller/source` vs `v003/world`	0 byte differences on all 178 shared files; 25 World-only files (engineering 3, execution 22)
`.controller/r03-snapshot.json`	203 / 203 match
`prereg/execution/authority.json` material	148 / 148 verified
`prereg/CHECKSUMS.sha256`	177 / 177 verified
`verification.json` `implementation_sources`	19 / 19 verified
execution anchor vs World execution tree	matches, self-consistent (`87fca979…ce7a3a`)

The anchor is deliberately outside CHECKSUMS/authority/manifest and README states the assumption ("a trusted launcher and protected World"). Correct design and honest disclosure, not a defect.

8. The controller's own round-3 `revise` is an environment artifact

`.controller/r03-host.json` records `revise` solely because `run_tests.py` returned 1. `logs/r03-host-run_tests-a01.log` shows 5 failures + 1 error in 460.691 s: tests **04, 09, 15, 17, 19, 21**, every one `OperationalError('Pinned R reference failed; inspect governed engine environment')`. That is byte-for-byte the same failing set as rounds 1 and 2. The installed R is 4.1.2 with rdrobust **3.0.0** (the code pins 4.0.0) and no rddensity; `engines.R` correctly refuses both. Supplying the hash-verified public CRAN sources through the code's own documented `engines.source_archives` mechanism — `rdrobust_4.0.0.tar.gz 78f0d6b4…13a36f` and `rddensity_3.0.tar.gz a9c45ab0…6f305d`, both exactly matching `engines.py` PINS — makes all six pass (30/30 here). **Nothing was installed and no shared environment was replaced.** This should not consume another round.

9. Honest statement of what remains unavailable

No numerical result of this study exists or can exist yet. All 24 causal endpoint slots, all six grade diagnostics, every descriptive stratum, every figure and all 162 manuscript slots are empty. No Danish mount, provider dictionary, extraction permission or disclosure clearance was available or attempted, and nothing was exported. The frozen unresolved source locators (D1–D10, listed in the YAML) each keep an explicit boundary in code rather than a guessed default — I verified the `STOP_UNRESOLVED_SOURCE` raises for the survey item crosswalk, absence months, reading strata, teacher form, HONUGE encoding, BFL reporting units, DISCED-15 crosswalk and income provenance. Two items are recorded as **observations, not findings**, because settling them would require me to supply a scientific reading the protocol does not state: the D9 provenance audit applied to `IND.AEKVIVADISP_13` for `resources20`, and the fact that no Atom protocol cross-references `prereg/execution/README.md` (the only compliant remedy would edit frozen protocol payloads, which is outside what I may request).

`accept` would mean faithful, tested engineering within these explicit limitations — never observed science, protocol approval or replication. With F1 patched and its regression added, and F2's one sentence written, I would expect to accept.

Complete registered Molecule

```
id: molecule-000001
molecule_mode: prereg
molecule_shape: boundary_map
topic: Dyslexia recognition consequences
rating: B-
draft: false
membership:
- atom: atom-000001
  role: supplementary
  description: Can dated retained national dyslexia assessments be
  ↪  distinguished
    from invalid or ambiguous records?
```

```
- atom: atom-000002
  role: supplementary
  description: Does the historical rule define a recoverable
  ↪  initial-assessment
    policy margin in the delivered national-test records?
- atom: atom-000010
  role: secondary
  description: Who appears in retained childhood assessments, which relatives
    are represented, and which life-course horizons can those cohorts reach?
- atom: atom-000011
  role: supplementary
  description: Can this boundary identify support received, adult dyslexia
    instruction or unaided learning?
- atom: atom-000101
  role: secondary
  description: What recorded school experience after assessment can be
  ↪  described,
    and which dimensions remain unobserved?
- atom: atom-000109
  role: secondary
  description: What recorded recorded child care pathways can be described,
    and which dimensions remain unobserved?
- atom: atom-000113
  role: secondary
  description: What recorded family circumstances after assessment can be
    described, and which dimensions remain unobserved?
- atom: atom-000118
  role: secondary
  description: What recorded early-adult circumstances after assessment can
    be described, and which dimensions remain unobserved?
- atom: atom-000201
  role: primary
  description: Does marginal classification change school social experience?
- atom: atom-000202
  role: primary
  description: Does marginal classification change school somatic symptoms?
- atom: atom-000205
  role: primary
  description: Does marginal classification change school attendance?
- atom: atom-000207
  role: primary
  description: Does marginal classification change assessed reading
  ↪  performance?
- atom: atom-000208
  role: primary
  description: Does marginal classification change teacher-assessed danish?
- atom: atom-000209
  role: primary
  description: Does marginal classification change recorded depressive/anxiety
    care?
- atom: atom-000211
  role: primary
  description: Does marginal classification change community care use?
- atom: atom-000213
  role: primary
  description: Does marginal classification change parental recorded care?
- atom: atom-000214
  role: primary
  description: Does marginal classification change sibling school experience?
- atom: atom-000215
```

```
  role: primary
  description: Does marginal classification change household material
  ↪ resources?
- atom: atom-000216
  role: primary
  description: Does marginal classification change parental paid work?
- atom: atom-000217
  role: primary
  description: Does marginal classification change parental recognition
  ↪ response?
- atom: atom-000218
  role: primary
  description: Does marginal classification change educational progression
    and attainment?
- atom: atom-000220
  role: primary
  description: Does marginal classification change early-adult paid work?
- atom: atom-000222
  role: primary
  description: Does marginal classification change early-adult household
  ↪ circumstances?
- atom: atom-000501
  role: supplementary
  description: Can the grade-4 score margin support a credible local
  ↪ classification-policy
    contrast?
- atom: atom-000502
  role: supplementary
  description: Can the grade-5 score margin support a credible local
  ↪ classification-policy
    contrast?
- atom: atom-000503
  role: supplementary
  description: Can the grade-6 score margin support a credible local
  ↪ classification-policy
    contrast?
- atom: atom-000504
  role: supplementary
  description: Can the grade-7 score margin support a credible local
  ↪ classification-policy
    contrast?
- atom: atom-000505
  role: supplementary
  description: Can the grade-8 score margin support a credible local
  ↪ classification-policy
    contrast?
- atom: atom-000506
  role: supplementary
  description: Can the grade-9 score margin support a credible local
  ↪ classification-policy
    contrast?
literature: []
frontier:
  rule: Among children assessed for dyslexia in Denmark, how does marginal
    administrative recognition affect school experience, recorded care, family
    responses and age-eligible life-course circumstances, and which parts
    remain descriptive or unmeasurable?
  avoid: No inherent-dyslexia effect, support-dose IV, universal screening
    effect, mature-child adulthood extrapolation, mediation decomposition
    or manufactured null.
```

```
  directions: []
preregistration:
  mode: adaptive
  question: Among children assessed for dyslexia in Denmark, how does marginal
    administrative recognition affect school experience, recorded care, family
    responses and age-eligible life-course circumstances, and which parts
    remain descriptive or unmeasurable?
  scope: Retained child assessments ages 9-17 during 2015-2024; provisional
    spring-2015 initial grade-specific margin, fixed baseline relatives and
    outcome-specific follow-up capped at 2024. Closed pre-data adaptive graph.
  storyline: |
    One child-family question organizes this World. Begin with assessment
    ↪ composition and life-course reach; establish the retained national-as
    ↪ sessment construct, the historical initial-margin provenance and each
    ↪ required grade margin. Four descriptive experiments remain
    ↪ independent of the causal margin. The 15 policy experiments contain
    ↪ 24 frozen primary endpoint/horizon slots with their ascertainment and
    ↪ robustness. Conditional nonactivation, partial evidence and
    ↪ operational failures remain visible for every member and component.
    ↪ School, symptom, care, relative and early-adult results retain their
    ↪ own scientific meaning and no domain is reduced to wages.

    All interpretation composes restrictions first, then compatible primary
    ↪ and supplementary claims; residual narration enumerates missing scope
    ↪ without overriding surviving evidence. Source component judgments,
    ↪ not a unit's coarse summary label, establish each endpoint direction.
    ↪ Evidence reuse below is exploratory interpretation of already
    ↪ registered outputs, with no model, new target, difference of
    ↪ coefficients, hypothesis test, holdout or additional alpha.
    ↪ Suppressed signs and values cannot be published through narrative.

    Grade summary: read support/support.csv, density/density.csv, balance/bal
    ↪ ance.csv and classification/classification.csv from all six
    ↪ grade-margin units, plus their component/root statuses. Preserve six
    ↪ grade rows and the eight balance slots per grade. A missing or failed
    ↪ grade stays visible; never require all six grades to permit a grades-
    ↪ 4-7 outcome. No second all-grade pass gate exists. grade-summary.csv
    ↪ may contain grade, component, component_state, component_terminal,
    ↪ inference_status, reason and source_path only; it performs no refit.

    HEALTH COMPARISON. Inputs are loneliness from atom-000201 and
    ↪ depressive_encounter/anxiety_stress_encounter from atom-000209, each
    ↪ at its endpoints/<key>/primary, ascertainment and robustness paths.
    ↪ Read one effects row, one primary component judgment/status, one
    ↪ scope record and one robustness judgment/status per endpoint; assert
    ↪ one-to-one exact endpoint/horizon joins. Required primary
    ↪ nonactivation means interpretation_status=not_activated with its
    ↪ trace, never no_result or a scientific null. Unknown required primary
    ↪ or required robustness stays pending. A completed primary in
    ↪ increase/decrease/uncertain/selection_limited requires its internal
    ↪ robustness to finish or terminate no_result; unexpected robustness
    ↪ not_activated is a scheduler-contract error and remains pending.
    ↪ Boundary/otherwise or primary no_result needs no robustness; such
    ↪ expected inactivity permits a partial comparison. These are
    ↪ reader-composition statuses, not new native local states.
```

```
Qualify each endpoint separately: primary increase/decrease, valid
↪  simultaneous point or bounds interval agreeing with its direction,
↪  and its OWN robustness=stable. Point intervals require a finite point
↪  within ordered limits; bounds can omit the point. Primary
↪  selection_limited, uncertain (whether a zero-containing interval or
↪  unestimable), boundary, otherwise or operational no_result cannot
↪  contribute a direction. Sensitive, unresolved or failed robustness
↪  restricts only its own endpoint. Malformed contradictory supplied
↪  values raise an input-contract error; they never become a scientific
↪  boundary. Apply this to governed values before public suppression.

For each loneliness/care pair compare complete verified D10 scope fields:
↪  target_id, eligibility_rule, index_rule, baseline_set_digest,
↪  sorted_required_grades, exact pre-outcome grade-weight
↪  numerator/denominators, observation_cap, horizon_class and
↪  nominal_horizon_rule. TRUE equality means within_target; known
↪  inequality means cross_target with differing fields; unknown metadata
↪  means scope_unresolved and disqualifies only that pair. The
↪  registered loneliness grade4-7/school-year and care grade4-9/730-day
↪  targets differ. No common-population refit is allowed.

Ordered health narration: (1) divergent when a qualified loneliness decre
↪  ase accompanies at least one qualified care increase with known pair
↪  scope. Report ALL qualifying pairs in depressive then anxiety/stress
↪  order. An unused care boundary, selection limitation, uncertainty,
↪  sensitive robustness, no_result or unknown scope does not veto a
↪  qualified pair; state that unused endpoint's exact disposition. (2)
↪  With no divergent pair, concordant requires THREE qualified decreases
↪  and both scopes known. (3) Every other completed combination is
↪  unresolved, not no effect. Known different targets always require
↪  side-by-side cross_target wording, with no latent-health,
↪  detection-share, common-population or mediation conclusion. Partial
↪  care plus a care decrease never establishes concordant.

health-patterns.csv has exactly two reader rows when composition
↪  completes: comparison=loneliness_depressive/
↪  loneliness_anxiety_stress; first_atom,second_atom,first_endpoint,seco
↪  nd_endpoint,first_state,second_state,first_terminal,second_terminal,f
↪  irst_robustness_state,second_robustness_state,first_robustness_termin
↪  al,second_robustness_terminal,first_horizon,second_horizon,first_targ
↪  et_id,second_target_id,first_qualified,second_qualified,pair_qualifie
↪  d,scope_compatible,scope_label,compatibility_reason,pair_pattern,used
↪  _in_synthesis,interpretation_status,interpretation,reason. Boolean
↪  qualification flags, TRUE/FALSE/unknown scope and ordered pair labels
↪  preserve partial evidence. An unrun composition emits only a reader
↪  disposition, not findings.
```

```
  MATERIAL COMPARISON. Pair education18 and attainment20 from atom-000218
  ↪ with wages20 from atom-000220 and resources20 from atom-000222, in
  ↪ that four-pair order. Employee participation and co-residence remain
  ↪ separately narrated outcomes and are not prerequisites. Read each
  ↪ pair's primary/robustness/scope records under its endpoint namespace.
  ↪ Valid zero-containing intervals are still numerical evidence;
  ↪ sensitive robustness remains an explicit restriction. Any
  ↪ selection_limited, boundary, unestimable, no_result, not_activated or
  ↪ pending primary makes that pair unavailable, without erasing other
  ↪ pairs. Scope equality uses the same D10 predicate and additionally
  ↪ the fixed horizon classes birthday18, birthday20 and annual20. Their
  ↪ registered differences imply different_scope; UNKNOWN metadata gives
  ↪ scope_unresolved. Contradictory compatible metadata is rejected,
  ↪ never permission to refit. Preserve all four rows with comparison,
  ↪ first_atom,second_atom,first_endpoint,second_endpoint,first_state,sec⌋
  ↪ ond_state,scope_compatible,compatibility_reason,first_horizon,second_⌋
  ↪ horizon,interpretation_status,interpretation,reason. No
  ↪ within-population divergence, financing, insurance or welfare
  ↪ mechanism follows from side-by-side signs. Resource provenance
  ↪ restrictions attach to each income row.

  FAMILY RECOGNITION COMPARISON. Read parent_assessment from atom-000217
  ↪ and parent_care from atom-000213, including primary, robustness and
  ↪ verified D7/D10 scope records. First, a valid adjusted POINT interval
  ↪ wholly above zero for parent_assessment plus stable own robustness
  ↪ supports recognition_response immediately; do not await care, work,
  ↪ resources or sibling outcomes. This intentionally retains the
  ↪ registered point-interval-only recognition narration: a valid
  ↪ directional bounds result remains a separately reported primary
  ↪ result but does not enter this named comparison. Second, a point
  ↪ interval wholly below zero for assessment with stable robustness
  ↪ permits family_response only when parent care has its own directional
  ↪ adjusted point interval, stable robustness and identical verified bas⌋
  ↪ eline_set_digest, index_rule, parent-roster definition and child730
  ↪ horizon. Otherwise the joint interpretation remains unresolved; a
  ↪ zero-containing assessment interval never becomes a decrease or nonin⌋
  ↪ crease. Neither resolved pattern isolates caregiving or rules out
  ↪ alternative unrecorded recognition. Optional care pending does not
  ↪ disable the early increase route; required nonactivation and unknowns
  ↪ retain their exact reader dispositions. family-patterns.csv records
  ↪ comparison=parent_recognition/parent_care_with_recognition, source
  ↪ endpoint/Atom paths, states, inference_status, robustness_states,
  ↪ scope_compatible, compatibility_reason, interpretation_status,
  ↪ interpretation and reason. No pilot effect is estimated.

  All comparison algorithms are derived implementations of these rules,
  ↪ never a second scientific authority. Status-only and synthetic truth
  ↪ tables test symmetric partial-care cases; sensitive versus stable, se⌋
  ↪ lected, boundary, operationally failed, inactive and unknown inputs;
  ↪ zero-containing intervals with either point sign; discordant/unknown
  ↪ scopes; and early parental recognition with optional care pending. No
  ↪ fixture enters a manuscript slot or accepted plot-ready result.
interpretation:
- kind: restriction
  condition: 'TRUE'
  says: Every claim is limited to its exact endpoint population, horizon,
    measurement and disclosure status. Grade passes do not prove continuity;
    classification is not inherent dyslexia or receipt of support. No
    ↪ equivalence
    or welfare conclusion follows from nonsignificance. Apply all component
```

```
    restrictions even when another endpoint in that Atom is directional.
- kind: restriction
  condition: state(atom-000002) == "selected" OR state(atom-000002) ==
  ↪  "boundary"
    OR state(atom-000002) == "retention_unresolved" OR state(atom-000002)
    == "otherwise"
  says: The initial-margin causal interpretation is not cleared.
  ↪  Independently
    valid descriptive and diagnostic evidence remains reportable.
- kind: restriction
  condition: 'TRUE'
  says: Income known_uncorrected/unresolved rows mean recorded-income proxy
    only, with no intended-resource or welfare interpretation. Unavailable
    metadata permits no numeric narration. Enforce by
    ↪  variable/delivery/reference-year
    even on suppressed cells. Reading calibration failures restrict pooled
    reading only. New hospital-era problems restrict the affected eras only.
    Missing relatives restrict the specific relative outcomes only.
- kind: supplementary
  condition: done(atom-000010)
  says: Report the descriptive experiment Assessment population and reach
    with all prespecified strata and independent unavailable dimensions.
    No causal, population-prevalence or first-diagnosis inference.
- kind: supplementary
  condition: done(atom-000101)
  says: Report the descriptive experiment School experience after assessment
    with all prespecified strata and independent unavailable dimensions.
    No causal, population-prevalence or first-diagnosis inference.
- kind: supplementary
  condition: done(atom-000109)
  says: Report the descriptive experiment Recorded child care pathways with
    all prespecified strata and independent unavailable dimensions. No
    ↪  causal,
    population-prevalence or first-diagnosis inference.
- kind: supplementary
  condition: done(atom-000113)
  says: Report the descriptive experiment Family circumstances after
  ↪  assessment
    with all prespecified strata and independent unavailable dimensions.
    No causal, population-prevalence or first-diagnosis inference.
- kind: supplementary
  condition: done(atom-000118)
  says: Report the descriptive experiment Early-adult circumstances after
    assessment with all prespecified strata and independent unavailable
    dimensions. No causal, population-prevalence or first-diagnosis
    ↪  inference.
- kind: primary
  condition: done(atom-000201)
  says: Report Does marginal classification change school social experience?
    using every endpoint component, interval/bound or boundary,
    ↪  ascertainment,
    and robustness restriction under atom-000201. Unit
    ↪  directional/mixed_direction/sensitive
    states never transfer a sign to another endpoint; unavailable companion
    endpoints stay explicit. This claim composes with other scientific
    ↪  experiments
    without a shared success index.
- kind: primary
  condition: done(atom-000202)
  says: Report Does marginal classification change school somatic symptoms?
```

```
    using every endpoint component, interval/bound or boundary,
    ↪  ascertainment,
    and robustness restriction under atom-000202. Unit
    ↪  directional/mixed_direction/sensitive
    states never transfer a sign to another endpoint; unavailable companion
    endpoints stay explicit. This claim composes with other scientific
    ↪  experiments
    without a shared success index.
- kind: primary
  condition: done(atom-000205)
  says: Report Does marginal classification change school attendance? using
    every endpoint component, interval/bound or boundary, ascertainment,
    and robustness restriction under atom-000205. Unit
    ↪  directional/mixed_direction/sensitive
    states never transfer a sign to another endpoint; unavailable companion
    endpoints stay explicit. This claim composes with other scientific
    ↪  experiments
    without a shared success index.
- kind: primary
  condition: done(atom-000207)
  says: Report Does marginal classification change assessed reading
  ↪  performance?
    using every endpoint component, interval/bound or boundary,
    ↪  ascertainment,
    and robustness restriction under atom-000207. Unit
    ↪  directional/mixed_direction/sensitive
    states never transfer a sign to another endpoint; unavailable companion
    endpoints stay explicit. This claim composes with other scientific
    ↪  experiments
    without a shared success index.
- kind: primary
  condition: done(atom-000208)
  says: Report Does marginal classification change teacher-assessed danish?
    using every endpoint component, interval/bound or boundary,
    ↪  ascertainment,
    and robustness restriction under atom-000208. Unit
    ↪  directional/mixed_direction/sensitive
    states never transfer a sign to another endpoint; unavailable companion
    endpoints stay explicit. This claim composes with other scientific
    ↪  experiments
    without a shared success index.
- kind: primary
  condition: done(atom-000209)
  says: Report Does marginal classification change recorded
  ↪  depressive/anxiety
    care? using every endpoint component, interval/bound or boundary,
    ↪  ascertainment,
    and robustness restriction under atom-000209. Unit
    ↪  directional/mixed_direction/sensitive
    states never transfer a sign to another endpoint; unavailable companion
    endpoints stay explicit. This claim composes with other scientific
    ↪  experiments
    without a shared success index.
- kind: primary
  condition: done(atom-000211)
  says: Report Does marginal classification change community care use? using
    every endpoint component, interval/bound or boundary, ascertainment,
    and robustness restriction under atom-000211. Unit
    ↪  directional/mixed_direction/sensitive
    states never transfer a sign to another endpoint; unavailable companion
```

```
    endpoints stay explicit. This claim composes with other scientific
    ↪ experiments
    without a shared success index.
- kind: primary
  condition: done(atom-000213)
  says: Report Does marginal classification change parental recorded care?
    using every endpoint component, interval/bound or boundary,
    ↪ ascertainment,
    and robustness restriction under atom-000213. Unit
    ↪ directional/mixed_direction/sensitive
    states never transfer a sign to another endpoint; unavailable companion
    endpoints stay explicit. This claim composes with other scientific
    ↪ experiments
    without a shared success index.
- kind: primary
  condition: done(atom-000214)
  says: Report Does marginal classification change sibling school
  ↪ experience?
    using every endpoint component, interval/bound or boundary,
    ↪ ascertainment,
    and robustness restriction under atom-000214. Unit
    ↪ directional/mixed_direction/sensitive
    states never transfer a sign to another endpoint; unavailable companion
    endpoints stay explicit. This claim composes with other scientific
    ↪ experiments
    without a shared success index.
- kind: primary
  condition: done(atom-000215)
  says: Report Does marginal classification change household material
  ↪ resources?
    using every endpoint component, interval/bound or boundary,
    ↪ ascertainment,
    and robustness restriction under atom-000215. Unit
    ↪ directional/mixed_direction/sensitive
    states never transfer a sign to another endpoint; unavailable companion
    endpoints stay explicit. This claim composes with other scientific
    ↪ experiments
    without a shared success index.
- kind: primary
  condition: done(atom-000216)
  says: Report Does marginal classification change parental paid work? using
    every endpoint component, interval/bound or boundary, ascertainment,
    and robustness restriction under atom-000216. Unit
    ↪ directional/mixed_direction/sensitive
    states never transfer a sign to another endpoint; unavailable companion
    endpoints stay explicit. This claim composes with other scientific
    ↪ experiments
    without a shared success index.
- kind: primary
  condition: done(atom-000217)
  says: Report Does marginal classification change parental recognition
    response? using every endpoint component, interval/bound or boundary,
    ascertainment, and robustness restriction under atom-000217. Unit
    ↪ directional/mixed_direction/sensitive
    states never transfer a sign to another endpoint; unavailable companion
    endpoints stay explicit. This claim composes with other scientific
    ↪ experiments
    without a shared success index.
- kind: primary
  condition: done(atom-000218)
```

```
  says: Report Does marginal classification change educational progression
    and attainment? using every endpoint component, interval/bound or
    ↪ boundary,
    ascertainment, and robustness restriction under atom-000218. Unit
    ↪ directional/mixed_direction/sensitive
    states never transfer a sign to another endpoint; unavailable companion
    endpoints stay explicit. This claim composes with other scientific
    ↪ experiments
    without a shared success index.
- kind: primary
  condition: done(atom-000220)
  says: Report Does marginal classification change early-adult paid work?
    using every endpoint component, interval/bound or boundary,
    ↪ ascertainment,
    and robustness restriction under atom-000220. Unit
    ↪ directional/mixed_direction/sensitive
    states never transfer a sign to another endpoint; unavailable companion
    endpoints stay explicit. This claim composes with other scientific
    ↪ experiments
    without a shared success index.
- kind: primary
  condition: done(atom-000222)
  says: Report Does marginal classification change early-adult household
    circumstances? using every endpoint component, interval/bound or
    ↪ boundary,
    ascertainment, and robustness restriction under atom-000222. Unit
    ↪ directional/mixed_direction/sensitive
    states never transfer a sign to another endpoint; unavailable companion
    endpoints stay explicit. This claim composes with other scientific
    ↪ experiments
    without a shared success index.
- kind: supplementary
  condition: (done(atom-000201) OR terminal(atom-000201) == "no_result")
    AND (done(atom-000209) OR terminal(atom-000209) == "no_result")
  says: Apply the registered HEALTH COMPARISON to the exact endpoint
  ↪ components;
    pair qualification retains partial-care knowledge and cross_target
    ↪ limits.
    No new scientific Atom or test is generated.
- kind: supplementary
  condition: done(atom-000217)
  says: Apply the FAMILY RECOGNITION COMPARISON. Its qualified
  ↪ early-recognition
    route can resolve with care pending; uncertain assessment is never
    ↪ nonincrease.
    Report all other family endpoints independently.
- kind: supplementary
  condition: done(atom-000218) OR done(atom-000220) OR done(atom-000222)
  says: Apply the MATERIAL COMPARISON pair by pair to available accepted
    component outputs. Preserve distinct birth/annual horizons and every
    unavailable pair; never pool or refit for common scope.
- kind: residual
  condition: 'TRUE'
  says: Enumerate every current member and internal component as completed,
    bounded, not_activated, pending or operational no_result with exact
    reasons. Report unresolved cross-domain scope without overriding
    ↪ independent
    results. The final argument can remain descriptive, mixed or unresolved;
    no all-study positive/null verdict is inferred.
```

Member Atom registrations and this Molecule payload own the science.

Current interpretation

All current members and their components are registered and pending. No empirical findings exist.

atom-000001: Retained assessment identity

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state, component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions. Population/unit: all allowed national-test records, audited before restriction, then D1 child records. Tables/fields: UDD_ORDBLINDETEST.PNR,DATO,SCORE,TESTRESULTAT,TESTRESULTATNIVEAU,UDDANNELSES
BEF.PNR,FOED_DAG. The ten-field page labels these test fields incompletely. Read the delivery dictionary before values. Assert event date, national-test identity and person linkage; summarize each distinct missing/incompatible field and early-date discrepancy. Apply D1 exact-duplicate and same-date conflict rules. A retained national test is not first lifetime diagnosis. Estimate descriptive fractions of dated child records with interpretable score/category, with family-cluster intervals only if clustering is validated; otherwise counts only. No hypothesis test or multiplicity claim. Output diagnostics.csv: date_valid_fraction, person_link_fraction, score_defined_fraction, category_defined_fraction, earliest_date_conflict_fraction, prelaunch_record_fraction; these are runtime fractions, not presumed values. Synthetic test: two identical rows collapse, conflicting same-day scores become ambiguous, date before birth is excluded. Independent consequence: descriptive chronology remains possible even if SCORE is unavailable.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000001/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Complete registration fields

```
id: atom-000001
topic: Retained assessment identity
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: Can dated retained national dyslexia assessments be distinguished
    from invalid or ambiguous records?
  rationale: 'A consequential shared measurement judgment: whether retained
    dated national assessments identify children for any downstream study.
    Score/category limitations permit dated-record description and do not
    automatically close it. Routine record checks are internal evidence for
    this judgment.'
  assumption: Administrative recognition can affect opportunities, reporting
    and service contact through multiple routes; exact source semantics and
    continuity require evidence, not an estimator label. See literature.md
    and identification.md.
  target_strength: descriptive
  target_shape: comparison
  ratings:
    importance: 4
    novelty: 3
    feasibility: 3
    data_advantage: 4
    informativeness: 0.5
  tables:
  - BEF
```

```
- UDD_ORDBLINDETEST
activation: 'TRUE'
verdicts:
- key: data_gap
  region: Authoritative delivery confirms that PNR, actual assessment DATO
    or national-test identity is absent/incompatible.
  says: No person-indexed assessment cohort under this contract.
- key: ready
  region: Dated person assessment semantics and both SCORE and category
    dictionary are verified; invalid individual records have the
    ↪  prespecified
    disposition.
  says: The retained-event cohort can be constructed; actual first-test
    and causal status remain unresolved.
- key: limited
  region: Dated person assessment semantics are verified but score and/or
    categories are unavailable or unresolved.
  says: Describe retained dated assessments in an unknown-category group;
    do not infer classification or a score margin.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
    negative finding is inferred; report the exact reason.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪  Atoms or activation primitives. Execute every prescribed component
  ↪  that is scientifically eligible, independently of other component
  ↪  signs. Component outputs retain their own local decision, inference
  ↪  and operational status; only the native judgment.json at the Atom
  ↪  root supplies the Atom local state. No component failure can erase
  ↪  completed evidence in another component. When no scientific component
  ↪  completes because execution fails, set terminal no_result with no
  ↪  Atom local state. Otherwise aggregate only by the ordered registered
  ↪  regions and record every component's failure, boundary, unknown or
  ↪  inactive disposition. Pending necessary evidence stays pending; it is
  ↪  never coded as negative evidence. Internal failed work is not
  ↪  automatically retried.
  Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
  ↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
  ↪  definitions. These fix population, dates, table/field dictionaries,
  ↪  code versions, joins, inference, missingness, outputs and synthetic c
  ↪  hecks. A dictionary crosswalk is semantic verification before outcome
  ↪  values, not a new scientific choice. Keep all endpoint-specific
  ↪  units, horizons and Bonferroni allocations; grouping introduces no
  ↪  average outcome, composite score, new hypothesis or additional alpha.
  ↪  Write root audit.json, status.json, judgment.json and components.csv
  ↪  with component, outcome, component_state, component_terminal,
  ↪  inference_status, reason, evidence_path. Components.csv is an
  ↪  evidence index under this protocol, never a second experiment graph.
  ↪  Suppression is applied after governed adjudication, and cannot govern
  ↪  activation or disclose protected directions.
```

```
Population/unit: all allowed national-test records, audited before
↪ restriction, then D1 child records. Tables/fields:
↪ UDD_ORDBLINDETEST.PNR,DATO,SCORE,TESTRESULTAT,TESTRESULTATNIVEAU,UDDA
↪ NNELSESNIVEAU,INSTNR,SKOLEAAR,CPRTJEK,CPRTYPE; BEF.PNR,FOED_DAG. The
↪ ten-field page labels these test fields incompletely. Read the
↪ delivery dictionary before values. Assert event date, national-test
↪ identity and person linkage; summarize each distinct missing/incompat
↪ ible field and early-date discrepancy. Apply D1 exact-duplicate and
↪ same-date conflict rules. A retained national test is not first lifet
↪ ime diagnosis. Estimate descriptive fractions of dated child records
↪ with interpretable score/category, with family-cluster intervals only
↪ if clustering is validated; otherwise counts only. No hypothesis test
↪ or multiplicity claim. Output diagnostics.csv: date_valid_fraction,
↪ person_link_fraction, score_defined_fraction, category_defined_fracti
↪ on, earliest_date_conflict_fraction, prelaunch_record_fraction; these
↪ are runtime fractions, not presumed values. Synthetic test: two
↪ identical rows collapse, conflicting same-day scores become
↪ ambiguous, date before birth is excluded. Independent consequence:
↪ descriptive chronology remains possible even if SCORE is unavailable.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to prereg/runtime/atom-000001/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.
```

Registered experiment

Can dated retained national dyslexia assessments be distinguished from invalid or ambiguous records?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000001`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000002: Initial classification margin

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state, component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Internal order: audit mapping and retention separately after dated assessment identity. Retention does not select a cutoff. Save mapping and retention component verdicts in distinct component judgments; apply the following full original-scale and selection procedures. The grade experiments may run on mapped selected/unresolved histories as diagnostics, but causal outcomes require compatible.

mapping

- key: boundary region: Documentation confirms SCORE is transformed/incompatible, actual test grade cannot be identified within allowed fields, or launch-period rules do not apply to these records. says: The registered RD cannot be implemented; later-year rules are not a substitute.
- key: mapped region: The original score scale, historical inclusive rules, actual-grade meaning and ordinary-public-school source semantics are documented. Each used grade code has a verified crosswalk; unknown individual codes remain unknown under D1, with support judged separately per grade. says: A historical running variable is defined; retention, score support and local continuity remain separate assumptions.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Scope: provisional spring-2015 cohort D1, one first-assessment candidate per child. Institutional source: 2016 ministry note p.1, table of upper

red/yellow bounds in I1. Use SCORE in its original composite units, actual assessment grade in UDDANNELSESNIVEAU, and prior-month absence KLASSETRIN/KLASSETYPE/INSTITUTIONSNUMMER/MAANED/SKOLEAAR as the independent grade/ordinary-public-school check. Check documentary scale identity before calculating x=SCORE-c_g. Exact c_g for grades 4–9 is 66,70,73,77,79,81 and assignment is SCORE<=c_g; upper yellow bounds are 73,78,81,84,86,88. No age-to-grade approximation or cutoff inferred from best category fit. Report disagreements and unknown grade as separate cases. Require a source establishing that the delivered level is actual test grade; background grade reconstructed after test cannot qualify. No cutoff/version substitutions. Output diagnostics.csv: mapping_documented, grade_agreement_fraction, ambiguous_grade_fraction, inclusive_boundary_confirmed, per-grade scope counts. Synthetic tests check each threshold minus epsilon/equal/plus epsilon, and grade disagreement cannot be resolved with future achievement. This component maps assignment, not actual approval or support. No statistical estimator; documentary equality is the criterion.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000002/mapping/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

The mapped state concerns verified source semantics for grades4–9, not a requirement that each grade has observed rows. Individual grade disagreements remain excluded from score comparisons as D1. Empty/insufficient grades have their own support Atoms. No outcome value establishes this mapping. ## retention - key: selected region: Documented extraction replaces/deletes initial assessments using later assessments, category, subsequent support or outcome-related approval without an recoverable initial record. says: Selection invalidates the registered initial-margin causal branch. - key: compatible region: Complete provenance meets the explicit initial-attempt/approval/retention criteria and no unresolved replacement mechanism remains. says: The documented retained-test process is compatible with the

initial-assessment design, conditional on remaining continuity assumptions. - key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Scope: spring-2015 target, record-generation process as well as rows; D1 first retained date is only a candidate. Inspect delivery/extraction documentation for approval and all test histories, especially later replacement of a third-grade result. UDD_ORDBLINDETEST has no explicit approval/retest flag. STIL warehouse rules are a warning, not proof of the FSV process. Pass only if provenance demonstrates either complete initial assessment histories with frozen first attempts and auditable approval OR retention of the earliest approved result with documented preclassification approval criteria and no score-dependent replacement, including earlier third-grade tests. When histories exist within the allowed table, count dates per PNR and grade-3 replacements; when absent, do not infer no retesting from one row/person. A later successful score may never become baseline. Output diagnostics.csv: initial_history_documented, selection_rule_known, later_replacement_possible, repeated_record_fraction where computable. Include a prose provenance judgment in judgment.json. Statistical tests cannot validate undocumented retention; no p-value. Synthetic test: later retest must not alter the initial score; deliberate omission of initial tests must prevent compatible state. This independent judgment can block causal claims while preserving retained-record descriptions.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000002/retention/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Complete registration fields

```
id: atom-000002
topic: Initial classification margin
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
```

```
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: Does the historical rule define a recoverable initial-assessment
    policy margin in the delivered national-test records?
  rationale: Mapping and retained-first-assessment provenance jointly define
    the same scientific assignment margin. They remain separately auditable
    within the unit; neither is an outcome experiment.
  assumption: Administrative recognition can affect opportunities, reporting
    and service contact through multiple routes; exact source semantics and
    continuity require evidence, not an estimator label. See literature.md
    and identification.md.
  target_strength: descriptive
  target_shape: comparison
  ratings:
    importance: 4
    novelty: 3
    feasibility: 3
    data_advantage: 4
    informativeness: 0.5
  tables:
  - BEF
  - UDD_FOLKESKOLE_FRAVAER_STIL
  - UDD_ORDBLINDETEST
  activation: state(atom-000001) == "ready"
  verdicts:
  - key: boundary
    region: The mapping component establishes its boundary. Retention
    ↪  findings,
      if any, remain reported.
    says: This historical margin is not constructible.
  - key: selected
    region: Mapping=mapped and retention=selected.
    says: The recorded margin can be described, but outcome-dependent
    ↪  initial-record
      selection blocks causal use.
  - key: compatible
    region: Mapping=mapped and retention=compatible.
    says: The initial margin is institutionally compatible; grade-specific
      validation and continuity assumptions remain necessary.
  - key: retention_unresolved
    region: Mapping=mapped and retention is unresolved or an internally
    ↪  recorded
      operational failure.
    says: The score rule can be audited; causal use awaits compatible
    ↪  initial-record
      provenance.
  - key: otherwise
    region: otherwise
    says: No compatible initial policy margin is established; retain the
    ↪  component
      reasons without a policy null.
  protocol: |2-
```

```
This is one scientific experiment. Internal components are not additional
↪  Atoms or activation primitives. Execute every prescribed component
↪  that is scientifically eligible, independently of other component
↪  signs. Component outputs retain their own local decision, inference
↪  and operational status; only the native judgment.json at the Atom
↪  root supplies the Atom local state. No component failure can erase
↪  completed evidence in another component. When no scientific component
↪  completes because execution fails, set terminal no_result with no
↪  Atom local state. Otherwise aggregate only by the ordered registered
↪  regions and record every component's failure, boundary, unknown or
↪  inactive disposition. Pending necessary evidence stays pending; it is
↪  never coded as negative evidence. Internal failed work is not
↪  automatically retried.
Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
↪  definitions. These fix population, dates, table/field dictionaries,
↪  code versions, joins, inference, missingness, outputs and synthetic c
↪  hecks. A dictionary crosswalk is semantic verification before outcome
↪  values, not a new scientific choice. Keep all endpoint-specific
↪  units, horizons and Bonferroni allocations; grouping introduces no
↪  average outcome, composite score, new hypothesis or additional alpha.
↪  Write root audit.json, status.json, judgment.json and components.csv
↪  with component, outcome, component_state, component_terminal,
↪  inference_status, reason, evidence_path. Components.csv is an
↪  evidence index under this protocol, never a second experiment graph.
↪  Suppression is applied after governed adjudication, and cannot govern
↪  activation or disclose protected directions.

Internal order: audit mapping and retention separately after dated
↪  assessment identity. Retention does not select a cutoff. Save mapping
↪  and retention component verdicts in distinct component judgments;
↪  apply the following full original-scale and selection procedures. The
↪  grade experiments may run on mapped selected/unresolved histories as
↪  diagnostics, but causal outcomes require compatible.

## mapping
- key: boundary
  region: Documentation confirms SCORE is transformed/incompatible,
  ↪  actual test grade
    cannot be identified within allowed fields, or launch-period rules do
    ↪  not apply
    to these records.
  says: The registered RD cannot be implemented; later-year rules are not
  ↪  a substitute.
- key: mapped
  region: The original score scale, historical inclusive rules,
  ↪  actual-grade meaning
    and ordinary-public-school source semantics are documented. Each used
    ↪  grade code
    has a verified crosswalk; unknown individual codes remain unknown
    ↪  under D1, with
    support judged separately per grade.
  says: A historical running variable is defined; retention, score
  ↪  support and local
    continuity remain separate assumptions.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Scope: provisional spring-2015 cohort D1, one first-assessment candidate
↪  per child. Institutional source: 2016 ministry note p.1, table of
↪  upper red/yellow bounds in I1. Use SCORE in its original composite
↪  units, actual assessment grade in UDDANNELSESNIVEAU, and prior-month
↪  absence KLASSETRIN/KLASSETYPE/INSTITUTIONSNUMMER/MAANED/SKOLEAAR as
↪  the independent grade/ordinary-public-school check. Check documentary
↪  scale identity before calculating x=SCORE-c_g. Exact c_g for grades
↪  4-9 is 66,70,73,77,79,81 and assignment is SCORE<=c_g; upper yellow
↪  bounds are 73,78,81,84,86,88. No age-to-grade approximation or cutoff
↪  inferred from best category fit. Report disagreements and unknown
↪  grade as separate cases. Require a source establishing that the
↪  delivered level is actual test grade; background grade reconstructed
↪  after test cannot qualify. No cutoff/version substitutions. Output
↪  diagnostics.csv: mapping_documented, grade_agreement_fraction,
↪  ambiguous_grade_fraction, inclusive_boundary_confirmed, per-grade
↪  scope counts. Synthetic tests check each threshold minus
↪  epsilon/equal/plus epsilon, and grade disagreement cannot be resolved
↪  with future achievement. This component maps assignment, not actual
↪  approval or support. No statistical estimator; documentary equality
↪  is the criterion.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000002/mappi
↪  ng/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

The mapped state concerns verified source semantics for grades4-9, not a
↪  requirement that each grade has observed rows. Individual grade
↪  disagreements remain excluded from score comparisons as D1.
↪  Empty/insufficient grades have their own support Atoms. No outcome
↪  value establishes this mapping.
## retention
- key: selected
  region: Documented extraction replaces/deletes initial assessments
  ↪  using later assessments,
    category, subsequent support or outcome-related approval without an
    ↪  recoverable
    initial record.
  says: Selection invalidates the registered initial-margin causal branch.
- key: compatible
  region: Complete provenance meets the explicit
  ↪  initial-attempt/approval/retention
```

```
    criteria and no unresolved replacement mechanism remains.
  says: The documented retained-test process is compatible with the
  ↪  initial-assessment
    design, conditional on remaining continuity assumptions.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Scope: spring-2015 target, record-generation process as well as rows; D1
↪  first retained date is only a candidate. Inspect delivery/extraction
↪  documentation for approval and all test histories, especially later
↪  replacement of a third-grade result. UDD_ORDBLINDETEST has no
↪  explicit approval/retest flag. STIL warehouse rules are a warning,
↪  not proof of the FSV process. Pass only if provenance demonstrates
↪  either complete initial assessment histories with frozen first
↪  attempts and auditable approval OR retention of the earliest approved
↪  result with documented preclassification approval criteria and no
↪  score-dependent replacement, including earlier third-grade tests.
↪  When histories exist within the allowed table, count dates per PNR
↪  and grade-3 replacements; when absent, do not infer no retesting from
↪  one row/person. A later successful score may never become baseline.
↪  Output diagnostics.csv: initial_history_documented,
↪  selection_rule_known, later_replacement_possible,
↪  repeated_record_fraction where computable. Include a prose provenance
↪  judgment in judgment.json. Statistical tests cannot validate
↪  undocumented retention; no p-value. Synthetic test: later retest must
↪  not alter the initial score; deliberate omission of initial tests
↪  must prevent compatible state. This independent judgment can block
↪  causal claims while preserving retained-record descriptions.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000002/reten
↪  tion/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

Registered experiment

Does the historical rule define a recoverable initial-assessment policy margin in the delivered national-test records?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000002`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000010: Assessment population and reach

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state, component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Run on any completed/failed assessment-identity judgment. If identity is not ready/limited, mark the profile unavailable with its exact reason; still inspect public calendar/reference semantics and document which reach/kinship claims remain possible. No outcome experiment depends on this descriptive summary: it repeats the applicable D1/D3/D7 checks locally. Family-link failure does not suppress profile or child calendar evidence.

profile

- key: described region: Dated-person cohort and computed governed category/unknown counts are produced. says: Describe recorded assessment composition only.
- key: boundary region: A verified empty eligible retained cohort or incompatible required dates prevents this description. says: Report the population boundary without an assessment-prevalence claim.

- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Descriptive illustration, not testing access rates in all Danish children. Activate on a dated-person assessment cohort even if score/categories fail. Use D1 cohort groups 2015–2018,2019–2021,2022–2024 and category red/yellow/green/unknown; preserve grade/age-unknown records in the audit. Count persons per cohort/category and divide by the full retained child cohort in that calendar band. First retained record defines a person once. Describe age at assessment with fixed bands9–11,12–14,15–17 in a separate diagnostics.csv; do not infer prevalence or unmet need among untested pupils. No p-values or causal comparison. Output profile.csv columns in G2; all 12 category/cohort cells appear even if suppressed/unavailable. Synthetic duplicate and unknown-category checks. This illustration remains useful when all causal analyses fail and is the first empirical figure. Its fractions are of retained assessments only.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000010/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

reach

- key: complete_scope region: All registered clocks and horizon eligibility indicators can be constructed and at least one eligible risk set exists in every requested family. says: The planned horizons can be enumerated, not guaranteed precise or complete at the person level.
- key: bounded_scope region: At least one clock/horizon is documented unavailable or has an empty eligible risk set, while another family is constructible. says: Report the endpoint-specific age/calendar limits and retain independently observable families.
- key: boundary region: No registered follow-up horizon can be defined with the available date documentation. says: This delivery supports at most baseline assessment description, not follow-up claims.

- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. This internal reach analysis is independent of causal score validity. Use test DATO, BEF.FOED_DAG and documented per-table observation ends; do not open outcome values. Compute each child's first full school year, 730-day nominal care horizon, year(t0)+1 and 18th/20th birthdays/calendar years. Check observation clocks in VNDS/DOD/BEFBOP as D3. Tabulate eligible vs not-yet-age-eligible vs calendar-ended vs unknown birth date for each registered endpoint and cohort; do not report a count until runtime. Output diagnostics.csv with check=endpoint/horizon and eligibility/coverage fractions; missing endpoints have their own flags, not a global rejection. Incomplete observation is an informative boundary, never no effect. No causal estimator, power test or significance criterion. Synthetic fixtures include age9 in2015 versus age16 in2015, year20 beyond2024, leap-day birth and emigration. A later table header cannot override the common 2024 cap. This Atom gives the paper its age/coverage explanation without requiring an RD to work.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000010/reach/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

relatives

- key: usable region: Pretest linkage semantics verified; all known relations have unique valid mappings and unknown roles are explicitly marked. says: Fixed recorded-parent/sibling targets can be studied with their baseline scope limitations.
- key: boundary region: Documentation establishes no dated parental linkage or incompatible key classes, so no baseline family target can be constructed. says: Family outcomes cannot be attributed to the index child under this delivery; child outcomes remain eligible.

- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Use D7 fixed pretest BEF snapshot, MOR_ID/FAR_ID, FOED_DAG, PNR, FAMILIE_ID and BEFBOP dated address intervals. Parent IDs must share the child PNR linkage class. Assert each child has at most one recorded value per parent role per snapshot; missing roles are unknown, not childless/no carer. Construct sibling sets by nonmissing shared parent; establish baseline school-grade eligibility with prior-month absence. Scan index assessments chronologically with fixed hash ties as D7. Report resident/nonresident parent links, one/two known roles, eligible sibling sets, conflicts and baseline missingness. This is the scope of recorded kinship, not validation of genetic relatedness or caregiving. Output diagnostics.csv with linkage proportions and conflict dispositions. No substantive outcome needed; no p-values. Synthetic fixture: two children with missing fathers are not siblings, subsequent births are excluded, later parental diagnosis cannot change roster. A complete roster at birth does not guarantee future response. Family branch uses only scientifically interpretable pretest links.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000010/relatives/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Complete registration fields

```
id: atom-000010
topic: Assessment population and reach
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
```

```
mode: adaptive
question: Who appears in retained childhood assessments, which relatives
  are represented, and which life-course horizons can those cohorts reach?
rationale: One descriptive orientation experiment locates the assessed
↪  population
  in calendar time and family context. Its component-specific evidence is
  useful even if no causal contrast runs. It does not test assessment access
  in all Danish children.
assumption: Administrative recognition can affect opportunities, reporting
  and service contact through multiple routes; exact source semantics and
  continuity require evidence, not an estimator label. See literature.md
  and identification.md.
target_strength: descriptive
target_shape: comparison
ratings:
  importance: 4
  novelty: 3
  feasibility: 3
  data_advantage: 4
  informativeness: 0.5
tables:
- BEF
- BEFBOP
- DOD
- IND
- KOTRE
- UDD_FOLKESKOLE_FRAVAER_STIL
- UDD_ORDBLINDETEST
- VNDS
activation: done(atom-000001) OR terminal(atom-000001) == "no_result"
verdicts:
- key: described
  region: Profile, reach and baseline-relative composition each have a
  ↪  computed
    scientific description; unavailable individual strata remain explicit.
  says: Describe assessment composition and observable life-course reach,
    without population prevalence or causal claims.
- key: partial
  region: At least one of the three components supplies a scientific
  ↪  description
    and another cannot.
  says: Report each available aspect and every unavailable aspect
  ↪  separately;
    no all-or-nothing scope gate.
- key: boundary
  region: All three components have evidenced empty/incompatible population
    or clock boundaries.
  says: No represented cohort or follow-up can be described under this
  ↪  contract.
- key: otherwise
  region: otherwise
  says: Report unresolved scope without invented counts, follow-up or
  ↪  relationships.
protocol: |2-
```

```
This is one scientific experiment. Internal components are not additional
↪  Atoms or activation primitives. Execute every prescribed component
↪  that is scientifically eligible, independently of other component
↪  signs. Component outputs retain their own local decision, inference
↪  and operational status; only the native judgment.json at the Atom
↪  root supplies the Atom local state. No component failure can erase
↪  completed evidence in another component. When no scientific component
↪  completes because execution fails, set terminal no_result with no
↪  Atom local state. Otherwise aggregate only by the ordered registered
↪  regions and record every component's failure, boundary, unknown or
↪  inactive disposition. Pending necessary evidence stays pending; it is
↪  never coded as negative evidence. Internal failed work is not
↪  automatically retried.
Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
↪  definitions. These fix population, dates, table/field dictionaries,
↪  code versions, joins, inference, missingness, outputs and synthetic c
↪  hecks. A dictionary crosswalk is semantic verification before outcome
↪  values, not a new scientific choice. Keep all endpoint-specific
↪  units, horizons and Bonferroni allocations; grouping introduces no
↪  average outcome, composite score, new hypothesis or additional alpha.
↪  Write root audit.json, status.json, judgment.json and components.csv
↪  with component, outcome, component_state, component_terminal,
↪  inference_status, reason, evidence_path. Components.csv is an
↪  evidence index under this protocol, never a second experiment graph.
↪  Suppression is applied after governed adjudication, and cannot govern
↪  activation or disclose protected directions.

Run on any completed/failed assessment-identity judgment. If identity is
↪  not ready/limited, mark the profile unavailable with its exact
↪  reason; still inspect public calendar/reference semantics and
↪  document which reach/kinship claims remain possible. No outcome
↪  experiment depends on this descriptive summary: it repeats the
↪  applicable D1/D3/D7 checks locally. Family-link failure does not
↪  suppress profile or child calendar evidence.

## profile
- key: described
  region: Dated-person cohort and computed governed category/unknown
  ↪  counts are produced.
  says: Describe recorded assessment composition only.
- key: boundary
  region: A verified empty eligible retained cohort or incompatible
  ↪  required dates
    prevents this description.
  says: Report the population boundary without an assessment-prevalence
  ↪  claim.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Descriptive illustration, not testing access rates in all Danish
↪  children. Activate on a dated-person assessment cohort even if score/
↪  categories fail. Use D1 cohort groups 2015-2018,2019-2021,2022-2024
↪  and category red/yellow/green/unknown; preserve grade/age-unknown
↪  records in the audit. Count persons per cohort/category and divide by
↪  the full retained child cohort in that calendar band. First retained
↪  record defines a person once. Describe age at assessment with fixed
↪  bands9-11,12-14,15-17 in a separate diagnostics.csv; do not infer
↪  prevalence or unmet need among untested pupils. No p-values or causal
↪  comparison. Output profile.csv columns in G2; all 12 category/cohort
↪  cells appear even if suppressed/unavailable. Synthetic duplicate and
↪  unknown-category checks. This illustration remains useful when all
↪  causal analyses fail and is the first empirical figure. Its fractions
↪  are of retained assessments only.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000010/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## reach
- key: complete_scope
  region: All registered clocks and horizon eligibility indicators can be
  ↪  constructed
    and at least one eligible risk set exists in every requested family.
  says: The planned horizons can be enumerated, not guaranteed precise or
  ↪  complete
    at the person level.
- key: bounded_scope
  region: At least one clock/horizon is documented unavailable or has an
  ↪  empty eligible
    risk set, while another family is constructible.
  says: Report the endpoint-specific age/calendar limits and retain
  ↪  independently
    observable families.
- key: boundary
  region: No registered follow-up horizon can be defined with the
  ↪  available date documentation.
  says: This delivery supports at most baseline assessment description,
  ↪  not follow-up
    claims.
- key: otherwise
```

```
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
This internal reach analysis is independent of causal score validity. Use
↪  test DATO, BEF.FOED_DAG and documented per-table observation ends; do
↪  not open outcome values. Compute each child's first full school year,
↪  730-day nominal care horizon, year(t0)+1 and 18th/20th
↪  birthdays/calendar years. Check observation clocks in VNDS/DOD/BEFBOP
↪  as D3. Tabulate eligible vs not-yet-age-eligible vs calendar-ended vs
↪  unknown birth date for each registered endpoint and cohort; do not
↪  report a count until runtime. Output diagnostics.csv with
↪  check=endpoint/horizon and eligibility/coverage fractions; missing
↪  endpoints have their own flags, not a global rejection. Incomplete
↪  observation is an informative boundary, never no effect. No causal
↪  estimator, power test or significance criterion. Synthetic fixtures
↪  include age9 in2015 versus age16 in2015, year20 beyond2024, leap-day
↪  birth and emigration. A later table header cannot override the common
↪  2024 cap. This Atom gives the paper its age/coverage explanation
↪  without requiring an RD to work.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is ex
↪  haustive. All future outputs go to prereg/runtime/atom-000010/reach/
↪  and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## relatives
- key: usable
  region: Pretest linkage semantics verified; all known relations have
  ↪  unique valid
    mappings and unknown roles are explicitly marked.
  says: Fixed recorded-parent/sibling targets can be studied with their
  ↪  baseline scope
    limitations.
- key: boundary
  region: Documentation establishes no dated parental linkage or
  ↪  incompatible key
    classes, so no baseline family target can be constructed.
  says: Family outcomes cannot be attributed to the index child under
  ↪  this delivery;
    child outcomes remain eligible.
- key: otherwise
```

```
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Use D7 fixed pretest BEF snapshot, MOR_ID/FAR_ID, FOED_DAG, PNR,
↪  FAMILIE_ID and BEFBOP dated address intervals. Parent IDs must share
↪  the child PNR linkage class. Assert each child has at most one
↪  recorded value per parent role per snapshot; missing roles are
↪  unknown, not childless/no carer. Construct sibling sets by nonmissing
↪  shared parent; establish baseline school-grade eligibility with
↪  prior-month absence. Scan index assessments chronologically with
↪  fixed hash ties as D7. Report resident/nonresident parent links,
↪  one/two known roles, eligible sibling sets, conflicts and baseline
↪  missingness. This is the scope of recorded kinship, not validation of
↪  genetic relatedness or caregiving. Output diagnostics.csv with
↪  linkage proportions and conflict dispositions. No substantive outcome
↪  needed; no p-values. Synthetic fixture: two children with missing
↪  fathers are not siblings, subsequent births are excluded, later
↪  parental diagnosis cannot change roster. A complete roster at birth
↪  does not guarantee future response. Family branch uses only
↪  scientifically interpretable pretest links.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000010/relat
↪  ives/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

Registered experiment

Who appears in retained childhood assessments, which relatives are represented, and which life-course horizons can those cohorts reach?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000010`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000011: Support and learning boundaries

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state, component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions. Documentation-only independent judgment covering D5/D7/G4. Inspect all three dyslexia schema hits: UDD_ORDBLINDETEST has no receipt/intensity/phonological subtest or vocabulary fields; HANDICNOTA.PNR,MEDLEMSTYPE,INDMDATO has documented2023–2025 coverage; VEUV.PNR,KURSKOD,KURSTXT,UDD,KURSIST_VFRA,KURSIST_VTIL,AFSLUTN,VERSION history mentions dyslexia instruction but not a verified historical OBU code/completeness contract. National-test and UDFK performance cannot isolate accommodations. Read actual field definitions and the official application/OBU guidance; no row query is needed for a documentary absence. Distinguish limited library membership, classification, eligibility and receipt. Output diagnostics.csv rows comprehensive_support, intensity, obu_historical_codes, unaided_learning with evidenced/unresolved flags and judgment.json source locators. There is no support-effect IV under any state. If unforeseen valid measures appear, the old closed graph is not extended automatically: their discovery is documented for a future extension. No p-values or equivalence claims. Synthetic check: Nota membership never populates comprehensive_support=1.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication.

Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000011/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Complete registration fields

```
id: atom-000011
topic: Support and learning boundaries
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: Can this boundary identify support received, adult dyslexia
  ↪  instruction
    or unaided learning?
  rationale: An independent consequential boundary judgment separates
  ↪  classification-policy
    effects from support receipt and unaided learning. It limits claims across
    all outcomes under any sign, and remains useful without a score sample.
  assumption: Administrative recognition can affect opportunities, reporting
    and service contact through multiple routes; exact source semantics and
    continuity require evidence, not an estimator label. See literature.md
    and identification.md.
  target_strength: descriptive
  target_shape: comparison
  ratings:
    importance: 4
    novelty: 3
    feasibility: 3
    data_advantage: 4
    informativeness: 0.5
  tables:
  - HANDICNOTA
  - UDD_ORDBLINDETEST
  - UDFK
  - VEUV
  activation: 'TRUE'
  verdicts:
  - key: limited_markers
    region: Documentation confirms only selected institutional markers and
      lacks the comprehensive receipt/intensity/unaided constructs specified
      here.
    says: Do not attribute effects to a particular support dose or unaided
```

```
    learning; limited markers remain service-boundary knowledge.
- key: additional_documentation
  region: New authoritative documentation specifies a relevant receipt
  ↪  construct,
    but no treatment-receipt design is registered here.
  says: Record it for a reviewed extension; no automatic support-effect
    claim or new endpoint.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
    negative finding is inferred; report the exact reason.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪  Atoms or activation primitives. Execute every prescribed component
  ↪  that is scientifically eligible, independently of other component
  ↪  signs. Component outputs retain their own local decision, inference
  ↪  and operational status; only the native judgment.json at the Atom
  ↪  root supplies the Atom local state. No component failure can erase
  ↪  completed evidence in another component. When no scientific component
  ↪  completes because execution fails, set terminal no_result with no
  ↪  Atom local state. Otherwise aggregate only by the ordered registered
  ↪  regions and record every component's failure, boundary, unknown or
  ↪  inactive disposition. Pending necessary evidence stays pending; it is
  ↪  never coded as negative evidence. Internal failed work is not
  ↪  automatically retried.
  Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
  ↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
  ↪  definitions. These fix population, dates, table/field dictionaries,
  ↪  code versions, joins, inference, missingness, outputs and synthetic c
  ↪  hecks. A dictionary crosswalk is semantic verification before outcome
  ↪  values, not a new scientific choice. Keep all endpoint-specific
  ↪  units, horizons and Bonferroni allocations; grouping introduces no
  ↪  average outcome, composite score, new hypothesis or additional alpha.
  ↪  Write root audit.json, status.json, judgment.json and components.csv
  ↪  with component, outcome, component_state, component_terminal,
  ↪  inference_status, reason, evidence_path. Components.csv is an
  ↪  evidence index under this protocol, never a second experiment graph.
  ↪  Suppression is applied after governed adjudication, and cannot govern
  ↪  activation or disclose protected directions.
  Documentation-only independent judgment covering D5/D7/G4. Inspect all
  ↪  three dyslexia schema hits: UDD_ORDBLINDETEST has no
  ↪  receipt/intensity/phonological subtest or vocabulary fields;
  ↪  HANDICNOTA.PNR,MEDLEMSTYPE,INDMDATO has documented2023-2025 coverage;
  ↪  VEUV.PNR,KURSKOD,KURSTXT,UDD,KURSIST_VFRA,KURSIST_VTIL,AFSLUTN,VERSIO
  ↪  N history mentions dyslexia instruction but not a verified historical
  ↪  OBU code/completeness contract. National-test and UDFK performance
  ↪  cannot isolate accommodations. Read actual field definitions and the
  ↪  official application/OBU guidance; no row query is needed for a
  ↪  documentary absence. Distinguish limited library membership,
  ↪  classification, eligibility and receipt. Output diagnostics.csv rows
  ↪  comprehensive_support, intensity, obu_historical_codes,
  ↪  unaided_learning with evidenced/unresolved flags and judgment.json
  ↪  source locators. There is no support-effect IV under any state. If
  ↪  unforeseen valid measures appear, the old closed graph is not
  ↪  extended automatically: their discovery is documented for a future
  ↪  extension. No p-values or equivalence claims. Synthetic check: Nota
  ↪  membership never populates comprehensive_support=1.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to prereg/runtime/atom-000011/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.
```

Registered experiment

Can this boundary identify support received, adult dyslexia instruction or unaided learning?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000011`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000101: School experience after assessment

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units,

horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state, component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Endpoint components execute independently in the order below. D3 horizon and D7 relative-link checks are internal per endpoint, never a common family prerequisite. Household-income construction can run without an identified parent roster when child/current-family and clustering requirements are available; relative outcomes require their own fixed known-parent/sibling roster. If clustering is unavailable, I3 permits valid descriptive levels with uncertainty unavailable. Each endpoint applies its original first-match regions below, writes its own component judgment and retains every era/stratum status. Root state is the ordered descriptive vector judgment above.

Internal reading-calibration

- key: comparable region: Every required 2015 target-grade/year/calibration link meets D9 documentary criteria. says: One pooled reading contrast has a documented common scale, conditional on other gates.
- key: incompatible region: At least one required link is authoritatively inconsistent. says: Pooled reading effect is restricted; separately labeled descriptions remain useful.
- key: unresolved region: No contradiction is established but at least one required common-calibration link is unverified. says: Common scale is not established; no pooled reading claim.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Population is the fixed school grades4–7 target and its D5 scheduled grades6/8 years. Unit=construct/calibration link, not pupil. Inspect UDD_NATTEST_GENBEREGNEDE FAG,FAGID,THETA,KLASSETRIN,NORM,GENBEREGNET,SKOLEAAR,TEST_DATOTID metadata before values. Apply D9 common-origin/unit/item-link criteria. Assert each scheduled stratum maps to one documented calibration identifier; no duplicate or conflicting mappings are averaged. Output calibration.csv: target_grade,calendar_year,calibration_id,construct,origin_unit_verified,link_verified,source_locator,status,reas No model or test; equivalence of observed score distributions cannot be evidence. Synthetic test: identical THETA field names with absent linking evidence yields unresolved. The primary reading Atom records measurement_boundary for incompatible and otherwise/common_calibration_unverified for unresolved; descriptive strata retain exact units. No additional causal estimands or standardization.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands

and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000101/reading-calibration/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Endpoint loneliness

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe frequent loneliness among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=loneliness; reporting family=school; one registered horizon=first_full_school_year. Construction uses D4 exactly: Baseline grades4–7; Q9 exact wording and frequent labels. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit;

apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=pp. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts. Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Reported loneliness may change through experience, interpretation or response assistance. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000101/endpoints/loneliness/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000101/endpoints/loneliness/descriptive/.

Endpoint stomach_ache

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe frequent stomach ache among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=stomach_ache; reporting family=school; one registered horizon=first_full_school_year. Construction uses D4 exactly: Baseline grades4–7; Q10 exact wording and frequent labels. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=pp. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts. Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: A pain report is not a

diagnosed physical disease or general morbidity. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000101/endpoints/stomach_ache/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000101/endpoints/stomach_ache/descriptive/.

Endpoint headache

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe frequent headache among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=headache; reporting family=school; one registered horizon=first_full_school_year. Construction

uses D4 exactly: Baseline grades4–7; Q11 exact wording and frequent labels. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=pp. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts. Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Headache reports can reflect stress, other causes and reporting changes. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000101/endpoints/headache/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify

row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000101/endpoints/headache/descriptive/.

Endpoint low_belonging

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe low school belonging among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=low_belonging; reporting family=school; one registered horizon=first_full_school_year. Construction uses D4 exactly: Baseline grades4–7; Q33 disagreement labels, not an inferred factor score. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=pp. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than

a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts. Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Belonging is a consequential school experience and a prior-work benchmark. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000101/endpoints/low_belonging/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000101/endpoints/low_belonging/descriptive/.

Endpoint total_absence

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.

- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe total school absence among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=total_absence; reporting family=school; one registered horizon=first_full_school_year. Construction uses D5 exactly: Baseline grades4–7; annual total absent days / active days, range0–100. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=pp. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts. Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Attendance measures participation; it is not a pure health or learning measure. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary;

date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000101/endpoints/total_absence/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000101/endpoints/total_absence/descriptive/.

Endpoint sickness_absence

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe sickness absence among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=sickness_absence; reporting family=school; one registered horizon=first_full_school_year. Construction uses D5 exactly: Baseline grades4–7; annual sickness days / active days, range0–100. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=pp. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts. Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Sickness classification of school absence can change without a diagnosed disorder. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000101/endpoints/sickness_absence/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint

descriptive files and component judgments are under prereg/runtime/atom-000101/endpoints/sickness_absence/descriptive/.

Endpoint reading_theta

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe assessed reading among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=reading_theta; reporting family=school; one registered horizon=scheduled_next_reading_test. Construction uses D5 exactly: Baseline grades4–7; targetgrade6 ifbaseline4/5,8 if6/7; fixed expected school year, earliest scheduled test. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=THETA. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts.

Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Assessed performance cannot separate unaided decoding from access/accommodations. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000101/endpoints/reading_theta/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000101/endpoints/reading_theta/descriptive/.

Endpoint danish_grade

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.

- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe teacher-assessed danish among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=danish_grade; reporting family=school; one registered horizon=scheduled_grade9_year. Construction uses D5 exactly: Baseline grades4–8; mean final Danish teacher disciplines in scheduled grade9 year, range[-3,12]. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=grade_points. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts. Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Teacher grades reflect assessed achievement and expectations; exam performance is not substituted. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result

with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000101/endpoints/danish_grade/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000101/endpoints/danish_grade/descriptive/.

Complete registration fields

```
id: atom-000101
topic: School experience after assessment
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: What recorded school experience after assessment can be described,
    and which dimensions remain unobserved?
  rationale: The descriptive school experiment asks how social experience,
    pain, participation and assessed performance are recorded among assessed
    children, without assigning a classification effect. Related displays
    orient interpretation while preserving each measurement.
  assumption: Administrative recognition can affect opportunities, reporting
    and service contact through multiple routes; exact source semantics and
    continuity require evidence, not an estimator label. See literature.md
    and identification.md.
  target_strength: descriptive
  target_shape: comparison
  ratings:
    importance: 4
    novelty: 3
    feasibility: 3
    data_advantage: 4
    informativeness: 0.5
  tables:
  - BEF
  - DOD
  - UDD_FOLKESKOLE_FRAVAER_STIL
  - UDD_NATTEST_GENBEREGNEDE
  - UDD_ORDBLINDETEST
  - UDD_TRIVSEL_STORE_KLASSER
```

```
- UDFK
- VNDS
activation: state(atom-000001) == "ready" OR state(atom-000001) == "limited"
verdicts:
- key: described
  region: Every registered endpoint supplies at least one computed governed
    descriptive stratum; all unobserved cells remain explicit.
  says: Describe the endpoint vector in original units and separate scopes;
    no composite or causal contrast.
- key: partial
  region: At least one endpoint supplies a computed governed descriptive
    stratum and another endpoint supplies none.
  says: Report available endpoint-specific descriptions and each independent
    measurement, horizon or operational limitation.
- key: boundary
  region: No description is computable and every endpoint has an evidenced
    measurement/horizon/population boundary.
  says: Report which documented dimensions cannot be measured or reached;
    no statistical null.
- key: otherwise
  region: otherwise
  says: Preserve unresolved documentation or execution reasons; unknown
    evidence is not a negative result.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪ Atoms or activation primitives. Execute every prescribed component
  ↪ that is scientifically eligible, independently of other component
  ↪ signs. Component outputs retain their own local decision, inference
  ↪ and operational status; only the native judgment.json at the Atom
  ↪ root supplies the Atom local state. No component failure can erase
  ↪ completed evidence in another component. When no scientific component
  ↪ completes because execution fails, set terminal no_result with no
  ↪ Atom local state. Otherwise aggregate only by the ordered registered
  ↪ regions and record every component's failure, boundary, unknown or
  ↪ inactive disposition. Pending necessary evidence stays pending; it is
  ↪ never coded as negative evidence. Internal failed work is not
  ↪ automatically retried.
  Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
  ↪ I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
  ↪ definitions. These fix population, dates, table/field dictionaries,
  ↪ code versions, joins, inference, missingness, outputs and synthetic c⌋
  ↪ hecks. A dictionary crosswalk is semantic verification before outcome
  ↪ values, not a new scientific choice. Keep all endpoint-specific
  ↪ units, horizons and Bonferroni allocations; grouping introduces no
  ↪ average outcome, composite score, new hypothesis or additional alpha.
  ↪ Write root audit.json, status.json, judgment.json and components.csv
  ↪ with component, outcome, component_state, component_terminal,
  ↪ inference_status, reason, evidence_path. Components.csv is an
  ↪ evidence index under this protocol, never a second experiment graph.
  ↪ Suppression is applied after governed adjudication, and cannot govern
  ↪ activation or disclose protected directions.
```

```
Endpoint components execute independently in the order below. D3 horizon
↪  and D7 relative-link checks are internal per endpoint, never a common
↪  family prerequisite. Household-income construction can run without an
↪  identified parent roster when child/current-family and clustering
↪  requirements are available; relative outcomes require their own fixed
↪  known-parent/sibling roster. If clustering is unavailable, I3 permits
↪  valid descriptive levels with uncertainty unavailable. Each endpoint
↪  applies its original first-match regions below, writes its own
↪  component judgment and retains every era/stratum status. Root state
↪  is the ordered descriptive vector judgment above.

## Internal reading-calibration
- key: comparable
  region: Every required 2015 target-grade/year/calibration link meets D9
  ↪  documentary
    criteria.
  says: One pooled reading contrast has a documented common scale,
  ↪  conditional on
    other gates.
- key: incompatible
  region: At least one required link is authoritatively inconsistent.
  says: Pooled reading effect is restricted; separately labeled
  ↪  descriptions remain
    useful.
- key: unresolved
  region: No contradiction is established but at least one required
  ↪  common-calibration
    link is unverified.
  says: Common scale is not established; no pooled reading claim.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
Population is the fixed school grades4-7 target and its D5 scheduled
↪  grades6/8 years. Unit=construct/calibration link, not pupil. Inspect
↪  UDD_NATTEST_GENBEREGNEDE FAG,FAGID,THETA,KLASSETRIN,NORM,GENBEREGNET,
↪  SKOLEAAR,TEST_DATOTID metadata before values. Apply D9
↪  common-origin/unit/item-link criteria. Assert each scheduled stratum
↪  maps to one documented calibration identifier; no duplicate or
↪  conflicting mappings are averaged. Output calibration.csv:
↪  target_grade,calendar_year,calibration_id,construct,origin_unit_verif
↪  ied,link_verified,source_locator,status,reason. No model or test;
↪  equivalence of observed score distributions cannot be evidence.
↪  Synthetic test: identical THETA field names with absent linking
↪  evidence yields unresolved. The primary reading Atom records
↪  measurement_boundary for incompatible and otherwise/common_calibratio
↪  n_unverified for unresolved; descriptive strata retain exact units.
↪  No additional causal estimands or standardization.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and prereg/i
↪  dentification.md I1-I4 for estimands and inference. These shared
↪  definitions are part of this Atom's protocol, not optional guidance.
↪  Apply ordered checks before model fitting: delivered schema/dictionar
↪  y; date and unit semantics; unique keys and duplicate disposition;
↪  baseline and horizon eligibility; outcome construction; missingness
↪  and inference; local adjudication. Never inspect a postbaseline
↪  estimate to repair an earlier choice. A demonstrably incompatible
↪  construct is an evidenced boundary; unresolved documentation reaches
↪  otherwise. A transport/access/software failure yields terminal
↪  no_result with no local state. Apply the listed verdict regions in
↪  order, first matching region wins; otherwise is exhaustive. All
↪  future outputs go to prereg/runtime/atom-000101/reading-calibration/
↪  and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## Endpoint loneliness
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪  absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪  descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪  child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪  construct and a computed
    governed summary; public suppression does not change this local
    ↪  state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪  it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe frequent loneliness among assessed children or
↪ their baseline relatives, with no causal interpretation. Endpoint
↪ key=loneliness; reporting family=school; one registered horizon=first
↪ _full_school_year. Construction uses D4 exactly: Baseline grades4-7;
↪ Q9 exact wording and frequent labels. Required schemas are listed in
↪ this Atom and exact fields/row units/code versions are in those
↪ incorporated clauses; no alternate field or index is permitted.
↪ Eligibility uses only baseline age/grade/kinship and fixed calendar,
↪ never whether this outcome is observed. Distinguish 2015-2018,2019-20
↪ 21,2022-2024 and red/yellow/green/unknown retained categories;
↪ unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪ construct; construct D1 index population and, where relevant,D7
↪ first-index family roster; compute expected horizon under D3; join
↪ events/statuses using D2 cardinalities; build the exact endpoint and
↪ missing flag; write a full eligible/observed/missing audit; apply
↪ DESCRIBE from I3 to all registered cohort/category cells; disclose
↪ suppression/boundary labels; write descriptives.csv with G2 columns
↪ and diagnostics.csv for denominator and era checks. Binary values are
↪ multiplied by100 for display, including equal-parent/sibling mean
↪ risks; absence rates are already percent. Display unit=pp. Never
↪ impute unknown values as zero. An individual missing response remains
↪ in the eligible count; an unavailable construct/year is a boundary
↪ rather than a low outcome. Any confidence interval is descriptive
↪ cluster sampling uncertainty, not causal or measurement-error
↪ coverage. The exact interval/seed/cluster rules are I3; no
↪ descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪ ure eligible count unchanged, observed count decreases and estimate
↪ is not filled with zero; shift its timestamp before t0 and ensure it
↪ cannot become a post-test event. Check family weighting when there
↪ are1 versus2 recorded parents and for unequal sibling counts. Output
↪ names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪ causal successor may activate only under its own scientific gates;
↪ these displayed means never select its hypothesis, horizon or
↪ favorable sign. Permitted claim: Reported loneliness may change
↪ through experience, interpretation or response assistance. If
↪ measurement fails here, this exact endpoint remains a visible
↪ boundary; other families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000101/endpoints/loneliness/descriptive/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪  scribed if computed internally; record computation_status separately
↪  from disclosure status. Public plotting rows are NA/suppressed. This
↪  descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪  prereg/runtime/atom-000101/endpoints/loneliness/descriptive/.

## Endpoint stomach_ache
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪  absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪  descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪  child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪  construct and a computed
    governed summary; public suppression does not change this local
    ↪  state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪  it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe frequent stomach ache among assessed children
↪ or their baseline relatives, with no causal interpretation. Endpoint
↪ key=stomach_ache; reporting family=school; one registered horizon=fir
↪ st_full_school_year. Construction uses D4 exactly: Baseline
↪ grades4-7; Q10 exact wording and frequent labels. Required schemas ar
↪ e listed in this Atom and exact fields/row units/code versions are in
↪ those incorporated clauses; no alternate field or index is permitted.
↪ Eligibility uses only baseline age/grade/kinship and fixed calendar,
↪ never whether this outcome is observed. Distinguish 2015-2018,2019-20
↪ 21,2022-2024 and red/yellow/green/unknown retained categories;
↪ unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪ construct; construct D1 index population and, where relevant,D7
↪ first-index family roster; compute expected horizon under D3; join
↪ events/statuses using D2 cardinalities; build the exact endpoint and
↪ missing flag; write a full eligible/observed/missing audit; apply
↪ DESCRIBE from I3 to all registered cohort/category cells; disclose
↪ suppression/boundary labels; write descriptives.csv with G2 columns
↪ and diagnostics.csv for denominator and era checks. Binary values are
↪ multiplied by100 for display, including equal-parent/sibling mean
↪ risks; absence rates are already percent. Display unit=pp. Never
↪ impute unknown values as zero. An individual missing response remains
↪ in the eligible count; an unavailable construct/year is a boundary
↪ rather than a low outcome. Any confidence interval is descriptive
↪ cluster sampling uncertainty, not causal or measurement-error
↪ coverage. The exact interval/seed/cluster rules are I3; no
↪ descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪ ure eligible count unchanged, observed count decreases and estimate
↪ is not filled with zero; shift its timestamp before t0 and ensure it
↪ cannot become a post-test event. Check family weighting when there
↪ are1 versus2 recorded parents and for unequal sibling counts. Output
↪ names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪ causal successor may activate only under its own scientific gates; th
↪ ese displayed means never select its hypothesis, horizon or favorable
↪ sign. Permitted claim: A pain report is not a diagnosed physical
↪ disease or general morbidity. If measurement fails here, this exact
↪ endpoint remains a visible boundary; other families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000101/endpoints/stomach_ache/descriptive/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪  scribed if computed internally; record computation_status separately
↪  from disclosure status. Public plotting rows are NA/suppressed. This
↪  descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪  prereg/runtime/atom-000101/endpoints/stomach_ache/descriptive/.

## Endpoint headache
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪  absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪  descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪  child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪  construct and a computed
    governed summary; public suppression does not change this local
    ↪  state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪  it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe frequent headache among assessed children or
↪ their baseline relatives, with no causal interpretation. Endpoint
↪ key=headache; reporting family=school; one registered horizon=first_f
↪ ull_school_year. Construction uses D4 exactly: Baseline grades4-7;
↪ Q11 exact wording and frequent labels. Required schemas are listed in
↪ this Atom and exact fields/row units/code versions are in those
↪ incorporated clauses; no alternate field or index is permitted.
↪ Eligibility uses only baseline age/grade/kinship and fixed calendar,
↪ never whether this outcome is observed. Distinguish 2015-2018,2019-20
↪ 21,2022-2024 and red/yellow/green/unknown retained categories;
↪ unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪ construct; construct D1 index population and, where relevant,D7
↪ first-index family roster; compute expected horizon under D3; join
↪ events/statuses using D2 cardinalities; build the exact endpoint and
↪ missing flag; write a full eligible/observed/missing audit; apply
↪ DESCRIBE from I3 to all registered cohort/category cells; disclose
↪ suppression/boundary labels; write descriptives.csv with G2 columns
↪ and diagnostics.csv for denominator and era checks. Binary values are
↪ multiplied by100 for display, including equal-parent/sibling mean
↪ risks; absence rates are already percent. Display unit=pp. Never
↪ impute unknown values as zero. An individual missing response remains
↪ in the eligible count; an unavailable construct/year is a boundary
↪ rather than a low outcome. Any confidence interval is descriptive
↪ cluster sampling uncertainty, not causal or measurement-error
↪ coverage. The exact interval/seed/cluster rules are I3; no
↪ descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪ ure eligible count unchanged, observed count decreases and estimate
↪ is not filled with zero; shift its timestamp before t0 and ensure it
↪ cannot become a post-test event. Check family weighting when there
↪ are1 versus2 recorded parents and for unequal sibling counts. Output
↪ names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪ causal successor may activate only under its own scientific gates;
↪ these displayed means never select its hypothesis, horizon or
↪ favorable sign. Permitted claim: Headache reports can reflect stress,
↪ other causes and reporting changes. If measurement fails here, this
↪ exact endpoint remains a visible boundary; other families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000101/endpoints/headache/descriptive/ and remain
↪  governed until aggregate disclosure approval. Write audit.json and
↪  judgment.json plus the named plot-ready table; G1/G2 define status
↪  and column meanings. No numerical result is populated now. Before
↪  runtime use G3 synthetic join/date/missingness checks and verify
↪  row-order invariance; a failed check prevents output release. Every
↪  result constrains the Molecule under its composable rules; neither
↪  failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪  scribed if computed internally; record computation_status separately
↪  from disclosure status. Public plotting rows are NA/suppressed. This
↪  descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪  prereg/runtime/atom-000101/endpoints/headache/descriptive/.

## Endpoint low_belonging
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪  absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪  descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪  child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪  construct and a computed
    governed summary; public suppression does not change this local
    ↪  state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪  it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe low school belonging among assessed children or
↪  their baseline relatives, with no causal interpretation. Endpoint
↪  key=low_belonging; reporting family=school; one registered
↪  horizon=first_full_school_year. Construction uses D4 exactly:
↪  Baseline grades4-7; Q33 disagreement labels, not an inferred factor
↪  score. Required schemas are listed in this Atom and exact fields/row
↪  units/code versions are in those incorporated clauses; no alternate
↪  field or index is permitted. Eligibility uses only baseline
↪  age/grade/kinship and fixed calendar, never whether this outcome is
↪  observed. Distinguish 2015-2018,2019-2021,2022-2024 and
↪  red/yellow/green/unknown retained categories; unknown grade
↪  eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪  construct; construct D1 index population and, where relevant,D7
↪  first-index family roster; compute expected horizon under D3; join
↪  events/statuses using D2 cardinalities; build the exact endpoint and
↪  missing flag; write a full eligible/observed/missing audit; apply
↪  DESCRIBE from I3 to all registered cohort/category cells; disclose
↪  suppression/boundary labels; write descriptives.csv with G2 columns
↪  and diagnostics.csv for denominator and era checks. Binary values are
↪  multiplied by100 for display, including equal-parent/sibling mean
↪  risks; absence rates are already percent. Display unit=pp. Never
↪  impute unknown values as zero. An individual missing response remains
↪  in the eligible count; an unavailable construct/year is a boundary
↪  rather than a low outcome. Any confidence interval is descriptive
↪  cluster sampling uncertainty, not causal or measurement-error
↪  coverage. The exact interval/seed/cluster rules are I3; no
↪  descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪  ure eligible count unchanged, observed count decreases and estimate
↪  is not filled with zero; shift its timestamp before t0 and ensure it
↪  cannot become a post-test event. Check family weighting when there
↪  are1 versus2 recorded parents and for unequal sibling counts. Output
↪  names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪  causal successor may activate only under its own scientific gates; th
↪  ese displayed means never select its hypothesis, horizon or favorable
↪  sign. Permitted claim: Belonging is a consequential school experience
↪  and a prior-work benchmark. If measurement fails here, this exact
↪  endpoint remains a visible boundary; other families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000101/endpoints/low_belonging/descriptive/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪  scribed if computed internally; record computation_status separately
↪  from disclosure status. Public plotting rows are NA/suppressed. This
↪  descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪  prereg/runtime/atom-000101/endpoints/low_belonging/descriptive/.

## Endpoint total_absence
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪  absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪  descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪  child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪  construct and a computed
    governed summary; public suppression does not change this local
    ↪  state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪  it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe total school absence among assessed children or
↪  their baseline relatives, with no causal interpretation. Endpoint
↪  key=total_absence; reporting family=school; one registered
↪  horizon=first_full_school_year. Construction uses D5 exactly:
↪  Baseline grades4-7; annual total absent days / active days,
↪  range0-100. Required schemas are listed in this Atom and exact
↪  fields/row units/code versions are in those incorporated clauses; no
↪  alternate field or index is permitted. Eligibility uses only baseline
↪  age/grade/kinship and fixed calendar, never whether this outcome is
↪  observed. Distinguish 2015-2018,2019-2021,2022-2024 and
↪  red/yellow/green/unknown retained categories; unknown grade
↪  eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪  construct; construct D1 index population and, where relevant,D7
↪  first-index family roster; compute expected horizon under D3; join
↪  events/statuses using D2 cardinalities; build the exact endpoint and
↪  missing flag; write a full eligible/observed/missing audit; apply
↪  DESCRIBE from I3 to all registered cohort/category cells; disclose
↪  suppression/boundary labels; write descriptives.csv with G2 columns
↪  and diagnostics.csv for denominator and era checks. Binary values are
↪  multiplied by100 for display, including equal-parent/sibling mean
↪  risks; absence rates are already percent. Display unit=pp. Never
↪  impute unknown values as zero. An individual missing response remains
↪  in the eligible count; an unavailable construct/year is a boundary
↪  rather than a low outcome. Any confidence interval is descriptive
↪  cluster sampling uncertainty, not causal or measurement-error
↪  coverage. The exact interval/seed/cluster rules are I3; no
↪  descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪  ure eligible count unchanged, observed count decreases and estimate
↪  is not filled with zero; shift its timestamp before t0 and ensure it
↪  cannot become a post-test event. Check family weighting when there
↪  are1 versus2 recorded parents and for unequal sibling counts. Output
↪  names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪  causal successor may activate only under its own scientific gates; th
↪  ese displayed means never select its hypothesis, horizon or favorable
↪  sign. Permitted claim: Attendance measures participation; it is not a
↪  pure health or learning measure. If measurement fails here, this
↪  exact endpoint remains a visible boundary; other families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000101/endpoints/total_absence/descriptive/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪  scribed if computed internally; record computation_status separately
↪  from disclosure status. Public plotting rows are NA/suppressed. This
↪  descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪  prereg/runtime/atom-000101/endpoints/total_absence/descriptive/.

## Endpoint sickness_absence
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪  absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪  descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪  child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪  construct and a computed
    governed summary; public suppression does not change this local
    ↪  state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪  it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe sickness absence among assessed children or
↪ their baseline relatives, with no causal interpretation. Endpoint
↪ key=sickness_absence; reporting family=school; one registered
↪ horizon=first_full_school_year. Construction uses D5 exactly:
↪ Baseline grades4-7; annual sickness days / active days, range0-100.
↪ Required schemas are listed in this Atom and exact fields/row
↪ units/code versions are in those incorporated clauses; no alternate
↪ field or index is permitted. Eligibility uses only baseline
↪ age/grade/kinship and fixed calendar, never whether this outcome is
↪ observed. Distinguish 2015-2018,2019-2021,2022-2024 and
↪ red/yellow/green/unknown retained categories; unknown grade
↪ eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪ construct; construct D1 index population and, where relevant,D7
↪ first-index family roster; compute expected horizon under D3; join
↪ events/statuses using D2 cardinalities; build the exact endpoint and
↪ missing flag; write a full eligible/observed/missing audit; apply
↪ DESCRIBE from I3 to all registered cohort/category cells; disclose
↪ suppression/boundary labels; write descriptives.csv with G2 columns
↪ and diagnostics.csv for denominator and era checks. Binary values are
↪ multiplied by100 for display, including equal-parent/sibling mean
↪ risks; absence rates are already percent. Display unit=pp. Never
↪ impute unknown values as zero. An individual missing response remains
↪ in the eligible count; an unavailable construct/year is a boundary
↪ rather than a low outcome. Any confidence interval is descriptive
↪ cluster sampling uncertainty, not causal or measurement-error
↪ coverage. The exact interval/seed/cluster rules are I3; no
↪ descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪ ure eligible count unchanged, observed count decreases and estimate
↪ is not filled with zero; shift its timestamp before t0 and ensure it
↪ cannot become a post-test event. Check family weighting when there
↪ are1 versus2 recorded parents and for unequal sibling counts. Output
↪ names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪ causal successor may activate only under its own scientific gates; th
↪ ese displayed means never select its hypothesis, horizon or favorable
↪ sign. Permitted claim: Sickness classification of school absence can
↪ change without a diagnosed disorder. If measurement fails here, this
↪ exact endpoint remains a visible boundary; other families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000101/endpoints/sickness_absence/descriptive/
↪  and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪  scribed if computed internally; record computation_status separately
↪  from disclosure status. Public plotting rows are NA/suppressed. This
↪  descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪  prereg/runtime/atom-000101/endpoints/sickness_absence/descriptive/.

## Endpoint reading_theta
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪  absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪  descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪  child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪  construct and a computed
    governed summary; public suppression does not change this local
    ↪  state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪  it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe assessed reading among assessed children or
↪ their baseline relatives, with no causal interpretation. Endpoint
↪ key=reading_theta; reporting family=school; one registered
↪ horizon=scheduled_next_reading_test. Construction uses D5 exactly:
↪ Baseline grades4-7; targetgrade6 ifbaseline4/5,8 if6/7; fixed
↪ expected school year, earliest scheduled test. Required schemas are
↪ listed in this Atom and exact fields/row units/code versions are in
↪ those incorporated clauses; no alternate field or index is permitted.
↪ Eligibility uses only baseline age/grade/kinship and fixed calendar,
↪ never whether this outcome is observed. Distinguish 2015-2018,2019-20
↪ 21,2022-2024 and red/yellow/green/unknown retained categories;
↪ unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪ construct; construct D1 index population and, where relevant,D7
↪ first-index family roster; compute expected horizon under D3; join
↪ events/statuses using D2 cardinalities; build the exact endpoint and
↪ missing flag; write a full eligible/observed/missing audit; apply
↪ DESCRIBE from I3 to all registered cohort/category cells; disclose
↪ suppression/boundary labels; write descriptives.csv with G2 columns
↪ and diagnostics.csv for denominator and era checks. Binary values are
↪ multiplied by100 for display, including equal-parent/sibling mean
↪ risks; absence rates are already percent. Display unit=THETA. Never
↪ impute unknown values as zero. An individual missing response remains
↪ in the eligible count; an unavailable construct/year is a boundary
↪ rather than a low outcome. Any confidence interval is descriptive
↪ cluster sampling uncertainty, not causal or measurement-error
↪ coverage. The exact interval/seed/cluster rules are I3; no
↪ descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪ ure eligible count unchanged, observed count decreases and estimate
↪ is not filled with zero; shift its timestamp before t0 and ensure it
↪ cannot become a post-test event. Check family weighting when there
↪ are1 versus2 recorded parents and for unequal sibling counts. Output
↪ names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪ causal successor may activate only under its own scientific gates; th
↪ ese displayed means never select its hypothesis, horizon or favorable
↪ sign. Permitted claim: Assessed performance cannot separate unaided
↪ decoding from access/accommodations. If measurement fails here, this
↪ exact endpoint remains a visible boundary; other families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000101/endpoints/reading_theta/descriptive/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪  scribed if computed internally; record computation_status separately
↪  from disclosure status. Public plotting rows are NA/suppressed. This
↪  descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪  prereg/runtime/atom-000101/endpoints/reading_theta/descriptive/.

## Endpoint danish_grade
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪  absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪  descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪  child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪  construct and a computed
    governed summary; public suppression does not change this local
    ↪  state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪  it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe teacher-assessed danish among assessed children
↪ or their baseline relatives, with no causal interpretation. Endpoint
↪ key=danish_grade; reporting family=school; one registered
↪ horizon=scheduled_grade9_year. Construction uses D5 exactly: Baseline
↪ grades4-8; mean final Danish teacher disciplines in scheduled grade9
↪ year, range[-3,12]. Required schemas are listed in this Atom and
↪ exact fields/row units/code versions are in those incorporated
↪ clauses; no alternate field or index is permitted. Eligibility uses
↪ only baseline age/grade/kinship and fixed calendar, never whether
↪ this outcome is observed. Distinguish 2015-2018,2019-2021,2022-2024
↪ and red/yellow/green/unknown retained categories; unknown grade
↪ eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪ construct; construct D1 index population and, where relevant,D7
↪ first-index family roster; compute expected horizon under D3; join
↪ events/statuses using D2 cardinalities; build the exact endpoint and
↪ missing flag; write a full eligible/observed/missing audit; apply
↪ DESCRIBE from I3 to all registered cohort/category cells; disclose
↪ suppression/boundary labels; write descriptives.csv with G2 columns
↪ and diagnostics.csv for denominator and era checks. Binary values are
↪ multiplied by100 for display, including equal-parent/sibling mean
↪ risks; absence rates are already percent. Display unit=grade_points.
↪ Never impute unknown values as zero. An individual missing response
↪ remains in the eligible count; an unavailable construct/year is a
↪ boundary rather than a low outcome. Any confidence interval is
↪ descriptive cluster sampling uncertainty, not causal or
↪ measurement-error coverage. The exact interval/seed/cluster rules are
↪ I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪ ure eligible count unchanged, observed count decreases and estimate
↪ is not filled with zero; shift its timestamp before t0 and ensure it
↪ cannot become a post-test event. Check family weighting when there
↪ are1 versus2 recorded parents and for unequal sibling counts. Output
↪ names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪ causal successor may activate only under its own scientific gates;
↪ these displayed means never select its hypothesis, horizon or
↪ favorable sign. Permitted claim: Teacher grades reflect assessed
↪ achievement and expectations; exam performance is not substituted. If
↪ measurement fails here, this exact endpoint remains a visible
↪ boundary; other families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000101/endpoints/danish_grade/descriptive/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪ scribed if computed internally; record computation_status separately
↪ from disclosure status. Public plotting rows are NA/suppressed. This
↪ descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪ prereg/runtime/atom-000101/endpoints/danish_grade/descriptive/.
```

Registered experiment

What recorded school experience after assessment can be described, and which dimensions remain unobserved?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000101`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000109: Recorded child care pathways

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure,

boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state, component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Endpoint components execute independently in the order below. D3 horizon and D7 relative-link checks are internal per endpoint, never a common family prerequisite. Household-income construction can run without an identified parent roster when child/current-family and clustering requirements are available; relative outcomes require their own fixed known-parent/sibling roster. If clustering is unavailable, I3 permits valid descriptive levels with uncertainty unavailable. Each endpoint applies its original first-match regions below, writes its own component judgment and retains every era/stratum status. Root state is the ordered descriptive vector judgment above.

Internal hospital-era

- key: both region: Legacy and new model keys, roles and phenotype dates each validate separately. says: Both eras support separately reported encounter constructs; equivalence across eras is not assumed.
- key: legacy_only region: Legacy mapping validates and new mapping is documented incompatible or unresolved. says: 2015 causal care windows and legacy descriptions remain possible; new-era claims are bounded.
- key: new_only region: New mapping validates but legacy mapping is documented incompatible or unresolved. says: New-era descriptions remain possible; the registered 2015 hospital effect cannot run.
- key: boundary region: Both models are demonstrably incompatible with the registered person-contact phenotype. says: No hospital-coded endpoint under this contract; school symptoms/community services remain independent.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Independent construct diagnostic, D6. Read legacy administration/diagnosis RECNUM semantics and the LPR3 DW_EK_KONTAKT dictionary, diagnosis-role labels, validity-date SKS mapping and reference periods. At runtime assert old contact:many-diagnosis and new contact:many-diagnosis cardinalities; compare label semantics and code inclusion but do not use agreement of effects to declare harmonization. Report old psychiatric/general overlap by person/date/code, missing roles and model vintage. A valid legacy model is sufficient for spring 2015+730days

and does not depend on LPR3. Post2019 descriptions use the new model separately; no pooled cross-era causal contrast is registered. Output diagnostics.csv rows old_key,old_roles,old_codes,new_key,new_roles,new_codes,era_overlap_semantics. No p-values. Synthetic repeated diagnoses must produce one person-day; same key with two people fails the join; expired SKS code cannot be included. This judgment concerns observed clinical coding, not sensitivity/specificity for latent disorder.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000109/hospital-era/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Endpoint depressive_encounter

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe depressive encounters among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=depressive_encounter; reporting family=care; one registered horizon=days1_to730_before_exit. Construction uses D6 exactly: DF32/DF33 valid-date action/secondary diagnoses, collapse person/contact date; all prior histories retained. Required schemas are

listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=pp. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts. Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Recorded depressive care cannot identify incidence or severity of depression. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000109/endpoints/depressive_encounter/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and

verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000109/endpoints/depressive_encounter/descriptive/.

Endpoint anxiety_stress_encounter

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe anxiety stress encounters among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=anxiety_stress_encounter; reporting family=care; one registered horizon=days1_to730_before_exit. Construction uses D6 exactly: DF40/DF41/DF43 valid-date action/secondary diagnoses; a separate endpoint from depression. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=pp. Never impute unknown values as zero. An individual missing response

remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts. Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Anxiety/stress-coded encounters reflect symptoms, referral, access and coding. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000109/endpoints/anxiety_stress_encounter/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000109/endpoints/anxiety_stress_encounter/descriptive/.

Endpoint community_specialist

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.

- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe community specialist contact among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=community_specialist; reporting family=care; one registered horizon=whole_billing_weeks_to730. Construction uses D6 exactly: Positive corrected KONTAKT in SPEC2{24,26,35,63}; billing-week chronology. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=pp. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts. Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Public-reimbursed specialist use excludes private/unrecorded care and is not latent mental health. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000109/endpoints/community_specialist/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000109/endpoints/community_specialist/descriptive/.

Endpoint gp_contact

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe general practitioner contact among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=gp_contact; reporting family=care; one registered horizon=whole_billing_weeks_to730. Construction uses D6 exactly: SPEC2=80, net positive KONTAKT, exclude chronic honoraria0130–0133; billing week. Required schemas are listed in this Atom and

exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=pp. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts. Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: GP contact may represent recognition/help-seeking and cannot be assigned a beneficial/adverse health sign. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000109/endpoints/gp_contact/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains

the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000109/endpoints/gp_contact/descriptive/.

Complete registration fields

```
id: atom-000109
topic: Recorded child care pathways
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: What recorded recorded child care pathways can be described, and
    which dimensions remain unobserved?
  rationale: The descriptive care experiment distinguishes hospital-coded
    distress from public-reimbursed service use and their recording eras;
    no source is a proxy for all latent health.
  assumption: Administrative recognition can affect opportunities, reporting
    and service contact through multiple routes; exact source semantics and
    continuity require evidence, not an estimator label. See literature.md
    and identification.md.
  target_strength: descriptive
  target_shape: comparison
  ratings:
    importance: 4
    novelty: 3
    feasibility: 3
    data_advantage: 4
    informativeness: 0.5
  tables:
  - BEF
  - DOD
  - LPR_ADM
  - LPR_A_DIAGNOSE
  - LPR_A_KONTAKT
  - LPR_DIAG
  - PSYK_ADM
  - PSYK_DIAG
  - SSSY
  - UDD_ORDBLINDETEST
  - VNDS
  activation: state(atom-000001) == "ready" OR state(atom-000001) == "limited"
  verdicts:
  - key: described
    region: Every registered endpoint supplies at least one computed governed
      descriptive stratum; all unobserved cells remain explicit.
    says: Describe the endpoint vector in original units and separate scopes;
```

```
    no composite or causal contrast.
- key: partial
  region: At least one endpoint supplies a computed governed descriptive
    stratum and another endpoint supplies none.
  says: Report available endpoint-specific descriptions and each independent
    measurement, horizon or operational limitation.
- key: boundary
  region: No description is computable and every endpoint has an evidenced
    measurement/horizon/population boundary.
  says: Report which documented dimensions cannot be measured or reached;
    no statistical null.
- key: otherwise
  region: otherwise
  says: Preserve unresolved documentation or execution reasons; unknown
    evidence is not a negative result.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪ Atoms or activation primitives. Execute every prescribed component
  ↪ that is scientifically eligible, independently of other component
  ↪ signs. Component outputs retain their own local decision, inference
  ↪ and operational status; only the native judgment.json at the Atom
  ↪ root supplies the Atom local state. No component failure can erase
  ↪ completed evidence in another component. When no scientific component
  ↪ completes because execution fails, set terminal no_result with no
  ↪ Atom local state. Otherwise aggregate only by the ordered registered
  ↪ regions and record every component's failure, boundary, unknown or
  ↪ inactive disposition. Pending necessary evidence stays pending; it is
  ↪ never coded as negative evidence. Internal failed work is not
  ↪ automatically retried.
  Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
  ↪ I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
  ↪ definitions. These fix population, dates, table/field dictionaries,
  ↪ code versions, joins, inference, missingness, outputs and synthetic c
  ↪ hecks. A dictionary crosswalk is semantic verification before outcome
  ↪ values, not a new scientific choice. Keep all endpoint-specific
  ↪ units, horizons and Bonferroni allocations; grouping introduces no
  ↪ average outcome, composite score, new hypothesis or additional alpha.
  ↪ Write root audit.json, status.json, judgment.json and components.csv
  ↪ with component, outcome, component_state, component_terminal,
  ↪ inference_status, reason, evidence_path. Components.csv is an
  ↪ evidence index under this protocol, never a second experiment graph.
  ↪ Suppression is applied after governed adjudication, and cannot govern
  ↪ activation or disclose protected directions.

  Endpoint components execute independently in the order below. D3 horizon
  ↪ and D7 relative-link checks are internal per endpoint, never a common
  ↪ family prerequisite. Household-income construction can run without an
  ↪ identified parent roster when child/current-family and clustering
  ↪ requirements are available; relative outcomes require their own fixed
  ↪ known-parent/sibling roster. If clustering is unavailable, I3 permits
  ↪ valid descriptive levels with uncertainty unavailable. Each endpoint
  ↪ applies its original first-match regions below, writes its own
  ↪ component judgment and retains every era/stratum status. Root state
  ↪ is the ordered descriptive vector judgment above.

  ## Internal hospital-era
  - key: both
    region: Legacy and new model keys, roles and phenotype dates each
    ↪ validate separately.
```

```
  says: Both eras support separately reported encounter constructs;
  ↪  equivalence across
    eras is not assumed.
- key: legacy_only
  region: Legacy mapping validates and new mapping is documented
  ↪  incompatible or unresolved.
  says: 2015 causal care windows and legacy descriptions remain possible;
  ↪  new-era
    claims are bounded.
- key: new_only
  region: New mapping validates but legacy mapping is documented
  ↪  incompatible or unresolved.
  says: New-era descriptions remain possible; the registered 2015
  ↪  hospital effect
    cannot run.
- key: boundary
  region: Both models are demonstrably incompatible with the registered
  ↪  person-contact
    phenotype.
  says: No hospital-coded endpoint under this contract; school
  ↪  symptoms/community
    services remain independent.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Independent construct diagnostic, D6. Read legacy
↪  administration/diagnosis RECNUM semantics and the LPR3 DW_EK_KONTAKT
↪  dictionary, diagnosis-role labels, validity-date SKS mapping and
↪  reference periods. At runtime assert old contact:many-diagnosis and
↪  new contact:many-diagnosis cardinalities; compare label semantics and
↪  code inclusion but do not use agreement of effects to declare
↪  harmonization. Report old psychiatric/general overlap by
↪  person/date/code, missing roles and model vintage. A valid legacy
↪  model is sufficient for spring 2015+730days and does not depend on
↪  LPR3. Post2019 descriptions use the new model separately; no pooled
↪  cross-era causal contrast is registered. Output diagnostics.csv rows
↪  old_key,old_roles,old_codes,new_key,new_roles,new_codes,era_overlap_s
↪  emantics. No p-values. Synthetic repeated diagnoses must produce one
↪  person-day; same key with two people fails the join; expired SKS code
↪  cannot be included. This judgment concerns observed clinical coding,
↪  not sensitivity/specificity for latent disorder.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and prereg/i
↪  dentification.md I1-I4 for estimands and inference. These shared
↪  definitions are part of this Atom's protocol, not optional guidance.
↪  Apply ordered checks before model fitting: delivered schema/dictionar
↪  y; date and unit semantics; unique keys and duplicate disposition;
↪  baseline and horizon eligibility; outcome construction; missingness
↪  and inference; local adjudication. Never inspect a postbaseline
↪  estimate to repair an earlier choice. A demonstrably incompatible
↪  construct is an evidenced boundary; unresolved documentation reaches
↪  otherwise. A transport/access/software failure yields terminal
↪  no_result with no local state. Apply the listed verdict regions in
↪  order, first matching region wins; otherwise is exhaustive. All
↪  future outputs go to prereg/runtime/atom-000109/hospital-era/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## Endpoint depressive_encounter
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪  absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪  descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪  child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪  construct and a computed
    governed summary; public suppression does not change this local
    ↪  state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪  it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe depressive encounters among assessed children
↪ or their baseline relatives, with no causal interpretation. Endpoint
↪ key=depressive_encounter; reporting family=care; one registered horiz
↪ on=days1_to730_before_exit. Construction uses D6 exactly: DF32/DF33
↪ valid-date action/secondary diagnoses, collapse person/contact date;
↪ all prior histories retained. Required schemas are listed in this Ato
↪ m and exact fields/row units/code versions are in those incorporated
↪ clauses; no alternate field or index is permitted. Eligibility uses
↪ only baseline age/grade/kinship and fixed calendar, never whether
↪ this outcome is observed. Distinguish 2015-2018,2019-2021,2022-2024
↪ and red/yellow/green/unknown retained categories; unknown grade
↪ eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪ construct; construct D1 index population and, where relevant,D7
↪ first-index family roster; compute expected horizon under D3; join
↪ events/statuses using D2 cardinalities; build the exact endpoint and
↪ missing flag; write a full eligible/observed/missing audit; apply
↪ DESCRIBE from I3 to all registered cohort/category cells; disclose
↪ suppression/boundary labels; write descriptives.csv with G2 columns
↪ and diagnostics.csv for denominator and era checks. Binary values are
↪ multiplied by100 for display, including equal-parent/sibling mean
↪ risks; absence rates are already percent. Display unit=pp. Never
↪ impute unknown values as zero. An individual missing response remains
↪ in the eligible count; an unavailable construct/year is a boundary
↪ rather than a low outcome. Any confidence interval is descriptive
↪ cluster sampling uncertainty, not causal or measurement-error
↪ coverage. The exact interval/seed/cluster rules are I3; no
↪ descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪ ure eligible count unchanged, observed count decreases and estimate
↪ is not filled with zero; shift its timestamp before t0 and ensure it
↪ cannot become a post-test event. Check family weighting when there
↪ are1 versus2 recorded parents and for unequal sibling counts. Output
↪ names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪ causal successor may activate only under its own scientific gates; th
↪ ese displayed means never select its hypothesis, horizon or favorable
↪ sign. Permitted claim: Recorded depressive care cannot identify
↪ incidence or severity of depression. If measurement fails here, this
↪ exact endpoint remains a visible boundary; other families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to prereg/runtime/atom-000109/endpo
↪ ints/depressive_encounter/descriptive/ and remain governed until
↪ aggregate disclosure approval. Write audit.json and judgment.json
↪ plus the named plot-ready table; G1/G2 define status and column
↪ meanings. No numerical result is populated now. Before runtime use G3
↪ synthetic join/date/missingness checks and verify row-order
↪ invariance; a failed check prevents output release. Every result
↪ constrains the Molecule under its composable rules; neither failure
↪ nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪ scribed if computed internally; record computation_status separately
↪ from disclosure status. Public plotting rows are NA/suppressed. This
↪ descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪ prereg/runtime/atom-000109/endpoints/depressive_encounter/descriptive
↪ /.

## Endpoint anxiety_stress_encounter
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪ absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪ descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪ child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪ construct and a computed
    governed summary; public suppression does not change this local
    ↪ state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪ it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪ negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe anxiety stress encounters among assessed
↪ children or their baseline relatives, with no causal interpretation.
↪ Endpoint key=anxiety_stress_encounter; reporting family=care; one
↪ registered horizon=days1_to730_before_exit. Construction uses D6 exac
↪ tly: DF40/DF41/DF43 valid-date action/secondary diagnoses; a separate
↪ endpoint from depression. Required schemas are listed in this Atom
↪ and exact fields/row units/code versions are in those incorporated
↪ clauses; no alternate field or index is permitted. Eligibility uses
↪ only baseline age/grade/kinship and fixed calendar, never whether
↪ this outcome is observed. Distinguish 2015-2018,2019-2021,2022-2024
↪ and red/yellow/green/unknown retained categories; unknown grade
↪ eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪ construct; construct D1 index population and, where relevant,D7
↪ first-index family roster; compute expected horizon under D3; join
↪ events/statuses using D2 cardinalities; build the exact endpoint and
↪ missing flag; write a full eligible/observed/missing audit; apply
↪ DESCRIBE from I3 to all registered cohort/category cells; disclose
↪ suppression/boundary labels; write descriptives.csv with G2 columns
↪ and diagnostics.csv for denominator and era checks. Binary values are
↪ multiplied by100 for display, including equal-parent/sibling mean
↪ risks; absence rates are already percent. Display unit=pp. Never
↪ impute unknown values as zero. An individual missing response remains
↪ in the eligible count; an unavailable construct/year is a boundary
↪ rather than a low outcome. Any confidence interval is descriptive
↪ cluster sampling uncertainty, not causal or measurement-error
↪ coverage. The exact interval/seed/cluster rules are I3; no
↪ descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪ ure eligible count unchanged, observed count decreases and estimate
↪ is not filled with zero; shift its timestamp before t0 and ensure it
↪ cannot become a post-test event. Check family weighting when there
↪ are1 versus2 recorded parents and for unequal sibling counts. Output
↪ names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪ causal successor may activate only under its own scientific gates; th
↪ ese displayed means never select its hypothesis, horizon or favorable
↪ sign. Permitted claim: Anxiety/stress-coded encounters reflect sympto
↪ ms, referral, access and coding. If measurement fails here, this
↪ exact endpoint remains a visible boundary; other families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to prereg/runtime/atom-000109/endpo
↪ ints/anxiety_stress_encounter/descriptive/ and remain governed until
↪ aggregate disclosure approval. Write audit.json and judgment.json
↪ plus the named plot-ready table; G1/G2 define status and column
↪ meanings. No numerical result is populated now. Before runtime use G3
↪ synthetic join/date/missingness checks and verify row-order
↪ invariance; a failed check prevents output release. Every result
↪ constrains the Molecule under its composable rules; neither failure
↪ nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪ scribed if computed internally; record computation_status separately
↪ from disclosure status. Public plotting rows are NA/suppressed. This
↪ descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪ prereg/runtime/atom-000109/endpoints/anxiety_stress_encounter/descrip
↪ tive/.

## Endpoint community_specialist
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪ absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪ descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪ child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪ construct and a computed
    governed summary; public suppression does not change this local
    ↪ state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪ it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪ negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe community specialist contact among assessed
↪ children or their baseline relatives, with no causal interpretation.
↪ Endpoint key=community_specialist; reporting family=care; one
↪ registered horizon=whole_billing_weeks_to730. Construction uses D6
↪ exactly: Positive corrected KONTAKT in SPEC2{24,26,35,63};
↪ billing-week chronology. Required schemas are listed in this Atom and
↪ exact fields/row units/code versions are in those incorporated
↪ clauses; no alternate field or index is permitted. Eligibility uses
↪ only baseline age/grade/kinship and fixed calendar, never whether
↪ this outcome is observed. Distinguish 2015-2018,2019-2021,2022-2024
↪ and red/yellow/green/unknown retained categories; unknown grade
↪ eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪ construct; construct D1 index population and, where relevant,D7
↪ first-index family roster; compute expected horizon under D3; join
↪ events/statuses using D2 cardinalities; build the exact endpoint and
↪ missing flag; write a full eligible/observed/missing audit; apply
↪ DESCRIBE from I3 to all registered cohort/category cells; disclose
↪ suppression/boundary labels; write descriptives.csv with G2 columns
↪ and diagnostics.csv for denominator and era checks. Binary values are
↪ multiplied by100 for display, including equal-parent/sibling mean
↪ risks; absence rates are already percent. Display unit=pp. Never
↪ impute unknown values as zero. An individual missing response remains
↪ in the eligible count; an unavailable construct/year is a boundary
↪ rather than a low outcome. Any confidence interval is descriptive
↪ cluster sampling uncertainty, not causal or measurement-error
↪ coverage. The exact interval/seed/cluster rules are I3; no
↪ descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪ ure eligible count unchanged, observed count decreases and estimate
↪ is not filled with zero; shift its timestamp before t0 and ensure it
↪ cannot become a post-test event. Check family weighting when there
↪ are1 versus2 recorded parents and for unequal sibling counts. Output
↪ names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪ causal successor may activate only under its own scientific gates;
↪ these displayed means never select its hypothesis, horizon or
↪ favorable sign. Permitted claim: Public-reimbursed specialist use
↪ excludes private/unrecorded care and is not latent mental health. If
↪ measurement fails here, this exact endpoint remains a visible
↪ boundary; other families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to prereg/runtime/atom-000109/endpo
↪ ints/community_specialist/descriptive/ and remain governed until
↪ aggregate disclosure approval. Write audit.json and judgment.json
↪ plus the named plot-ready table; G1/G2 define status and column
↪ meanings. No numerical result is populated now. Before runtime use G3
↪ synthetic join/date/missingness checks and verify row-order
↪ invariance; a failed check prevents output release. Every result
↪ constrains the Molecule under its composable rules; neither failure
↪ nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪ scribed if computed internally; record computation_status separately
↪ from disclosure status. Public plotting rows are NA/suppressed. This
↪ descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪ prereg/runtime/atom-000109/endpoints/community_specialist/descriptive
↪ /.

## Endpoint gp_contact
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪ absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪ descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪ child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪ construct and a computed
    governed summary; public suppression does not change this local
    ↪ state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪ it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪ negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe general practitioner contact among assessed
↪ children or their baseline relatives, with no causal interpretation.
↪ Endpoint key=gp_contact; reporting family=care; one registered
↪ horizon=whole_billing_weeks_to730. Construction uses D6 exactly:
↪ SPEC2=80, net positive KONTAKT, exclude chronic honoraria0130-0133;
↪ billing week. Required schemas are listed in this Atom and exact
↪ fields/row units/code versions are in those incorporated clauses; no
↪ alternate field or index is permitted. Eligibility uses only baseline
↪ age/grade/kinship and fixed calendar, never whether this outcome is
↪ observed. Distinguish 2015-2018,2019-2021,2022-2024 and
↪ red/yellow/green/unknown retained categories; unknown grade
↪ eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪ construct; construct D1 index population and, where relevant,D7
↪ first-index family roster; compute expected horizon under D3; join
↪ events/statuses using D2 cardinalities; build the exact endpoint and
↪ missing flag; write a full eligible/observed/missing audit; apply
↪ DESCRIBE from I3 to all registered cohort/category cells; disclose
↪ suppression/boundary labels; write descriptives.csv with G2 columns
↪ and diagnostics.csv for denominator and era checks. Binary values are
↪ multiplied by100 for display, including equal-parent/sibling mean
↪ risks; absence rates are already percent. Display unit=pp. Never
↪ impute unknown values as zero. An individual missing response remains
↪ in the eligible count; an unavailable construct/year is a boundary
↪ rather than a low outcome. Any confidence interval is descriptive
↪ cluster sampling uncertainty, not causal or measurement-error
↪ coverage. The exact interval/seed/cluster rules are I3; no
↪ descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪ ure eligible count unchanged, observed count decreases and estimate
↪ is not filled with zero; shift its timestamp before t0 and ensure it
↪ cannot become a post-test event. Check family weighting when there
↪ are1 versus2 recorded parents and for unequal sibling counts. Output
↪ names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪ causal successor may activate only under its own scientific gates;
↪ these displayed means never select its hypothesis, horizon or
↪ favorable sign. Permitted claim: GP contact may represent
↪ recognition/help-seeking and cannot be assigned a beneficial/adverse
↪ health sign. If measurement fails here, this exact endpoint remains a
↪ visible boundary; other families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000109/endpoints/gp_contact/descriptive/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪ scribed if computed internally; record computation_status separately
↪ from disclosure status. Public plotting rows are NA/suppressed. This
↪ descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪ prereg/runtime/atom-000109/endpoints/gp_contact/descriptive/.
```

Registered experiment

What recorded recorded child care pathways can be described, and which dimensions remain unobserved?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000109`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000113: Family circumstances after assessment

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure,

boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state, component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Endpoint components execute independently in the order below. D3 horizon and D7 relative-link checks are internal per endpoint, never a common family prerequisite. Household-income construction can run without an identified parent roster when child/current-family and clustering requirements are available; relative outcomes require their own fixed known-parent/sibling roster. If clustering is unavailable, I3 permits valid descriptive levels with uncertainty unavailable. Each endpoint applies its original first-match regions below, writes its own component judgment and retains every era/stratum status. Root state is the ordered descriptive vector judgment above.

Internal hospital-era

- key: both region: Legacy and new model keys, roles and phenotype dates each validate separately. says: Both eras support separately reported encounter constructs; equivalence across eras is not assumed.
- key: legacy_only region: Legacy mapping validates and new mapping is documented incompatible or unresolved. says: 2015 causal care windows and legacy descriptions remain possible; new-era claims are bounded.
- key: new_only region: New mapping validates but legacy mapping is documented incompatible or unresolved. says: New-era descriptions remain possible; the registered 2015 hospital effect cannot run.
- key: boundary region: Both models are demonstrably incompatible with the registered person-contact phenotype. says: No hospital-coded endpoint under this contract; school symptoms/community services remain independent.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Independent construct diagnostic, D6. Read legacy administration/diagnosis RECNUM semantics and the LPR3 DW_EK_KONTAKT dictionary, diagnosis-role labels, validity-date SKS mapping and reference periods. At runtime assert old contact:many-diagnosis and new contact:many-diagnosis cardinalities; compare label semantics and code inclusion but do not use agreement of effects to declare harmonization. Report old psychiatric/general overlap by person/date/code, missing roles and model vintage. A valid legacy model is sufficient for spring 2015+730days

and does not depend on LPR3. Post2019 descriptions use the new model separately; no pooled cross-era causal contrast is registered. Output diagnostics.csv rows old_key,old_roles,old_codes,new_key,new_roles,new_codes,era_overlap_semantics. No p-values. Synthetic repeated diagnoses must produce one person-day; same key with two people fails the join; expired SKS code cannot be included. This judgment concerns observed clinical coding, not sensitivity/specificity for latent disorder.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000113/hospital-era/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Internal relatives

- key: usable region: Pretest linkage semantics verified; all known relations have unique valid mappings and unknown roles are explicitly marked. says: Fixed recorded-parent/sibling targets can be studied with their baseline scope limitations.
- key: boundary region: Documentation establishes no dated parental linkage or incompatible key classes, so no baseline family target can be constructed. says: Family outcomes cannot be attributed to the index child under this delivery; child outcomes remain eligible.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Use D7 fixed pretest BEF snapshot, MOR_ID/FAR_ID, FOED_DAG, PNR, FAMILIE_ID and BEFBOP dated address intervals. Parent IDs must share the child PNR linkage class. Assert each child has at most one recorded value per parent role per snapshot; missing roles are unknown, not childless/no carer. Construct sibling sets by nonmissing shared parent; establish baseline school-grade eligibility with prior-month absence. Scan index assessments chronologically with fixed hash ties as D7. Report resident/nonresident parent links, one/two known roles, eligible sibling sets, conflicts and baseline missingness. This is the scope of recorded kinship, not validation of genetic relatedness or caregiving. Output diagnostics.csv with linkage

proportions and conflict dispositions. No substantive outcome needed; no p-values. Synthetic fixture: two children with missing fathers are not siblings, subsequent births are excluded, later parental diagnosis cannot change roster. A complete roster at birth does not guarantee future response. Family branch uses only scientifically interpretable pretest links.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000113/relatives/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Internal income-provenance

- key: corrected region: D9 exact delivery/variable/year correction provenance is complete. says: Interpret the delivered variable under the documented corrected definition; runtime value and join validity remain separate.
- key: known_uncorrected region: D9 provenance explicitly identifies the uncorrected historical variable. says: Use only the frozen recorded-income proxy interpretation; no intended-resource or welfare conclusion.
- key: unresolved region: Neither correction status is established, including contradictory or absent documentation. says: Retain a correction-unverified recorded-income proxy; do not infer corrected status from vintage or suffix.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Documentation-only pre-outcome judgment, unit delivery-variable-year. Incorporate D9 exactly. Check dated release notes and the allowed table provenance against the official DST income pages cited there. No rows or estimates needed. For FAIK.FAMAEKVIVADISP_13, primary year=2016; additionally report each affected descriptive year separately. Preserve PNR/year (IND) or FAMILIE_ID/year (FAIK) key class and D2 reference alignment; no row-level joins performed by this Atom. First match corrected, known_uncorrected, unresolved; otherwise covers contradictory execution evidence not a transport

failure. No estimator, SE, multiplicity or equivalence test. Write correction.csv: table, variable, reference_year, delivery_id, correction_status, source_locator, criterion, status, reason. Required correction status is decided before related values are opened; no field substitution or municipality removal. Synthetic checks: a recent delivery and _13 alone yield unresolved; an explicit uncorrected manifest yields known_uncorrected; only exact documented propagation qualifies corrected. Effects retain the same numeric proxy under noncorrected states, with restrictions in the Molecule and paper. Missing variable becomes the consuming endpoint measurement_boundary; this Atom does not manufacture income.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000113/income-provenance/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Year-specific descriptive provenance: in addition to the primary 2016 judgment, correction.csv contains one adjudicated record for each delivered FAIK.FAMAEKVIVADISP_13 reference year 2016–2024 used by atom-000113. No 2016 local state is propagated to another year. Apply D9 separately to the exact delivery-variable-year; preserve known year-specific recording issues, including the separately documented 2019 correction, rather than assuming every issue is the 2014–2016 error. corrected requires an exact dated provider provenance statement establishing the intended definition and resolution of applicable documented issues in that delivered year; merely being outside 2014–2016 or newly delivered is insufficient. known_uncorrected requires explicit affected-version evidence for that year; otherwise unresolved. This retains the three existing dispositions without assuming favorable later years. Add delivery_checksum and provenance_id (unique release-safe record identifier) to correction.csv; retain full source_locator and criterion in the governed record. Its unique key is (table,variable,reference_year,delivery_id), one record per key. Conflicting source claims are one adjudicated unresolved record, never duplicate conflicting rows. An omitted/inaccessible record is unavailable binding, distinct from an adjudicated unresolved correction. atom-000113 may perform this same documentation check locally when the primary-2016 diagnostic is unrun; it must preserve the

same key and criteria in its own income-provenance.csv, not infer a local result for this Atom. Descriptive work is not globally gated by this Atom. The local D9 family-income audit state remains the 2016 judgment only; supplementary years are interface provenance, not new effect tests. ## Endpoint parent_care - key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred. - key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary. - key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect. - key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe parents recorded care among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=parent_care; reporting family=family; one registered horizon=child_days1_to730. Construction uses D6/D7 exactly: Mean over fixed recorded parents of any DF32/33/40/41/43 encounter; not restricted to resident mothers. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=pp. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts. Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Parental recorded care

cannot quantify caregiving burden; own recognition is a rival route. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000113/endpoints/parent_care/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000113/endpoints/parent_care/descriptive/.

Endpoint sibling_belonging

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe sibling school belonging among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=sibling_belonging;

reporting family=family; one registered horizon=first_full_school_year. Construction uses D4/D7 exactly: Mean low-belonging outcome among fixed baseline siblings aged9–14 in grades4–7; no eligible siblings means outside this estimand. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=pp. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts. Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Sibling experience is independently consequential and does not identify resource diversion. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching

region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000113/endpoints/sibling_belonging/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000113/endpoints/sibling_belonging/descriptive/.

Endpoint family_resources

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe family disposable resources among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=family_resources; reporting family=family; one registered horizon=calendar_year_after_test. Construction uses D7 exactly: FAIK.FAMAEKVIVADISP_13/1000 via child current December FAMILIE_ID in year(t0)+1. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose

suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=1000_DKK. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts. Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Current equivalized family resources include household composition; they are not consumption or transfers. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000113/endpoints/family_resources/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect.

Mandatory income binding before values, export and Figure4: incorporate D9, D10 and G2's descriptive income metadata contract. Retain calendar_year=year(t0)+1 separately; only nominal complete years through 2024 can have values. For each stratum, join to EXACTLY one adjudicated provenance record

by (FAIK,FAMAEKVIVADISP_13,reference_year=calendar_year,delivery_id). Use D9 family-income audit correction.csv where its year-specific record is available; otherwise perform the same pre-value D9 documentation check within this Atom and emit income-provenance.csv with identical fields. This is part of constructing this description and is not a new hypothesis or a dependence on the primary2016 correction state. Never transfer a correction disposition between years or deliveries. Preserve source locators, delivery checksum and criteria in the governed audit. Contradictory documented correction evidence is an adjudicated unresolved disposition; contradictory/missing export metadata are an interface error and must not be plotted as if adjudicated.

Every descriptives.csv row additionally carries source_table=FAIK, source_variable=FAMAEKVIVADISP_13, reference_year, delivery_id, provenance_id, scope_id, interpretation_ceiling and metadata_status. Verified binding uses a decimal reference_year equal to calendar_year; public delivery_id/provenance_id/scope_id are nonempty opaque release-safe labels of at most80 characters linked one-to-one in the exporter to governed source/checksum/scope records. Distinct years may have distinct states, and categories in the same delivery-year must share the same adjudication. metadata_status=verified means the join and adjudication are verified, not that correction was established. Allowed mappings are corrected/documented_resources, known_uncorrected/recorded_income_proxy, unresolved/recorded_income_proxy. Corrected permits documented disposable-resource language only for that year; both proxy routes explicitly say recorded equivalized-income proxy and No intended-resource or welfare interpretation. They cannot identify actual resource change or correct historical reporting error.

An unavailable binding uses metadata_status=unavailable, correction_status=unavailable, interpretation_ceiling=unavailable_metadata and delivery_id=provenance_id=scope_id=unavailable. Keep known source_table/source_variable and reference_year=calendar_year (all only for the all-key horizon-boundary row); all empirical numeric fields are NA, with an explicit status/reason. Do not downgrade a supplied contradictory row into this route: reject the malformed export. Underlying description may remain described if an internal governed summary exists; public unavailable/suppressed rows do not alter its local state. If no stratum can be computed because the documentation check itself remains unperformed, otherwise or operational no_result applies by cause; it is not a statistical null. Figure4 uses separate year/delivery panels and the exact ceiling note, retaining corrected, proxy and unavailable years together without pooling or a shared2016 state. A wholly absent input gets a neutral family-income panel and unavailable-binding note. Figures never recompute or combine these means.

Required checks: corrected, known_uncorrected, adjudicated unresolved, unavailable binding and mixed-year status-only rows; reject omitted metadata, wrong variable/year/horizon, inconsistent ceiling, unknown binding, conflicting same-year provenance, and numerical values on unavailable rows. Verify a2016 known_uncorrected row with every number suppressed still displays the proxy and welfare restriction. Verify changing only another year's correction state does not relabel the2016

row. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000113/endpoints/family_resources/descriptive/.

Endpoint parent_hours

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe parents paid hours among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=parent_hours; reporting family=family; one registered horizon=calendar_year_after_test. Construction uses D7 exactly: Mean annual sum AJO_LOENTIMER over fixed parents; retain imputed hours, report share, include validated employee zeros. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=hours. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts.

Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Employee hours cannot measure self-employment, advocacy time or total family welfare. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000113/endpoints/parent_hours/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000113/endpoints/parent_hours/descriptive/.

Endpoint parent_assessment

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.

- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe parents retained assessment among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=parent_assessment; reporting family=family; one registered horizon=child_days1_to730. Construction uses D7 exactly: Mean fixed-parent indicator of later retained national-test DATO; no pilot/reason inference. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=pp. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts. Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Subsequent retained assessment is a possible family-recognition response, not first lifetime dyslexia. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result

with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000113/endpoints/parent_assessment/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000113/endpoints/parent_assessment/descriptive/.

Endpoint parent_wages

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe parents wage income among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=parent_wages; reporting family=family; one registered horizon=calendar_year_after_test. Construction uses D7 exactly: Mean IND.LOENMV_13/1000 over fixed parents inyear(t0)+1, not employed-only; same resource missingness/annual-slice rules. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing

audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=1000_DKK. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts. Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Wages are separate from paid hours and resources; neither identifies advocacy costs. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000113/endpoints/parent_wages/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000113/endpoints/parent_wages/descriptive/.

Complete registration fields

```
id: atom-000113
topic: Family circumstances after assessment
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: What recorded family circumstances after assessment can be
  ↪  described,
    and which dimensions remain unobserved?
  rationale: The descriptive family experiment locates child assessment within
    relatives' care, schooling, work, recognition and household income. Each
    component retains its own relative roster and claim ceiling.
  assumption: Administrative recognition can affect opportunities, reporting
    and service contact through multiple routes; exact source semantics and
    continuity require evidence, not an estimator label. See literature.md
    and identification.md.
  target_strength: descriptive
  target_shape: comparison
  ratings:
    importance: 4
    novelty: 3
    feasibility: 3
    data_advantage: 4
    informativeness: 0.5
  tables:
  - BEF
  - BEFBOP
  - BFL
  - DOD
  - FAIK
  - IND
  - LPR_ADM
  - LPR_A_DIAGNOSE
  - LPR_A_KONTAKT
  - LPR_DIAG
  - PSYK_ADM
  - PSYK_DIAG
  - UDD_FOLKESKOLE_FRAVAER_STIL
  - UDD_ORDBLINDETEST
  - UDD_TRIVSEL_STORE_KLASSER
  - VNDS
  activation: state(atom-000001) == "ready" OR state(atom-000001) == "limited"
  verdicts:
  - key: described
    region: Every registered endpoint supplies at least one computed governed
      descriptive stratum; all unobserved cells remain explicit.
    says: Describe the endpoint vector in original units and separate scopes;
      no composite or causal contrast.
  - key: partial
    region: At least one endpoint supplies a computed governed descriptive
      stratum and another endpoint supplies none.
    says: Report available endpoint-specific descriptions and each independent
      measurement, horizon or operational limitation.
```

```
- key: boundary
  region: No description is computable and every endpoint has an evidenced
    measurement/horizon/population boundary.
  says: Report which documented dimensions cannot be measured or reached;
    no statistical null.
- key: otherwise
  region: otherwise
  says: Preserve unresolved documentation or execution reasons; unknown
    evidence is not a negative result.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪ Atoms or activation primitives. Execute every prescribed component
  ↪ that is scientifically eligible, independently of other component
  ↪ signs. Component outputs retain their own local decision, inference
  ↪ and operational status; only the native judgment.json at the Atom
  ↪ root supplies the Atom local state. No component failure can erase
  ↪ completed evidence in another component. When no scientific component
  ↪ completes because execution fails, set terminal no_result with no
  ↪ Atom local state. Otherwise aggregate only by the ordered registered
  ↪ regions and record every component's failure, boundary, unknown or
  ↪ inactive disposition. Pending necessary evidence stays pending; it is
  ↪ never coded as negative evidence. Internal failed work is not
  ↪ automatically retried.
  Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
  ↪ I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
  ↪ definitions. These fix population, dates, table/field dictionaries,
  ↪ code versions, joins, inference, missingness, outputs and synthetic c
  ↪ hecks. A dictionary crosswalk is semantic verification before outcome
  ↪ values, not a new scientific choice. Keep all endpoint-specific
  ↪ units, horizons and Bonferroni allocations; grouping introduces no
  ↪ average outcome, composite score, new hypothesis or additional alpha.
  ↪ Write root audit.json, status.json, judgment.json and components.csv
  ↪ with component, outcome, component_state, component_terminal,
  ↪ inference_status, reason, evidence_path. Components.csv is an
  ↪ evidence index under this protocol, never a second experiment graph.
  ↪ Suppression is applied after governed adjudication, and cannot govern
  ↪ activation or disclose protected directions.

  Endpoint components execute independently in the order below. D3 horizon
  ↪ and D7 relative-link checks are internal per endpoint, never a common
  ↪ family prerequisite. Household-income construction can run without an
  ↪ identified parent roster when child/current-family and clustering
  ↪ requirements are available; relative outcomes require their own fixed
  ↪ known-parent/sibling roster. If clustering is unavailable, I3 permits
  ↪ valid descriptive levels with uncertainty unavailable. Each endpoint
  ↪ applies its original first-match regions below, writes its own
  ↪ component judgment and retains every era/stratum status. Root state
  ↪ is the ordered descriptive vector judgment above.

  ## Internal hospital-era
  - key: both
    region: Legacy and new model keys, roles and phenotype dates each
    ↪ validate separately.
    says: Both eras support separately reported encounter constructs;
    ↪ equivalence across
      eras is not assumed.
  - key: legacy_only
    region: Legacy mapping validates and new mapping is documented
    ↪ incompatible or unresolved.
```

```
  says: 2015 causal care windows and legacy descriptions remain possible;
  ↪ new-era
    claims are bounded.
- key: new_only
  region: New mapping validates but legacy mapping is documented
  ↪ incompatible or unresolved.
  says: New-era descriptions remain possible; the registered 2015
  ↪ hospital effect
    cannot run.
- key: boundary
  region: Both models are demonstrably incompatible with the registered
  ↪ person-contact
    phenotype.
  says: No hospital-coded endpoint under this contract; school
  ↪ symptoms/community
    services remain independent.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪ negative
    finding is inferred; report the exact reason.
Independent construct diagnostic, D6. Read legacy
↪ administration/diagnosis RECNUM semantics and the LPR3 DW_EK_KONTAKT
↪ dictionary, diagnosis-role labels, validity-date SKS mapping and
↪ reference periods. At runtime assert old contact:many-diagnosis and
↪ new contact:many-diagnosis cardinalities; compare label semantics and
↪ code inclusion but do not use agreement of effects to declare
↪ harmonization. Report old psychiatric/general overlap by
↪ person/date/code, missing roles and model vintage. A valid legacy
↪ model is sufficient for spring 2015+730days and does not depend on
↪ LPR3. Post2019 descriptions use the new model separately; no pooled
↪ cross-era causal contrast is registered. Output diagnostics.csv rows
↪ old_key,old_roles,old_codes,new_key,new_roles,new_codes,era_overlap_s
↪ emantics. No p-values. Synthetic repeated diagnoses must produce one
↪ person-day; same key with two people fails the join; expired SKS code
↪ cannot be included. This judgment concerns observed clinical coding,
↪ not sensitivity/specificity for latent disorder.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and prereg/i
↪ dentification.md I1-I4 for estimands and inference. These shared
↪ definitions are part of this Atom's protocol, not optional guidance.
↪ Apply ordered checks before model fitting: delivered schema/dictionar
↪ y; date and unit semantics; unique keys and duplicate disposition;
↪ baseline and horizon eligibility; outcome construction; missingness
↪ and inference; local adjudication. Never inspect a postbaseline
↪ estimate to repair an earlier choice. A demonstrably incompatible
↪ construct is an evidenced boundary; unresolved documentation reaches
↪ otherwise. A transport/access/software failure yields terminal
↪ no_result with no local state. Apply the listed verdict regions in
↪ order, first matching region wins; otherwise is exhaustive. All
↪ future outputs go to prereg/runtime/atom-000113/hospital-era/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.
```

```
## Internal relatives
- key: usable
  region: Pretest linkage semantics verified; all known relations have
  ↪  unique valid
    mappings and unknown roles are explicitly marked.
  says: Fixed recorded-parent/sibling targets can be studied with their
  ↪  baseline scope
    limitations.
- key: boundary
  region: Documentation establishes no dated parental linkage or
  ↪  incompatible key
    classes, so no baseline family target can be constructed.
  says: Family outcomes cannot be attributed to the index child under
  ↪  this delivery;
    child outcomes remain eligible.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Use D7 fixed pretest BEF snapshot, MOR_ID/FAR_ID, FOED_DAG, PNR,
↪  FAMILIE_ID and BEFBOP dated address intervals. Parent IDs must share
↪  the child PNR linkage class. Assert each child has at most one
↪  recorded value per parent role per snapshot; missing roles are
↪  unknown, not childless/no carer. Construct sibling sets by nonmissing
↪  shared parent; establish baseline school-grade eligibility with
↪  prior-month absence. Scan index assessments chronologically with
↪  fixed hash ties as D7. Report resident/nonresident parent links,
↪  one/two known roles, eligible sibling sets, conflicts and baseline
↪  missingness. This is the scope of recorded kinship, not validation of
↪  genetic relatedness or caregiving. Output diagnostics.csv with
↪  linkage proportions and conflict dispositions. No substantive outcome
↪  needed; no p-values. Synthetic fixture: two children with missing
↪  fathers are not siblings, subsequent births are excluded, later
↪  parental diagnosis cannot change roster. A complete roster at birth
↪  does not guarantee future response. Family branch uses only
↪  scientifically interpretable pretest links.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000113/relat
↪  ives/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## Internal income-provenance
- key: corrected
  region: D9 exact delivery/variable/year correction provenance is
  ↪  complete.
  says: Interpret the delivered variable under the documented corrected
  ↪  definition;
    runtime value and join validity remain separate.
- key: known_uncorrected
  region: D9 provenance explicitly identifies the uncorrected historical
  ↪  variable.
  says: Use only the frozen recorded-income proxy interpretation; no
  ↪  intended-resource
    or welfare conclusion.
- key: unresolved
  region: Neither correction status is established, including
  ↪  contradictory or absent
    documentation.
  says: Retain a correction-unverified recorded-income proxy; do not
  ↪  infer corrected
    status from vintage or suffix.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Documentation-only pre-outcome judgment, unit delivery-variable-year.
↪ Incorporate D9 exactly. Check dated release notes and the allowed
↪ table provenance against the official DST income pages cited there.
↪ No rows or estimates needed. For FAIK.FAMAEKVIVADISP_13, primary
↪ year=2016; additionally report each affected descriptive year
↪ separately. Preserve PNR/year (IND) or FAMILIE_ID/year (FAIK) key
↪ class and D2 reference alignment; no row-level joins performed by
↪ this Atom. First match corrected, known_uncorrected, unresolved;
↪ otherwise covers contradictory execution evidence not a transport
↪ failure. No estimator, SE, multiplicity or equivalence test. Write
↪ correction.csv: table, variable, reference_year, delivery_id,
↪ correction_status, source_locator, criterion, status, reason.
↪ Required correction status is decided before related values are
↪ opened; no field substitution or municipality removal. Synthetic
↪ checks: a recent delivery and _13 alone yield unresolved; an explicit
↪ uncorrected manifest yields known_uncorrected; only exact documented
↪ propagation qualifies corrected. Effects retain the same numeric
↪ proxy under noncorrected states, with restrictions in the Molecule
↪ and paper. Missing variable becomes the consuming endpoint
↪ measurement_boundary; this Atom does not manufacture income.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and prereg/i
↪ dentification.md I1-I4 for estimands and inference. These shared
↪ definitions are part of this Atom's protocol, not optional guidance.
↪ Apply ordered checks before model fitting: delivered schema/dictionar
↪ y; date and unit semantics; unique keys and duplicate disposition;
↪ baseline and horizon eligibility; outcome construction; missingness
↪ and inference; local adjudication. Never inspect a postbaseline
↪ estimate to repair an earlier choice. A demonstrably incompatible
↪ construct is an evidenced boundary; unresolved documentation reaches
↪ otherwise. A transport/access/software failure yields terminal
↪ no_result with no local state. Apply the listed verdict regions in
↪ order, first matching region wins; otherwise is exhaustive. All
↪ future outputs go to prereg/runtime/atom-000113/income-provenance/
↪ and remain governed until aggregate disclosure approval. Write
↪ audit.json and judgment.json plus the named plot-ready table; G1/G2
↪ define status and column meanings. No numerical result is populated
↪ now. Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.
```

```
Year-specific descriptive provenance: in addition to the primary 2016
↪  judgment, correction.csv contains one adjudicated record for each
↪  delivered FAIK.FAMAEKVIVADISP_13 reference year 2016-2024 used by
↪  atom-000113. No 2016 local state is propagated to another year. Apply
↪  D9 separately to the exact delivery-variable-year; preserve known yea
↪  r-specific recording issues, including the separately documented 2019
↪  correction, rather than assuming every issue is the 2014-2016 error.
↪  corrected requires an exact dated provider provenance statement
↪  establishing the intended definition and resolution of applicable
↪  documented issues in that delivered year; merely being outside
↪  2014-2016 or newly delivered is insufficient. known_uncorrected
↪  requires explicit affected-version evidence for that year; otherwise
↪  unresolved. This retains the three existing dispositions without assu
↪  ming favorable later years. Add delivery_checksum and provenance_id
↪  (unique release-safe record identifier) to correction.csv; retain
↪  full source_locator and criterion in the governed record. Its unique
↪  key is (table,variable,reference_year,delivery_id), one record per
↪  key. Conflicting source claims are one adjudicated unresolved record,
↪  never duplicate conflicting rows. An omitted/inaccessible record is
↪  unavailable binding, distinct from an adjudicated unresolved
↪  correction. atom-000113 may perform this same documentation check
↪  locally when the primary-2016 diagnostic is unrun; it must preserve
↪  the same key and criteria in its own income-provenance.csv, not infer
↪  a local result for this Atom. Descriptive work is not globally gated
↪  by this Atom. The local D9 family-income audit state remains the 2016
↪  judgment only; supplementary years are interface provenance, not new
↪  effect tests.
## Endpoint parent_care
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪  absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪  descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪  child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪  construct and a computed
    governed summary; public suppression does not change this local
    ↪  state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪  it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe parents recorded care among assessed children
↪ or their baseline relatives, with no causal interpretation. Endpoint
↪ key=parent_care; reporting family=family; one registered horizon=chil
↪ d_days1_to730. Construction uses D6/D7 exactly: Mean over fixed
↪ recorded parents of any DF32/33/40/41/43 encounter; not restricted to
↪ resident mothers. Required schemas are listed in this Atom and exact
↪ fields/row units/code versions are in those incorporated clauses; no
↪ alternate field or index is permitted. Eligibility uses only baseline
↪ age/grade/kinship and fixed calendar, never whether this outcome is
↪ observed. Distinguish 2015-2018,2019-2021,2022-2024 and
↪ red/yellow/green/unknown retained categories; unknown grade
↪ eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪ construct; construct D1 index population and, where relevant,D7
↪ first-index family roster; compute expected horizon under D3; join
↪ events/statuses using D2 cardinalities; build the exact endpoint and
↪ missing flag; write a full eligible/observed/missing audit; apply
↪ DESCRIBE from I3 to all registered cohort/category cells; disclose
↪ suppression/boundary labels; write descriptives.csv with G2 columns
↪ and diagnostics.csv for denominator and era checks. Binary values are
↪ multiplied by100 for display, including equal-parent/sibling mean
↪ risks; absence rates are already percent. Display unit=pp. Never
↪ impute unknown values as zero. An individual missing response remains
↪ in the eligible count; an unavailable construct/year is a boundary
↪ rather than a low outcome. Any confidence interval is descriptive
↪ cluster sampling uncertainty, not causal or measurement-error
↪ coverage. The exact interval/seed/cluster rules are I3; no
↪ descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪ ure eligible count unchanged, observed count decreases and estimate
↪ is not filled with zero; shift its timestamp before t0 and ensure it
↪ cannot become a post-test event. Check family weighting when there
↪ are1 versus2 recorded parents and for unequal sibling counts. Output
↪ names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪ causal successor may activate only under its own scientific gates;
↪ these displayed means never select its hypothesis, horizon or
↪ favorable sign. Permitted claim: Parental recorded care cannot
↪ quantify caregiving burden; own recognition is a rival route. If
↪ measurement fails here, this exact endpoint remains a visible
↪ boundary; other families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000113/endpoints/parent_care/descriptive/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪  scribed if computed internally; record computation_status separately
↪  from disclosure status. Public plotting rows are NA/suppressed. This
↪  descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪  prereg/runtime/atom-000113/endpoints/parent_care/descriptive/.

## Endpoint sibling_belonging
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪  absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪  descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪  child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪  construct and a computed
    governed summary; public suppression does not change this local
    ↪  state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪  it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe sibling school belonging among assessed
↪ children or their baseline relatives, with no causal interpretation.
↪ Endpoint key=sibling_belonging; reporting family=family; one
↪ registered horizon=first_full_school_year. Construction uses D4/D7
↪ exactly: Mean low-belonging outcome among fixed baseline siblings
↪ aged9-14 in grades4-7; no eligible siblings means outside this
↪ estimand. Required schemas are listed in this Atom and exact
↪ fields/row units/code versions are in those incorporated clauses; no
↪ alternate field or index is permitted. Eligibility uses only baseline
↪ age/grade/kinship and fixed calendar, never whether this outcome is
↪ observed. Distinguish 2015-2018,2019-2021,2022-2024 and
↪ red/yellow/green/unknown retained categories; unknown grade
↪ eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪ construct; construct D1 index population and, where relevant,D7
↪ first-index family roster; compute expected horizon under D3; join
↪ events/statuses using D2 cardinalities; build the exact endpoint and
↪ missing flag; write a full eligible/observed/missing audit; apply
↪ DESCRIBE from I3 to all registered cohort/category cells; disclose
↪ suppression/boundary labels; write descriptives.csv with G2 columns
↪ and diagnostics.csv for denominator and era checks. Binary values are
↪ multiplied by100 for display, including equal-parent/sibling mean
↪ risks; absence rates are already percent. Display unit=pp. Never
↪ impute unknown values as zero. An individual missing response remains
↪ in the eligible count; an unavailable construct/year is a boundary
↪ rather than a low outcome. Any confidence interval is descriptive
↪ cluster sampling uncertainty, not causal or measurement-error
↪ coverage. The exact interval/seed/cluster rules are I3; no
↪ descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪ ure eligible count unchanged, observed count decreases and estimate
↪ is not filled with zero; shift its timestamp before t0 and ensure it
↪ cannot become a post-test event. Check family weighting when there
↪ are1 versus2 recorded parents and for unequal sibling counts. Output
↪ names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪ causal successor may activate only under its own scientific gates;
↪ these displayed means never select its hypothesis, horizon or
↪ favorable sign. Permitted claim: Sibling experience is independently
↪ consequential and does not identify resource diversion. If
↪ measurement fails here, this exact endpoint remains a visible
↪ boundary; other families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000113/endpoints/sibling_belonging/descriptive/
↪  and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪  scribed if computed internally; record computation_status separately
↪  from disclosure status. Public plotting rows are NA/suppressed. This
↪  descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪  prereg/runtime/atom-000113/endpoints/sibling_belonging/descriptive/.

## Endpoint family_resources
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪  absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪  descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪  child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪  construct and a computed
    governed summary; public suppression does not change this local
    ↪  state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪  it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe family disposable resources among assessed
↪ children or their baseline relatives, with no causal interpretation.
↪ Endpoint key=family_resources; reporting family=family; one
↪ registered horizon=calendar_year_after_test. Construction uses D7
↪ exactly: FAIK.FAMAEKVIVADISP_13/1000 via child current December
↪ FAMILIE_ID in year(t0)+1. Required schemas are listed in this Atom
↪ and exact fields/row units/code versions are in those incorporated
↪ clauses; no alternate field or index is permitted. Eligibility uses
↪ only baseline age/grade/kinship and fixed calendar, never whether
↪ this outcome is observed. Distinguish 2015-2018,2019-2021,2022-2024
↪ and red/yellow/green/unknown retained categories; unknown grade
↪ eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪ construct; construct D1 index population and, where relevant,D7
↪ first-index family roster; compute expected horizon under D3; join
↪ events/statuses using D2 cardinalities; build the exact endpoint and
↪ missing flag; write a full eligible/observed/missing audit; apply
↪ DESCRIBE from I3 to all registered cohort/category cells; disclose
↪ suppression/boundary labels; write descriptives.csv with G2 columns
↪ and diagnostics.csv for denominator and era checks. Binary values are
↪ multiplied by100 for display, including equal-parent/sibling mean
↪ risks; absence rates are already percent. Display unit=1000_DKK.
↪ Never impute unknown values as zero. An individual missing response
↪ remains in the eligible count; an unavailable construct/year is a
↪ boundary rather than a low outcome. Any confidence interval is
↪ descriptive cluster sampling uncertainty, not causal or
↪ measurement-error coverage. The exact interval/seed/cluster rules are
↪ I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪ ure eligible count unchanged, observed count decreases and estimate
↪ is not filled with zero; shift its timestamp before t0 and ensure it
↪ cannot become a post-test event. Check family weighting when there
↪ are1 versus2 recorded parents and for unequal sibling counts. Output
↪ names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪ causal successor may activate only under its own scientific gates;
↪ these displayed means never select its hypothesis, horizon or
↪ favorable sign. Permitted claim: Current equivalized family resources
↪ include household composition; they are not consumption or transfers.
↪ If measurement fails here, this exact endpoint remains a visible
↪ boundary; other families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000113/endpoints/family_resources/descriptive/
↪ and remain governed until aggregate disclosure approval. Write
↪ audit.json and judgment.json plus the named plot-ready table; G1/G2
↪ define status and column meanings. No numerical result is populated
↪ now. Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪ scribed if computed internally; record computation_status separately
↪ from disclosure status. Public plotting rows are NA/suppressed. This
↪ descriptive result is never a prerequisite for its primary effect.

Mandatory income binding before values, export and Figure4: incorporate
↪ D9, D10 and G2's descriptive income metadata contract. Retain
↪ calendar_year=year(t0)+1 separately; only nominal complete years
↪ through 2024 can have values. For each stratum, join to EXACTLY one
↪ adjudicated provenance record by (FAIK,FAMAEKVIVADISP_13,reference_ye
↪ ar=calendar_year,delivery_id). Use D9 family-income audit
↪ correction.csv where its year-specific record is available; otherwise
↪ perform the same pre-value D9 documentation check within this Atom
↪ and emit income-provenance.csv with identical fields. This is part of
↪ constructing this description and is not a new hypothesis or a
↪ dependence on the primary2016 correction state. Never transfer a
↪ correction disposition between years or deliveries. Preserve source
↪ locators, delivery checksum and criteria in the governed audit.
↪ Contradictory documented correction evidence is an adjudicated
↪ unresolved disposition; contradictory/missing export metadata are an
↪ interface error and must not be plotted as if adjudicated.
```

```
Every descriptives.csv row additionally carries source_table=FAIK,
↪  source_variable=FAMAEKVIVADISP_13, reference_year, delivery_id,
↪  provenance_id, scope_id, interpretation_ceiling and metadata_status.
↪  Verified binding uses a decimal reference_year equal to calendar_year
↪  ; public delivery_id/provenance_id/scope_id are nonempty opaque
↪  release-safe labels of at most80 characters linked one-to-one in the
↪  exporter to governed source/checksum/scope records. Distinct years ma
↪  y have distinct states, and categories in the same delivery-year must
↪  share the same adjudication. metadata_status=verified means the join
↪  and adjudication are verified, not that correction was established.
↪  Allowed mappings are corrected/documented_resources, known_uncorrecte
↪  d/recorded_income_proxy, unresolved/recorded_income_proxy. Corrected
↪  permits documented disposable-resource language only for that year;
↪  both proxy routes explicitly say recorded equivalized-income proxy
↪  and No intended-resource or welfare interpretation. They cannot
↪  identify actual resource change or correct historical reporting error.

An unavailable binding uses metadata_status=unavailable, correction_statu
↪  s=unavailable, interpretation_ceiling=unavailable_metadata and
↪  delivery_id=provenance_id=scope_id=unavailable. Keep known
↪  source_table/source_variable and reference_year=calendar_year (all
↪  only for the all-key horizon-boundary row); all empirical numeric
↪  fields are NA, with an explicit status/reason. Do not downgrade a
↪  supplied contradictory row into this route: reject the malformed
↪  export. Underlying description may remain described if an internal
↪  governed summary exists; public unavailable/suppressed rows do not
↪  alter its local state. If no stratum can be computed because the
↪  documentation check itself remains unperformed, otherwise or
↪  operational no_result applies by cause; it is not a statistical null.
↪  Figure4 uses separate year/delivery panels and the exact ceiling
↪  note, retaining corrected, proxy and unavailable years together
↪  without pooling or a shared2016 state. A wholly absent input gets a
↪  neutral family-income panel and unavailable-binding note. Figures
↪  never recompute or combine these means.

Required checks: corrected, known_uncorrected, adjudicated unresolved,
↪  unavailable binding and mixed-year status-only rows; reject omitted
↪  metadata, wrong variable/year/horizon, inconsistent ceiling, unknown
↪  binding, conflicting same-year provenance, and numerical values on
↪  unavailable rows. Verify a2016 known_uncorrected row with every
↪  number suppressed still displays the proxy and welfare restriction.
↪  Verify changing only another year's correction state does not relabel
↪  the2016 row.
Binding: all endpoint descriptive files and component judgments are under
↪  prereg/runtime/atom-000113/endpoints/family_resources/descriptive/.

## Endpoint parent_hours
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪  absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪  descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪  child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
```

```
  region: At least one prespecified cohort/stratum has a defined
  ↪  construct and a computed
    governed summary; public suppression does not change this local
    ↪  state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪  it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Question/status: describe parents paid hours among assessed children or
↪  their baseline relatives, with no causal interpretation. Endpoint
↪  key=parent_hours; reporting family=family; one registered
↪  horizon=calendar_year_after_test. Construction uses D7 exactly: Mean
↪  annual sum AJO_LOENTIMER over fixed parents; retain imputed hours,
↪  report share, include validated employee zeros. Required schemas are
↪  listed in this Atom and exact fields/row units/code versions are in
↪  those incorporated clauses; no alternate field or index is permitted.
↪  Eligibility uses only baseline age/grade/kinship and fixed calendar,
↪  never whether this outcome is observed. Distinguish 2015-2018,2019-20
↪  21,2022-2024 and red/yellow/green/unknown retained categories;
↪  unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪  construct; construct D1 index population and, where relevant,D7
↪  first-index family roster; compute expected horizon under D3; join
↪  events/statuses using D2 cardinalities; build the exact endpoint and
↪  missing flag; write a full eligible/observed/missing audit; apply
↪  DESCRIBE from I3 to all registered cohort/category cells; disclose
↪  suppression/boundary labels; write descriptives.csv with G2 columns
↪  and diagnostics.csv for denominator and era checks. Binary values are
↪  multiplied by100 for display, including equal-parent/sibling mean
↪  risks; absence rates are already percent. Display unit=hours. Never
↪  impute unknown values as zero. An individual missing response remains
↪  in the eligible count; an unavailable construct/year is a boundary
↪  rather than a low outcome. Any confidence interval is descriptive
↪  cluster sampling uncertainty, not causal or measurement-error
↪  coverage. The exact interval/seed/cluster rules are I3; no
↪  descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪  ure eligible count unchanged, observed count decreases and estimate
↪  is not filled with zero; shift its timestamp before t0 and ensure it
↪  cannot become a post-test event. Check family weighting when there
↪  are1 versus2 recorded parents and for unequal sibling counts. Output
↪  names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪  causal successor may activate only under its own scientific gates;
↪  these displayed means never select its hypothesis, horizon or
↪  favorable sign. Permitted claim: Employee hours cannot measure
↪  self-employment, advocacy time or total family welfare. If
↪  measurement fails here, this exact endpoint remains a visible
↪  boundary; other families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000113/endpoints/parent_hours/descriptive/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪  scribed if computed internally; record computation_status separately
↪  from disclosure status. Public plotting rows are NA/suppressed. This
↪  descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪  prereg/runtime/atom-000113/endpoints/parent_hours/descriptive/.

## Endpoint parent_assessment
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪  absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪  descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪  child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪  construct and a computed
    governed summary; public suppression does not change this local
    ↪  state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪  it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe parents retained assessment among assessed
↪ children or their baseline relatives, with no causal interpretation.
↪ Endpoint key=parent_assessment; reporting family=family; one
↪ registered horizon=child_days1_to730. Construction uses D7 exactly:
↪ Mean fixed-parent indicator of later retained national-test DATO; no
↪ pilot/reason inference. Required schemas are listed in this Atom and
↪ exact fields/row units/code versions are in those incorporated
↪ clauses; no alternate field or index is permitted. Eligibility uses
↪ only baseline age/grade/kinship and fixed calendar, never whether
↪ this outcome is observed. Distinguish 2015-2018,2019-2021,2022-2024
↪ and red/yellow/green/unknown retained categories; unknown grade
↪ eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪ construct; construct D1 index population and, where relevant,D7
↪ first-index family roster; compute expected horizon under D3; join
↪ events/statuses using D2 cardinalities; build the exact endpoint and
↪ missing flag; write a full eligible/observed/missing audit; apply
↪ DESCRIBE from I3 to all registered cohort/category cells; disclose
↪ suppression/boundary labels; write descriptives.csv with G2 columns
↪ and diagnostics.csv for denominator and era checks. Binary values are
↪ multiplied by100 for display, including equal-parent/sibling mean
↪ risks; absence rates are already percent. Display unit=pp. Never
↪ impute unknown values as zero. An individual missing response remains
↪ in the eligible count; an unavailable construct/year is a boundary
↪ rather than a low outcome. Any confidence interval is descriptive
↪ cluster sampling uncertainty, not causal or measurement-error
↪ coverage. The exact interval/seed/cluster rules are I3; no
↪ descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪ ure eligible count unchanged, observed count decreases and estimate
↪ is not filled with zero; shift its timestamp before t0 and ensure it
↪ cannot become a post-test event. Check family weighting when there
↪ are1 versus2 recorded parents and for unequal sibling counts. Output
↪ names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪ causal successor may activate only under its own scientific gates;
↪ these displayed means never select its hypothesis, horizon or
↪ favorable sign. Permitted claim: Subsequent retained assessment is a
↪ possible family-recognition response, not first lifetime dyslexia. If
↪ measurement fails here, this exact endpoint remains a visible
↪ boundary; other families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000113/endpoints/parent_assessment/descriptive/
↪  and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪  scribed if computed internally; record computation_status separately
↪  from disclosure status. Public plotting rows are NA/suppressed. This
↪  descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪  prereg/runtime/atom-000113/endpoints/parent_assessment/descriptive/.

## Endpoint parent_wages
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪  absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪  descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪  child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪  construct and a computed
    governed summary; public suppression does not change this local
    ↪  state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪  it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe parents wage income among assessed children or
↪ their baseline relatives, with no causal interpretation. Endpoint
↪ key=parent_wages; reporting family=family; one registered
↪ horizon=calendar_year_after_test. Construction uses D7 exactly: Mean
↪ IND.LOENMV_13/1000 over fixed parents inyear(t0)+1, not employed-only
↪ ; same resource missingness/annual-slice rules. Required schemas are
↪ listed in this Atom and exact fields/row units/code versions are in
↪ those incorporated clauses; no alternate field or index is permitted.
↪ Eligibility uses only baseline age/grade/kinship and fixed calendar,
↪ never whether this outcome is observed. Distinguish 2015-2018,2019-20
↪ 21,2022-2024 and red/yellow/green/unknown retained categories;
↪ unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪ construct; construct D1 index population and, where relevant,D7
↪ first-index family roster; compute expected horizon under D3; join
↪ events/statuses using D2 cardinalities; build the exact endpoint and
↪ missing flag; write a full eligible/observed/missing audit; apply
↪ DESCRIBE from I3 to all registered cohort/category cells; disclose
↪ suppression/boundary labels; write descriptives.csv with G2 columns
↪ and diagnostics.csv for denominator and era checks. Binary values are
↪ multiplied by100 for display, including equal-parent/sibling mean
↪ risks; absence rates are already percent. Display unit=1000_DKK.
↪ Never impute unknown values as zero. An individual missing response
↪ remains in the eligible count; an unavailable construct/year is a
↪ boundary rather than a low outcome. Any confidence interval is
↪ descriptive cluster sampling uncertainty, not causal or
↪ measurement-error coverage. The exact interval/seed/cluster rules are
↪ I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪ ure eligible count unchanged, observed count decreases and estimate
↪ is not filled with zero; shift its timestamp before t0 and ensure it
↪ cannot become a post-test event. Check family weighting when there
↪ are1 versus2 recorded parents and for unequal sibling counts. Output
↪ names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪ causal successor may activate only under its own scientific gates;
↪ these displayed means never select its hypothesis, horizon or
↪ favorable sign. Permitted claim: Wages are separate from paid hours
↪ and resources; neither identifies advocacy costs. If measurement
↪ fails here, this exact endpoint remains a visible boundary; other
↪ families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000113/endpoints/parent_wages/descriptive/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪  scribed if computed internally; record computation_status separately
↪  from disclosure status. Public plotting rows are NA/suppressed. This
↪  descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪  prereg/runtime/atom-000113/endpoints/parent_wages/descriptive/.
```

Registered experiment

What recorded family circumstances after assessment can be described, and which dimensions remain unobserved?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000113`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000118: Early-adult circumstances after assessment

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure,

boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state, component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Endpoint components execute independently in the order below. D3 horizon and D7 relative-link checks are internal per endpoint, never a common family prerequisite. Household-income construction can run without an identified parent roster when child/current-family and clustering requirements are available; relative outcomes require their own fixed known-parent/sibling roster. If clustering is unavailable, I3 permits valid descriptive levels with uncertainty unavailable. Each endpoint applies its original first-match regions below, writes its own component judgment and retains every era/stratum status. Root state is the ordered descriptive vector judgment above.

Internal relatives

- key: usable region: Pretest linkage semantics verified; all known relations have unique valid mappings and unknown roles are explicitly marked. says: Fixed recorded-parent/sibling targets can be studied with their baseline scope limitations.
- key: boundary region: Documentation establishes no dated parental linkage or incompatible key classes, so no baseline family target can be constructed. says: Family outcomes cannot be attributed to the index child under this delivery; child outcomes remain eligible.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Use D7 fixed pretest BEF snapshot, MOR_ID/FAR_ID, FOED_DAG, PNR, FAMILIE_ID and BEFBOP dated address intervals. Parent IDs must share the child PNR linkage class. Assert each child has at most one recorded value per parent role per snapshot; missing roles are unknown, not childless/no carer. Construct sibling sets by nonmissing shared parent; establish baseline school-grade eligibility with prior-month absence. Scan index assessments chronologically with fixed hash ties as D7. Report resident/nonresident parent links, one/two known roles, eligible sibling sets, conflicts and baseline missingness. This is the scope of recorded kinship, not validation of genetic relatedness or caregiving. Output diagnostics.csv with linkage proportions and conflict dispositions. No substantive outcome needed; no p-values. Synthetic fixture: two children with missing fathers are not siblings, subsequent births are excluded, later parental diagnosis cannot change roster. A complete roster

at birth does not guarantee future response. Family branch uses only scientifically interpretable pretest links.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000118/relatives/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Endpoint education18

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe formal education at 18 among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=education18; reporting family=adulthood; one registered horizon=18th_birthday. Construction uses D8 exactly: Covering KOTRE spell classified DISCED15 level3+ by dated UDD crosswalk. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024

and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=pp. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts. Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Educational participation at 18 is a benchmark and does not establish completed attainment. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000118/endpoints/education18/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000118/endpoints/education18/descriptive/.

Endpoint attainment20

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe attainment by 20 among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=attainment20; reporting family=adulthood; one registered horizon=20th_birthday. Construction uses D8 exactly: Valid HFAUDD spell on20th birthday classified at least upper-secondary completion, not an exit code alone. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=pp. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts. Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Completion overlaps prior work; it does not establish material security. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000118/endpoints/attainment20/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000118/endpoints/attainment20/descriptive/.

Endpoint employee20

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded

observed distribution and its ascertainment; it does not establish a classification effect.

- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe employee participation at 20 among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=employee20; reporting family=adulthood; one registered horizon=calendar_year_turning20. Construction uses D8 exactly: Any positive validated employee paid hours in calendar year containing20th birthday; no graduation/employment selection. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=pp. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts. Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Employee participation is one component of inclusion and excludes unmeasured self-employment. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication.

Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000118/endpoints/employee20/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000118/endpoints/employee20/descriptive/.

Endpoint wages20

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe wage income at 20 among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=wages20; reporting family=adulthood; one registered horizon=calendar_year_turning20. Construction uses D8 exactly: Annual IND.LOENMV_13/1000, preserve negatives and verified zeros, no employed-only restriction. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=1000_DKK. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts. Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Lower current wages may coexist with education; no lifetime-return or welfare inference. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000118/endpoints/wages20/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint

descriptive files and component judgments are under prereg/runtime/atom-000118/endpoints/wages20/descriptive/.

Endpoint resources20

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe equivalized resources at 20 among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=resources20; reporting family=adulthood; one registered horizon=calendar_year_turning20. Construction uses D8 exactly: Annual IND.AEKVIVADISP_13/1000 in20th-birthday calendar year. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=1000_DKK. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts.

Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Resources reflect family composition and registry equivalization, not direct parental insurance. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000118/endpoints/resources20/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000118/endpoints/resources20/descriptive/.

Endpoint coresidence20

- key: measurement_boundary region: The exact registered construct is demonstrably absent/incompatible in every otherwise eligible source era. says: This endpoint is not measurable under the stated contract; no descriptive or causal effect is inferred.
- key: horizon_boundary region: The construct is defined but no baseline-eligible child/relative has the registered complete nominal horizon. says: Report the age/calendar/population boundary.
- key: described region: At least one prespecified cohort/stratum has a defined construct and a computed governed summary; public suppression does not change this local state. All other cells retain their own statuses. says: Describe the bounded observed distribution and its ascertainment; it does not establish a classification effect.

- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Question/status: describe parental co-residence at 20 among assessed children or their baseline relatives, with no causal interpretation. Endpoint key=coresidence20; reporting family=adulthood; one registered horizon=20th_birthday. Construction uses D8 exactly: Shared valid address with either fixed baseline recorded parent; preserve unknown addresses. Required schemas are listed in this Atom and exact fields/row units/code versions are in those incorporated clauses; no alternate field or index is permitted. Eligibility uses only baseline age/grade/kinship and fixed calendar, never whether this outcome is observed. Distinguish 2015–2018,2019–2021,2022–2024 and red/yellow/green/unknown retained categories; unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified construct; construct D1 index population and, where relevant,D7 first-index family roster; compute expected horizon under D3; join events/statuses using D2 cardinalities; build the exact endpoint and missing flag; write a full eligible/observed/missing audit; apply DESCRIBE from I3 to all registered cohort/category cells; disclose suppression/boundary labels; write descriptives.csv with G2 columns and diagnostics.csv for denominator and era checks. Binary values are multiplied by100 for display, including equal-parent/sibling mean risks; absence rates are already percent. Display unit=pp. Never impute unknown values as zero. An individual missing response remains in the eligible count; an unavailable construct/year is a boundary rather than a low outcome. Any confidence interval is descriptive cluster sampling uncertainty, not causal or measurement-error coverage. The exact interval/seed/cluster rules are I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ensure eligible count unchanged, observed count decreases and estimate is not filled with zero; shift its timestamp before t0 and ensure it cannot become a post-test event. Check family weighting when there are1 versus2 recorded parents and for unequal sibling counts. Output names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The causal successor may activate only under its own scientific gates; these displayed means never select its hypothesis, horizon or favorable sign. Permitted claim: Co-residence does not identify constraint, dependence, preference or reduced autonomy. If measurement fails here, this exact endpoint remains a visible boundary; other families continue.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching

region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000118/endpoints/coresidence20/descriptive/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains described if computed internally; record computation_status separately from disclosure status. Public plotting rows are NA/suppressed. This descriptive result is never a prerequisite for its primary effect. Binding: all endpoint descriptive files and component judgments are under prereg/runtime/atom-000118/endpoints/coresidence20/descriptive/.

Complete registration fields

```
id: atom-000118
topic: Early-adult circumstances after assessment
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: What recorded early-adult circumstances after assessment can be
    described, and which dimensions remain unobserved?
  rationale: The descriptive life-course experiment locates age-eligible
  ↪  education,
    paid work, household income and co-residence in their birth and calendar
    cohorts. Unequal reach is part of the evidence, not an outcome-selected
    cohort.
  assumption: Administrative recognition can affect opportunities, reporting
    and service contact through multiple routes; exact source semantics and
    continuity require evidence, not an estimator label. See literature.md
    and identification.md.
  target_strength: descriptive
  target_shape: comparison
  ratings:
    importance: 4
    novelty: 3
    feasibility: 3
    data_advantage: 4
    informativeness: 0.5
  tables:
  - BEF
  - BEFBOP
  - BFL
  - DOD
  - IND
  - KOTRE
  - UDDA
```

```
- UDDF
- UDD_FOLKESKOLE_FRAVAER_STIL
- UDD_ORDBLINDETEST
- VNDS
activation: state(atom-000001) == "ready" OR state(atom-000001) == "limited"
verdicts:
- key: described
  region: Every registered endpoint supplies at least one computed governed
    descriptive stratum; all unobserved cells remain explicit.
  says: Describe the endpoint vector in original units and separate scopes;
    no composite or causal contrast.
- key: partial
  region: At least one endpoint supplies a computed governed descriptive
    stratum and another endpoint supplies none.
  says: Report available endpoint-specific descriptions and each independent
    measurement, horizon or operational limitation.
- key: boundary
  region: No description is computable and every endpoint has an evidenced
    measurement/horizon/population boundary.
  says: Report which documented dimensions cannot be measured or reached;
    no statistical null.
- key: otherwise
  region: otherwise
  says: Preserve unresolved documentation or execution reasons; unknown
    evidence is not a negative result.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪ Atoms or activation primitives. Execute every prescribed component
  ↪ that is scientifically eligible, independently of other component
  ↪ signs. Component outputs retain their own local decision, inference
  ↪ and operational status; only the native judgment.json at the Atom
  ↪ root supplies the Atom local state. No component failure can erase
  ↪ completed evidence in another component. When no scientific component
  ↪ completes because execution fails, set terminal no_result with no
  ↪ Atom local state. Otherwise aggregate only by the ordered registered
  ↪ regions and record every component's failure, boundary, unknown or
  ↪ inactive disposition. Pending necessary evidence stays pending; it is
  ↪ never coded as negative evidence. Internal failed work is not
  ↪ automatically retried.
  Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
  ↪ I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
  ↪ definitions. These fix population, dates, table/field dictionaries,
  ↪ code versions, joins, inference, missingness, outputs and synthetic c
  ↪ hecks. A dictionary crosswalk is semantic verification before outcome
  ↪ values, not a new scientific choice. Keep all endpoint-specific
  ↪ units, horizons and Bonferroni allocations; grouping introduces no
  ↪ average outcome, composite score, new hypothesis or additional alpha.
  ↪ Write root audit.json, status.json, judgment.json and components.csv
  ↪ with component, outcome, component_state, component_terminal,
  ↪ inference_status, reason, evidence_path. Components.csv is an
  ↪ evidence index under this protocol, never a second experiment graph.
  ↪ Suppression is applied after governed adjudication, and cannot govern
  ↪ activation or disclose protected directions.
```

```
Endpoint components execute independently in the order below. D3 horizon
↪  and D7 relative-link checks are internal per endpoint, never a common
↪  family prerequisite. Household-income construction can run without an
↪  identified parent roster when child/current-family and clustering
↪  requirements are available; relative outcomes require their own fixed
↪  known-parent/sibling roster. If clustering is unavailable, I3 permits
↪  valid descriptive levels with uncertainty unavailable. Each endpoint
↪  applies its original first-match regions below, writes its own
↪  component judgment and retains every era/stratum status. Root state
↪  is the ordered descriptive vector judgment above.

## Internal relatives
- key: usable
  region: Pretest linkage semantics verified; all known relations have
  ↪  unique valid
    mappings and unknown roles are explicitly marked.
  says: Fixed recorded-parent/sibling targets can be studied with their
  ↪  baseline scope
    limitations.
- key: boundary
  region: Documentation establishes no dated parental linkage or
  ↪  incompatible key
    classes, so no baseline family target can be constructed.
  says: Family outcomes cannot be attributed to the index child under
  ↪  this delivery;
    child outcomes remain eligible.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Use D7 fixed pretest BEF snapshot, MOR_ID/FAR_ID, FOED_DAG, PNR,
↪  FAMILIE_ID and BEFBOP dated address intervals. Parent IDs must share
↪  the child PNR linkage class. Assert each child has at most one
↪  recorded value per parent role per snapshot; missing roles are
↪  unknown, not childless/no carer. Construct sibling sets by nonmissing
↪  shared parent; establish baseline school-grade eligibility with
↪  prior-month absence. Scan index assessments chronologically with
↪  fixed hash ties as D7. Report resident/nonresident parent links,
↪  one/two known roles, eligible sibling sets, conflicts and baseline
↪  missingness. This is the scope of recorded kinship, not validation of
↪  genetic relatedness or caregiving. Output diagnostics.csv with
↪  linkage proportions and conflict dispositions. No substantive outcome
↪  needed; no p-values. Synthetic fixture: two children with missing
↪  fathers are not siblings, subsequent births are excluded, later
↪  parental diagnosis cannot change roster. A complete roster at birth
↪  does not guarantee future response. Family branch uses only
↪  scientifically interpretable pretest links.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000118/relat
↪  ives/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## Endpoint education18
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪  absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪  descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪  child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪  construct and a computed
    governed summary; public suppression does not change this local
    ↪  state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪  it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe formal education at 18 among assessed children
↪ or their baseline relatives, with no causal interpretation. Endpoint
↪ key=education18; reporting family=adulthood; one registered
↪ horizon=18th_birthday. Construction uses D8 exactly: Covering KOTRE
↪ spell classified DISCED15 level3+ by dated UDD crosswalk. Required
↪ schemas are listed in this Atom and exact fields/row units/code
↪ versions are in those incorporated clauses; no alternate field or
↪ index is permitted. Eligibility uses only baseline age/grade/kinship
↪ and fixed calendar, never whether this outcome is observed.
↪ Distinguish 2015-2018,2019-2021,2022-2024 and
↪ red/yellow/green/unknown retained categories; unknown grade
↪ eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪ construct; construct D1 index population and, where relevant,D7
↪ first-index family roster; compute expected horizon under D3; join
↪ events/statuses using D2 cardinalities; build the exact endpoint and
↪ missing flag; write a full eligible/observed/missing audit; apply
↪ DESCRIBE from I3 to all registered cohort/category cells; disclose
↪ suppression/boundary labels; write descriptives.csv with G2 columns
↪ and diagnostics.csv for denominator and era checks. Binary values are
↪ multiplied by100 for display, including equal-parent/sibling mean
↪ risks; absence rates are already percent. Display unit=pp. Never
↪ impute unknown values as zero. An individual missing response remains
↪ in the eligible count; an unavailable construct/year is a boundary
↪ rather than a low outcome. Any confidence interval is descriptive
↪ cluster sampling uncertainty, not causal or measurement-error
↪ coverage. The exact interval/seed/cluster rules are I3; no
↪ descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪ ure eligible count unchanged, observed count decreases and estimate
↪ is not filled with zero; shift its timestamp before t0 and ensure it
↪ cannot become a post-test event. Check family weighting when there
↪ are1 versus2 recorded parents and for unequal sibling counts. Output
↪ names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪ causal successor may activate only under its own scientific gates;
↪ these displayed means never select its hypothesis, horizon or
↪ favorable sign. Permitted claim: Educational participation at 18 is a
↪ benchmark and does not establish completed attainment. If measurement
↪ fails here, this exact endpoint remains a visible boundary; other
↪ families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000118/endpoints/education18/descriptive/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪  scribed if computed internally; record computation_status separately
↪  from disclosure status. Public plotting rows are NA/suppressed. This
↪  descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪  prereg/runtime/atom-000118/endpoints/education18/descriptive/.

## Endpoint attainment20
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪  absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪  descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪  child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪  construct and a computed
    governed summary; public suppression does not change this local
    ↪  state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪  it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe attainment by 20 among assessed children or
↪ their baseline relatives, with no causal interpretation. Endpoint
↪ key=attainment20; reporting family=adulthood; one registered
↪ horizon=20th_birthday. Construction uses D8 exactly: Valid HFAUDD
↪ spell on20th birthday classified at least upper-secondary completion,
↪ not an exit code alone. Required schemas are listed in this Atom and
↪ exact fields/row units/code versions are in those incorporated
↪ clauses; no alternate field or index is permitted. Eligibility uses
↪ only baseline age/grade/kinship and fixed calendar, never whether
↪ this outcome is observed. Distinguish 2015-2018,2019-2021,2022-2024
↪ and red/yellow/green/unknown retained categories; unknown grade
↪ eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪ construct; construct D1 index population and, where relevant,D7
↪ first-index family roster; compute expected horizon under D3; join
↪ events/statuses using D2 cardinalities; build the exact endpoint and
↪ missing flag; write a full eligible/observed/missing audit; apply
↪ DESCRIBE from I3 to all registered cohort/category cells; disclose
↪ suppression/boundary labels; write descriptives.csv with G2 columns
↪ and diagnostics.csv for denominator and era checks. Binary values are
↪ multiplied by100 for display, including equal-parent/sibling mean
↪ risks; absence rates are already percent. Display unit=pp. Never
↪ impute unknown values as zero. An individual missing response remains
↪ in the eligible count; an unavailable construct/year is a boundary
↪ rather than a low outcome. Any confidence interval is descriptive
↪ cluster sampling uncertainty, not causal or measurement-error
↪ coverage. The exact interval/seed/cluster rules are I3; no
↪ descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪ ure eligible count unchanged, observed count decreases and estimate
↪ is not filled with zero; shift its timestamp before t0 and ensure it
↪ cannot become a post-test event. Check family weighting when there
↪ are1 versus2 recorded parents and for unequal sibling counts. Output
↪ names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪ causal successor may activate only under its own scientific gates;
↪ these displayed means never select its hypothesis, horizon or
↪ favorable sign. Permitted claim: Completion overlaps prior work; it
↪ does not establish material security. If measurement fails here, this
↪ exact endpoint remains a visible boundary; other families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000118/endpoints/attainment20/descriptive/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪  scribed if computed internally; record computation_status separately
↪  from disclosure status. Public plotting rows are NA/suppressed. This
↪  descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪  prereg/runtime/atom-000118/endpoints/attainment20/descriptive/.

## Endpoint employee20
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪  absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪  descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪  child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪  construct and a computed
    governed summary; public suppression does not change this local
    ↪  state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪  it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe employee participation at 20 among assessed
↪ children or their baseline relatives, with no causal interpretation.
↪ Endpoint key=employee20; reporting family=adulthood; one registered
↪ horizon=calendar_year_turning20. Construction uses D8 exactly: Any po
↪ sitive validated employee paid hours in calendar year containing20th
↪ birthday; no graduation/employment selection. Required schemas are
↪ listed in this Atom and exact fields/row units/code versions are in
↪ those incorporated clauses; no alternate field or index is permitted.
↪ Eligibility uses only baseline age/grade/kinship and fixed calendar,
↪ never whether this outcome is observed. Distinguish 2015-2018,2019-20
↪ 21,2022-2024 and red/yellow/green/unknown retained categories;
↪ unknown grade eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪ construct; construct D1 index population and, where relevant,D7
↪ first-index family roster; compute expected horizon under D3; join
↪ events/statuses using D2 cardinalities; build the exact endpoint and
↪ missing flag; write a full eligible/observed/missing audit; apply
↪ DESCRIBE from I3 to all registered cohort/category cells; disclose
↪ suppression/boundary labels; write descriptives.csv with G2 columns
↪ and diagnostics.csv for denominator and era checks. Binary values are
↪ multiplied by100 for display, including equal-parent/sibling mean
↪ risks; absence rates are already percent. Display unit=pp. Never
↪ impute unknown values as zero. An individual missing response remains
↪ in the eligible count; an unavailable construct/year is a boundary
↪ rather than a low outcome. Any confidence interval is descriptive
↪ cluster sampling uncertainty, not causal or measurement-error
↪ coverage. The exact interval/seed/cluster rules are I3; no
↪ descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪ ure eligible count unchanged, observed count decreases and estimate
↪ is not filled with zero; shift its timestamp before t0 and ensure it
↪ cannot become a post-test event. Check family weighting when there
↪ are1 versus2 recorded parents and for unequal sibling counts. Output
↪ names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪ causal successor may activate only under its own scientific gates;
↪ these displayed means never select its hypothesis, horizon or
↪ favorable sign. Permitted claim: Employee participation is one
↪ component of inclusion and excludes unmeasured self-employment. If
↪ measurement fails here, this exact endpoint remains a visible
↪ boundary; other families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000118/endpoints/employee20/descriptive/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪  scribed if computed internally; record computation_status separately
↪  from disclosure status. Public plotting rows are NA/suppressed. This
↪  descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪  prereg/runtime/atom-000118/endpoints/employee20/descriptive/.

## Endpoint wages20
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪  absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪  descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪  child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪  construct and a computed
    governed summary; public suppression does not change this local
    ↪  state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪  it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe wage income at 20 among assessed children or
↪ their baseline relatives, with no causal interpretation. Endpoint
↪ key=wages20; reporting family=adulthood; one registered
↪ horizon=calendar_year_turning20. Construction uses D8 exactly: Annual
↪ IND.LOENMV_13/1000, preserve negatives and verified zeros, no
↪ employed-only restriction. Required schemas are listed in this Atom
↪ and exact fields/row units/code versions are in those incorporated
↪ clauses; no alternate field or index is permitted. Eligibility uses
↪ only baseline age/grade/kinship and fixed calendar, never whether
↪ this outcome is observed. Distinguish 2015-2018,2019-2021,2022-2024
↪ and red/yellow/green/unknown retained categories; unknown grade
↪ eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪ construct; construct D1 index population and, where relevant,D7
↪ first-index family roster; compute expected horizon under D3; join
↪ events/statuses using D2 cardinalities; build the exact endpoint and
↪ missing flag; write a full eligible/observed/missing audit; apply
↪ DESCRIBE from I3 to all registered cohort/category cells; disclose
↪ suppression/boundary labels; write descriptives.csv with G2 columns
↪ and diagnostics.csv for denominator and era checks. Binary values are
↪ multiplied by100 for display, including equal-parent/sibling mean
↪ risks; absence rates are already percent. Display unit=1000_DKK.
↪ Never impute unknown values as zero. An individual missing response
↪ remains in the eligible count; an unavailable construct/year is a
↪ boundary rather than a low outcome. Any confidence interval is
↪ descriptive cluster sampling uncertainty, not causal or
↪ measurement-error coverage. The exact interval/seed/cluster rules are
↪ I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪ ure eligible count unchanged, observed count decreases and estimate
↪ is not filled with zero; shift its timestamp before t0 and ensure it
↪ cannot become a post-test event. Check family weighting when there
↪ are1 versus2 recorded parents and for unequal sibling counts. Output
↪ names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪ causal successor may activate only under its own scientific gates;
↪ these displayed means never select its hypothesis, horizon or
↪ favorable sign. Permitted claim: Lower current wages may coexist with
↪ education; no lifetime-return or welfare inference. If measurement
↪ fails here, this exact endpoint remains a visible boundary; other
↪ families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000118/endpoints/wages20/descriptive/ and remain
↪  governed until aggregate disclosure approval. Write audit.json and
↪  judgment.json plus the named plot-ready table; G1/G2 define status
↪  and column meanings. No numerical result is populated now. Before
↪  runtime use G3 synthetic join/date/missingness checks and verify
↪  row-order invariance; a failed check prevents output release. Every
↪  result constrains the Molecule under its composable rules; neither
↪  failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪  scribed if computed internally; record computation_status separately
↪  from disclosure status. Public plotting rows are NA/suppressed. This
↪  descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪  prereg/runtime/atom-000118/endpoints/wages20/descriptive/.

## Endpoint resources20
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪  absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪  descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪  child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪  construct and a computed
    governed summary; public suppression does not change this local
    ↪  state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪  it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe equivalized resources at 20 among assessed
↪ children or their baseline relatives, with no causal interpretation.
↪ Endpoint key=resources20; reporting family=adulthood; one registered
↪ horizon=calendar_year_turning20. Construction uses D8 exactly: Annual
↪ IND.AEKVIVADISP_13/1000 in20th-birthday calendar year. Required
↪ schemas are listed in this Atom and exact fields/row units/code
↪ versions are in those incorporated clauses; no alternate field or
↪ index is permitted. Eligibility uses only baseline age/grade/kinship
↪ and fixed calendar, never whether this outcome is observed.
↪ Distinguish 2015-2018,2019-2021,2022-2024 and
↪ red/yellow/green/unknown retained categories; unknown grade
↪ eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪ construct; construct D1 index population and, where relevant,D7
↪ first-index family roster; compute expected horizon under D3; join
↪ events/statuses using D2 cardinalities; build the exact endpoint and
↪ missing flag; write a full eligible/observed/missing audit; apply
↪ DESCRIBE from I3 to all registered cohort/category cells; disclose
↪ suppression/boundary labels; write descriptives.csv with G2 columns
↪ and diagnostics.csv for denominator and era checks. Binary values are
↪ multiplied by100 for display, including equal-parent/sibling mean
↪ risks; absence rates are already percent. Display unit=1000_DKK.
↪ Never impute unknown values as zero. An individual missing response
↪ remains in the eligible count; an unavailable construct/year is a
↪ boundary rather than a low outcome. Any confidence interval is
↪ descriptive cluster sampling uncertainty, not causal or
↪ measurement-error coverage. The exact interval/seed/cluster rules are
↪ I3; no descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪ ure eligible count unchanged, observed count decreases and estimate
↪ is not filled with zero; shift its timestamp before t0 and ensure it
↪ cannot become a post-test event. Check family weighting when there
↪ are1 versus2 recorded parents and for unequal sibling counts. Output
↪ names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪ causal successor may activate only under its own scientific gates;
↪ these displayed means never select its hypothesis, horizon or
↪ favorable sign. Permitted claim: Resources reflect family composition
↪ and registry equivalization, not direct parental insurance. If
↪ measurement fails here, this exact endpoint remains a visible
↪ boundary; other families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000118/endpoints/resources20/descriptive/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪  scribed if computed internally; record computation_status separately
↪  from disclosure status. Public plotting rows are NA/suppressed. This
↪  descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪  prereg/runtime/atom-000118/endpoints/resources20/descriptive/.

## Endpoint coresidence20
- key: measurement_boundary
  region: The exact registered construct is demonstrably
  ↪  absent/incompatible in every
    otherwise eligible source era.
  says: This endpoint is not measurable under the stated contract; no
  ↪  descriptive
    or causal effect is inferred.
- key: horizon_boundary
  region: The construct is defined but no baseline-eligible
  ↪  child/relative has the
    registered complete nominal horizon.
  says: Report the age/calendar/population boundary.
- key: described
  region: At least one prespecified cohort/stratum has a defined
  ↪  construct and a computed
    governed summary; public suppression does not change this local
    ↪  state. All other
    cells retain their own statuses.
  says: Describe the bounded observed distribution and its ascertainment;
  ↪  it does
    not establish a classification effect.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Question/status: describe parental co-residence at 20 among assessed
↪ children or their baseline relatives, with no causal interpretation.
↪ Endpoint key=coresidence20; reporting family=adulthood; one
↪ registered horizon=20th_birthday. Construction uses D8 exactly:
↪ Shared valid address with either fixed baseline recorded parent;
↪ preserve unknown addresses. Required schemas are listed in this Atom
↪ and exact fields/row units/code versions are in those incorporated
↪ clauses; no alternate field or index is permitted. Eligibility uses
↪ only baseline age/grade/kinship and fixed calendar, never whether
↪ this outcome is observed. Distinguish 2015-2018,2019-2021,2022-2024
↪ and red/yellow/green/unknown retained categories; unknown grade
↪ eligibility is reported separately, not guessed.

Ordered pseudocode: read frozen dictionaries and map the specified
↪ construct; construct D1 index population and, where relevant,D7
↪ first-index family roster; compute expected horizon under D3; join
↪ events/statuses using D2 cardinalities; build the exact endpoint and
↪ missing flag; write a full eligible/observed/missing audit; apply
↪ DESCRIBE from I3 to all registered cohort/category cells; disclose
↪ suppression/boundary labels; write descriptives.csv with G2 columns
↪ and diagnostics.csv for denominator and era checks. Binary values are
↪ multiplied by100 for display, including equal-parent/sibling mean
↪ risks; absence rates are already percent. Display unit=pp. Never
↪ impute unknown values as zero. An individual missing response remains
↪ in the eligible count; an unavailable construct/year is a boundary
↪ rather than a low outcome. Any confidence interval is descriptive
↪ cluster sampling uncertainty, not causal or measurement-error
↪ coverage. The exact interval/seed/cluster rules are I3; no
↪ descriptive p-values or equivalence claim.

Synthetic check: replace the endpoint with missing in one fixture and ens
↪ ure eligible count unchanged, observed count decreases and estimate
↪ is not filled with zero; shift its timestamp before t0 and ensure it
↪ cannot become a post-test event. Check family weighting when there
↪ are1 versus2 recorded parents and for unequal sibling counts. Output
↪ names: audit.json,judgment.json,descriptives.csv,diagnostics.csv. The
↪ causal successor may activate only under its own scientific gates;
↪ these displayed means never select its hypothesis, horizon or
↪ favorable sign. Permitted claim: Co-residence does not identify
↪ constraint, dependence, preference or reduced autonomy. If
↪ measurement fails here, this exact endpoint remains a visible
↪ boundary; other families continue.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000118/endpoints/coresidence20/descriptive/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

D10 stratum keys are mandatory. A summary suppressed in public remains de
↪ scribed if computed internally; record computation_status separately
↪ from disclosure status. Public plotting rows are NA/suppressed. This
↪ descriptive result is never a prerequisite for its primary effect.
Binding: all endpoint descriptive files and component judgments are under
↪ prereg/runtime/atom-000118/endpoints/coresidence20/descriptive/.
```

Registered experiment

What recorded early-adult circumstances after assessment can be described, and which dimensions remain unobserved?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000118`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000201: School social experience

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure,

boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state, component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Scope and order: this experiment asks whether marginal national-test classification changes school social experience. Use all grades 4,5,6,7. Each endpoint below is a separate slot in the unchanged 24-slot primary family; its ascertainment belongs to the separate 24-slot diagnostic family. No endpoint value activates another endpoint. After the native grade activation passes, first perform each endpoint's own calendar/construct/relative/provenance checks, then ascertainment, primary estimation, and mandatory robustness whenever its primary component is increase/decrease/uncertain/selection_limited. An evidenced primary boundary makes its robustness internally not_activated. Ascertainment can finish even when primary or robustness fails, and primary does not require an insignificant ascertainment test. Robustness no_result never becomes stable. Aggregate only after every scheduled component completes, is evidenced ineligible, or has a recorded operational terminal. Preserve completed components when another fails; if all scientific work fails operationally use Atom terminal no_result.

loneliness / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.

- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000201, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events. For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000201/endpoints/loneliness/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000201/endpoints/loneliness/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000201/endpoints/loneliness/primary/; ascertainment and robustness never overwrite primary judgments or scope.

loneliness / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata. says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.
- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=loneliness; family=school; fixed horizon=first_full_school_year; display unit=pp. Population and exact coding: Baseline grades4–7; Q9 exact wording and frequent labels. Incorporate D4 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with

endpoint kind=binary; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must support the fitted operator; no renormalizing after a stratum fails. Report h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Reported loneliness may change through experience, interpretation or response assistance. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000201/endpoints/loneliness/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display

status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values; exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000201. Exact component path: prereg/runtime/atom-000201/endpoints/loneliness/primary/. Cross-component primary files are read from prereg/runtime/atom-000201/endpoints/loneliness/primary/; ascertainment and robustness never overwrite primary judgments or scope.

loneliness / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for loneliness, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000201 and incorporated D4. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=pp, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability

is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. Reported loneliness may change through experience, interpretation or response assistance.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000201/endpoints/loneliness/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000201/endpoints/loneliness/robustness/. Cross-component primary files are read from prereg/runtime/atom-000201/endpoints/loneliness/primary/; ascertainment and robustness never overwrite primary judgments or scope.

low_belonging / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.

- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000201, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events. For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000201/endpoints/low_belonging/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000201/endpoints/low_belonging/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000201/endpoints/low_belonging/primary/; ascertainment and robustness never overwrite primary judgments or scope.

low_belonging / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata. says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.
- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=low_belonging; family=school; fixed horizon=first_full_school_year; display unit=pp. Population and exact coding: Baseline grades4–7; Q33 disagreement labels, not an inferred factor score. Incorporate D4 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain

unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=binary; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must support the fitted operator; no renormalizing after a stratum fails. Report h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Belonging is a consequential school experience and a prior-work benchmark. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000201/endpoints/low_belonging/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains

the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values; exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000201. Exact component path: prereg/runtime/atom-000201/endpoints/low_belonging/primary/. Cross-component primary files are read from prereg/runtime/atom-000201/endpoints/low_belonging/primary/; ascertainment and robustness never overwrite primary judgments or scope.

low_belonging / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for low_belonging, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000201 and incorporated D4. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=pp, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside

the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. Belonging is a consequential school experience and a prior-work benchmark.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000201/endpoints/low_belonging/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000201/endpoints/low_belonging/robustness/. Cross-component primary files are read from prereg/runtime/atom-000201/endpoints/low_belonging/primary/; ascertainment and robustness never overwrite primary judgments or scope.

The root component vector reports each endpoint primary direction/interval type, ascertainment decision, robustness decision, and measurement, horizon, selection and operational restrictions. Within this experiment, differing outcomes remain independently interpretable. Mixed signs across different horizons are side-by-side observed contrasts, not common-population divergence. All graphical and manuscript bindings use the exact endpoint/component directory above.

Complete registration fields

```
id: atom-000201
topic: School social experience
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: Does marginal classification change school social experience?
  rationale: Loneliness and school belonging jointly ask whether children's
    social experience of school changes. They remain separate binary reports,
    with separate ascertainment and directions.
  assumption: Administrative recognition can affect opportunities, reporting
    and service contact through multiple routes; exact source semantics and
    continuity require evidence, not an estimator label. See literature.md
    and identification.md.
  target_strength: causal
  target_shape: comparison
  ratings:
    importance: 5
    novelty: 3
    feasibility: 2
    data_advantage: 4
    informativeness: 0.5
  tables:
  - BEF
  - DOD
  - UDD_FOLKESKOLE_FRAVAER_STIL
  - UDD_ORDBLINDETEST
  - UDD_TRIVSEL_STORE_KLASSER
  - VNDS
  activation: state(atom-000001) == "ready" AND state(atom-000002) ==
  ↪  "compatible"
    AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) ==
    ↪  "eligible_nonsharp")
  verdicts:
  - key: sensitive
    region: At least one endpoint has a computed I4 sensitivity contradiction.
      This precedence applies even if another endpoint/variant fails.
    says: Name every affected endpoint and variant; retain all primary
    ↪  estimates
      and independent component failures without replacing a primary.
  - key: mixed_direction
    region: No preceding region; at least one qualified increase and one
    ↪  qualified
      decrease among this experiment's endpoints. Qualified means valid
      ↪  primary
      interval/bounds and stable own robustness.
```

```
  says: Report the discordant endpoint directions in their original
  ↪  units/scopes;
    do not average or assign a common welfare sign.
- key: directional
  region: No preceding region; at least one endpoint is a qualified increase
    or decrease. Other endpoints may be uncertain, selected, boundary,
    ↪  failed
    or unresolved.
  says: Report only named qualified directions and every other endpoint's
    disposition. This does not imply the entire domain changed or that all
    endpoints were available.
- key: uncertain
  region: No preceding region; at least one endpoint has a valid primary
    interval/bounds, but no qualified direction.
  says: Report exact intervals and endpoint-specific robustness
  ↪  restrictions;
    zero-containing intervals and unresolved robustness remain different
    cases, neither equivalence.
- key: boundary
  region: No preceding region; every endpoint has an evidenced measurement
    or horizon/population boundary.
  says: This scientific question cannot be evaluated under the frozen
  ↪  target;
    report component-specific reasons, never a null.
- key: restricted
  region: No preceding region; at least one endpoint supplies completed
    evidence of selection_limited or unestimable inference.
  says: Report the surviving selected/unestimable evidence and independent
    failures; no all-eligible directional claim.
- key: otherwise
  region: otherwise
  says: The experiment remains unresolved. Preserve every component state,
    terminal and unavailable reason; operational failure is not
    ↪  insignificance.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪  Atoms or activation primitives. Execute every prescribed component
  ↪  that is scientifically eligible, independently of other component
  ↪  signs. Component outputs retain their own local decision, inference
  ↪  and operational status; only the native judgment.json at the Atom
  ↪  root supplies the Atom local state. No component failure can erase
  ↪  completed evidence in another component. When no scientific component
  ↪  completes because execution fails, set terminal no_result with no
  ↪  Atom local state. Otherwise aggregate only by the ordered registered
  ↪  regions and record every component's failure, boundary, unknown or
  ↪  inactive disposition. Pending necessary evidence stays pending; it is
  ↪  never coded as negative evidence. Internal failed work is not
  ↪  automatically retried.
```

```
Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
↪  definitions. These fix population, dates, table/field dictionaries,
↪  code versions, joins, inference, missingness, outputs and synthetic c
↪  hecks. A dictionary crosswalk is semantic verification before outcome
↪  values, not a new scientific choice. Keep all endpoint-specific
↪  units, horizons and Bonferroni allocations; grouping introduces no
↪  average outcome, composite score, new hypothesis or additional alpha.
↪  Write root audit.json, status.json, judgment.json and components.csv
↪  with component, outcome, component_state, component_terminal,
↪  inference_status, reason, evidence_path. Components.csv is an
↪  evidence index under this protocol, never a second experiment graph.
↪  Suppression is applied after governed adjudication, and cannot govern
↪  activation or disclose protected directions.

Scope and order: this experiment asks whether marginal national-test
↪  classification changes school social experience. Use all grades
↪  4,5,6,7. Each endpoint below is a separate slot in the unchanged
↪  24-slot primary family; its ascertainment belongs to the separate
↪  24-slot diagnostic family. No endpoint value activates another
↪  endpoint. After the native grade activation passes, first perform
↪  each endpoint's own calendar/construct/relative/provenance checks,
↪  then ascertainment, primary estimation, and mandatory robustness
↪  whenever its primary component is
↪  increase/decrease/uncertain/selection_limited. An evidenced primary
↪  boundary makes its robustness internally not_activated. Ascertainment
↪  can finish even when primary or robustness fails, and primary does
↪  not require an insignificant ascertainment test. Robustness no_result
↪  never becomes stable. Aggregate only after every scheduled component
↪  completes, is evidenced ineligible, or has a recorded operational
↪  terminal. Preserve completed components when another fails; if all
↪  scientific work fails operationally use Atom terminal no_result.

## loneliness / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
```

```
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
Internal ascertainment diagnostic on exactly the baseline-eligible
↪  population and horizon of atom-000201, with the same
↪  table/field/version/join/exit definitions, fixed grades and baseline
↪  weights. Do not require that primary to finish and do not use its
↪  sign. First construct whether the registered endpoint is defined and
↪  observed for each baseline index; no value or realized employment
↪  changes eligibility. Atom-specific D9 calibration/correction checks
↪  still apply. For defined event-before-exit outcomes, complete event
↪  universe establishes observation even for zero events. For undefined
↪  after-death school/state outcomes, report undefined proportion
↪  separately; never classify death as a negative symptom. Apply I5
↪  constant handling to the observation indicator; documentary
↪  arithmetic can be structural_complete, observed constants have no
↪  p-value. Otherwise apply I3 as a binary outcome without outcome
↪  missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪  is distinct from the 24 primary outcomes and baseline48. Output
↪  ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪  diagnostics.csv, audit.json, judgment.json. Include observation
↪  fractions by side, undefined/death/emigration counts and
↪  denominators, exact horizon and p_raw/p_adjusted only for a valid
↪  contrast. A detected or undetected difference cannot choose a new
↪  endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪  all-unobserved, varying indicator and death-undefined fixtures test
↪  the local regions. Every state is narrated in Table S2 through its
↪  own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000201/endpoints/loneliness/ascertainment/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

```
Exact component path: prereg/runtime/atom-000201/endpoints/loneliness/asc
↪  ertainment/. Cross-component primary files are read from
↪  prereg/runtime/atom-000201/endpoints/loneliness/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## loneliness / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪  demonstrably
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Inferential status: one prespecified directional slot in the 24-slot
↪  study-wide family; conditional causal interpretation for the spring
↪  2015 historical margin only. Endpoint=loneliness; family=school;
↪  fixed horizon=first_full_school_year; display unit=pp. Population and
↪  exact coding: Baseline grades4-7; Q9 exact wording and frequent
↪  labels. Incorporate D4 and D1-D3, including individual exclusions,
↪  date-based eligibility, join cardinalities, code dictionaries and
↪  missingness. D7 first-family indexing applies to relatives' outcomes.
↪  No actual graduation, employment, care use, intact family or future
↪  response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the
↪  inclusive historical cutoff, pooled across the endpoint's fixed
↪  baseline-grade strata with pre-outcome count weights. It is neither
↪  the inherent effect of dyslexia nor the effect of a particular
↪  support program. Required identifying variation/assumptions are I1/I2
↪  and remain unproved by diagnostic passes. This endpoint uses no
↪  postbaseline controls. No fuzzy ratio is allowed even if recorded
↪  classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪  verify this endpoint's2015 calendar/dictionaries before values; form
↪  its baseline target and expected outcome row for every eligible
↪  index; assert D2 joins, invalid-code and duplicates dispositions;
↪  build endpoint plus observation/exit indicators; produce missingness
↪  diagnostics without removing the baseline row; apply RD from I3 with
↪  endpoint kind=binary; transform binary risk effects by100 once; fit
↪  available-case sensitivity only when missingness requires it;
↪  calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪  for a complete point estimand, or the simultaneous outer bound
↪  interval for a bounded partially observed endpoint; retain unbounded
↪  missingness as selection_limited. Do not choose another cohort, grade
↪  stratum, time window or definition if this fit lacks support. All
↪  grade strata required by this endpoint must support the fitted
↪  operator; no renormalizing after a stratum fails. Report h/b,
↪  support, clusters, effective n, censoring/exit fractions and
↪  conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable),
↪  diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪  identified bounds put estimate/p values NA and use lower/upper as
↪  outer limits; a missing point estimate must never be plotted at zero.
↪  Required figure: the full causal forest, plus its own registered
↪  robustness display if the internal robustness rule is satisfied. Synt
↪  hetic check: score=0 belongs on red; complete binary endpoint agrees
↪  with ordinary RD after transformation; missing bounded endpoint
↪  widens the extreme interval; missing unbounded endpoint never
↪  produces a full-population causal p-value; dormant slots remain in
↪  the 24 denominator. Software failures get no_result, not uncertain.
↪  Permitted claim ceiling: Reported loneliness may change through
↪  experience, interpretation or response assistance. Directional local
↪  states do not establish practical importance. A confidence interval
↪  spanning zero never licenses no effect or equivalence.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000201/endpoints/loneliness/primary/ and remain
↪  governed until aggregate disclosure approval. Write audit.json and
↪  judgment.json plus the named plot-ready table; G1/G2 define status
↪  and column meanings. No numerical result is populated now. Before
↪  runtime use G3 synthetic join/date/missingness checks and verify
↪  row-order invariance; a failed check prevents output release. Every
↪  result constrains the Molecule under its composable rules; neither
↪  failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000201.
Exact component path: prereg/runtime/atom-000201/endpoints/loneliness/pri
↪  mary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000201/endpoints/loneliness/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## loneliness / robustness
- key: sensitive
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
```

```
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for loneliness, not an additional primary
↪  discovery. Scope, unit, field/code mapping, population, estimand and
↪  missingness are exactly those of atom-000201 and incorporated D4.
↪  Read its frozen analysis population, weights, primary h/b and saved
↪  aggregate influence outputs; do not reconstruct a more favorable
↪  cohort. For each fixed specification in I4 (primary,half_bandwidth,wi
↪  der_bandwidth,donut), rerun the same local-linear/bias-corrected
↪  operator with the specified h/b changes, same grade weights and
↪  primary 24-slot interval and exploratory nonprimary 95% intervals as
↪  I4; exclude only x==0 for the donut, explicitly changing local
↪  extrapolation. Recompute cluster influence variance and missingness
↪  bounds as needed. No new covariates, grade filters or bandwidth
↪  search. If a specification has insufficient support, its status is
↪  unresolved, never silently omitted. No multiplicity claim is made
↪  from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all fou
↪  r rows in the sensitivity figure with units=pp, including noncomputed
↪  rows. Compare available scalar primary and variant estimates: a sign
↪  reversal or variant point outside the primary interval is sensitive.
↪  For partial bounds use disjoint intervals as sensitive; overlapping
↪  intervals alone cannot prove equality. All variants must be computed
↪  for stable. If primary is selection_limited, variants inherit that
↪  ceiling. Synthetic tests keep identical rows in primary and
↪  recomputation, respect inclusive zero except the expressly registered
↪  donut, and preserve a missing variant row. Consequence: stability is
↪  only consistency over these specified choices, while sensitivity
↪  limits a broad policy conclusion. Reported loneliness may change
↪  through experience, interpretation or response assistance.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000201/endpoints/loneliness/robustness/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

```
Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪  computable variant contradicts primary; all failed variants remain
↪  explicit with NA display rows. Stable never follows an unestimable
↪  primary or missing variant. No joint multi-specification coverage is
↪  claimed. Write inference_status and display status under G2,
↪  including unestimable numeric rows. Reproduce exact per-grade h/b
↪  from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000201/endpoints/loneliness/rob
↪  ustness/. Cross-component primary files are read from
↪  prereg/runtime/atom-000201/endpoints/loneliness/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## low_belonging / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Internal ascertainment diagnostic on exactly the baseline-eligible
↪ population and horizon of atom-000201, with the same
↪ table/field/version/join/exit definitions, fixed grades and baseline
↪ weights. Do not require that primary to finish and do not use its
↪ sign. First construct whether the registered endpoint is defined and
↪ observed for each baseline index; no value or realized employment
↪ changes eligibility. Atom-specific D9 calibration/correction checks
↪ still apply. For defined event-before-exit outcomes, complete event
↪ universe establishes observation even for zero events. For undefined
↪ after-death school/state outcomes, report undefined proportion
↪ separately; never classify death as a negative symptom. Apply I5
↪ constant handling to the observation indicator; documentary
↪ arithmetic can be structural_complete, observed constants have no
↪ p-value. Otherwise apply I3 as a binary outcome without outcome
↪ missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪ is distinct from the 24 primary outcomes and baseline48. Output
↪ ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪ diagnostics.csv, audit.json, judgment.json. Include observation
↪ fractions by side, undefined/death/emigration counts and
↪ denominators, exact horizon and p_raw/p_adjusted only for a valid
↪ contrast. A detected or undetected difference cannot choose a new
↪ endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪ all-unobserved, varying indicator and death-undefined fixtures test
↪ the local regions. Every state is narrated in Table S2 through its
↪ own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000201/endpoints/low_belonging/ascertainment/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000201/endpoints/low_belonging/
↪ ascertainment/. Cross-component primary files are read from
↪ prereg/runtime/atom-000201/endpoints/low_belonging/primary/;
↪ ascertainment and robustness never overwrite primary judgments or
↪ scope.

## low_belonging / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪ demonstrably
```

```
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Inferential status: one prespecified directional slot in the 24-slot
↪  study-wide family; conditional causal interpretation for the spring
↪  2015 historical margin only. Endpoint=low_belonging; family=school;
↪  fixed horizon=first_full_school_year; display unit=pp. Population and
↪  exact coding: Baseline grades4-7; Q33 disagreement labels, not an
↪  inferred factor score. Incorporate D4 and D1-D3, including individual
↪  exclusions, date-based eligibility, join cardinalities, code
↪  dictionaries and missingness. D7 first-family indexing applies to
↪  relatives' outcomes. No actual graduation, employment, care use,
↪  intact family or future response condition determines eligibility.
```

```
Estimand: red-minus-adjacent-yellow local policy contrast at the
↪ inclusive historical cutoff, pooled across the endpoint's fixed
↪ baseline-grade strata with pre-outcome count weights. It is neither
↪ the inherent effect of dyslexia nor the effect of a particular
↪ support program. Required identifying variation/assumptions are I1/I2
↪ and remain unproved by diagnostic passes. This endpoint uses no
↪ postbaseline controls. No fuzzy ratio is allowed even if recorded
↪ classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪ verify this endpoint's2015 calendar/dictionaries before values; form
↪ its baseline target and expected outcome row for every eligible
↪ index; assert D2 joins, invalid-code and duplicates dispositions;
↪ build endpoint plus observation/exit indicators; produce missingness
↪ diagnostics without removing the baseline row; apply RD from I3 with
↪ endpoint kind=binary; transform binary risk effects by100 once; fit
↪ available-case sensitivity only when missingness requires it;
↪ calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪ for a complete point estimand, or the simultaneous outer bound
↪ interval for a bounded partially observed endpoint; retain unbounded
↪ missingness as selection_limited. Do not choose another cohort, grade
↪ stratum, time window or definition if this fit lacks support. All
↪ grade strata required by this endpoint must support the fitted
↪ operator; no renormalizing after a stratum fails. Report h/b,
↪ support, clusters, effective n, censoring/exit fractions and
↪ conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable),
↪ diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪ identified bounds put estimate/p values NA and use lower/upper as
↪ outer limits; a missing point estimate must never be plotted at zero.
↪ Required figure: the full causal forest, plus its own registered
↪ robustness display if the internal robustness rule is satisfied.
↪ Synthetic check: score=0 belongs on red; complete binary endpoint
↪ agrees with ordinary RD after transformation; missing bounded
↪ endpoint widens the extreme interval; missing unbounded endpoint
↪ never produces a full-population causal p-value; dormant slots remain
↪ in the 24 denominator. Software failures get no_result, not
↪ uncertain. Permitted claim ceiling: Belonging is a consequential
↪ school experience and a prior-work benchmark. Directional local
↪ states do not establish practical importance. A confidence interval
↪ spanning zero never licenses no effect or equivalence.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000201/endpoints/low_belonging/primary/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000201.
Exact component path: prereg/runtime/atom-000201/endpoints/low_belonging/
↪  primary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000201/endpoints/low_belonging/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## low_belonging / robustness
- key: sensitive
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
```

```
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for low_belonging, not an additional
↪  primary discovery. Scope, unit, field/code mapping, population,
↪  estimand and missingness are exactly those of atom-000201 and
↪  incorporated D4. Read its frozen analysis population, weights,
↪  primary h/b and saved aggregate influence outputs; do not reconstruct
↪  a more favorable cohort. For each fixed specification in I4
↪  (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-
↪  linear/bias-corrected operator with the specified h/b changes, same
↪  grade weights and primary 24-slot interval and exploratory nonprimary
↪  95% intervals as I4; exclude only x==0 for the donut, explicitly
↪  changing local extrapolation. Recompute cluster influence variance
↪  and missingness bounds as needed. No new covariates, grade filters or
↪  bandwidth search. If a specification has insufficient support, its
↪  status is unresolved, never silently omitted. No multiplicity claim
↪  is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all fou
↪  r rows in the sensitivity figure with units=pp, including noncomputed
↪  rows. Compare available scalar primary and variant estimates: a sign
↪  reversal or variant point outside the primary interval is sensitive.
↪  For partial bounds use disjoint intervals as sensitive; overlapping
↪  intervals alone cannot prove equality. All variants must be computed
↪  for stable. If primary is selection_limited, variants inherit that
↪  ceiling. Synthetic tests keep identical rows in primary and
↪  recomputation, respect inclusive zero except the expressly registered
↪  donut, and preserve a missing variant row. Consequence: stability is
↪  only consistency over these specified choices, while sensitivity
↪  limits a broad policy conclusion. Belonging is a consequential school
↪  experience and a prior-work benchmark.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000201/endpoints/low_belonging/robustness/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

```
Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪  computable variant contradicts primary; all failed variants remain
↪  explicit with NA display rows. Stable never follows an unestimable
↪  primary or missing variant. No joint multi-specification coverage is
↪  claimed. Write inference_status and display status under G2,
↪  including unestimable numeric rows. Reproduce exact per-grade h/b
↪  from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000201/endpoints/low_belonging/
↪  robustness/. Cross-component primary files are read from
↪  prereg/runtime/atom-000201/endpoints/low_belonging/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

The root component vector reports each endpoint primary direction/interva
↪  l type, ascertainment decision, robustness decision, and measurement,
↪  horizon, selection and operational restrictions. Within this
↪  experiment, differing outcomes remain independently interpretable.
↪  Mixed signs across different horizons are side-by-side observed
↪  contrasts, not common-population divergence. All graphical and
↪  manuscript bindings use the exact endpoint/component directory above.
```

Registered experiment

Does marginal classification change school social experience?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000201`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000202: School somatic symptoms

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state,

component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Scope and order: this experiment asks whether marginal national-test classification changes school somatic symptoms. Use all grades 4,5,6,7. Each endpoint below is a separate slot in the unchanged 24-slot primary family; its ascertainment belongs to the separate 24-slot diagnostic family. No endpoint value activates another endpoint. After the native grade activation passes, first perform each endpoint's own calendar/construct/relative/provenance checks, then ascertainment, primary estimation, and mandatory robustness whenever its primary component is increase/decrease/uncertain/selection_limited. An evidenced primary boundary makes its robustness internally not_activated. Ascertainment can finish even when primary or robustness fails, and primary does not require an insignificant ascertainment test. Robustness no_result never becomes stable. Aggregate only after every scheduled component completes, is evidenced ineligible, or has a recorded operational terminal. Preserve completed components when another fails; if all scientific work fails operationally use Atom terminal no_result.

stomach_ache / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000202, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events. For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling

to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000202/endpoints/stomach_ache/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000202/endpoints/stomach_ache/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000202/endpoints/stomach_ache/primary/; ascertainment and robustness never overwrite primary judgments or scope.

stomach_ache / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata. says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.
- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.

- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=stomach_ache; family=school; fixed horizon=first_full_school_year; display unit=pp. Population and exact coding: Baseline grades4–7; Q10 exact wording and frequent labels. Incorporate D4 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=binary; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must support the fitted operator; no renormalizing after a stratum fails. Report h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: A pain report is not a diagnosed physical disease or general morbidity. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000202/endpoints/stomach_ache/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values; exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000202. Exact component path: prereg/runtime/atom-000202/endpoints/stomach_ache/primary/. Cross-component primary files are read from prereg/runtime/atom-000202/endpoints/stomach_ache/primary/; ascertainment and robustness never overwrite primary judgments or scope.

stomach_ache / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for stomach_ache, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000202 and incorporated D4. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=pp, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. A pain report is not a diagnosed physical disease or general morbidity.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result

with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000202/endpoints/stomach_ache/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000202/endpoints/stomach_ache/robustness/. Cross-component primary files are read from prereg/runtime/atom-000202/endpoints/stomach_ache/primary/; ascertainment and robustness never overwrite primary judgments or scope.

headache / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000202, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events.

For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000202/endpoints/headache/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000202/endpoints/headache/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000202/endpoints/headache/primary/; ascertainment and robustness never overwrite primary judgments or scope.

headache / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata. says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.
- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.

- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=headache; family=school; fixed horizon=first_full_school_year; display unit=pp. Population and exact coding: Baseline grades4–7; Q11 exact wording and frequent labels. Incorporate D4 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=binary; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must support the fitted operator; no renormalizing after a stratum fails. Report h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Headache reports can reflect stress, other causes and reporting changes. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000202/endpoints/headache/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values; exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000202. Exact component path: prereg/runtime/atom-000202/endpoints/headache/primary/. Cross-component primary files are read from prereg/runtime/atom-000202/endpoints/headache/primary/; ascertainment and robustness never overwrite primary judgments or scope.

headache / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for headache, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000202 and incorporated D4. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=pp, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. Headache reports can reflect stress, other causes and reporting changes.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result

with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000202/endpoints/headache/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000202/endpoints/headache/robustness/. Cross-component primary files are read from prereg/runtime/atom-000202/endpoints/headache/primary/; ascertainment and robustness never overwrite primary judgments or scope.

The root component vector reports each endpoint primary direction/interval type, ascertainment decision, robustness decision, and measurement, horizon, selection and operational restrictions. Within this experiment, differing outcomes remain independently interpretable. Mixed signs across different horizons are side-by-side observed contrasts, not common-population divergence. All graphical and manuscript bindings use the exact endpoint/component directory above.

Complete registration fields


```
id: atom-000202
topic: School somatic symptoms
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: Does marginal classification change school somatic symptoms?
  rationale: Headache and stomach ache jointly operationalize experienced
    somatic symptom burden at school. Neither is a broad physical-morbidity
    diagnosis.
  assumption: Administrative recognition can affect opportunities, reporting
    and service contact through multiple routes; exact source semantics and
    continuity require evidence, not an estimator label. See literature.md
    and identification.md.
  target_strength: causal
  target_shape: comparison
  ratings:
    importance: 5
```

```
  novelty: 3
  feasibility: 2
  data_advantage: 4
  informativeness: 0.5
tables:
- BEF
- DOD
- UDD_FOLKESKOLE_FRAVAER_STIL
- UDD_ORDBLINDETEST
- UDD_TRIVSEL_STORE_KLASSER
- VNDS
activation: state(atom-000001) == "ready" AND state(atom-000002) ==
↪  "compatible"
  AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) ==
  ↪  "eligible_nonsharp")
verdicts:
- key: sensitive
  region: At least one endpoint has a computed I4 sensitivity contradiction.
    This precedence applies even if another endpoint/variant fails.
  says: Name every affected endpoint and variant; retain all primary
  ↪  estimates
    and independent component failures without replacing a primary.
- key: mixed_direction
  region: No preceding region; at least one qualified increase and one
  ↪  qualified
    decrease among this experiment's endpoints. Qualified means valid
    ↪  primary
    interval/bounds and stable own robustness.
  says: Report the discordant endpoint directions in their original
  ↪  units/scopes;
    do not average or assign a common welfare sign.
- key: directional
  region: No preceding region; at least one endpoint is a qualified increase
    or decrease. Other endpoints may be uncertain, selected, boundary,
    ↪  failed
    or unresolved.
  says: Report only named qualified directions and every other endpoint's
    disposition. This does not imply the entire domain changed or that all
    endpoints were available.
- key: uncertain
  region: No preceding region; at least one endpoint has a valid primary
    interval/bounds, but no qualified direction.
  says: Report exact intervals and endpoint-specific robustness
  ↪  restrictions;
    zero-containing intervals and unresolved robustness remain different
    cases, neither equivalence.
- key: boundary
  region: No preceding region; every endpoint has an evidenced measurement
    or horizon/population boundary.
  says: This scientific question cannot be evaluated under the frozen
  ↪  target;
    report component-specific reasons, never a null.
- key: restricted
  region: No preceding region; at least one endpoint supplies completed
```

```
    evidence of selection_limited or unestimable inference.
  says: Report the surviving selected/unestimable evidence and independent
    failures; no all-eligible directional claim.
- key: otherwise
  region: otherwise
  says: The experiment remains unresolved. Preserve every component state,
    terminal and unavailable reason; operational failure is not
    ↪  insignificance.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪  Atoms or activation primitives. Execute every prescribed component
  ↪  that is scientifically eligible, independently of other component
  ↪  signs. Component outputs retain their own local decision, inference
  ↪  and operational status; only the native judgment.json at the Atom
  ↪  root supplies the Atom local state. No component failure can erase
  ↪  completed evidence in another component. When no scientific component
  ↪  completes because execution fails, set terminal no_result with no
  ↪  Atom local state. Otherwise aggregate only by the ordered registered
  ↪  regions and record every component's failure, boundary, unknown or
  ↪  inactive disposition. Pending necessary evidence stays pending; it is
  ↪  never coded as negative evidence. Internal failed work is not
  ↪  automatically retried.
  Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
  ↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
  ↪  definitions. These fix population, dates, table/field dictionaries,
  ↪  code versions, joins, inference, missingness, outputs and synthetic c
  ↪  hecks. A dictionary crosswalk is semantic verification before outcome
  ↪  values, not a new scientific choice. Keep all endpoint-specific
  ↪  units, horizons and Bonferroni allocations; grouping introduces no
  ↪  average outcome, composite score, new hypothesis or additional alpha.
  ↪  Write root audit.json, status.json, judgment.json and components.csv
  ↪  with component, outcome, component_state, component_terminal,
  ↪  inference_status, reason, evidence_path. Components.csv is an
  ↪  evidence index under this protocol, never a second experiment graph.
  ↪  Suppression is applied after governed adjudication, and cannot govern
  ↪  activation or disclose protected directions.

  Scope and order: this experiment asks whether marginal national-test
  ↪  classification changes school somatic symptoms. Use all grades
  ↪  4,5,6,7. Each endpoint below is a separate slot in the unchanged
  ↪  24-slot primary family; its ascertainment belongs to the separate
  ↪  24-slot diagnostic family. No endpoint value activates another
  ↪  endpoint. After the native grade activation passes, first perform
  ↪  each endpoint's own calendar/construct/relative/provenance checks,
  ↪  then ascertainment, primary estimation, and mandatory robustness
  ↪  whenever its primary component is
  ↪  increase/decrease/uncertain/selection_limited. An evidenced primary
  ↪  boundary makes its robustness internally not_activated. Ascertainment
  ↪  can finish even when primary or robustness fails, and primary does
  ↪  not require an insignificant ascertainment test. Robustness no_result
  ↪  never becomes stable. Aggregate only after every scheduled component
  ↪  completes, is evidenced ineligible, or has a recorded operational
  ↪  terminal. Preserve completed components when another fails; if all
  ↪  scientific work fails operationally use Atom terminal no_result.

  ## stomach_ache / ascertainment
  - key: differential
    region: Valid observation-indicator Bonferroni24 interval excludes zero.
```

```
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
Internal ascertainment diagnostic on exactly the baseline-eligible
↪  population and horizon of atom-000202, with the same
↪  table/field/version/join/exit definitions, fixed grades and baseline
↪  weights. Do not require that primary to finish and do not use its
↪  sign. First construct whether the registered endpoint is defined and
↪  observed for each baseline index; no value or realized employment
↪  changes eligibility. Atom-specific D9 calibration/correction checks
↪  still apply. For defined event-before-exit outcomes, complete event
↪  universe establishes observation even for zero events. For undefined
↪  after-death school/state outcomes, report undefined proportion
↪  separately; never classify death as a negative symptom. Apply I5
↪  constant handling to the observation indicator; documentary
↪  arithmetic can be structural_complete, observed constants have no
↪  p-value. Otherwise apply I3 as a binary outcome without outcome
↪  missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪  is distinct from the 24 primary outcomes and baseline48. Output
↪  ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪  diagnostics.csv, audit.json, judgment.json. Include observation
↪  fractions by side, undefined/death/emigration counts and
↪  denominators, exact horizon and p_raw/p_adjusted only for a valid
↪  contrast. A detected or undetected difference cannot choose a new
↪  endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪  all-unobserved, varying indicator and death-undefined fixtures test
↪  the local regions. Every state is narrated in Table S2 through its
↪  own result slot; no public suppressed value gates computation.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000202/endpoints/stomach_ache/ascertainment/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000202/endpoints/stomach_ache/a
↪  scertainment/. Cross-component primary files are read from
↪  prereg/runtime/atom-000202/endpoints/stomach_ache/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## stomach_ache / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪  demonstrably
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
```

```
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Inferential status: one prespecified directional slot in the 24-slot
↪  study-wide family; conditional causal interpretation for the spring
↪  2015 historical margin only. Endpoint=stomach_ache; family=school;
↪  fixed horizon=first_full_school_year; display unit=pp. Population and
↪  exact coding: Baseline grades4-7; Q10 exact wording and frequent
↪  labels. Incorporate D4 and D1-D3, including individual exclusions,
↪  date-based eligibility, join cardinalities, code dictionaries and
↪  missingness. D7 first-family indexing applies to relatives' outcomes.
↪  No actual graduation, employment, care use, intact family or future
↪  response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the
↪  inclusive historical cutoff, pooled across the endpoint's fixed
↪  baseline-grade strata with pre-outcome count weights. It is neither
↪  the inherent effect of dyslexia nor the effect of a particular
↪  support program. Required identifying variation/assumptions are I1/I2
↪  and remain unproved by diagnostic passes. This endpoint uses no
↪  postbaseline controls. No fuzzy ratio is allowed even if recorded
↪  classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪  verify this endpoint's2015 calendar/dictionaries before values; form
↪  its baseline target and expected outcome row for every eligible
↪  index; assert D2 joins, invalid-code and duplicates dispositions;
↪  build endpoint plus observation/exit indicators; produce missingness
↪  diagnostics without removing the baseline row; apply RD from I3 with
↪  endpoint kind=binary; transform binary risk effects by100 once; fit
↪  available-case sensitivity only when missingness requires it;
↪  calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪  for a complete point estimand, or the simultaneous outer bound
↪  interval for a bounded partially observed endpoint; retain unbounded
↪  missingness as selection_limited. Do not choose another cohort, grade
↪  stratum, time window or definition if this fit lacks support. All
↪  grade strata required by this endpoint must support the fitted
↪  operator; no renormalizing after a stratum fails. Report h/b,
↪  support, clusters, effective n, censoring/exit fractions and
↪  conditional detectable contrast; no power pass threshold.
```

```
Output effects.csv, selection-sensitivity.csv (only when applicable),
↪  diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪  identified bounds put estimate/p values NA and use lower/upper as
↪  outer limits; a missing point estimate must never be plotted at zero.
↪  Required figure: the full causal forest, plus its own registered
↪  robustness display if the internal robustness rule is satisfied.
↪  Synthetic check: score=0 belongs on red; complete binary endpoint
↪  agrees with ordinary RD after transformation; missing bounded
↪  endpoint widens the extreme interval; missing unbounded endpoint
↪  never produces a full-population causal p-value; dormant slots remain
↪  in the 24 denominator. Software failures get no_result, not
↪  uncertain. Permitted claim ceiling: A pain report is not a diagnosed
↪  physical disease or general morbidity. Directional local states do
↪  not establish practical importance. A confidence interval spanning
↪  zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000202/endpoints/stomach_ache/primary/ and remain
↪  governed until aggregate disclosure approval. Write audit.json and
↪  judgment.json plus the named plot-ready table; G1/G2 define status
↪  and column meanings. No numerical result is populated now. Before
↪  runtime use G3 synthetic join/date/missingness checks and verify
↪  row-order invariance; a failed check prevents output release. Every
↪  result constrains the Molecule under its composable rules; neither
↪  failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000202.
Exact component path: prereg/runtime/atom-000202/endpoints/stomach_ache/p
↪  rimary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000202/endpoints/stomach_ache/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## stomach_ache / robustness
- key: sensitive
```

```
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for stomach_ache, not an additional
↪  primary discovery. Scope, unit, field/code mapping, population,
↪  estimand and missingness are exactly those of atom-000202 and
↪  incorporated D4. Read its frozen analysis population, weights,
↪  primary h/b and saved aggregate influence outputs; do not reconstruct
↪  a more favorable cohort. For each fixed specification in I4
↪  (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-
↪  linear/bias-corrected operator with the specified h/b changes, same
↪  grade weights and primary 24-slot interval and exploratory nonprimary
↪  95% intervals as I4; exclude only x==0 for the donut, explicitly
↪  changing local extrapolation. Recompute cluster influence variance
↪  and missingness bounds as needed. No new covariates, grade filters or
↪  bandwidth search. If a specification has insufficient support, its
↪  status is unresolved, never silently omitted. No multiplicity claim
↪  is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all fou
↪  r rows in the sensitivity figure with units=pp, including noncomputed
↪  rows. Compare available scalar primary and variant estimates: a sign
↪  reversal or variant point outside the primary interval is sensitive.
↪  For partial bounds use disjoint intervals as sensitive; overlapping
↪  intervals alone cannot prove equality. All variants must be computed
↪  for stable. If primary is selection_limited, variants inherit that
↪  ceiling. Synthetic tests keep identical rows in primary and
↪  recomputation, respect inclusive zero except the expressly registered
↪  donut, and preserve a missing variant row. Consequence: stability is
↪  only consistency over these specified choices, while sensitivity
↪  limits a broad policy conclusion. A pain report is not a diagnosed
↪  physical disease or general morbidity.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000202/endpoints/stomach_ache/robustness/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪  computable variant contradicts primary; all failed variants remain
↪  explicit with NA display rows. Stable never follows an unestimable
↪  primary or missing variant. No joint multi-specification coverage is
↪  claimed. Write inference_status and display status under G2,
↪  including unestimable numeric rows. Reproduce exact per-grade h/b
↪  from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000202/endpoints/stomach_ache/r
↪  obustness/. Cross-component primary files are read from
↪  prereg/runtime/atom-000202/endpoints/stomach_ache/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## headache / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
```

```
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪ undefined.
  says: This observation question is bounded; no manufactured missingness
  ↪ rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪ limitation, without
    negative or favorable inference.
Internal ascertainment diagnostic on exactly the baseline-eligible
↪ population and horizon of atom-000202, with the same
↪ table/field/version/join/exit definitions, fixed grades and baseline
↪ weights. Do not require that primary to finish and do not use its
↪ sign. First construct whether the registered endpoint is defined and
↪ observed for each baseline index; no value or realized employment
↪ changes eligibility. Atom-specific D9 calibration/correction checks
↪ still apply. For defined event-before-exit outcomes, complete event
↪ universe establishes observation even for zero events. For undefined
↪ after-death school/state outcomes, report undefined proportion
↪ separately; never classify death as a negative symptom. Apply I5
↪ constant handling to the observation indicator; documentary
↪ arithmetic can be structural_complete, observed constants have no
↪ p-value. Otherwise apply I3 as a binary outcome without outcome
↪ missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪ is distinct from the 24 primary outcomes and baseline48. Output
↪ ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪ diagnostics.csv, audit.json, judgment.json. Include observation
↪ fractions by side, undefined/death/emigration counts and
↪ denominators, exact horizon and p_raw/p_adjusted only for a valid
↪ contrast. A detected or undetected difference cannot choose a new
↪ endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪ all-unobserved, varying indicator and death-undefined fixtures test
↪ the local regions. Every state is narrated in Table S2 through its
↪ own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000202/endpoints/headache/ascertainment/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.
```

```
Exact component path: prereg/runtime/atom-000202/endpoints/headache/ascer
↪  tainment/. Cross-component primary files are read from
↪  prereg/runtime/atom-000202/endpoints/headache/primary/; ascertainment
↪  and robustness never overwrite primary judgments or scope.

## headache / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪  demonstrably
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Inferential status: one prespecified directional slot in the 24-slot
↪ study-wide family; conditional causal interpretation for the spring
↪ 2015 historical margin only. Endpoint=headache; family=school; fixed
↪ horizon=first_full_school_year; display unit=pp. Population and exact
↪ coding: Baseline grades4-7; Q11 exact wording and frequent labels.
↪ Incorporate D4 and D1-D3, including individual exclusions, date-based
↪ eligibility, join cardinalities, code dictionaries and missingness.
↪ D7 first-family indexing applies to relatives' outcomes. No actual
↪ graduation, employment, care use, intact family or future response
↪ condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the
↪ inclusive historical cutoff, pooled across the endpoint's fixed
↪ baseline-grade strata with pre-outcome count weights. It is neither
↪ the inherent effect of dyslexia nor the effect of a particular
↪ support program. Required identifying variation/assumptions are I1/I2
↪ and remain unproved by diagnostic passes. This endpoint uses no
↪ postbaseline controls. No fuzzy ratio is allowed even if recorded
↪ classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪ verify this endpoint's2015 calendar/dictionaries before values; form
↪ its baseline target and expected outcome row for every eligible
↪ index; assert D2 joins, invalid-code and duplicates dispositions;
↪ build endpoint plus observation/exit indicators; produce missingness
↪ diagnostics without removing the baseline row; apply RD from I3 with
↪ endpoint kind=binary; transform binary risk effects by100 once; fit
↪ available-case sensitivity only when missingness requires it;
↪ calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪ for a complete point estimand, or the simultaneous outer bound
↪ interval for a bounded partially observed endpoint; retain unbounded
↪ missingness as selection_limited. Do not choose another cohort, grade
↪ stratum, time window or definition if this fit lacks support. All
↪ grade strata required by this endpoint must support the fitted
↪ operator; no renormalizing after a stratum fails. Report h/b,
↪ support, clusters, effective n, censoring/exit fractions and
↪ conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable),
↪ diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪ identified bounds put estimate/p values NA and use lower/upper as
↪ outer limits; a missing point estimate must never be plotted at zero.
↪ Required figure: the full causal forest, plus its own registered
↪ robustness display if the internal robustness rule is satisfied.
↪ Synthetic check: score=0 belongs on red; complete binary endpoint
↪ agrees with ordinary RD after transformation; missing bounded
↪ endpoint widens the extreme interval; missing unbounded endpoint
↪ never produces a full-population causal p-value; dormant slots remain
↪ in the 24 denominator. Software failures get no_result, not
↪ uncertain. Permitted claim ceiling: Headache reports can reflect
↪ stress, other causes and reporting changes. Directional local states
↪ do not establish practical importance. A confidence interval spanning
↪ zero never licenses no effect or equivalence.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and prereg/i
↪  dentification.md I1-I4 for estimands and inference. These shared
↪  definitions are part of this Atom's protocol, not optional guidance.
↪  Apply ordered checks before model fitting: delivered schema/dictionar
↪  y; date and unit semantics; unique keys and duplicate disposition;
↪  baseline and horizon eligibility; outcome construction; missingness
↪  and inference; local adjudication. Never inspect a postbaseline
↪  estimate to repair an earlier choice. A demonstrably incompatible
↪  construct is an evidenced boundary; unresolved documentation reaches
↪  otherwise. A transport/access/software failure yields terminal no_res
↪  ult with no local state. Apply the listed verdict regions in order,
↪  first matching region wins; otherwise is exhaustive. All future
↪  outputs go to prereg/runtime/atom-000202/endpoints/headache/primary/
↪  and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000202.
Exact component path: prereg/runtime/atom-000202/endpoints/headache/prima
↪  ry/. Cross-component primary files are read from
↪  prereg/runtime/atom-000202/endpoints/headache/primary/; ascertainment
↪  and robustness never overwrite primary judgments or scope.

## headache / robustness
- key: sensitive
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Registered robustness judgment for headache, not an additional primary
↪ discovery. Scope, unit, field/code mapping, population, estimand and
↪ missingness are exactly those of atom-000202 and incorporated D4.
↪ Read its frozen analysis population, weights, primary h/b and saved
↪ aggregate influence outputs; do not reconstruct a more favorable
↪ cohort. For each fixed specification in I4 (primary,half_bandwidth,wi
↪ der_bandwidth,donut), rerun the same local-linear/bias-corrected
↪ operator with the specified h/b changes, same grade weights and
↪ primary 24-slot interval and exploratory nonprimary 95% intervals as
↪ I4; exclude only x==0 for the donut, explicitly changing local
↪ extrapolation. Recompute cluster influence variance and missingness
↪ bounds as needed. No new covariates, grade filters or bandwidth
↪ search. If a specification has insufficient support, its status is
↪ unresolved, never silently omitted. No multiplicity claim is made
↪ from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all fou
↪ r rows in the sensitivity figure with units=pp, including noncomputed
↪ rows. Compare available scalar primary and variant estimates: a sign
↪ reversal or variant point outside the primary interval is sensitive.
↪ For partial bounds use disjoint intervals as sensitive; overlapping
↪ intervals alone cannot prove equality. All variants must be computed
↪ for stable. If primary is selection_limited, variants inherit that
↪ ceiling. Synthetic tests keep identical rows in primary and
↪ recomputation, respect inclusive zero except the expressly registered
↪ donut, and preserve a missing variant row. Consequence: stability is
↪ only consistency over these specified choices, while sensitivity
↪ limits a broad policy conclusion. Headache reports can reflect
↪ stress, other causes and reporting changes.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000202/endpoints/headache/robustness/ and remain
↪ governed until aggregate disclosure approval. Write audit.json and
↪ judgment.json plus the named plot-ready table; G1/G2 define status
↪ and column meanings. No numerical result is populated now. Before
↪ runtime use G3 synthetic join/date/missingness checks and verify
↪ row-order invariance; a failed check prevents output release. Every
↪ result constrains the Molecule under its composable rules; neither
↪ failure nor nonactivation means statistical insignificance.
```

```
Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪  computable variant contradicts primary; all failed variants remain
↪  explicit with NA display rows. Stable never follows an unestimable
↪  primary or missing variant. No joint multi-specification coverage is
↪  claimed. Write inference_status and display status under G2,
↪  including unestimable numeric rows. Reproduce exact per-grade h/b
↪  from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000202/endpoints/headache/robus
↪  tness/. Cross-component primary files are read from
↪  prereg/runtime/atom-000202/endpoints/headache/primary/; ascertainment
↪  and robustness never overwrite primary judgments or scope.

The root component vector reports each endpoint primary direction/interva
↪  l type, ascertainment decision, robustness decision, and measurement,
↪  horizon, selection and operational restrictions. Within this
↪  experiment, differing outcomes remain independently interpretable.
↪  Mixed signs across different horizons are side-by-side observed
↪  contrasts, not common-population divergence. All graphical and
↪  manuscript bindings use the exact endpoint/component directory above.
```

Registered experiment

Does marginal classification change school somatic symptoms?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000202`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000205: School attendance

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state, component_terminal, inference_status, reason, evidence_path. Components.csv is

an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Scope and order: this experiment asks whether marginal national-test classification changes school attendance. Use all grades 4,5,6,7. Each endpoint below is a separate slot in the unchanged 24-slot primary family; its ascertainment belongs to the separate 24-slot diagnostic family. No endpoint value activates another endpoint. After the native grade activation passes, first perform each endpoint's own calendar/construct/relative/provenance checks, then ascertainment, primary estimation, and mandatory robustness whenever its primary component is increase/decrease/uncertain/selection_limited. An evidenced primary boundary makes its robustness internally not_activated. Ascertainment can finish even when primary or robustness fails, and primary does not require an insignificant ascertainment test. Robustness no_result never becomes stable. Aggregate only after every scheduled component completes, is evidenced ineligible, or has a recorded operational terminal. Preserve completed components when another fails; if all scientific work fails operationally use Atom terminal no_result.

total_absence / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000205, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events. For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling to the observation indicator; documentary arithmetic can be structural_complete,

observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000205/endpoints/total_absence/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000205/endpoints/total_absence/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000205/endpoints/total_absence/primary/; ascertainment and robustness never overwrite primary judgments or scope.

total_absence / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata. says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.
- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing

exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.

- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=total_absence; family=school; fixed horizon=first_full_school_year; display unit=pp. Population and exact coding: Baseline grades4–7; annual total absent days / active days, range0–100. Incorporate D5 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=bounded; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must support the fitted operator; no renormalizing after a stratum fails. Report h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Attendance measures participation; it is not a pure health or learning measure. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000205/endpoints/total_absence/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values; exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000205. Exact component path: prereg/runtime/atom-000205/endpoints/total_absence/primary/. Cross-component primary files are read from prereg/runtime/atom-000205/endpoints/total_absence/primary/; ascertainment and robustness never overwrite primary judgments or scope.

total_absence / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for total_absence, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000205 and incorporated D5. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=pp, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. Attendance measures participation; it is not a pure health or learning measure.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation

reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000205/endpoints/total_absence/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000205/endpoints/total_absence/robustness/. Cross-component primary files are read from prereg/runtime/atom-000205/endpoints/total_absence/primary/; ascertainment and robustness never overwrite primary judgments or scope.

sickness_absence / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000205, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events.

For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000205/endpoints/sickness_absence/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000205/endpoints/sickness_absence/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000205/endpoints/sickness_absence/primary/; ascertainment and robustness never overwrite primary judgments or scope.

sickness_absence / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata. says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.
- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.

- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=sickness_absence; family=school; fixed horizon=first_full_school_year; display unit=pp. Population and exact coding: Baseline grades4–7; annual sickness days / active days, range0–100. Incorporate D5 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=bounded; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must support the fitted operator; no renormalizing after a stratum fails. Report

h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Sickness classification of school absence can change without a diagnosed disorder. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000205/endpoints/sickness_absence/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values; exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000205. Exact component path: prereg/runtime/atom-000205/endpoints/sickness_absence/primary/. Cross-component primary files are

read from prereg/runtime/atom-000205/endpoints/sickness_absence/primary/; ascertainment and robustness never overwrite primary judgments or scope.

sickness_absence / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for sickness_absence, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000205 and incorporated D5. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=pp, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. Sickness classification of school absence can change without a diagnosed disorder.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary;

date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000205/endpoints/sickness_absence/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000205/endpoints/sickness_absence/robustness/. Cross-component primary files are read from prereg/runtime/atom-000205/endpoints/sickness_absence/primary/; ascertainment and robustness never overwrite primary judgments or scope.

The root component vector reports each endpoint primary direction/interval type, ascertainment decision, robustness decision, and measurement, horizon, selection and operational restrictions. Within this experiment, differing outcomes remain independently interpretable. Mixed signs across different horizons are side-by-side observed contrasts, not common-population divergence. All graphical and manuscript bindings use the exact endpoint/component directory above.

Complete registration fields

```
id: atom-000205
topic: School attendance
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: Does marginal classification change school attendance?
  rationale: Total and sickness absence jointly describe participation lost
    from recorded active school days. The sickness component is retained
    ↪  separately
    and cannot be interpreted as clinical disease.
```

```
assumption: Administrative recognition can affect opportunities, reporting
  and service contact through multiple routes; exact source semantics and
  continuity require evidence, not an estimator label. See literature.md
  and identification.md.
target_strength: causal
target_shape: comparison
ratings:
  importance: 5
  novelty: 3
  feasibility: 2
  data_advantage: 4
  informativeness: 0.5
tables:
- BEF
- DOD
- UDD_FOLKESKOLE_FRAVAER_STIL
- UDD_ORDBLINDETEST
- VNDS
activation: state(atom-000001) == "ready" AND state(atom-000002) ==
↪  "compatible"
  AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) ==
  ↪  "eligible_nonsharp")
verdicts:
- key: sensitive
  region: At least one endpoint has a computed I4 sensitivity contradiction.
    This precedence applies even if another endpoint/variant fails.
  says: Name every affected endpoint and variant; retain all primary
  ↪  estimates
    and independent component failures without replacing a primary.
- key: mixed_direction
  region: No preceding region; at least one qualified increase and one
  ↪  qualified
    decrease among this experiment's endpoints. Qualified means valid
    ↪  primary
    interval/bounds and stable own robustness.
  says: Report the discordant endpoint directions in their original
  ↪  units/scopes;
    do not average or assign a common welfare sign.
- key: directional
  region: No preceding region; at least one endpoint is a qualified increase
    or decrease. Other endpoints may be uncertain, selected, boundary,
    ↪  failed
    or unresolved.
  says: Report only named qualified directions and every other endpoint's
    disposition. This does not imply the entire domain changed or that all
    endpoints were available.
- key: uncertain
  region: No preceding region; at least one endpoint has a valid primary
    interval/bounds, but no qualified direction.
  says: Report exact intervals and endpoint-specific robustness
  ↪  restrictions;
    zero-containing intervals and unresolved robustness remain different
    cases, neither equivalence.
- key: boundary
```

```
  region: No preceding region; every endpoint has an evidenced measurement
    or horizon/population boundary.
  says: This scientific question cannot be evaluated under the frozen
  ↪  target;
    report component-specific reasons, never a null.
- key: restricted
  region: No preceding region; at least one endpoint supplies completed
    evidence of selection_limited or unestimable inference.
  says: Report the surviving selected/unestimable evidence and independent
    failures; no all-eligible directional claim.
- key: otherwise
  region: otherwise
  says: The experiment remains unresolved. Preserve every component state,
    terminal and unavailable reason; operational failure is not
    ↪  insignificance.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪  Atoms or activation primitives. Execute every prescribed component
  ↪  that is scientifically eligible, independently of other component
  ↪  signs. Component outputs retain their own local decision, inference
  ↪  and operational status; only the native judgment.json at the Atom
  ↪  root supplies the Atom local state. No component failure can erase
  ↪  completed evidence in another component. When no scientific component
  ↪  completes because execution fails, set terminal no_result with no
  ↪  Atom local state. Otherwise aggregate only by the ordered registered
  ↪  regions and record every component's failure, boundary, unknown or
  ↪  inactive disposition. Pending necessary evidence stays pending; it is
  ↪  never coded as negative evidence. Internal failed work is not
  ↪  automatically retried.
  Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
  ↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
  ↪  definitions. These fix population, dates, table/field dictionaries,
  ↪  code versions, joins, inference, missingness, outputs and synthetic c
  ↪  hecks. A dictionary crosswalk is semantic verification before outcome
  ↪  values, not a new scientific choice. Keep all endpoint-specific
  ↪  units, horizons and Bonferroni allocations; grouping introduces no
  ↪  average outcome, composite score, new hypothesis or additional alpha.
  ↪  Write root audit.json, status.json, judgment.json and components.csv
  ↪  with component, outcome, component_state, component_terminal,
  ↪  inference_status, reason, evidence_path. Components.csv is an
  ↪  evidence index under this protocol, never a second experiment graph.
  ↪  Suppression is applied after governed adjudication, and cannot govern
  ↪  activation or disclose protected directions.
```

```
Scope and order: this experiment asks whether marginal national-test
↪  classification changes school attendance. Use all grades 4,5,6,7.
↪  Each endpoint below is a separate slot in the unchanged 24-slot
↪  primary family; its ascertainment belongs to the separate 24-slot
↪  diagnostic family. No endpoint value activates another endpoint.
↪  After the native grade activation passes, first perform each
↪  endpoint's own calendar/construct/relative/provenance checks, then
↪  ascertainment, primary estimation, and mandatory robustness whenever
↪  its primary component is
↪  increase/decrease/uncertain/selection_limited. An evidenced primary
↪  boundary makes its robustness internally not_activated. Ascertainment
↪  can finish even when primary or robustness fails, and primary does
↪  not require an insignificant ascertainment test. Robustness no_result
↪  never becomes stable. Aggregate only after every scheduled component
↪  completes, is evidenced ineligible, or has a recorded operational
↪  terminal. Preserve completed components when another fails; if all
↪  scientific work fails operationally use Atom terminal no_result.

## total_absence / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Internal ascertainment diagnostic on exactly the baseline-eligible
↪ population and horizon of atom-000205, with the same
↪ table/field/version/join/exit definitions, fixed grades and baseline
↪ weights. Do not require that primary to finish and do not use its
↪ sign. First construct whether the registered endpoint is defined and
↪ observed for each baseline index; no value or realized employment
↪ changes eligibility. Atom-specific D9 calibration/correction checks
↪ still apply. For defined event-before-exit outcomes, complete event
↪ universe establishes observation even for zero events. For undefined
↪ after-death school/state outcomes, report undefined proportion
↪ separately; never classify death as a negative symptom. Apply I5
↪ constant handling to the observation indicator; documentary
↪ arithmetic can be structural_complete, observed constants have no
↪ p-value. Otherwise apply I3 as a binary outcome without outcome
↪ missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪ is distinct from the 24 primary outcomes and baseline48. Output
↪ ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪ diagnostics.csv, audit.json, judgment.json. Include observation
↪ fractions by side, undefined/death/emigration counts and
↪ denominators, exact horizon and p_raw/p_adjusted only for a valid
↪ contrast. A detected or undetected difference cannot choose a new
↪ endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪ all-unobserved, varying indicator and death-undefined fixtures test
↪ the local regions. Every state is narrated in Table S2 through its
↪ own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000205/endpoints/total_absence/ascertainment/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000205/endpoints/total_absence/
↪ ascertainment/. Cross-component primary files are read from
↪ prereg/runtime/atom-000205/endpoints/total_absence/primary/;
↪ ascertainment and robustness never overwrite primary judgments or
↪ scope.

## total_absence / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪ demonstrably
```

```
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Inferential status: one prespecified directional slot in the 24-slot
↪  study-wide family; conditional causal interpretation for the spring
↪  2015 historical margin only. Endpoint=total_absence; family=school;
↪  fixed horizon=first_full_school_year; display unit=pp. Population and
↪  exact coding: Baseline grades4-7; annual total absent days / active
↪  days, range0-100. Incorporate D5 and D1-D3, including individual
↪  exclusions, date-based eligibility, join cardinalities, code
↪  dictionaries and missingness. D7 first-family indexing applies to
↪  relatives' outcomes. No actual graduation, employment, care use,
↪  intact family or future response condition determines eligibility.
```

```
Estimand: red-minus-adjacent-yellow local policy contrast at the
↪ inclusive historical cutoff, pooled across the endpoint's fixed
↪ baseline-grade strata with pre-outcome count weights. It is neither
↪ the inherent effect of dyslexia nor the effect of a particular
↪ support program. Required identifying variation/assumptions are I1/I2
↪ and remain unproved by diagnostic passes. This endpoint uses no
↪ postbaseline controls. No fuzzy ratio is allowed even if recorded
↪ classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪ verify this endpoint's2015 calendar/dictionaries before values; form
↪ its baseline target and expected outcome row for every eligible
↪ index; assert D2 joins, invalid-code and duplicates dispositions;
↪ build endpoint plus observation/exit indicators; produce missingness
↪ diagnostics without removing the baseline row; apply RD from I3 with
↪ endpoint kind=bounded; transform binary risk effects by100 once; fit
↪ available-case sensitivity only when missingness requires it;
↪ calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪ for a complete point estimand, or the simultaneous outer bound
↪ interval for a bounded partially observed endpoint; retain unbounded
↪ missingness as selection_limited. Do not choose another cohort, grade
↪ stratum, time window or definition if this fit lacks support. All
↪ grade strata required by this endpoint must support the fitted
↪ operator; no renormalizing after a stratum fails. Report h/b,
↪ support, clusters, effective n, censoring/exit fractions and
↪ conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable),
↪ diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪ identified bounds put estimate/p values NA and use lower/upper as
↪ outer limits; a missing point estimate must never be plotted at zero.
↪ Required figure: the full causal forest, plus its own registered
↪ robustness display if the internal robustness rule is satisfied. Synt
↪ hetic check: score=0 belongs on red; complete binary endpoint agrees
↪ with ordinary RD after transformation; missing bounded endpoint
↪ widens the extreme interval; missing unbounded endpoint never
↪ produces a full-population causal p-value; dormant slots remain in
↪ the 24 denominator. Software failures get no_result, not uncertain.
↪ Permitted claim ceiling: Attendance measures participation; it is not
↪ a pure health or learning measure. Directional local states do not
↪ establish practical importance. A confidence interval spanning zero
↪ never licenses no effect or equivalence.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000205/endpoints/total_absence/primary/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000205.
Exact component path: prereg/runtime/atom-000205/endpoints/total_absence/
↪  primary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000205/endpoints/total_absence/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## total_absence / robustness
- key: sensitive
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
```

```
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for total_absence, not an additional
↪  primary discovery. Scope, unit, field/code mapping, population,
↪  estimand and missingness are exactly those of atom-000205 and
↪  incorporated D5. Read its frozen analysis population, weights,
↪  primary h/b and saved aggregate influence outputs; do not reconstruct
↪  a more favorable cohort. For each fixed specification in I4
↪  (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-
↪  linear/bias-corrected operator with the specified h/b changes, same
↪  grade weights and primary 24-slot interval and exploratory nonprimary
↪  95% intervals as I4; exclude only x==0 for the donut, explicitly
↪  changing local extrapolation. Recompute cluster influence variance
↪  and missingness bounds as needed. No new covariates, grade filters or
↪  bandwidth search. If a specification has insufficient support, its
↪  status is unresolved, never silently omitted. No multiplicity claim
↪  is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all fou
↪  r rows in the sensitivity figure with units=pp, including noncomputed
↪  rows. Compare available scalar primary and variant estimates: a sign
↪  reversal or variant point outside the primary interval is sensitive.
↪  For partial bounds use disjoint intervals as sensitive; overlapping
↪  intervals alone cannot prove equality. All variants must be computed
↪  for stable. If primary is selection_limited, variants inherit that
↪  ceiling. Synthetic tests keep identical rows in primary and
↪  recomputation, respect inclusive zero except the expressly registered
↪  donut, and preserve a missing variant row. Consequence: stability is
↪  only consistency over these specified choices, while sensitivity
↪  limits a broad policy conclusion. Attendance measures participation;
↪  it is not a pure health or learning measure.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000205/endpoints/total_absence/robustness/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

```
Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪  computable variant contradicts primary; all failed variants remain
↪  explicit with NA display rows. Stable never follows an unestimable
↪  primary or missing variant. No joint multi-specification coverage is
↪  claimed. Write inference_status and display status under G2,
↪  including unestimable numeric rows. Reproduce exact per-grade h/b
↪  from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000205/endpoints/total_absence/
↪  robustness/. Cross-component primary files are read from
↪  prereg/runtime/atom-000205/endpoints/total_absence/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## sickness_absence / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Internal ascertainment diagnostic on exactly the baseline-eligible
↪ population and horizon of atom-000205, with the same
↪ table/field/version/join/exit definitions, fixed grades and baseline
↪ weights. Do not require that primary to finish and do not use its
↪ sign. First construct whether the registered endpoint is defined and
↪ observed for each baseline index; no value or realized employment
↪ changes eligibility. Atom-specific D9 calibration/correction checks
↪ still apply. For defined event-before-exit outcomes, complete event
↪ universe establishes observation even for zero events. For undefined
↪ after-death school/state outcomes, report undefined proportion
↪ separately; never classify death as a negative symptom. Apply I5
↪ constant handling to the observation indicator; documentary
↪ arithmetic can be structural_complete, observed constants have no
↪ p-value. Otherwise apply I3 as a binary outcome without outcome
↪ missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪ is distinct from the 24 primary outcomes and baseline48. Output
↪ ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪ diagnostics.csv, audit.json, judgment.json. Include observation
↪ fractions by side, undefined/death/emigration counts and
↪ denominators, exact horizon and p_raw/p_adjusted only for a valid
↪ contrast. A detected or undetected difference cannot choose a new
↪ endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪ all-unobserved, varying indicator and death-undefined fixtures test
↪ the local regions. Every state is narrated in Table S2 through its
↪ own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000205/endpoints/sickness_absence/ascertainment/
↪ and remain governed until aggregate disclosure approval. Write
↪ audit.json and judgment.json plus the named plot-ready table; G1/G2
↪ define status and column meanings. No numerical result is populated
↪ now. Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000205/endpoints/sickness_absen
↪ ce/ascertainment/. Cross-component primary files are read from
↪ prereg/runtime/atom-000205/endpoints/sickness_absence/primary/;
↪ ascertainment and robustness never overwrite primary judgments or
↪ scope.

## sickness_absence / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪ demonstrably
```

```
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Inferential status: one prespecified directional slot in the 24-slot
↪  study-wide family; conditional causal interpretation for the spring
↪  2015 historical margin only. Endpoint=sickness_absence;
↪  family=school; fixed horizon=first_full_school_year; display unit=pp.
↪  Population and exact coding: Baseline grades4-7; annual sickness days
↪  / active days, range0-100. Incorporate D5 and D1-D3, including
↪  individual exclusions, date-based eligibility, join cardinalities,
↪  code dictionaries and missingness. D7 first-family indexing applies
↪  to relatives' outcomes. No actual graduation, employment, care use,
↪  intact family or future response condition determines eligibility.
```

```
Estimand: red-minus-adjacent-yellow local policy contrast at the
↪ inclusive historical cutoff, pooled across the endpoint's fixed
↪ baseline-grade strata with pre-outcome count weights. It is neither
↪ the inherent effect of dyslexia nor the effect of a particular
↪ support program. Required identifying variation/assumptions are I1/I2
↪ and remain unproved by diagnostic passes. This endpoint uses no
↪ postbaseline controls. No fuzzy ratio is allowed even if recorded
↪ classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪ verify this endpoint's2015 calendar/dictionaries before values; form
↪ its baseline target and expected outcome row for every eligible
↪ index; assert D2 joins, invalid-code and duplicates dispositions;
↪ build endpoint plus observation/exit indicators; produce missingness
↪ diagnostics without removing the baseline row; apply RD from I3 with
↪ endpoint kind=bounded; transform binary risk effects by100 once; fit
↪ available-case sensitivity only when missingness requires it;
↪ calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪ for a complete point estimand, or the simultaneous outer bound
↪ interval for a bounded partially observed endpoint; retain unbounded
↪ missingness as selection_limited. Do not choose another cohort, grade
↪ stratum, time window or definition if this fit lacks support. All
↪ grade strata required by this endpoint must support the fitted
↪ operator; no renormalizing after a stratum fails. Report h/b,
↪ support, clusters, effective n, censoring/exit fractions and
↪ conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable),
↪ diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪ identified bounds put estimate/p values NA and use lower/upper as
↪ outer limits; a missing point estimate must never be plotted at zero.
↪ Required figure: the full causal forest, plus its own registered
↪ robustness display if the internal robustness rule is satisfied.
↪ Synthetic check: score=0 belongs on red; complete binary endpoint
↪ agrees with ordinary RD after transformation; missing bounded
↪ endpoint widens the extreme interval; missing unbounded endpoint
↪ never produces a full-population causal p-value; dormant slots remain
↪ in the 24 denominator. Software failures get no_result, not
↪ uncertain. Permitted claim ceiling: Sickness classification of school
↪ absence can change without a diagnosed disorder. Directional local
↪ states do not establish practical importance. A confidence interval
↪ spanning zero never licenses no effect or equivalence.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000205/endpoints/sickness_absence/primary/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000205.
Exact component path: prereg/runtime/atom-000205/endpoints/sickness_absen
↪  ce/primary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000205/endpoints/sickness_absence/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## sickness_absence / robustness
- key: sensitive
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
```

```
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for sickness_absence, not an additional
↪  primary discovery. Scope, unit, field/code mapping, population,
↪  estimand and missingness are exactly those of atom-000205 and
↪  incorporated D5. Read its frozen analysis population, weights,
↪  primary h/b and saved aggregate influence outputs; do not reconstruct
↪  a more favorable cohort. For each fixed specification in I4
↪  (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-
↪  linear/bias-corrected operator with the specified h/b changes, same
↪  grade weights and primary 24-slot interval and exploratory nonprimary
↪  95% intervals as I4; exclude only x==0 for the donut, explicitly
↪  changing local extrapolation. Recompute cluster influence variance
↪  and missingness bounds as needed. No new covariates, grade filters or
↪  bandwidth search. If a specification has insufficient support, its
↪  status is unresolved, never silently omitted. No multiplicity claim
↪  is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all fou
↪  r rows in the sensitivity figure with units=pp, including noncomputed
↪  rows. Compare available scalar primary and variant estimates: a sign
↪  reversal or variant point outside the primary interval is sensitive.
↪  For partial bounds use disjoint intervals as sensitive; overlapping
↪  intervals alone cannot prove equality. All variants must be computed
↪  for stable. If primary is selection_limited, variants inherit that
↪  ceiling. Synthetic tests keep identical rows in primary and
↪  recomputation, respect inclusive zero except the expressly registered
↪  donut, and preserve a missing variant row. Consequence: stability is
↪  only consistency over these specified choices, while sensitivity
↪  limits a broad policy conclusion. Sickness classification of school
↪  absence can change without a diagnosed disorder.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000205/endpoints/sickness_absence/robustness/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

```
Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪  computable variant contradicts primary; all failed variants remain
↪  explicit with NA display rows. Stable never follows an unestimable
↪  primary or missing variant. No joint multi-specification coverage is
↪  claimed. Write inference_status and display status under G2,
↪  including unestimable numeric rows. Reproduce exact per-grade h/b
↪  from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000205/endpoints/sickness_absen
↪  ce/robustness/. Cross-component primary files are read from
↪  prereg/runtime/atom-000205/endpoints/sickness_absence/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

The root component vector reports each endpoint primary direction/interva
↪  l type, ascertainment decision, robustness decision, and measurement,
↪  horizon, selection and operational restrictions. Within this
↪  experiment, differing outcomes remain independently interpretable.
↪  Mixed signs across different horizons are side-by-side observed
↪  contrasts, not common-population divergence. All graphical and
↪  manuscript bindings use the exact endpoint/component directory above.
```

Registered experiment

Does marginal classification change school attendance?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000205`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000207: Assessed reading performance

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state,

component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Scope and order: this experiment asks whether marginal national-test classification changes assessed reading performance. Use all grades 4,5,6,7. Each endpoint below is a separate slot in the unchanged 24-slot primary family; its ascertainment belongs to the separate 24-slot diagnostic family. No endpoint value activates another endpoint. After the native grade activation passes, first perform each endpoint's own calendar/construct/relative/provenance checks, then ascertainment, primary estimation, and mandatory robustness whenever its primary component is increase/decrease/uncertain/selection_limited. An evidenced primary boundary makes its robustness internally not_activated. Ascertainment can finish even when primary or robustness fails, and primary does not require an insignificant ascertainment test. Robustness no_result never becomes stable. Aggregate only after every scheduled component completes, is evidenced ineligible, or has a recorded operational terminal. Preserve completed components when another fails; if all scientific work fails operationally use Atom terminal no_result.

Internal reading-calibration

- key: comparable region: Every required 2015 target-grade/year/calibration link meets D9 documentary criteria. says: One pooled reading contrast has a documented common scale, conditional on other gates.
- key: incompatible region: At least one required link is authoritatively inconsistent. says: Pooled reading effect is restricted; separately labeled descriptions remain useful.
- key: unresolved region: No contradiction is established but at least one required common-calibration link is unverified. says: Common scale is not established; no pooled reading claim.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Population is the fixed school grades4–7 target and its D5 scheduled grades6/8 years. Unit=construct/calibration link, not pupil. Inspect UDD_NATTEST_GENBEREGNEDE FAG,FAGID,THETA,KLASSETRIN,NORM,GENBEREGNET,SKOLEAAR,TEST_DATOTID metadata before values. Apply D9 common-origin/unit/item-link criteria. Assert each scheduled stratum maps to one documented calibration identifier; no duplicate or conflicting mappings are averaged. Output calibration.csv: target_grade,calendar_year,calibration_id,construct,origin_unit_verified,link_verified,source_locator,statu No model or test; equivalence of observed score distributions cannot be evidence. Synthetic test: identical THETA field names with absent linking evidence yields unresolved. The primary reading Atom records measurement_boundary for incompatible and otherwise/common_calibration_unverified for unresolved; descriptive strata retain exact units. No additional causal estimands or standardization.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000207/reading-calibration/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

reading_theta / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000207, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Ascertainment requires each source-stratum construct and observation flag, not common-scale pooling or historical income correction. A reading calibration-link failure does not prevent judging whether a documented scheduled reading test was observed. Income correction uncertainty does not prevent judging presence of its recorded

variable. Common-scale and intended-resource interpretations remain restricted in the primary Atom. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events. For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000207/endpoints/reading_theta/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000207/endpoints/reading_theta/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000207/endpoints/reading_theta/primary/; ascertainment and robustness never overwrite primary judgments or scope.

reading_theta / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata.

says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.

- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=reading_theta; family=school; fixed horizon=scheduled_next_reading_test; display unit=THETA. Population and exact coding: Baseline grades4–7; targetgrade6 ifbaseline4/5,8 if6/7; fixed expected school year, earliest scheduled test. Incorporate D5 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=unbounded; transform binary risk effects by100 once; fit available-case

sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must support the fitted operator; no renormalizing after a stratum fails. Report h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Assessed performance cannot separate unaided decoding from access/accommodations. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000207/endpoints/reading_theta/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason.

Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values; exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000207. Before any reading fit, if D9 reading-calibration audit is incompatible, return measurement_boundary for the pooled common-scale construct. If D9 reading-calibration audit is unresolved, return otherwise with reason common_calibration_unverified; unresolved documentary evidence is not known incompatibility. Descriptives stay stratified. If D9 reading-calibration audit no_result, required verification was not executed: this dependent verification cannot become a boundary or corrected guess; report no_result. Exact component path: prereg/runtime/atom-000207/endpoints/reading_theta/primary/. Cross-component primary files are read from prereg/runtime/atom-000207/endpoints/reading_theta/primary/; ascertainment and robustness never overwrite primary judgments or scope.

reading_theta / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for reading_theta, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000207 and incorporated D5. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=THETA, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be

computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. Assessed performance cannot separate unaided decoding from access/accommodations.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000207/endpoints/reading_theta/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000207/endpoints/reading_theta/robustness/. Cross-component primary files are read from prereg/runtime/atom-000207/endpoints/reading_theta/primary/; ascertainment and robustness never overwrite primary judgments or scope.

The root component vector reports each endpoint primary direction/interval type, ascertainment decision, robustness decision, and measurement, horizon, selection and operational restrictions. Within this experiment, differing outcomes remain independently interpretable. Mixed signs across different horizons are side-by-side observed contrasts, not common-population divergence. All graphical and manuscript bindings use the exact endpoint/component directory above.

Complete registration fields

```
id: atom-000207
topic: Assessed reading performance
atom_result: prereg
```

```
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: Does marginal classification change assessed reading performance?
  rationale: The next scheduled reading assessment concerns demonstrated
  ↪  reading
    performance across a prespecified linked scale. Its calibration question
    is internal; it remains distinct from later teacher assessments with a
    different target grade set.
  assumption: Administrative recognition can affect opportunities, reporting
    and service contact through multiple routes; exact source semantics and
    continuity require evidence, not an estimator label. See literature.md
    and identification.md.
  target_strength: causal
  target_shape: comparison
  ratings:
    importance: 5
    novelty: 3
    feasibility: 2
    data_advantage: 4
    informativeness: 0.5
  tables:
  - BEF
  - DOD
  - UDD_FOLKESKOLE_FRAVAER_STIL
  - UDD_NATTEST_GENBEREGNEDE
  - UDD_ORDBLINDETEST
  - VNDS
  activation: state(atom-000001) == "ready" AND state(atom-000002) ==
  ↪  "compatible"
    AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) ==
    ↪  "eligible_nonsharp")
  verdicts:
  - key: sensitive
    region: At least one endpoint has a computed I4 sensitivity contradiction.
      This precedence applies even if another endpoint/variant fails.
    says: Name every affected endpoint and variant; retain all primary
    ↪  estimates
      and independent component failures without replacing a primary.
  - key: mixed_direction
    region: No preceding region; at least one qualified increase and one
    ↪  qualified
      decrease among this experiment's endpoints. Qualified means valid
      ↪  primary
      interval/bounds and stable own robustness.
    says: Report the discordant endpoint directions in their original
    ↪  units/scopes;
      do not average or assign a common welfare sign.
```

```
- key: directional
  region: No preceding region; at least one endpoint is a qualified increase
    or decrease. Other endpoints may be uncertain, selected, boundary,
    ↪  failed
    or unresolved.
  says: Report only named qualified directions and every other endpoint's
    disposition. This does not imply the entire domain changed or that all
    endpoints were available.
- key: uncertain
  region: No preceding region; at least one endpoint has a valid primary
    interval/bounds, but no qualified direction.
  says: Report exact intervals and endpoint-specific robustness
  ↪  restrictions;
    zero-containing intervals and unresolved robustness remain different
    cases, neither equivalence.
- key: boundary
  region: No preceding region; every endpoint has an evidenced measurement
    or horizon/population boundary.
  says: This scientific question cannot be evaluated under the frozen
  ↪  target;
    report component-specific reasons, never a null.
- key: restricted
  region: No preceding region; at least one endpoint supplies completed
    evidence of selection_limited or unestimable inference.
  says: Report the surviving selected/unestimable evidence and independent
    failures; no all-eligible directional claim.
- key: otherwise
  region: otherwise
  says: The experiment remains unresolved. Preserve every component state,
    terminal and unavailable reason; operational failure is not
    ↪  insignificance.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪  Atoms or activation primitives. Execute every prescribed component
  ↪  that is scientifically eligible, independently of other component
  ↪  signs. Component outputs retain their own local decision, inference
  ↪  and operational status; only the native judgment.json at the Atom
  ↪  root supplies the Atom local state. No component failure can erase
  ↪  completed evidence in another component. When no scientific component
  ↪  completes because execution fails, set terminal no_result with no
  ↪  Atom local state. Otherwise aggregate only by the ordered registered
  ↪  regions and record every component's failure, boundary, unknown or
  ↪  inactive disposition. Pending necessary evidence stays pending; it is
  ↪  never coded as negative evidence. Internal failed work is not
  ↪  automatically retried.
  Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
  ↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
  ↪  definitions. These fix population, dates, table/field dictionaries,
  ↪  code versions, joins, inference, missingness, outputs and synthetic c
  ↪  hecks. A dictionary crosswalk is semantic verification before outcome
  ↪  values, not a new scientific choice. Keep all endpoint-specific
  ↪  units, horizons and Bonferroni allocations; grouping introduces no
  ↪  average outcome, composite score, new hypothesis or additional alpha.
  ↪  Write root audit.json, status.json, judgment.json and components.csv
  ↪  with component, outcome, component_state, component_terminal,
  ↪  inference_status, reason, evidence_path. Components.csv is an
  ↪  evidence index under this protocol, never a second experiment graph.
  ↪  Suppression is applied after governed adjudication, and cannot govern
  ↪  activation or disclose protected directions.
```

```
Scope and order: this experiment asks whether marginal national-test
↪  classification changes assessed reading performance. Use all grades
↪  4,5,6,7. Each endpoint below is a separate slot in the unchanged
↪  24-slot primary family; its ascertainment belongs to the separate
↪  24-slot diagnostic family. No endpoint value activates another
↪  endpoint. After the native grade activation passes, first perform
↪  each endpoint's own calendar/construct/relative/provenance checks,
↪  then ascertainment, primary estimation, and mandatory robustness
↪  whenever its primary component is
↪  increase/decrease/uncertain/selection_limited. An evidenced primary
↪  boundary makes its robustness internally not_activated. Ascertainment
↪  can finish even when primary or robustness fails, and primary does
↪  not require an insignificant ascertainment test. Robustness no_result
↪  never becomes stable. Aggregate only after every scheduled component
↪  completes, is evidenced ineligible, or has a recorded operational
↪  terminal. Preserve completed components when another fails; if all
↪  scientific work fails operationally use Atom terminal no_result.

## Internal reading-calibration
- key: comparable
  region: Every required 2015 target-grade/year/calibration link meets D9
  ↪  documentary
    criteria.
  says: One pooled reading contrast has a documented common scale,
  ↪  conditional on
    other gates.
- key: incompatible
  region: At least one required link is authoritatively inconsistent.
  says: Pooled reading effect is restricted; separately labeled
  ↪  descriptions remain
    useful.
- key: unresolved
  region: No contradiction is established but at least one required
  ↪  common-calibration
    link is unverified.
  says: Common scale is not established; no pooled reading claim.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
Population is the fixed school grades4-7 target and its D5 scheduled
↪  grades6/8 years. Unit=construct/calibration link, not pupil. Inspect
↪  UDD_NATTEST_GENBEREGNEDE FAG,FAGID,THETA,KLASSETRIN,NORM,GENBEREGNET,
↪  SKOLEAAR,TEST_DATOTID metadata before values. Apply D9
↪  common-origin/unit/item-link criteria. Assert each scheduled stratum
↪  maps to one documented calibration identifier; no duplicate or
↪  conflicting mappings are averaged. Output calibration.csv:
↪  target_grade,calendar_year,calibration_id,construct,origin_unit_verif
↪  ied,link_verified,source_locator,status,reason. No model or test;
↪  equivalence of observed score distributions cannot be evidence.
↪  Synthetic test: identical THETA field names with absent linking
↪  evidence yields unresolved. The primary reading Atom records
↪  measurement_boundary for incompatible and otherwise/common_calibratio
↪  n_unverified for unresolved; descriptive strata retain exact units.
↪  No additional causal estimands or standardization.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and prereg/i
↪  dentification.md I1-I4 for estimands and inference. These shared
↪  definitions are part of this Atom's protocol, not optional guidance.
↪  Apply ordered checks before model fitting: delivered schema/dictionar
↪  y; date and unit semantics; unique keys and duplicate disposition;
↪  baseline and horizon eligibility; outcome construction; missingness
↪  and inference; local adjudication. Never inspect a postbaseline
↪  estimate to repair an earlier choice. A demonstrably incompatible
↪  construct is an evidenced boundary; unresolved documentation reaches
↪  otherwise. A transport/access/software failure yields terminal
↪  no_result with no local state. Apply the listed verdict regions in
↪  order, first matching region wins; otherwise is exhaustive. All
↪  future outputs go to prereg/runtime/atom-000207/reading-calibration/
↪  and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## reading_theta / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Internal ascertainment diagnostic on exactly the baseline-eligible
↪  population and horizon of atom-000207, with the same table/field/vers⌋
↪  ion/join/exit definitions, fixed grades and baseline weights. Do not
↪  require that primary to finish and do not use its sign. First constru⌋
↪  ct whether the registered endpoint is defined and observed for each
↪  baseline index; no value or realized employment changes eligibility.
↪  Ascertainment requires each source-stratum construct and observation
↪  flag, not common-scale pooling or historical income correction. A
↪  reading calibration-link failure does not prevent judging whether a
↪  documented scheduled reading test was observed. Income correction
↪  uncertainty does not prevent judging presence of its recorded
↪  variable. Common-scale and intended-resource interpretations remain
↪  restricted in the primary Atom. For defined event-before-exit
↪  outcomes, complete event universe establishes observation even for
↪  zero events. For undefined after-death school/state outcomes, report
↪  undefined proportion separately; never classify death as a negative
↪  symptom. Apply I5 constant handling to the observation indicator;
↪  documentary arithmetic can be structural_complete, observed constants
↪  have no p-value. Otherwise apply I3 as a binary outcome without
↪  outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This
↪  budget is distinct from the 24 primary outcomes and baseline48.
↪  Output ascertainment.csv (G2) plus estimator-components.csv for any
↪  fit, diagnostics.csv, audit.json, judgment.json. Include observation
↪  fractions by side, undefined/death/emigration counts and
↪  denominators, exact horizon and p_raw/p_adjusted only for a valid
↪  contrast. A detected or undetected difference cannot choose a new
↪  endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪  all-unobserved, varying indicator and death-undefined fixtures test
↪  the local regions. Every state is narrated in Table S2 through its
↪  own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000207/endpoints/reading_theta/ascertainment/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000207/endpoints/reading_theta/⌋
↪  ascertainment/. Cross-component primary files are read from
↪  prereg/runtime/atom-000207/endpoints/reading_theta/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.
```

```
## reading_theta / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪  demonstrably
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Inferential status: one prespecified directional slot in the 24-slot
↪  study-wide family; conditional causal interpretation for the spring
↪  2015 historical margin only. Endpoint=reading_theta; family=school;
↪  fixed horizon=scheduled_next_reading_test; display unit=THETA.
↪  Population and exact coding: Baseline grades4-7; targetgrade6
↪  ifbaseline4/5,8 if6/7; fixed expected school year, earliest scheduled
↪  test. Incorporate D5 and D1-D3, including individual exclusions,
↪  date-based eligibility, join cardinalities, code dictionaries and
↪  missingness. D7 first-family indexing applies to relatives' outcomes.
↪  No actual graduation, employment, care use, intact family or future
↪  response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the
↪  inclusive historical cutoff, pooled across the endpoint's fixed
↪  baseline-grade strata with pre-outcome count weights. It is neither
↪  the inherent effect of dyslexia nor the effect of a particular
↪  support program. Required identifying variation/assumptions are I1/I2
↪  and remain unproved by diagnostic passes. This endpoint uses no
↪  postbaseline controls. No fuzzy ratio is allowed even if recorded
↪  classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪  verify this endpoint's2015 calendar/dictionaries before values; form
↪  its baseline target and expected outcome row for every eligible
↪  index; assert D2 joins, invalid-code and duplicates dispositions;
↪  build endpoint plus observation/exit indicators; produce missingness
↪  diagnostics without removing the baseline row; apply RD from I3 with
↪  endpoint kind=unbounded; transform binary risk effects by100 once;
↪  fit available-case sensitivity only when missingness requires it;
↪  calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪  for a complete point estimand, or the simultaneous outer bound
↪  interval for a bounded partially observed endpoint; retain unbounded
↪  missingness as selection_limited. Do not choose another cohort, grade
↪  stratum, time window or definition if this fit lacks support. All
↪  grade strata required by this endpoint must support the fitted
↪  operator; no renormalizing after a stratum fails. Report h/b,
↪  support, clusters, effective n, censoring/exit fractions and
↪  conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable),
↪  diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪  identified bounds put estimate/p values NA and use lower/upper as
↪  outer limits; a missing point estimate must never be plotted at zero.
↪  Required figure: the full causal forest, plus its own registered
↪  robustness display if the internal robustness rule is satisfied.
↪  Synthetic check: score=0 belongs on red; complete binary endpoint
↪  agrees with ordinary RD after transformation; missing bounded
↪  endpoint widens the extreme interval; missing unbounded endpoint
↪  never produces a full-population causal p-value; dormant slots remain
↪  in the 24 denominator. Software failures get no_result, not
↪  uncertain. Permitted claim ceiling: Assessed performance cannot
↪  separate unaided decoding from access/accommodations. Directional
↪  local states do not establish practical importance. A confidence
↪  interval spanning zero never licenses no effect or equivalence.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000207/endpoints/reading_theta/primary/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000207.
Before any reading fit, if D9 reading-calibration audit is incompatible,
↪  return measurement_boundary for the pooled common-scale construct. If
↪  D9 reading-calibration audit is unresolved, return otherwise with
↪  reason common_calibration_unverified; unresolved documentary evidence
↪  is not known incompatibility. Descriptives stay stratified. If D9
↪  reading-calibration audit no_result, required verification was not
↪  executed: this dependent verification cannot become a boundary or
↪  corrected guess; report no_result.
Exact component path: prereg/runtime/atom-000207/endpoints/reading_theta/
↪  primary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000207/endpoints/reading_theta/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## reading_theta / robustness
- key: sensitive
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
```

```
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for reading_theta, not an additional
↪  primary discovery. Scope, unit, field/code mapping, population,
↪  estimand and missingness are exactly those of atom-000207 and
↪  incorporated D5. Read its frozen analysis population, weights,
↪  primary h/b and saved aggregate influence outputs; do not reconstruct
↪  a more favorable cohort. For each fixed specification in I4
↪  (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-
↪  linear/bias-corrected operator with the specified h/b changes, same
↪  grade weights and primary 24-slot interval and exploratory nonprimary
↪  95% intervals as I4; exclude only x==0 for the donut, explicitly
↪  changing local extrapolation. Recompute cluster influence variance
↪  and missingness bounds as needed. No new covariates, grade filters or
↪  bandwidth search. If a specification has insufficient support, its
↪  status is unresolved, never silently omitted. No multiplicity claim
↪  is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all
↪  four rows in the sensitivity figure with units=THETA, including nonco
↪  mputed rows. Compare available scalar primary and variant estimates:
↪  a sign reversal or variant point outside the primary interval is
↪  sensitive. For partial bounds use disjoint intervals as sensitive;
↪  overlapping intervals alone cannot prove equality. All variants must
↪  be computed for stable. If primary is selection_limited, variants
↪  inherit that ceiling. Synthetic tests keep identical rows in primary
↪  and recomputation, respect inclusive zero except the expressly
↪  registered donut, and preserve a missing variant row. Consequence:
↪  stability is only consistency over these specified choices, while
↪  sensitivity limits a broad policy conclusion. Assessed performance
↪  cannot separate unaided decoding from access/accommodations.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000207/endpoints/reading_theta/robustness/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪ computable variant contradicts primary; all failed variants remain
↪ explicit with NA display rows. Stable never follows an unestimable
↪ primary or missing variant. No joint multi-specification coverage is
↪ claimed. Write inference_status and display status under G2,
↪ including unestimable numeric rows. Reproduce exact per-grade h/b
↪ from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000207/endpoints/reading_theta/
↪ robustness/. Cross-component primary files are read from
↪ prereg/runtime/atom-000207/endpoints/reading_theta/primary/;
↪ ascertainment and robustness never overwrite primary judgments or
↪ scope.

The root component vector reports each endpoint primary direction/interva
↪ l type, ascertainment decision, robustness decision, and measurement,
↪ horizon, selection and operational restrictions. Within this
↪ experiment, differing outcomes remain independently interpretable.
↪ Mixed signs across different horizons are side-by-side observed
↪ contrasts, not common-population divergence. All graphical and
↪ manuscript bindings use the exact endpoint/component directory above.
```

Registered experiment

Does marginal classification change assessed reading performance?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000207`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000208: Teacher-assessed Danish

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state, component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Scope and order: this experiment asks whether marginal national-test classification changes teacher-assessed danish. Use all grades 4,5,6,7,8. Each endpoint below is a separate slot in the unchanged 24-slot primary family; its ascertainment belongs to the separate 24-slot diagnostic family. No endpoint value activates another endpoint. After the native grade activation passes, first perform each endpoint's own calendar/construct/relative/provenance checks, then ascertainment, primary estimation, and mandatory robustness whenever its primary component is increase/decrease/uncertain/selection_limited. An evidenced primary boundary makes its robustness internally not_activated. Ascertainment can finish even when primary or robustness fails, and primary does not require an insignificant ascertainment test. Robustness no_result never becomes stable. Aggregate only after every scheduled component completes, is evidenced ineligible, or has a recorded operational terminal. Preserve completed components when another fails; if all scientific work fails operationally use Atom terminal no_result.

danish_grade / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.

- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000208, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events. For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching

region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000208/endpoints/danish_grade/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000208/endpoints/danish_grade/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000208/endpoints/danish_grade/primary/; ascertainment and robustness never overwrite primary judgments or scope.

danish_grade / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata. says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.
- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=danish_grade; family=school; fixed horizon=scheduled_grade9_year; display unit=grade_points. Population and exact coding: Baseline grades4–8; mean final Danish teacher disciplines in scheduled grade9 year, range[-3,12]. Incorporate D5 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives'

outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=grade; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must support the fitted operator; no renormalizing after a stratum fails. Report h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Teacher grades reflect assessed achievement and expectations; exam performance is not substituted. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching

region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000208/endpoints/danish_grade/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values; exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000208. Exact component path: prereg/runtime/atom-000208/endpoints/danish_grade/primary/. Cross-component primary files are read from prereg/runtime/atom-000208/endpoints/danish_grade/primary/; ascertainment and robustness never overwrite primary judgments or scope.

danish_grade / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for danish_grade, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000208 and incorporated D5. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or

bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=grade_points, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. Teacher grades reflect assessed achievement and expectations; exam performance is not substituted.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000208/endpoints/danish_grade/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000208/endpoints/danish_grade/robustness/. Cross-component primary files are read from prereg/runtime/atom-000208/endpoints/danish_grade/primary/; ascertainment and robustness never overwrite primary judgments or scope.

The root component vector reports each endpoint primary direction/interval type, ascertainment decision, robustness decision, and measurement, horizon, selection and

operational restrictions. Within this experiment, differing outcomes remain independently interpretable. Mixed signs across different horizons are side-by-side observed contrasts, not common-population divergence. All graphical and manuscript bindings use the exact endpoint/component directory above.

Complete registration fields

```
id: atom-000208
topic: Teacher-assessed Danish
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: Does marginal classification change teacher-assessed danish?
  rationale: Teacher-assessed Danish at scheduled grade 9 is a distinct
  ↪  educational
    assessment horizon and population from the reading test. Its conclusion
    can stand when reading calibration fails.
  assumption: Administrative recognition can affect opportunities, reporting
    and service contact through multiple routes; exact source semantics and
    continuity require evidence, not an estimator label. See literature.md
    and identification.md.
  target_strength: causal
  target_shape: comparison
  ratings:
    importance: 5
    novelty: 3
    feasibility: 2
    data_advantage: 4
    informativeness: 0.5
  tables:
  - BEF
  - DOD
  - UDD_FOLKESKOLE_FRAVAER_STIL
  - UDD_ORDBLINDETEST
  - UDFK
  - VNDS
  activation: state(atom-000001) == "ready" AND state(atom-000002) ==
  ↪  "compatible"
    AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000505) == "eligible_sharp" OR state(atom-000505) ==
    ↪  "eligible_nonsharp")
  verdicts:
  - key: sensitive
    region: At least one endpoint has a computed I4 sensitivity contradiction.
      This precedence applies even if another endpoint/variant fails.
```

```
  says: Name every affected endpoint and variant; retain all primary
  ↪  estimates
    and independent component failures without replacing a primary.
- key: mixed_direction
  region: No preceding region; at least one qualified increase and one
  ↪  qualified
    decrease among this experiment's endpoints. Qualified means valid
    ↪  primary
    interval/bounds and stable own robustness.
  says: Report the discordant endpoint directions in their original
  ↪  units/scopes;
    do not average or assign a common welfare sign.
- key: directional
  region: No preceding region; at least one endpoint is a qualified increase
    or decrease. Other endpoints may be uncertain, selected, boundary,
    ↪  failed
    or unresolved.
  says: Report only named qualified directions and every other endpoint's
    disposition. This does not imply the entire domain changed or that all
    endpoints were available.
- key: uncertain
  region: No preceding region; at least one endpoint has a valid primary
    interval/bounds, but no qualified direction.
  says: Report exact intervals and endpoint-specific robustness
  ↪  restrictions;
    zero-containing intervals and unresolved robustness remain different
    cases, neither equivalence.
- key: boundary
  region: No preceding region; every endpoint has an evidenced measurement
    or horizon/population boundary.
  says: This scientific question cannot be evaluated under the frozen
  ↪  target;
    report component-specific reasons, never a null.
- key: restricted
  region: No preceding region; at least one endpoint supplies completed
    evidence of selection_limited or unestimable inference.
  says: Report the surviving selected/unestimable evidence and independent
    failures; no all-eligible directional claim.
- key: otherwise
  region: otherwise
  says: The experiment remains unresolved. Preserve every component state,
    terminal and unavailable reason; operational failure is not
    ↪  insignificance.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪  Atoms or activation primitives. Execute every prescribed component
  ↪  that is scientifically eligible, independently of other component
  ↪  signs. Component outputs retain their own local decision, inference
  ↪  and operational status; only the native judgment.json at the Atom
  ↪  root supplies the Atom local state. No component failure can erase
  ↪  completed evidence in another component. When no scientific component
  ↪  completes because execution fails, set terminal no_result with no
  ↪  Atom local state. Otherwise aggregate only by the ordered registered
  ↪  regions and record every component's failure, boundary, unknown or
  ↪  inactive disposition. Pending necessary evidence stays pending; it is
  ↪  never coded as negative evidence. Internal failed work is not
  ↪  automatically retried.
```

```
Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
↪  definitions. These fix population, dates, table/field dictionaries,
↪  code versions, joins, inference, missingness, outputs and synthetic c
↪  hecks. A dictionary crosswalk is semantic verification before outcome
↪  values, not a new scientific choice. Keep all endpoint-specific
↪  units, horizons and Bonferroni allocations; grouping introduces no
↪  average outcome, composite score, new hypothesis or additional alpha.
↪  Write root audit.json, status.json, judgment.json and components.csv
↪  with component, outcome, component_state, component_terminal,
↪  inference_status, reason, evidence_path. Components.csv is an
↪  evidence index under this protocol, never a second experiment graph.
↪  Suppression is applied after governed adjudication, and cannot govern
↪  activation or disclose protected directions.

Scope and order: this experiment asks whether marginal national-test
↪  classification changes teacher-assessed danish. Use all grades
↪  4,5,6,7,8. Each endpoint below is a separate slot in the unchanged
↪  24-slot primary family; its ascertainment belongs to the separate
↪  24-slot diagnostic family. No endpoint value activates another
↪  endpoint. After the native grade activation passes, first perform
↪  each endpoint's own calendar/construct/relative/provenance checks,
↪  then ascertainment, primary estimation, and mandatory robustness
↪  whenever its primary component is
↪  increase/decrease/uncertain/selection_limited. An evidenced primary
↪  boundary makes its robustness internally not_activated. Ascertainment
↪  can finish even when primary or robustness fails, and primary does
↪  not require an insignificant ascertainment test. Robustness no_result
↪  never becomes stable. Aggregate only after every scheduled component
↪  completes, is evidenced ineligible, or has a recorded operational
↪  terminal. Preserve completed components when another fails; if all
↪  scientific work fails operationally use Atom terminal no_result.

## danish_grade / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
```

```
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
Internal ascertainment diagnostic on exactly the baseline-eligible
↪  population and horizon of atom-000208, with the same
↪  table/field/version/join/exit definitions, fixed grades and baseline
↪  weights. Do not require that primary to finish and do not use its
↪  sign. First construct whether the registered endpoint is defined and
↪  observed for each baseline index; no value or realized employment
↪  changes eligibility. Atom-specific D9 calibration/correction checks
↪  still apply. For defined event-before-exit outcomes, complete event
↪  universe establishes observation even for zero events. For undefined
↪  after-death school/state outcomes, report undefined proportion
↪  separately; never classify death as a negative symptom. Apply I5
↪  constant handling to the observation indicator; documentary
↪  arithmetic can be structural_complete, observed constants have no
↪  p-value. Otherwise apply I3 as a binary outcome without outcome
↪  missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪  is distinct from the 24 primary outcomes and baseline48. Output
↪  ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪  diagnostics.csv, audit.json, judgment.json. Include observation
↪  fractions by side, undefined/death/emigration counts and
↪  denominators, exact horizon and p_raw/p_adjusted only for a valid
↪  contrast. A detected or undetected difference cannot choose a new
↪  endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪  all-unobserved, varying indicator and death-undefined fixtures test
↪  the local regions. Every state is narrated in Table S2 through its
↪  own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000208/endpoints/danish_grade/ascertainment/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

```
Exact component path: prereg/runtime/atom-000208/endpoints/danish_grade/a
↪  scertainment/. Cross-component primary files are read from
↪  prereg/runtime/atom-000208/endpoints/danish_grade/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## danish_grade / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪  demonstrably
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Inferential status: one prespecified directional slot in the 24-slot
↪ study-wide family; conditional causal interpretation for the spring
↪ 2015 historical margin only. Endpoint=danish_grade; family=school;
↪ fixed horizon=scheduled_grade9_year; display unit=grade_points.
↪ Population and exact coding: Baseline grades4-8; mean final Danish
↪ teacher disciplines in scheduled grade9 year, range[-3,12].
↪ Incorporate D5 and D1-D3, including individual exclusions, date-based
↪ eligibility, join cardinalities, code dictionaries and missingness.
↪ D7 first-family indexing applies to relatives' outcomes. No actual
↪ graduation, employment, care use, intact family or future response
↪ condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the
↪ inclusive historical cutoff, pooled across the endpoint's fixed
↪ baseline-grade strata with pre-outcome count weights. It is neither
↪ the inherent effect of dyslexia nor the effect of a particular
↪ support program. Required identifying variation/assumptions are I1/I2
↪ and remain unproved by diagnostic passes. This endpoint uses no
↪ postbaseline controls. No fuzzy ratio is allowed even if recorded
↪ classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪ verify this endpoint's2015 calendar/dictionaries before values; form
↪ its baseline target and expected outcome row for every eligible
↪ index; assert D2 joins, invalid-code and duplicates dispositions;
↪ build endpoint plus observation/exit indicators; produce missingness
↪ diagnostics without removing the baseline row; apply RD from I3 with
↪ endpoint kind=grade; transform binary risk effects by100 once; fit
↪ available-case sensitivity only when missingness requires it;
↪ calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪ for a complete point estimand, or the simultaneous outer bound
↪ interval for a bounded partially observed endpoint; retain unbounded
↪ missingness as selection_limited. Do not choose another cohort, grade
↪ stratum, time window or definition if this fit lacks support. All
↪ grade strata required by this endpoint must support the fitted
↪ operator; no renormalizing after a stratum fails. Report h/b,
↪ support, clusters, effective n, censoring/exit fractions and
↪ conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable),
↪ diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪ identified bounds put estimate/p values NA and use lower/upper as
↪ outer limits; a missing point estimate must never be plotted at zero.
↪ Required figure: the full causal forest, plus its own registered
↪ robustness display if the internal robustness rule is satisfied. Synt
↪ hetic check: score=0 belongs on red; complete binary endpoint agrees
↪ with ordinary RD after transformation; missing bounded endpoint
↪ widens the extreme interval; missing unbounded endpoint never
↪ produces a full-population causal p-value; dormant slots remain in
↪ the 24 denominator. Software failures get no_result, not uncertain.
↪ Permitted claim ceiling: Teacher grades reflect assessed achievement
↪ and expectations; exam performance is not substituted. Directional
↪ local states do not establish practical importance. A confidence
↪ interval spanning zero never licenses no effect or equivalence.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000208/endpoints/danish_grade/primary/ and remain
↪  governed until aggregate disclosure approval. Write audit.json and
↪  judgment.json plus the named plot-ready table; G1/G2 define status
↪  and column meanings. No numerical result is populated now. Before
↪  runtime use G3 synthetic join/date/missingness checks and verify
↪  row-order invariance; a failed check prevents output release. Every
↪  result constrains the Molecule under its composable rules; neither
↪  failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000208.
Exact component path: prereg/runtime/atom-000208/endpoints/danish_grade/p
↪  rimary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000208/endpoints/danish_grade/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## danish_grade / robustness
- key: sensitive
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
```

```
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for danish_grade, not an additional
↪  primary discovery. Scope, unit, field/code mapping, population,
↪  estimand and missingness are exactly those of atom-000208 and
↪  incorporated D5. Read its frozen analysis population, weights,
↪  primary h/b and saved aggregate influence outputs; do not reconstruct
↪  a more favorable cohort. For each fixed specification in I4
↪  (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-
↪  linear/bias-corrected operator with the specified h/b changes, same
↪  grade weights and primary 24-slot interval and exploratory nonprimary
↪  95% intervals as I4; exclude only x==0 for the donut, explicitly
↪  changing local extrapolation. Recompute cluster influence variance
↪  and missingness bounds as needed. No new covariates, grade filters or
↪  bandwidth search. If a specification has insufficient support, its
↪  status is unresolved, never silently omitted. No multiplicity claim
↪  is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all fou
↪  r rows in the sensitivity figure with units=grade_points, including
↪  noncomputed rows. Compare available scalar primary and variant estima
↪  tes: a sign reversal or variant point outside the primary interval is
↪  sensitive. For partial bounds use disjoint intervals as sensitive;
↪  overlapping intervals alone cannot prove equality. All variants must
↪  be computed for stable. If primary is selection_limited, variants inh
↪  erit that ceiling. Synthetic tests keep identical rows in primary and
↪  recomputation, respect inclusive zero except the expressly registered
↪  donut, and preserve a missing variant row. Consequence: stability is
↪  only consistency over these specified choices, while sensitivity
↪  limits a broad policy conclusion. Teacher grades reflect assessed
↪  achievement and expectations; exam performance is not substituted.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000208/endpoints/danish_grade/robustness/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

```
Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪  computable variant contradicts primary; all failed variants remain
↪  explicit with NA display rows. Stable never follows an unestimable
↪  primary or missing variant. No joint multi-specification coverage is
↪  claimed. Write inference_status and display status under G2,
↪  including unestimable numeric rows. Reproduce exact per-grade h/b
↪  from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000208/endpoints/danish_grade/r
↪  obustness/. Cross-component primary files are read from
↪  prereg/runtime/atom-000208/endpoints/danish_grade/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

The root component vector reports each endpoint primary direction/interva
↪  l type, ascertainment decision, robustness decision, and measurement,
↪  horizon, selection and operational restrictions. Within this
↪  experiment, differing outcomes remain independently interpretable.
↪  Mixed signs across different horizons are side-by-side observed
↪  contrasts, not common-population divergence. All graphical and
↪  manuscript bindings use the exact endpoint/component directory above.
```

Registered experiment

Does marginal classification change teacher-assessed danish?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000208`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000209: Recorded depressive/anxiety care

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state,

component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Scope and order: this experiment asks whether marginal national-test classification changes recorded depressive/anxiety care. Use all grades 4,5,6,7,8,9. Each endpoint below is a separate slot in the unchanged 24-slot primary family; its ascertainment belongs to the separate 24-slot diagnostic family. No endpoint value activates another endpoint. After the native grade activation passes, first perform each endpoint's own calendar/construct/relative/provenance checks, then ascertainment, primary estimation, and mandatory robustness whenever its primary component is increase/decrease/uncertain/selection_limited. An evidenced primary boundary makes its robustness internally not_activated. Ascertainment can finish even when primary or robustness fails, and primary does not require an insignificant ascertainment test. Robustness no_result never becomes stable. Aggregate only after every scheduled component completes, is evidenced ineligible, or has a recorded operational terminal. Preserve completed components when another fails; if all scientific work fails operationally use Atom terminal no_result.

Internal hospital-era

- key: both region: Legacy and new model keys, roles and phenotype dates each validate separately. says: Both eras support separately reported encounter constructs; equivalence across eras is not assumed.
- key: legacy_only region: Legacy mapping validates and new mapping is documented incompatible or unresolved. says: 2015 causal care windows and legacy descriptions remain possible; new-era claims are bounded.
- key: new_only region: New mapping validates but legacy mapping is documented incompatible or unresolved. says: New-era descriptions remain possible; the registered 2015 hospital effect cannot run.
- key: boundary region: Both models are demonstrably incompatible with the registered person-contact phenotype. says: No hospital-coded endpoint under this contract; school symptoms/community services remain independent.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Independent construct diagnostic, D6. Read legacy administration/diagnosis RECNUM semantics and the LPR3 DW_EK_KONTAKT dictionary, diagnosis-role labels, validity-date SKS mapping and reference periods. At runtime assert old contact:many-diagnosis and new contact:many-diagnosis cardinalities; compare label semantics and code inclusion but do not use agreement of effects to declare harmonization. Report old psychiatric/general overlap by person/date/code, missing roles and model vintage. A valid legacy model is sufficient for spring 2015+730days and does not depend on LPR3. Post2019 descriptions use the new model separately; no pooled cross-era causal contrast is registered. Output diagnostics.csv rows old_key,old_roles,old_codes,new_key,new_roles,new_codes,era_overlap_semantics. No p-values. Synthetic repeated diagnoses must produce one person-day; same key

with two people fails the join; expired SKS code cannot be included. This judgment concerns observed clinical coding, not sensitivity/specificity for latent disorder.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000209/hospital-era/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

depressive_encounter / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000209, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit

outcomes, complete event universe establishes observation even for zero events. For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000209/endpoints/depressive_encounter/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000209/endpoints/depressive_encounter/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000209/endpoints/depressive_encounter/primary/; ascertainment and robustness never overwrite primary judgments or scope.

depressive_encounter / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata. says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.

- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=depressive_encounter; family=care; fixed horizon=days1_to730_before_exit; display unit=pp. Population and exact coding: DF32/DF33 valid-date action/secondary diagnoses, collapse person/contact date; all prior histories retained. Incorporate D6 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=binary; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer

bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must support the fitted operator; no renormalizing after a stratum fails. Report h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Recorded depressive care cannot identify incidence or severity of depression. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000209/endpoints/depressive_encounter/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it.

scope.json is frozen before outcome values; exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000209. Exact component path: prereg/runtime/atom-000209/endpoints/depressive_encounter/primary/. Cross-component primary files are read from prereg/runtime/atom-000209/endpoints/depressive_encounter/primary/; ascertainment and robustness never overwrite primary judgments or scope.

depressive_encounter / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for depressive_encounter, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000209 and incorporated D6. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=pp, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. Recorded depressive care cannot identify incidence or severity of depression.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000209/endpoints/depressive_encounter/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000209/endpoints/depressive_encounter/robustness/. Cross-component primary files are read from prereg/runtime/atom-000209/endpoints/depressive_encounter/primary/; ascertainment and robustness never overwrite primary judgments or scope.

anxiety_stress_encounter / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.

- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000209, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events. For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000209/endpoints/anxiety_stress_encounter/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000209/endpoints/anxiety_stress_encounter/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000209/endpoints/anxiety_stress_encounter/primary/; ascertainment and robustness never overwrite primary judgments or scope.

anxiety_stress_encounter / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata. says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.
- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=anxiety_stress_encounter; family=care; fixed horizon=days1_to730_before_exit; display unit=pp. Population and exact coding: DF40/DF41/DF43 valid-date action/secondary diagnoses; a separate endpoint from depression. Incorporate D6 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce

missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=binary; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must support the fitted operator; no renormalizing after a stratum fails. Report h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Anxiety/stress-coded encounters reflect symptoms, referral, access and coding. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000209/endpoints/anxiety_stress_encounter/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval

spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values; exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000209. Exact component path: prereg/runtime/atom-000209/endpoints/anxiety_stress_encounter/primary/. Cross-component primary files are read from prereg/runtime/atom-000209/endpoints/anxiety_stress_encounter/primary/; ascertainment and robustness never overwrite primary judgments or scope.

anxiety_stress_encounter / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for anxiety_stress_encounter, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000209 and incorporated D6. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=pp, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability

is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. Anxiety/stress-coded encounters reflect symptoms, referral, access and coding.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000209/endpoints/anxiety_stress_encounter/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000209/endpoints/anxiety_stress_encounter/robustness/. Cross-component primary files are read from prereg/runtime/atom-000209/endpoints/anxiety_stress_encounter/primary/; ascertainment and robustness never overwrite primary judgments or scope.

The root component vector reports each endpoint primary direction/interval type, ascertainment decision, robustness decision, and measurement, horizon, selection and operational restrictions. Within this experiment, differing outcomes remain independently interpretable. Mixed signs across different horizons are side-by-side observed contrasts, not common-population divergence. All graphical and manuscript bindings use the exact endpoint/component directory above.

Complete registration fields

```
id: atom-000209
topic: Recorded depressive/anxiety care
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
```

```
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: Does marginal classification change recorded depressive/anxiety
    care?
  rationale: Depressive and anxiety/stress encounters jointly ask about
  ↪  recorded
    distress-related hospital care. The two phenotype directions and
    ↪  legacy/new-era
    limitations remain separate; no combined clinical outcome is introduced.
  assumption: Administrative recognition can affect opportunities, reporting
    and service contact through multiple routes; exact source semantics and
    continuity require evidence, not an estimator label. See literature.md
    and identification.md.
  target_strength: causal
  target_shape: comparison
  ratings:
    importance: 5
    novelty: 3
    feasibility: 2
    data_advantage: 4
    informativeness: 0.5
  tables:
  - BEF
  - DOD
  - LPR_ADM
  - LPR_A_DIAGNOSE
  - LPR_A_KONTAKT
  - LPR_DIAG
  - PSYK_ADM
  - PSYK_DIAG
  - UDD_FOLKESKOLE_FRAVAER_STIL
  - UDD_ORDBLINDETEST
  - VNDS
  activation: state(atom-000001) == "ready" AND state(atom-000002) ==
  ↪  "compatible"
    AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000505) == "eligible_sharp" OR state(atom-000505) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000506) == "eligible_sharp" OR state(atom-000506) ==
    ↪  "eligible_nonsharp")
  verdicts:
  - key: sensitive
    region: At least one endpoint has a computed I4 sensitivity contradiction.
      This precedence applies even if another endpoint/variant fails.
    says: Name every affected endpoint and variant; retain all primary
    ↪  estimates
      and independent component failures without replacing a primary.
  - key: mixed_direction
    region: No preceding region; at least one qualified increase and one
    ↪  qualified
```

```
    decrease among this experiment's endpoints. Qualified means valid
    ↪ primary
    interval/bounds and stable own robustness.
  says: Report the discordant endpoint directions in their original
  ↪ units/scopes;
    do not average or assign a common welfare sign.
- key: directional
  region: No preceding region; at least one endpoint is a qualified increase
    or decrease. Other endpoints may be uncertain, selected, boundary,
    ↪ failed
    or unresolved.
  says: Report only named qualified directions and every other endpoint's
    disposition. This does not imply the entire domain changed or that all
    endpoints were available.
- key: uncertain
  region: No preceding region; at least one endpoint has a valid primary
    interval/bounds, but no qualified direction.
  says: Report exact intervals and endpoint-specific robustness
  ↪ restrictions;
    zero-containing intervals and unresolved robustness remain different
    cases, neither equivalence.
- key: boundary
  region: No preceding region; every endpoint has an evidenced measurement
    or horizon/population boundary.
  says: This scientific question cannot be evaluated under the frozen
  ↪ target;
    report component-specific reasons, never a null.
- key: restricted
  region: No preceding region; at least one endpoint supplies completed
    evidence of selection_limited or unestimable inference.
  says: Report the surviving selected/unestimable evidence and independent
    failures; no all-eligible directional claim.
- key: otherwise
  region: otherwise
  says: The experiment remains unresolved. Preserve every component state,
    terminal and unavailable reason; operational failure is not
    ↪ insignificance.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪ Atoms or activation primitives. Execute every prescribed component
  ↪ that is scientifically eligible, independently of other component
  ↪ signs. Component outputs retain their own local decision, inference
  ↪ and operational status; only the native judgment.json at the Atom
  ↪ root supplies the Atom local state. No component failure can erase
  ↪ completed evidence in another component. When no scientific component
  ↪ completes because execution fails, set terminal no_result with no
  ↪ Atom local state. Otherwise aggregate only by the ordered registered
  ↪ regions and record every component's failure, boundary, unknown or
  ↪ inactive disposition. Pending necessary evidence stays pending; it is
  ↪ never coded as negative evidence. Internal failed work is not
  ↪ automatically retried.
```

```
Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
↪  definitions. These fix population, dates, table/field dictionaries,
↪  code versions, joins, inference, missingness, outputs and synthetic c
↪  hecks. A dictionary crosswalk is semantic verification before outcome
↪  values, not a new scientific choice. Keep all endpoint-specific
↪  units, horizons and Bonferroni allocations; grouping introduces no
↪  average outcome, composite score, new hypothesis or additional alpha.
↪  Write root audit.json, status.json, judgment.json and components.csv
↪  with component, outcome, component_state, component_terminal,
↪  inference_status, reason, evidence_path. Components.csv is an
↪  evidence index under this protocol, never a second experiment graph.
↪  Suppression is applied after governed adjudication, and cannot govern
↪  activation or disclose protected directions.

Scope and order: this experiment asks whether marginal national-test
↪  classification changes recorded depressive/anxiety care. Use all
↪  grades 4,5,6,7,8,9. Each endpoint below is a separate slot in the
↪  unchanged 24-slot primary family; its ascertainment belongs to the
↪  separate 24-slot diagnostic family. No endpoint value activates
↪  another endpoint. After the native grade activation passes, first
↪  perform each endpoint's own calendar/construct/relative/provenance
↪  checks, then ascertainment, primary estimation, and mandatory
↪  robustness whenever its primary component is
↪  increase/decrease/uncertain/selection_limited. An evidenced primary
↪  boundary makes its robustness internally not_activated. Ascertainment
↪  can finish even when primary or robustness fails, and primary does
↪  not require an insignificant ascertainment test. Robustness no_result
↪  never becomes stable. Aggregate only after every scheduled component
↪  completes, is evidenced ineligible, or has a recorded operational
↪  terminal. Preserve completed components when another fails; if all
↪  scientific work fails operationally use Atom terminal no_result.

## Internal hospital-era
- key: both
  region: Legacy and new model keys, roles and phenotype dates each
  ↪  validate separately.
  says: Both eras support separately reported encounter constructs;
  ↪  equivalence across
    eras is not assumed.
- key: legacy_only
  region: Legacy mapping validates and new mapping is documented
  ↪  incompatible or unresolved.
  says: 2015 causal care windows and legacy descriptions remain possible;
  ↪  new-era
    claims are bounded.
- key: new_only
  region: New mapping validates but legacy mapping is documented
  ↪  incompatible or unresolved.
  says: New-era descriptions remain possible; the registered 2015
  ↪  hospital effect
    cannot run.
- key: boundary
  region: Both models are demonstrably incompatible with the registered
  ↪  person-contact
    phenotype.
  says: No hospital-coded endpoint under this contract; school
  ↪  symptoms/community
    services remain independent.
- key: otherwise
```

```
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Independent construct diagnostic, D6. Read legacy
↪  administration/diagnosis RECNUM semantics and the LPR3 DW_EK_KONTAKT
↪  dictionary, diagnosis-role labels, validity-date SKS mapping and
↪  reference periods. At runtime assert old contact:many-diagnosis and
↪  new contact:many-diagnosis cardinalities; compare label semantics and
↪  code inclusion but do not use agreement of effects to declare
↪  harmonization. Report old psychiatric/general overlap by
↪  person/date/code, missing roles and model vintage. A valid legacy
↪  model is sufficient for spring 2015+730days and does not depend on
↪  LPR3. Post2019 descriptions use the new model separately; no pooled
↪  cross-era causal contrast is registered. Output diagnostics.csv rows
↪  old_key,old_roles,old_codes,new_key,new_roles,new_codes,era_overlap_s
↪  emantics. No p-values. Synthetic repeated diagnoses must produce one
↪  person-day; same key with two people fails the join; expired SKS code
↪  cannot be included. This judgment concerns observed clinical coding,
↪  not sensitivity/specificity for latent disorder.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and prereg/i
↪  dentification.md I1-I4 for estimands and inference. These shared
↪  definitions are part of this Atom's protocol, not optional guidance.
↪  Apply ordered checks before model fitting: delivered schema/dictionar
↪  y; date and unit semantics; unique keys and duplicate disposition;
↪  baseline and horizon eligibility; outcome construction; missingness
↪  and inference; local adjudication. Never inspect a postbaseline
↪  estimate to repair an earlier choice. A demonstrably incompatible
↪  construct is an evidenced boundary; unresolved documentation reaches
↪  otherwise. A transport/access/software failure yields terminal
↪  no_result with no local state. Apply the listed verdict regions in
↪  order, first matching region wins; otherwise is exhaustive. All
↪  future outputs go to prereg/runtime/atom-000209/hospital-era/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## depressive_encounter / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
```

```
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
Internal ascertainment diagnostic on exactly the baseline-eligible
↪  population and horizon of atom-000209, with the same
↪  table/field/version/join/exit definitions, fixed grades and baseline
↪  weights. Do not require that primary to finish and do not use its
↪  sign. First construct whether the registered endpoint is defined and
↪  observed for each baseline index; no value or realized employment
↪  changes eligibility. Atom-specific D9 calibration/correction checks
↪  still apply. For defined event-before-exit outcomes, complete event
↪  universe establishes observation even for zero events. For undefined
↪  after-death school/state outcomes, report undefined proportion
↪  separately; never classify death as a negative symptom. Apply I5
↪  constant handling to the observation indicator; documentary
↪  arithmetic can be structural_complete, observed constants have no
↪  p-value. Otherwise apply I3 as a binary outcome without outcome
↪  missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪  is distinct from the 24 primary outcomes and baseline48. Output
↪  ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪  diagnostics.csv, audit.json, judgment.json. Include observation
↪  fractions by side, undefined/death/emigration counts and
↪  denominators, exact horizon and p_raw/p_adjusted only for a valid
↪  contrast. A detected or undetected difference cannot choose a new
↪  endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪  all-unobserved, varying indicator and death-undefined fixtures test
↪  the local regions. Every state is narrated in Table S2 through its
↪  own result slot; no public suppressed value gates computation.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000209/endpo
↪  ints/depressive_encounter/ascertainment/ and remain governed until
↪  aggregate disclosure approval. Write audit.json and judgment.json
↪  plus the named plot-ready table; G1/G2 define status and column
↪  meanings. No numerical result is populated now. Before runtime use G3
↪  synthetic join/date/missingness checks and verify row-order
↪  invariance; a failed check prevents output release. Every result
↪  constrains the Molecule under its composable rules; neither failure
↪  nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000209/endpoints/depressive_enc
↪  ounter/ascertainment/. Cross-component primary files are read from
↪  prereg/runtime/atom-000209/endpoints/depressive_encounter/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## depressive_encounter / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪  demonstrably
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
```

```
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Inferential status: one prespecified directional slot in the 24-slot
↪  study-wide family; conditional causal interpretation for the spring
↪  2015 historical margin only. Endpoint=depressive_encounter;
↪  family=care; fixed horizon=days1_to730_before_exit; display unit=pp.
↪  Population and exact coding: DF32/DF33 valid-date action/secondary
↪  diagnoses, collapse person/contact date; all prior histories
↪  retained. Incorporate D6 and D1-D3, including individual exclusions,
↪  date-based eligibility, join cardinalities, code dictionaries and
↪  missingness. D7 first-family indexing applies to relatives' outcomes.
↪  No actual graduation, employment, care use, intact family or future
↪  response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the
↪  inclusive historical cutoff, pooled across the endpoint's fixed
↪  baseline-grade strata with pre-outcome count weights. It is neither
↪  the inherent effect of dyslexia nor the effect of a particular
↪  support program. Required identifying variation/assumptions are I1/I2
↪  and remain unproved by diagnostic passes. This endpoint uses no
↪  postbaseline controls. No fuzzy ratio is allowed even if recorded
↪  classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪  verify this endpoint's2015 calendar/dictionaries before values; form
↪  its baseline target and expected outcome row for every eligible
↪  index; assert D2 joins, invalid-code and duplicates dispositions;
↪  build endpoint plus observation/exit indicators; produce missingness
↪  diagnostics without removing the baseline row; apply RD from I3 with
↪  endpoint kind=binary; transform binary risk effects by100 once; fit
↪  available-case sensitivity only when missingness requires it;
↪  calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪  for a complete point estimand, or the simultaneous outer bound
↪  interval for a bounded partially observed endpoint; retain unbounded
↪  missingness as selection_limited. Do not choose another cohort, grade
↪  stratum, time window or definition if this fit lacks support. All
↪  grade strata required by this endpoint must support the fitted
↪  operator; no renormalizing after a stratum fails. Report h/b,
↪  support, clusters, effective n, censoring/exit fractions and
↪  conditional detectable contrast; no power pass threshold.
```

```
Output effects.csv, selection-sensitivity.csv (only when applicable),
↪  diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪  identified bounds put estimate/p values NA and use lower/upper as
↪  outer limits; a missing point estimate must never be plotted at zero.
↪  Required figure: the full causal forest, plus its own registered
↪  robustness display if the internal robustness rule is satisfied.
↪  Synthetic check: score=0 belongs on red; complete binary endpoint
↪  agrees with ordinary RD after transformation; missing bounded
↪  endpoint widens the extreme interval; missing unbounded endpoint
↪  never produces a full-population causal p-value; dormant slots remain
↪  in the 24 denominator. Software failures get no_result, not
↪  uncertain. Permitted claim ceiling: Recorded depressive care cannot
↪  identify incidence or severity of depression. Directional local
↪  states do not establish practical importance. A confidence interval
↪  spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000209/endpoints/depressive_encounter/primary/
↪  and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000209.
Exact component path: prereg/runtime/atom-000209/endpoints/depressive_enc
↪  ounter/primary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000209/endpoints/depressive_encounter/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## depressive_encounter / robustness
- key: sensitive
```

```
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for depressive_encounter, not an
↪  additional primary discovery. Scope, unit, field/code mapping,
↪  population, estimand and missingness are exactly those of atom-000209
↪  and incorporated D6. Read its frozen analysis population, weights,
↪  primary h/b and saved aggregate influence outputs; do not reconstruct
↪  a more favorable cohort. For each fixed specification in I4
↪  (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-
↪  linear/bias-corrected operator with the specified h/b changes, same
↪  grade weights and primary 24-slot interval and exploratory nonprimary
↪  95% intervals as I4; exclude only x==0 for the donut, explicitly
↪  changing local extrapolation. Recompute cluster influence variance
↪  and missingness bounds as needed. No new covariates, grade filters or
↪  bandwidth search. If a specification has insufficient support, its
↪  status is unresolved, never silently omitted. No multiplicity claim
↪  is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all fou
↪  r rows in the sensitivity figure with units=pp, including noncomputed
↪  rows. Compare available scalar primary and variant estimates: a sign
↪  reversal or variant point outside the primary interval is sensitive.
↪  For partial bounds use disjoint intervals as sensitive; overlapping
↪  intervals alone cannot prove equality. All variants must be computed
↪  for stable. If primary is selection_limited, variants inherit that
↪  ceiling. Synthetic tests keep identical rows in primary and
↪  recomputation, respect inclusive zero except the expressly registered
↪  donut, and preserve a missing variant row. Consequence: stability is
↪  only consistency over these specified choices, while sensitivity
↪  limits a broad policy conclusion. Recorded depressive care cannot
↪  identify incidence or severity of depression.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000209/endpoints/depressive_encounter/robustness/
↪  and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪  computable variant contradicts primary; all failed variants remain
↪  explicit with NA display rows. Stable never follows an unestimable
↪  primary or missing variant. No joint multi-specification coverage is
↪  claimed. Write inference_status and display status under G2,
↪  including unestimable numeric rows. Reproduce exact per-grade h/b
↪  from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000209/endpoints/depressive_enc
↪  ounter/robustness/. Cross-component primary files are read from
↪  prereg/runtime/atom-000209/endpoints/depressive_encounter/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## anxiety_stress_encounter / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
```

```
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪ undefined.
  says: This observation question is bounded; no manufactured missingness
  ↪ rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪ limitation, without
    negative or favorable inference.
Internal ascertainment diagnostic on exactly the baseline-eligible
↪ population and horizon of atom-000209, with the same
↪ table/field/version/join/exit definitions, fixed grades and baseline
↪ weights. Do not require that primary to finish and do not use its
↪ sign. First construct whether the registered endpoint is defined and
↪ observed for each baseline index; no value or realized employment
↪ changes eligibility. Atom-specific D9 calibration/correction checks
↪ still apply. For defined event-before-exit outcomes, complete event
↪ universe establishes observation even for zero events. For undefined
↪ after-death school/state outcomes, report undefined proportion
↪ separately; never classify death as a negative symptom. Apply I5
↪ constant handling to the observation indicator; documentary
↪ arithmetic can be structural_complete, observed constants have no
↪ p-value. Otherwise apply I3 as a binary outcome without outcome
↪ missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪ is distinct from the 24 primary outcomes and baseline48. Output
↪ ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪ diagnostics.csv, audit.json, judgment.json. Include observation
↪ fractions by side, undefined/death/emigration counts and
↪ denominators, exact horizon and p_raw/p_adjusted only for a valid
↪ contrast. A detected or undetected difference cannot choose a new
↪ endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪ all-unobserved, varying indicator and death-undefined fixtures test
↪ the local regions. Every state is narrated in Table S2 through its
↪ own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to prereg/runtime/atom-000209/endpo
↪ ints/anxiety_stress_encounter/ascertainment/ and remain governed
↪ until aggregate disclosure approval. Write audit.json and
↪ judgment.json plus the named plot-ready table; G1/G2 define status
↪ and column meanings. No numerical result is populated now. Before
↪ runtime use G3 synthetic join/date/missingness checks and verify
↪ row-order invariance; a failed check prevents output release. Every
↪ result constrains the Molecule under its composable rules; neither
↪ failure nor nonactivation means statistical insignificance.
```

```
Exact component path: prereg/runtime/atom-000209/endpoints/anxiety_stress
↪  _encounter/ascertainment/. Cross-component primary files are read
↪  from prereg/runtime/atom-000209/endpoints/anxiety_stress_encounter/pr
↪  imary/; ascertainment and robustness never overwrite primary
↪  judgments or scope.

## anxiety_stress_encounter / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪  demonstrably
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Inferential status: one prespecified directional slot in the 24-slot
↪ study-wide family; conditional causal interpretation for the spring
↪ 2015 historical margin only. Endpoint=anxiety_stress_encounter;
↪ family=care; fixed horizon=days1_to730_before_exit; display unit=pp.
↪ Population and exact coding: DF40/DF41/DF43 valid-date
↪ action/secondary diagnoses; a separate endpoint from depression.
↪ Incorporate D6 and D1-D3, including individual exclusions, date-based
↪ eligibility, join cardinalities, code dictionaries and missingness.
↪ D7 first-family indexing applies to relatives' outcomes. No actual
↪ graduation, employment, care use, intact family or future response
↪ condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the
↪ inclusive historical cutoff, pooled across the endpoint's fixed
↪ baseline-grade strata with pre-outcome count weights. It is neither
↪ the inherent effect of dyslexia nor the effect of a particular
↪ support program. Required identifying variation/assumptions are I1/I2
↪ and remain unproved by diagnostic passes. This endpoint uses no
↪ postbaseline controls. No fuzzy ratio is allowed even if recorded
↪ classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪ verify this endpoint's2015 calendar/dictionaries before values; form
↪ its baseline target and expected outcome row for every eligible
↪ index; assert D2 joins, invalid-code and duplicates dispositions;
↪ build endpoint plus observation/exit indicators; produce missingness
↪ diagnostics without removing the baseline row; apply RD from I3 with
↪ endpoint kind=binary; transform binary risk effects by100 once; fit
↪ available-case sensitivity only when missingness requires it;
↪ calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪ for a complete point estimand, or the simultaneous outer bound
↪ interval for a bounded partially observed endpoint; retain unbounded
↪ missingness as selection_limited. Do not choose another cohort, grade
↪ stratum, time window or definition if this fit lacks support. All
↪ grade strata required by this endpoint must support the fitted
↪ operator; no renormalizing after a stratum fails. Report h/b,
↪ support, clusters, effective n, censoring/exit fractions and
↪ conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable),
↪ diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪ identified bounds put estimate/p values NA and use lower/upper as
↪ outer limits; a missing point estimate must never be plotted at zero.
↪ Required figure: the full causal forest, plus its own registered
↪ robustness display if the internal robustness rule is satisfied.
↪ Synthetic check: score=0 belongs on red; complete binary endpoint
↪ agrees with ordinary RD after transformation; missing bounded
↪ endpoint widens the extreme interval; missing unbounded endpoint
↪ never produces a full-population causal p-value; dormant slots remain
↪ in the 24 denominator. Software failures get no_result, not
↪ uncertain. Permitted claim ceiling: Anxiety/stress-coded encounters
↪ reflect symptoms, referral, access and coding. Directional local
↪ states do not establish practical importance. A confidence interval
↪ spanning zero never licenses no effect or equivalence.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000209/endpo
↪  ints/anxiety_stress_encounter/primary/ and remain governed until
↪  aggregate disclosure approval. Write audit.json and judgment.json
↪  plus the named plot-ready table; G1/G2 define status and column
↪  meanings. No numerical result is populated now. Before runtime use G3
↪  synthetic join/date/missingness checks and verify row-order
↪  invariance; a failed check prevents output release. Every result
↪  constrains the Molecule under its composable rules; neither failure
↪  nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000209.
Exact component path: prereg/runtime/atom-000209/endpoints/anxiety_stress
↪  _encounter/primary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000209/endpoints/anxiety_stress_encounter/primary
↪  /; ascertainment and robustness never overwrite primary judgments or
↪  scope.

## anxiety_stress_encounter / robustness
- key: sensitive
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
```

```
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for anxiety_stress_encounter, not an
↪  additional primary discovery. Scope, unit, field/code mapping,
↪  population, estimand and missingness are exactly those of atom-000209
↪  and incorporated D6. Read its frozen analysis population, weights,
↪  primary h/b and saved aggregate influence outputs; do not reconstruct
↪  a more favorable cohort. For each fixed specification in I4
↪  (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-
↪  linear/bias-corrected operator with the specified h/b changes, same
↪  grade weights and primary 24-slot interval and exploratory nonprimary
↪  95% intervals as I4; exclude only x==0 for the donut, explicitly
↪  changing local extrapolation. Recompute cluster influence variance
↪  and missingness bounds as needed. No new covariates, grade filters or
↪  bandwidth search. If a specification has insufficient support, its
↪  status is unresolved, never silently omitted. No multiplicity claim
↪  is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all fou
↪  r rows in the sensitivity figure with units=pp, including noncomputed
↪  rows. Compare available scalar primary and variant estimates: a sign
↪  reversal or variant point outside the primary interval is sensitive.
↪  For partial bounds use disjoint intervals as sensitive; overlapping
↪  intervals alone cannot prove equality. All variants must be computed
↪  for stable. If primary is selection_limited, variants inherit that
↪  ceiling. Synthetic tests keep identical rows in primary and
↪  recomputation, respect inclusive zero except the expressly registered
↪  donut, and preserve a missing variant row. Consequence: stability is
↪  only consistency over these specified choices, while sensitivity
↪  limits a broad policy conclusion. Anxiety/stress-coded encounters
↪  reflect symptoms, referral, access and coding.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000209/endpo
↪  ints/anxiety_stress_encounter/robustness/ and remain governed until
↪  aggregate disclosure approval. Write audit.json and judgment.json
↪  plus the named plot-ready table; G1/G2 define status and column
↪  meanings. No numerical result is populated now. Before runtime use G3
↪  synthetic join/date/missingness checks and verify row-order
↪  invariance; a failed check prevents output release. Every result
↪  constrains the Molecule under its composable rules; neither failure
↪  nor nonactivation means statistical insignificance.
```

```
Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪  computable variant contradicts primary; all failed variants remain
↪  explicit with NA display rows. Stable never follows an unestimable
↪  primary or missing variant. No joint multi-specification coverage is
↪  claimed. Write inference_status and display status under G2,
↪  including unestimable numeric rows. Reproduce exact per-grade h/b
↪  from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000209/endpoints/anxiety_stress
↪  _encounter/robustness/. Cross-component primary files are read from
↪  prereg/runtime/atom-000209/endpoints/anxiety_stress_encounter/primary
↪  /; ascertainment and robustness never overwrite primary judgments or
↪  scope.

The root component vector reports each endpoint primary direction/interva
↪  l type, ascertainment decision, robustness decision, and measurement,
↪  horizon, selection and operational restrictions. Within this
↪  experiment, differing outcomes remain independently interpretable.
↪  Mixed signs across different horizons are side-by-side observed
↪  contrasts, not common-population divergence. All graphical and
↪  manuscript bindings use the exact endpoint/component directory above.
```

Registered experiment

Does marginal classification change recorded depressive/anxiety care?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000209`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000211: Community care use

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state,

component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Scope and order: this experiment asks whether marginal national-test classification changes community care use. Use all grades 4,5,6,7,8,9. Each endpoint below is a separate slot in the unchanged 24-slot primary family; its ascertainment belongs to the separate 24-slot diagnostic family. No endpoint value activates another endpoint. After the native grade activation passes, first perform each endpoint's own calendar/construct/relative/provenance checks, then ascertainment, primary estimation, and mandatory robustness whenever its primary component is increase/decrease/uncertain/selection_limited. An evidenced primary boundary makes its robustness internally not_activated. Ascertainment can finish even when primary or robustness fails, and primary does not require an insignificant ascertainment test. Robustness no_result never becomes stable. Aggregate only after every scheduled component completes, is evidenced ineligible, or has a recorded operational terminal. Preserve completed components when another fails; if all scientific work fails operationally use Atom terminal no_result.

community_specialist / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000211, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events. For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling

to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000211/endpoints/community_specialist/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000211/endpoints/community_specialist/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000211/endpoints/community_specialist/primary/; ascertainment and robustness never overwrite primary judgments or scope.

community_specialist / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata. says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.
- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.

- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=community_specialist; family=care; fixed horizon=whole_billing_weeks_to730; display unit=pp. Population and exact coding: Positive corrected KONTAKT in SPEC2{24,26,35,63}; billing-week chronology. Incorporate D6 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=binary; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must

support the fitted operator; no renormalizing after a stratum fails. Report h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Public-reimbursed specialist use excludes private/unrecorded care and is not latent mental health. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000211/endpoints/community_specialist/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values; exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000211. Exact component path: prereg/runtime/atom-000211/endpoints/community_specialist/primary/.

Cross-component primary files are read from prereg/runtime/atom-000211/endpoints/community_specialist/primary/; ascertainment and robustness never overwrite primary judgments or scope.

community_specialist / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for community_specialist, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000211 and incorporated D6. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=pp, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. Public-reimbursed specialist use excludes private/unrecorded care and is not latent mental health.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary;

date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000211/endpoints/community_specialist/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000211/endpoints/community_specialist/robustness/. Cross-component primary files are read from prereg/runtime/atom-000211/endpoints/community_specialist/primary/; ascertainment and robustness never overwrite primary judgments or scope.

gp_contact / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000211, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its

sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events. For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000211/endpoints/gp_contact/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000211/endpoints/gp_contact/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000211/endpoints/gp_contact/primary/; ascertainment and robustness never overwrite primary judgments or scope.

gp_contact / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata.

says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.

- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=gp_contact; family=care; fixed horizon=whole_billing_weeks_to730; display unit=pp. Population and exact coding: SPEC2=80, net positive KONTAKT, exclude chronic honoraria0130–0133; billing week. Incorporate D6 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=binary; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer

bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must support the fitted operator; no renormalizing after a stratum fails. Report h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: GP contact may represent recognition/help-seeking and cannot be assigned a beneficial/adverse health sign. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000211/endpoints/gp_contact/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance

reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values; exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000211. Exact component path: prereg/runtime/atom-000211/endpoints/gp_contact/primary/. Cross-component primary files are read from prereg/runtime/atom-000211/endpoints/gp_contact/primary/; ascertainment and robustness never overwrite primary judgments or scope.

gp_contact / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for gp_contact, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000211 and incorporated D6. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=pp, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. GP contact may represent recognition/help-seeking and cannot be assigned a beneficial/adverse health sign.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000211/endpoints/gp_contact/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000211/endpoints/gp_contact/robustness/. Cross-component primary files are read from prereg/runtime/atom-000211/endpoints/gp_contact/primary/; ascertainment and robustness never overwrite primary judgments or scope.

The root component vector reports each endpoint primary direction/interval type, ascertainment decision, robustness decision, and measurement, horizon, selection and operational restrictions. Within this experiment, differing outcomes remain independently interpretable. Mixed signs across different horizons are side-by-side observed contrasts, not common-population divergence. All graphical and manuscript bindings use the exact endpoint/component directory above.

Complete registration fields


```
id: atom-000211
topic: Community care use
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
```

```
mode: adaptive
question: Does marginal classification change community care use?
rationale: GP and psychiatric/psychology billing contacts jointly ask how
  public-reimbursed community service use changes. General and specialist
  contacts retain separate clocks, categories and claims; they are not
  ↪ diagnoses.
assumption: Administrative recognition can affect opportunities, reporting
  and service contact through multiple routes; exact source semantics and
  continuity require evidence, not an estimator label. See literature.md
  and identification.md.
target_strength: causal
target_shape: comparison
ratings:
  importance: 5
  novelty: 3
  feasibility: 2
  data_advantage: 4
  informativeness: 0.5
tables:
- BEF
- DOD
- SSSY
- UDD_FOLKESKOLE_FRAVAER_STIL
- UDD_ORDBLINDETEST
- VNDS
activation: state(atom-000001) == "ready" AND state(atom-000002) ==
↪  "compatible"
  AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000505) == "eligible_sharp" OR state(atom-000505) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000506) == "eligible_sharp" OR state(atom-000506) ==
  ↪  "eligible_nonsharp")
verdicts:
- key: sensitive
  region: At least one endpoint has a computed I4 sensitivity contradiction.
    This precedence applies even if another endpoint/variant fails.
  says: Name every affected endpoint and variant; retain all primary
  ↪  estimates
    and independent component failures without replacing a primary.
- key: mixed_direction
  region: No preceding region; at least one qualified increase and one
  ↪  qualified
    decrease among this experiment's endpoints. Qualified means valid
    ↪  primary
    interval/bounds and stable own robustness.
  says: Report the discordant endpoint directions in their original
  ↪  units/scopes;
    do not average or assign a common welfare sign.
- key: directional
  region: No preceding region; at least one endpoint is a qualified increase
    or decrease. Other endpoints may be uncertain, selected, boundary,
    ↪  failed
    or unresolved.
```

```
  says: Report only named qualified directions and every other endpoint's
    disposition. This does not imply the entire domain changed or that all
    endpoints were available.
- key: uncertain
  region: No preceding region; at least one endpoint has a valid primary
    interval/bounds, but no qualified direction.
  says: Report exact intervals and endpoint-specific robustness
  ↪  restrictions;
    zero-containing intervals and unresolved robustness remain different
    cases, neither equivalence.
- key: boundary
  region: No preceding region; every endpoint has an evidenced measurement
    or horizon/population boundary.
  says: This scientific question cannot be evaluated under the frozen
  ↪  target;
    report component-specific reasons, never a null.
- key: restricted
  region: No preceding region; at least one endpoint supplies completed
    evidence of selection_limited or unestimable inference.
  says: Report the surviving selected/unestimable evidence and independent
    failures; no all-eligible directional claim.
- key: otherwise
  region: otherwise
  says: The experiment remains unresolved. Preserve every component state,
    terminal and unavailable reason; operational failure is not
    ↪  insignificance.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪  Atoms or activation primitives. Execute every prescribed component
  ↪  that is scientifically eligible, independently of other component
  ↪  signs. Component outputs retain their own local decision, inference
  ↪  and operational status; only the native judgment.json at the Atom
  ↪  root supplies the Atom local state. No component failure can erase
  ↪  completed evidence in another component. When no scientific component
  ↪  completes because execution fails, set terminal no_result with no
  ↪  Atom local state. Otherwise aggregate only by the ordered registered
  ↪  regions and record every component's failure, boundary, unknown or
  ↪  inactive disposition. Pending necessary evidence stays pending; it is
  ↪  never coded as negative evidence. Internal failed work is not
  ↪  automatically retried.
  Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
  ↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
  ↪  definitions. These fix population, dates, table/field dictionaries,
  ↪  code versions, joins, inference, missingness, outputs and synthetic c⌋
  ↪  hecks. A dictionary crosswalk is semantic verification before outcome
  ↪  values, not a new scientific choice. Keep all endpoint-specific
  ↪  units, horizons and Bonferroni allocations; grouping introduces no
  ↪  average outcome, composite score, new hypothesis or additional alpha.
  ↪  Write root audit.json, status.json, judgment.json and components.csv
  ↪  with component, outcome, component_state, component_terminal,
  ↪  inference_status, reason, evidence_path. Components.csv is an
  ↪  evidence index under this protocol, never a second experiment graph.
  ↪  Suppression is applied after governed adjudication, and cannot govern
  ↪  activation or disclose protected directions.
```

```
Scope and order: this experiment asks whether marginal national-test
↪  classification changes community care use. Use all grades
↪  4,5,6,7,8,9. Each endpoint below is a separate slot in the unchanged
↪  24-slot primary family; its ascertainment belongs to the separate
↪  24-slot diagnostic family. No endpoint value activates another
↪  endpoint. After the native grade activation passes, first perform
↪  each endpoint's own calendar/construct/relative/provenance checks,
↪  then ascertainment, primary estimation, and mandatory robustness
↪  whenever its primary component is
↪  increase/decrease/uncertain/selection_limited. An evidenced primary
↪  boundary makes its robustness internally not_activated. Ascertainment
↪  can finish even when primary or robustness fails, and primary does
↪  not require an insignificant ascertainment test. Robustness no_result
↪  never becomes stable. Aggregate only after every scheduled component
↪  completes, is evidenced ineligible, or has a recorded operational
↪  terminal. Preserve completed components when another fails; if all
↪  scientific work fails operationally use Atom terminal no_result.

## community_specialist / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Internal ascertainment diagnostic on exactly the baseline-eligible
↪ population and horizon of atom-000211, with the same
↪ table/field/version/join/exit definitions, fixed grades and baseline
↪ weights. Do not require that primary to finish and do not use its
↪ sign. First construct whether the registered endpoint is defined and
↪ observed for each baseline index; no value or realized employment
↪ changes eligibility. Atom-specific D9 calibration/correction checks
↪ still apply. For defined event-before-exit outcomes, complete event
↪ universe establishes observation even for zero events. For undefined
↪ after-death school/state outcomes, report undefined proportion
↪ separately; never classify death as a negative symptom. Apply I5
↪ constant handling to the observation indicator; documentary
↪ arithmetic can be structural_complete, observed constants have no
↪ p-value. Otherwise apply I3 as a binary outcome without outcome
↪ missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪ is distinct from the 24 primary outcomes and baseline48. Output
↪ ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪ diagnostics.csv, audit.json, judgment.json. Include observation
↪ fractions by side, undefined/death/emigration counts and
↪ denominators, exact horizon and p_raw/p_adjusted only for a valid
↪ contrast. A detected or undetected difference cannot choose a new
↪ endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪ all-unobserved, varying indicator and death-undefined fixtures test
↪ the local regions. Every state is narrated in Table S2 through its
↪ own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to prereg/runtime/atom-000211/endpo
↪ ints/community_specialist/ascertainment/ and remain governed until
↪ aggregate disclosure approval. Write audit.json and judgment.json
↪ plus the named plot-ready table; G1/G2 define status and column
↪ meanings. No numerical result is populated now. Before runtime use G3
↪ synthetic join/date/missingness checks and verify row-order
↪ invariance; a failed check prevents output release. Every result
↪ constrains the Molecule under its composable rules; neither failure
↪ nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000211/endpoints/community_spec
↪ ialist/ascertainment/. Cross-component primary files are read from
↪ prereg/runtime/atom-000211/endpoints/community_specialist/primary/;
↪ ascertainment and robustness never overwrite primary judgments or
↪ scope.

## community_specialist / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪ demonstrably
```

```
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Inferential status: one prespecified directional slot in the 24-slot stud
↪  y-wide family; conditional causal interpretation for the spring 2015
↪  historical margin only. Endpoint=community_specialist; family=care;
↪  fixed horizon=whole_billing_weeks_to730; display unit=pp. Population
↪  and exact coding: Positive corrected KONTAKT in SPEC2{24,26,35,63};
↪  billing-week chronology. Incorporate D6 and D1-D3, including
↪  individual exclusions, date-based eligibility, join cardinalities,
↪  code dictionaries and missingness. D7 first-family indexing applies
↪  to relatives' outcomes. No actual graduation, employment, care use,
↪  intact family or future response condition determines eligibility.
```

```
Estimand: red-minus-adjacent-yellow local policy contrast at the
↪ inclusive historical cutoff, pooled across the endpoint's fixed
↪ baseline-grade strata with pre-outcome count weights. It is neither
↪ the inherent effect of dyslexia nor the effect of a particular
↪ support program. Required identifying variation/assumptions are I1/I2
↪ and remain unproved by diagnostic passes. This endpoint uses no
↪ postbaseline controls. No fuzzy ratio is allowed even if recorded
↪ classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪ verify this endpoint's2015 calendar/dictionaries before values; form
↪ its baseline target and expected outcome row for every eligible
↪ index; assert D2 joins, invalid-code and duplicates dispositions;
↪ build endpoint plus observation/exit indicators; produce missingness
↪ diagnostics without removing the baseline row; apply RD from I3 with
↪ endpoint kind=binary; transform binary risk effects by100 once; fit
↪ available-case sensitivity only when missingness requires it;
↪ calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪ for a complete point estimand, or the simultaneous outer bound
↪ interval for a bounded partially observed endpoint; retain unbounded
↪ missingness as selection_limited. Do not choose another cohort, grade
↪ stratum, time window or definition if this fit lacks support. All
↪ grade strata required by this endpoint must support the fitted
↪ operator; no renormalizing after a stratum fails. Report h/b,
↪ support, clusters, effective n, censoring/exit fractions and
↪ conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable),
↪ diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪ identified bounds put estimate/p values NA and use lower/upper as
↪ outer limits; a missing point estimate must never be plotted at zero.
↪ Required figure: the full causal forest, plus its own registered
↪ robustness display if the internal robustness rule is satisfied. Synt
↪ hetic check: score=0 belongs on red; complete binary endpoint agrees
↪ with ordinary RD after transformation; missing bounded endpoint
↪ widens the extreme interval; missing unbounded endpoint never
↪ produces a full-population causal p-value; dormant slots remain in
↪ the 24 denominator. Software failures get no_result, not uncertain.
↪ Permitted claim ceiling: Public-reimbursed specialist use excludes
↪ private/unrecorded care and is not latent mental health. Directional
↪ local states do not establish practical importance. A confidence
↪ interval spanning zero never licenses no effect or equivalence.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000211/endpoints/community_specialist/primary/
↪  and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000211.
Exact component path: prereg/runtime/atom-000211/endpoints/community_spec
↪  ialist/primary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000211/endpoints/community_specialist/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## community_specialist / robustness
- key: sensitive
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
```

```
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for community_specialist, not an
↪  additional primary discovery. Scope, unit, field/code mapping,
↪  population, estimand and missingness are exactly those of atom-000211
↪  and incorporated D6. Read its frozen analysis population, weights,
↪  primary h/b and saved aggregate influence outputs; do not reconstruct
↪  a more favorable cohort. For each fixed specification in I4
↪  (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-
↪  linear/bias-corrected operator with the specified h/b changes, same
↪  grade weights and primary 24-slot interval and exploratory nonprimary
↪  95% intervals as I4; exclude only x==0 for the donut, explicitly
↪  changing local extrapolation. Recompute cluster influence variance
↪  and missingness bounds as needed. No new covariates, grade filters or
↪  bandwidth search. If a specification has insufficient support, its
↪  status is unresolved, never silently omitted. No multiplicity claim
↪  is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all fou
↪  r rows in the sensitivity figure with units=pp, including noncomputed
↪  rows. Compare available scalar primary and variant estimates: a sign
↪  reversal or variant point outside the primary interval is sensitive.
↪  For partial bounds use disjoint intervals as sensitive; overlapping
↪  intervals alone cannot prove equality. All variants must be computed
↪  for stable. If primary is selection_limited, variants inherit that
↪  ceiling. Synthetic tests keep identical rows in primary and
↪  recomputation, respect inclusive zero except the expressly registered
↪  donut, and preserve a missing variant row. Consequence: stability is
↪  only consistency over these specified choices, while sensitivity
↪  limits a broad policy conclusion. Public-reimbursed specialist use
↪  excludes private/unrecorded care and is not latent mental health.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000211/endpoints/community_specialist/robustness/
↪  and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

```
Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪  computable variant contradicts primary; all failed variants remain
↪  explicit with NA display rows. Stable never follows an unestimable
↪  primary or missing variant. No joint multi-specification coverage is
↪  claimed. Write inference_status and display status under G2,
↪  including unestimable numeric rows. Reproduce exact per-grade h/b
↪  from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000211/endpoints/community_spec
↪  ialist/robustness/. Cross-component primary files are read from
↪  prereg/runtime/atom-000211/endpoints/community_specialist/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## gp_contact / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Internal ascertainment diagnostic on exactly the baseline-eligible
↪ population and horizon of atom-000211, with the same
↪ table/field/version/join/exit definitions, fixed grades and baseline
↪ weights. Do not require that primary to finish and do not use its
↪ sign. First construct whether the registered endpoint is defined and
↪ observed for each baseline index; no value or realized employment
↪ changes eligibility. Atom-specific D9 calibration/correction checks
↪ still apply. For defined event-before-exit outcomes, complete event
↪ universe establishes observation even for zero events. For undefined
↪ after-death school/state outcomes, report undefined proportion
↪ separately; never classify death as a negative symptom. Apply I5
↪ constant handling to the observation indicator; documentary
↪ arithmetic can be structural_complete, observed constants have no
↪ p-value. Otherwise apply I3 as a binary outcome without outcome
↪ missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪ is distinct from the 24 primary outcomes and baseline48. Output
↪ ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪ diagnostics.csv, audit.json, judgment.json. Include observation
↪ fractions by side, undefined/death/emigration counts and
↪ denominators, exact horizon and p_raw/p_adjusted only for a valid
↪ contrast. A detected or undetected difference cannot choose a new
↪ endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪ all-unobserved, varying indicator and death-undefined fixtures test
↪ the local regions. Every state is narrated in Table S2 through its
↪ own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000211/endpoints/gp_contact/ascertainment/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000211/endpoints/gp_contact/asc
↪ ertainment/. Cross-component primary files are read from
↪ prereg/runtime/atom-000211/endpoints/gp_contact/primary/;
↪ ascertainment and robustness never overwrite primary judgments or
↪ scope.

## gp_contact / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪ demonstrably
```

```
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Inferential status: one prespecified directional slot in the 24-slot
↪  study-wide family; conditional causal interpretation for the spring
↪  2015 historical margin only. Endpoint=gp_contact; family=care; fixed
↪  horizon=whole_billing_weeks_to730; display unit=pp. Population and
↪  exact coding: SPEC2=80, net positive KONTAKT, exclude chronic
↪  honoraria0130-0133; billing week. Incorporate D6 and D1-D3, including
↪  individual exclusions, date-based eligibility, join cardinalities,
↪  code dictionaries and missingness. D7 first-family indexing applies
↪  to relatives' outcomes. No actual graduation, employment, care use,
↪  intact family or future response condition determines eligibility.
```

```
Estimand: red-minus-adjacent-yellow local policy contrast at the
↪ inclusive historical cutoff, pooled across the endpoint's fixed
↪ baseline-grade strata with pre-outcome count weights. It is neither
↪ the inherent effect of dyslexia nor the effect of a particular
↪ support program. Required identifying variation/assumptions are I1/I2
↪ and remain unproved by diagnostic passes. This endpoint uses no
↪ postbaseline controls. No fuzzy ratio is allowed even if recorded
↪ classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪ verify this endpoint's2015 calendar/dictionaries before values; form
↪ its baseline target and expected outcome row for every eligible
↪ index; assert D2 joins, invalid-code and duplicates dispositions;
↪ build endpoint plus observation/exit indicators; produce missingness
↪ diagnostics without removing the baseline row; apply RD from I3 with
↪ endpoint kind=binary; transform binary risk effects by100 once; fit
↪ available-case sensitivity only when missingness requires it;
↪ calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪ for a complete point estimand, or the simultaneous outer bound
↪ interval for a bounded partially observed endpoint; retain unbounded
↪ missingness as selection_limited. Do not choose another cohort, grade
↪ stratum, time window or definition if this fit lacks support. All
↪ grade strata required by this endpoint must support the fitted
↪ operator; no renormalizing after a stratum fails. Report h/b,
↪ support, clusters, effective n, censoring/exit fractions and
↪ conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable),
↪ diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪ identified bounds put estimate/p values NA and use lower/upper as
↪ outer limits; a missing point estimate must never be plotted at zero.
↪ Required figure: the full causal forest, plus its own registered
↪ robustness display if the internal robustness rule is satisfied. Synt
↪ hetic check: score=0 belongs on red; complete binary endpoint agrees
↪ with ordinary RD after transformation; missing bounded endpoint widen
↪ s the extreme interval; missing unbounded endpoint never produces a
↪ full-population causal p-value; dormant slots remain in the 24 denomi
↪ nator. Software failures get no_result, not uncertain. Permitted
↪ claim ceiling: GP contact may represent recognition/help-seeking and
↪ cannot be assigned a beneficial/adverse health sign. Directional
↪ local states do not establish practical importance. A confidence
↪ interval spanning zero never licenses no effect or equivalence.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000211/endpoints/gp_contact/primary/ and remain
↪  governed until aggregate disclosure approval. Write audit.json and
↪  judgment.json plus the named plot-ready table; G1/G2 define status
↪  and column meanings. No numerical result is populated now. Before
↪  runtime use G3 synthetic join/date/missingness checks and verify
↪  row-order invariance; a failed check prevents output release. Every
↪  result constrains the Molecule under its composable rules; neither
↪  failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000211.
Exact component path: prereg/runtime/atom-000211/endpoints/gp_contact/pri
↪  mary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000211/endpoints/gp_contact/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## gp_contact / robustness
- key: sensitive
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
```

```
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for gp_contact, not an additional primary
↪  discovery. Scope, unit, field/code mapping, population, estimand and
↪  missingness are exactly those of atom-000211 and incorporated D6.
↪  Read its frozen analysis population, weights, primary h/b and saved
↪  aggregate influence outputs; do not reconstruct a more favorable
↪  cohort. For each fixed specification in I4 (primary,half_bandwidth,wi
↪  der_bandwidth,donut), rerun the same local-linear/bias-corrected
↪  operator with the specified h/b changes, same grade weights and
↪  primary 24-slot interval and exploratory nonprimary 95% intervals as
↪  I4; exclude only x==0 for the donut, explicitly changing local
↪  extrapolation. Recompute cluster influence variance and missingness
↪  bounds as needed. No new covariates, grade filters or bandwidth
↪  search. If a specification has insufficient support, its status is
↪  unresolved, never silently omitted. No multiplicity claim is made
↪  from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all
↪  four rows in the sensitivity figure with units=pp, including
↪  noncomputed rows. Compare available scalar primary and variant
↪  estimates: a sign reversal or variant point outside the primary
↪  interval is sensitive. For partial bounds use disjoint intervals as
↪  sensitive; overlapping intervals alone cannot prove equality. All
↪  variants must be computed for stable. If primary is
↪  selection_limited, variants inherit that ceiling. Synthetic tests
↪  keep identical rows in primary and recomputation, respect inclusive
↪  zero except the expressly registered donut, and preserve a missing
↪  variant row. Consequence: stability is only consistency over these
↪  specified choices, while sensitivity limits a broad policy
↪  conclusion. GP contact may represent recognition/help-seeking and
↪  cannot be assigned a beneficial/adverse health sign.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000211/endpoints/gp_contact/robustness/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

```
Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪  computable variant contradicts primary; all failed variants remain
↪  explicit with NA display rows. Stable never follows an unestimable
↪  primary or missing variant. No joint multi-specification coverage is
↪  claimed. Write inference_status and display status under G2,
↪  including unestimable numeric rows. Reproduce exact per-grade h/b
↪  from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000211/endpoints/gp_contact/rob
↪  ustness/. Cross-component primary files are read from
↪  prereg/runtime/atom-000211/endpoints/gp_contact/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

The root component vector reports each endpoint primary direction/interva
↪  l type, ascertainment decision, robustness decision, and measurement,
↪  horizon, selection and operational restrictions. Within this
↪  experiment, differing outcomes remain independently interpretable.
↪  Mixed signs across different horizons are side-by-side observed
↪  contrasts, not common-population divergence. All graphical and
↪  manuscript bindings use the exact endpoint/component directory above.
```

Registered experiment

Does marginal classification change community care use?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000211`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000213: Parental recorded care

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state,

component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Scope and order: this experiment asks whether marginal national-test classification changes parental recorded care. Use all grades 4,5,6,7,8,9. Each endpoint below is a separate slot in the unchanged 24-slot primary family; its ascertainment belongs to the separate 24-slot diagnostic family. No endpoint value activates another endpoint. After the native grade activation passes, first perform each endpoint's own calendar/construct/relative/provenance checks, then ascertainment, primary estimation, and mandatory robustness whenever its primary component is increase/decrease/uncertain/selection_limited. An evidenced primary boundary makes its robustness internally not_activated. Ascertainment can finish even when primary or robustness fails, and primary does not require an insignificant ascertainment test. Robustness no_result never becomes stable. Aggregate only after every scheduled component completes, is evidenced ineligible, or has a recorded operational terminal. Preserve completed components when another fails; if all scientific work fails operationally use Atom terminal no_result.

Internal hospital-era

- key: both region: Legacy and new model keys, roles and phenotype dates each validate separately. says: Both eras support separately reported encounter constructs; equivalence across eras is not assumed.
- key: legacy_only region: Legacy mapping validates and new mapping is documented incompatible or unresolved. says: 2015 causal care windows and legacy descriptions remain possible; new-era claims are bounded.
- key: new_only region: New mapping validates but legacy mapping is documented incompatible or unresolved. says: New-era descriptions remain possible; the registered 2015 hospital effect cannot run.
- key: boundary region: Both models are demonstrably incompatible with the registered person-contact phenotype. says: No hospital-coded endpoint under this contract; school symptoms/community services remain independent.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Independent construct diagnostic, D6. Read legacy administration/diagnosis RECNUM semantics and the LPR3 DW_EK_KONTAKT dictionary, diagnosis-role labels, validity-date SKS mapping and reference periods. At runtime assert old contact:many-diagnosis and new contact:many-diagnosis cardinalities; compare label semantics and code inclusion but do not use agreement of effects to declare harmonization. Report old psychiatric/general overlap by person/date/code, missing roles and model vintage. A valid legacy model is sufficient for spring 2015+730days and does not depend on LPR3. Post2019 descriptions use the new model separately; no pooled cross-era causal contrast is registered. Output diagnostics.csv rows old_key,old_roles,old_codes,new_key,new_roles,new_codes,era_overlap_semantics. No p-values. Synthetic repeated diagnoses must produce one person-day; same key

with two people fails the join; expired SKS code cannot be included. This judgment concerns observed clinical coding, not sensitivity/specificity for latent disorder.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000213/hospital-era/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Internal relatives

- key: usable region: Pretest linkage semantics verified; all known relations have unique valid mappings and unknown roles are explicitly marked. says: Fixed recorded-parent/sibling targets can be studied with their baseline scope limitations.
- key: boundary region: Documentation establishes no dated parental linkage or incompatible key classes, so no baseline family target can be constructed. says: Family outcomes cannot be attributed to the index child under this delivery; child outcomes remain eligible.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Use D7 fixed pretest BEF snapshot, MOR_ID/FAR_ID, FOED_DAG, PNR, FAMILIE_ID and BEFBOP dated address intervals. Parent IDs must share the child PNR linkage class. Assert each child has at most one recorded value per parent role per snapshot; missing roles are unknown, not childless/no carer. Construct sibling sets by nonmissing shared parent; establish baseline school-grade eligibility with prior-month absence. Scan index assessments chronologically with fixed hash ties as D7. Report resident/nonresident parent links, one/two known roles, eligible sibling sets, conflicts and baseline missingness. This is the scope of recorded kinship, not validation of genetic relatedness or caregiving. Output diagnostics.csv with linkage proportions and conflict dispositions. No substantive outcome needed; no p-values. Synthetic fixture: two children with missing fathers are not siblings, subsequent births are excluded, later parental diagnosis cannot change roster. A complete roster

at birth does not guarantee future response. Family branch uses only scientifically interpretable pretest links.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000213/relatives/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

parent_care / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000213, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit

outcomes, complete event universe establishes observation even for zero events. For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000213/endpoints/parent_care/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000213/endpoints/parent_care/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000213/endpoints/parent_care/primary/; ascertainment and robustness never overwrite primary judgments or scope.

parent_care / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata. says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.

- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=parent_care; family=family; fixed horizon=child_days1_to730; display unit=pp. Population and exact coding: Mean over fixed recorded parents of any DF32/33/40/41/43 encounter; not restricted to resident mothers. Incorporate D6/D7 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=binary; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window

or definition if this fit lacks support. All grade strata required by this endpoint must support the fitted operator; no renormalizing after a stratum fails. Report h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Parental recorded care cannot quantify caregiving burden; own recognition is a rival route. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000213/endpoints/parent_care/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values;

exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000213. Exact component path: prereg/runtime/atom-000213/endpoints/parent_care/primary/. Cross-component primary files are read from prereg/runtime/atom-000213/endpoints/parent_care/primary/; ascertainment and robustness never overwrite primary judgments or scope.

parent_care / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for parent_care, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000213 and incorporated D6/D7. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=pp, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. Parental recorded care cannot quantify caregiving burden; own recognition is a rival route.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands

and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000213/endpoints/parent_care/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000213/endpoints/parent_care/robustness/. Cross-component primary files are read from prereg/runtime/atom-000213/endpoints/parent_care/primary/; ascertainment and robustness never overwrite primary judgments or scope.

The root component vector reports each endpoint primary direction/interval type, ascertainment decision, robustness decision, and measurement, horizon, selection and operational restrictions. Within this experiment, differing outcomes remain independently interpretable. Mixed signs across different horizons are side-by-side observed contrasts, not common-population divergence. All graphical and manuscript bindings use the exact endpoint/component directory above.

Complete registration fields


```
id: atom-000213
topic: Parental recorded care
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: Does marginal classification change parental recorded care?
  rationale: Parental health-service responses concern a different affected
    unit and cannot be absorbed into the child-care effect or parental work.
```

```
assumption: Administrative recognition can affect opportunities, reporting
  and service contact through multiple routes; exact source semantics and
  continuity require evidence, not an estimator label. See literature.md
  and identification.md.
target_strength: causal
target_shape: comparison
ratings:
  importance: 5
  novelty: 3
  feasibility: 2
  data_advantage: 4
  informativeness: 0.5
tables:
- BEF
- BEFBOP
- DOD
- LPR_ADM
- LPR_A_DIAGNOSE
- LPR_A_KONTAKT
- LPR_DIAG
- PSYK_ADM
- PSYK_DIAG
- UDD_FOLKESKOLE_FRAVAER_STIL
- UDD_ORDBLINDETEST
- VNDS
activation: state(atom-000001) == "ready" AND state(atom-000002) ==
↪  "compatible"
  AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000505) == "eligible_sharp" OR state(atom-000505) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000506) == "eligible_sharp" OR state(atom-000506) ==
  ↪  "eligible_nonsharp")
verdicts:
- key: sensitive
  region: At least one endpoint has a computed I4 sensitivity contradiction.
    This precedence applies even if another endpoint/variant fails.
  says: Name every affected endpoint and variant; retain all primary
  ↪  estimates
    and independent component failures without replacing a primary.
- key: mixed_direction
  region: No preceding region; at least one qualified increase and one
  ↪  qualified
    decrease among this experiment's endpoints. Qualified means valid
    ↪  primary
    interval/bounds and stable own robustness.
  says: Report the discordant endpoint directions in their original
  ↪  units/scopes;
    do not average or assign a common welfare sign.
- key: directional
  region: No preceding region; at least one endpoint is a qualified increase
    or decrease. Other endpoints may be uncertain, selected, boundary,
    ↪  failed
    or unresolved.
```

```
  says: Report only named qualified directions and every other endpoint's
    disposition. This does not imply the entire domain changed or that all
    endpoints were available.
- key: uncertain
  region: No preceding region; at least one endpoint has a valid primary
    interval/bounds, but no qualified direction.
  says: Report exact intervals and endpoint-specific robustness
  ↪  restrictions;
    zero-containing intervals and unresolved robustness remain different
    cases, neither equivalence.
- key: boundary
  region: No preceding region; every endpoint has an evidenced measurement
    or horizon/population boundary.
  says: This scientific question cannot be evaluated under the frozen
  ↪  target;
    report component-specific reasons, never a null.
- key: restricted
  region: No preceding region; at least one endpoint supplies completed
    evidence of selection_limited or unestimable inference.
  says: Report the surviving selected/unestimable evidence and independent
    failures; no all-eligible directional claim.
- key: otherwise
  region: otherwise
  says: The experiment remains unresolved. Preserve every component state,
    terminal and unavailable reason; operational failure is not
    ↪  insignificance.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪  Atoms or activation primitives. Execute every prescribed component
  ↪  that is scientifically eligible, independently of other component
  ↪  signs. Component outputs retain their own local decision, inference
  ↪  and operational status; only the native judgment.json at the Atom
  ↪  root supplies the Atom local state. No component failure can erase
  ↪  completed evidence in another component. When no scientific component
  ↪  completes because execution fails, set terminal no_result with no
  ↪  Atom local state. Otherwise aggregate only by the ordered registered
  ↪  regions and record every component's failure, boundary, unknown or
  ↪  inactive disposition. Pending necessary evidence stays pending; it is
  ↪  never coded as negative evidence. Internal failed work is not
  ↪  automatically retried.
  Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
  ↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
  ↪  definitions. These fix population, dates, table/field dictionaries,
  ↪  code versions, joins, inference, missingness, outputs and synthetic c
  ↪  hecks. A dictionary crosswalk is semantic verification before outcome
  ↪  values, not a new scientific choice. Keep all endpoint-specific
  ↪  units, horizons and Bonferroni allocations; grouping introduces no
  ↪  average outcome, composite score, new hypothesis or additional alpha.
  ↪  Write root audit.json, status.json, judgment.json and components.csv
  ↪  with component, outcome, component_state, component_terminal,
  ↪  inference_status, reason, evidence_path. Components.csv is an
  ↪  evidence index under this protocol, never a second experiment graph.
  ↪  Suppression is applied after governed adjudication, and cannot govern
  ↪  activation or disclose protected directions.
```

```
Scope and order: this experiment asks whether marginal national-test
↪  classification changes parental recorded care. Use all grades
↪  4,5,6,7,8,9. Each endpoint below is a separate slot in the unchanged
↪  24-slot primary family; its ascertainment belongs to the separate
↪  24-slot diagnostic family. No endpoint value activates another
↪  endpoint. After the native grade activation passes, first perform
↪  each endpoint's own calendar/construct/relative/provenance checks,
↪  then ascertainment, primary estimation, and mandatory robustness
↪  whenever its primary component is
↪  increase/decrease/uncertain/selection_limited. An evidenced primary
↪  boundary makes its robustness internally not_activated. Ascertainment
↪  can finish even when primary or robustness fails, and primary does
↪  not require an insignificant ascertainment test. Robustness no_result
↪  never becomes stable. Aggregate only after every scheduled component
↪  completes, is evidenced ineligible, or has a recorded operational
↪  terminal. Preserve completed components when another fails; if all
↪  scientific work fails operationally use Atom terminal no_result.

## Internal hospital-era
- key: both
  region: Legacy and new model keys, roles and phenotype dates each
  ↪  validate separately.
  says: Both eras support separately reported encounter constructs;
  ↪  equivalence across
    eras is not assumed.
- key: legacy_only
  region: Legacy mapping validates and new mapping is documented
  ↪  incompatible or unresolved.
  says: 2015 causal care windows and legacy descriptions remain possible;
  ↪  new-era
    claims are bounded.
- key: new_only
  region: New mapping validates but legacy mapping is documented
  ↪  incompatible or unresolved.
  says: New-era descriptions remain possible; the registered 2015
  ↪  hospital effect
    cannot run.
- key: boundary
  region: Both models are demonstrably incompatible with the registered
  ↪  person-contact
    phenotype.
  says: No hospital-coded endpoint under this contract; school
  ↪  symptoms/community
    services remain independent.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Independent construct diagnostic, D6. Read legacy
↪ administration/diagnosis RECNUM semantics and the LPR3 DW_EK_KONTAKT
↪ dictionary, diagnosis-role labels, validity-date SKS mapping and
↪ reference periods. At runtime assert old contact:many-diagnosis and
↪ new contact:many-diagnosis cardinalities; compare label semantics and
↪ code inclusion but do not use agreement of effects to declare
↪ harmonization. Report old psychiatric/general overlap by
↪ person/date/code, missing roles and model vintage. A valid legacy
↪ model is sufficient for spring 2015+730days and does not depend on
↪ LPR3. Post2019 descriptions use the new model separately; no pooled
↪ cross-era causal contrast is registered. Output diagnostics.csv rows
↪ old_key,old_roles,old_codes,new_key,new_roles,new_codes,era_overlap_s
↪ emantics. No p-values. Synthetic repeated diagnoses must produce one
↪ person-day; same key with two people fails the join; expired SKS code
↪ cannot be included. This judgment concerns observed clinical coding,
↪ not sensitivity/specificity for latent disorder.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and prereg/i
↪ dentification.md I1-I4 for estimands and inference. These shared
↪ definitions are part of this Atom's protocol, not optional guidance.
↪ Apply ordered checks before model fitting: delivered schema/dictionar
↪ y; date and unit semantics; unique keys and duplicate disposition;
↪ baseline and horizon eligibility; outcome construction; missingness
↪ and inference; local adjudication. Never inspect a postbaseline
↪ estimate to repair an earlier choice. A demonstrably incompatible
↪ construct is an evidenced boundary; unresolved documentation reaches
↪ otherwise. A transport/access/software failure yields terminal
↪ no_result with no local state. Apply the listed verdict regions in
↪ order, first matching region wins; otherwise is exhaustive. All
↪ future outputs go to prereg/runtime/atom-000213/hospital-era/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

## Internal relatives
- key: usable
  region: Pretest linkage semantics verified; all known relations have
  ↪ unique valid
    mappings and unknown roles are explicitly marked.
  says: Fixed recorded-parent/sibling targets can be studied with their
  ↪ baseline scope
    limitations.
- key: boundary
  region: Documentation establishes no dated parental linkage or
  ↪ incompatible key
    classes, so no baseline family target can be constructed.
  says: Family outcomes cannot be attributed to the index child under
  ↪ this delivery;
    child outcomes remain eligible.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪ negative
    finding is inferred; report the exact reason.
```

```
Use D7 fixed pretest BEF snapshot, MOR_ID/FAR_ID, FOED_DAG, PNR,
↪  FAMILIE_ID and BEFBOP dated address intervals. Parent IDs must share
↪  the child PNR linkage class. Assert each child has at most one
↪  recorded value per parent role per snapshot; missing roles are
↪  unknown, not childless/no carer. Construct sibling sets by nonmissing
↪  shared parent; establish baseline school-grade eligibility with
↪  prior-month absence. Scan index assessments chronologically with
↪  fixed hash ties as D7. Report resident/nonresident parent links,
↪  one/two known roles, eligible sibling sets, conflicts and baseline
↪  missingness. This is the scope of recorded kinship, not validation of
↪  genetic relatedness or caregiving. Output diagnostics.csv with
↪  linkage proportions and conflict dispositions. No substantive outcome
↪  needed; no p-values. Synthetic fixture: two children with missing
↪  fathers are not siblings, subsequent births are excluded, later
↪  parental diagnosis cannot change roster. A complete roster at birth
↪  does not guarantee future response. Family branch uses only
↪  scientifically interpretable pretest links.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000213/relat
↪  ives/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## parent_care / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
```

```
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
Internal ascertainment diagnostic on exactly the baseline-eligible
↪  population and horizon of atom-000213, with the same
↪  table/field/version/join/exit definitions, fixed grades and baseline
↪  weights. Do not require that primary to finish and do not use its
↪  sign. First construct whether the registered endpoint is defined and
↪  observed for each baseline index; no value or realized employment
↪  changes eligibility. Atom-specific D9 calibration/correction checks
↪  still apply. For defined event-before-exit outcomes, complete event
↪  universe establishes observation even for zero events. For undefined
↪  after-death school/state outcomes, report undefined proportion
↪  separately; never classify death as a negative symptom. Apply I5
↪  constant handling to the observation indicator; documentary
↪  arithmetic can be structural_complete, observed constants have no
↪  p-value. Otherwise apply I3 as a binary outcome without outcome
↪  missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪  is distinct from the 24 primary outcomes and baseline48. Output
↪  ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪  diagnostics.csv, audit.json, judgment.json. Include observation
↪  fractions by side, undefined/death/emigration counts and
↪  denominators, exact horizon and p_raw/p_adjusted only for a valid
↪  contrast. A detected or undetected difference cannot choose a new
↪  endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪  all-unobserved, varying indicator and death-undefined fixtures test
↪  the local regions. Every state is narrated in Table S2 through its
↪  own result slot; no public suppressed value gates computation.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000213/endpoints/parent_care/ascertainment/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000213/endpoints/parent_care/as
↪ certainment/. Cross-component primary files are read from
↪ prereg/runtime/atom-000213/endpoints/parent_care/primary/;
↪ ascertainment and robustness never overwrite primary judgments or
↪ scope.

## parent_care / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪ demonstrably
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪ broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪ horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪ missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪ defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪ point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪ interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪ units, subject
    to the measurement and identification restrictions.
- key: decrease
```

```
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Inferential status: one prespecified directional slot in the 24-slot
↪  study-wide family; conditional causal interpretation for the spring
↪  2015 historical margin only. Endpoint=parent_care; family=family;
↪  fixed horizon=child_days1_to730; display unit=pp. Population and
↪  exact coding: Mean over fixed recorded parents of any
↪  DF32/33/40/41/43 encounter; not restricted to resident mothers.
↪  Incorporate D6/D7 and D1-D3, including individual exclusions,
↪  date-based eligibility, join cardinalities, code dictionaries and
↪  missingness. D7 first-family indexing applies to relatives' outcomes.
↪  No actual graduation, employment, care use, intact family or future
↪  response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the
↪  inclusive historical cutoff, pooled across the endpoint's fixed
↪  baseline-grade strata with pre-outcome count weights. It is neither
↪  the inherent effect of dyslexia nor the effect of a particular
↪  support program. Required identifying variation/assumptions are I1/I2
↪  and remain unproved by diagnostic passes. This endpoint uses no
↪  postbaseline controls. No fuzzy ratio is allowed even if recorded
↪  classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪  verify this endpoint's2015 calendar/dictionaries before values; form
↪  its baseline target and expected outcome row for every eligible
↪  index; assert D2 joins, invalid-code and duplicates dispositions;
↪  build endpoint plus observation/exit indicators; produce missingness
↪  diagnostics without removing the baseline row; apply RD from I3 with
↪  endpoint kind=binary; transform binary risk effects by100 once; fit
↪  available-case sensitivity only when missingness requires it;
↪  calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪  for a complete point estimand, or the simultaneous outer bound
↪  interval for a bounded partially observed endpoint; retain unbounded
↪  missingness as selection_limited. Do not choose another cohort, grade
↪  stratum, time window or definition if this fit lacks support. All
↪  grade strata required by this endpoint must support the fitted
↪  operator; no renormalizing after a stratum fails. Report h/b,
↪  support, clusters, effective n, censoring/exit fractions and
↪  conditional detectable contrast; no power pass threshold.
```

```
Output effects.csv, selection-sensitivity.csv (only when applicable),
↪  diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪  identified bounds put estimate/p values NA and use lower/upper as
↪  outer limits; a missing point estimate must never be plotted at zero.
↪  Required figure: the full causal forest, plus its own registered
↪  robustness display if the internal robustness rule is satisfied. Synt
↪  hetic check: score=0 belongs on red; complete binary endpoint agrees
↪  with ordinary RD after transformation; missing bounded endpoint
↪  widens the extreme interval; missing unbounded endpoint never
↪  produces a full-population causal p-value; dormant slots remain in
↪  the 24 denominator. Software failures get no_result, not uncertain.
↪  Permitted claim ceiling: Parental recorded care cannot quantify
↪  caregiving burden; own recognition is a rival route. Directional
↪  local states do not establish practical importance. A confidence
↪  interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000213/endpoints/parent_care/primary/ and remain
↪  governed until aggregate disclosure approval. Write audit.json and
↪  judgment.json plus the named plot-ready table; G1/G2 define status
↪  and column meanings. No numerical result is populated now. Before
↪  runtime use G3 synthetic join/date/missingness checks and verify
↪  row-order invariance; a failed check prevents output release. Every
↪  result constrains the Molecule under its composable rules; neither
↪  failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000213.
Exact component path: prereg/runtime/atom-000213/endpoints/parent_care/pr
↪  imary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000213/endpoints/parent_care/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## parent_care / robustness
- key: sensitive
```

```
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for parent_care, not an additional primary
↪  discovery. Scope, unit, field/code mapping, population, estimand and
↪  missingness are exactly those of atom-000213 and incorporated D6/D7.
↪  Read its frozen analysis population, weights, primary h/b and saved
↪  aggregate influence outputs; do not reconstruct a more favorable
↪  cohort. For each fixed specification in I4 (primary,half_bandwidth,wi
↪  der_bandwidth,donut), rerun the same local-linear/bias-corrected
↪  operator with the specified h/b changes, same grade weights and
↪  primary 24-slot interval and exploratory nonprimary 95% intervals as
↪  I4; exclude only x==0 for the donut, explicitly changing local
↪  extrapolation. Recompute cluster influence variance and missingness
↪  bounds as needed. No new covariates, grade filters or bandwidth
↪  search. If a specification has insufficient support, its status is
↪  unresolved, never silently omitted. No multiplicity claim is made
↪  from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all fou
↪  r rows in the sensitivity figure with units=pp, including noncomputed
↪  rows. Compare available scalar primary and variant estimates: a sign
↪  reversal or variant point outside the primary interval is sensitive.
↪  For partial bounds use disjoint intervals as sensitive; overlapping
↪  intervals alone cannot prove equality. All variants must be computed
↪  for stable. If primary is selection_limited, variants inherit that
↪  ceiling. Synthetic tests keep identical rows in primary and
↪  recomputation, respect inclusive zero except the expressly registered
↪  donut, and preserve a missing variant row. Consequence: stability is
↪  only consistency over these specified choices, while sensitivity
↪  limits a broad policy conclusion. Parental recorded care cannot
↪  quantify caregiving burden; own recognition is a rival route.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000213/endpoints/parent_care/robustness/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪  computable variant contradicts primary; all failed variants remain
↪  explicit with NA display rows. Stable never follows an unestimable
↪  primary or missing variant. No joint multi-specification coverage is
↪  claimed. Write inference_status and display status under G2,
↪  including unestimable numeric rows. Reproduce exact per-grade h/b
↪  from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000213/endpoints/parent_care/ro
↪  bustness/. Cross-component primary files are read from
↪  prereg/runtime/atom-000213/endpoints/parent_care/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

The root component vector reports each endpoint primary direction/interva
↪  l type, ascertainment decision, robustness decision, and measurement,
↪  horizon, selection and operational restrictions. Within this
↪  experiment, differing outcomes remain independently interpretable.
↪  Mixed signs across different horizons are side-by-side observed
↪  contrasts, not common-population divergence. All graphical and
↪  manuscript bindings use the exact endpoint/component directory above.
```

Registered experiment

Does marginal classification change parental recorded care?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000213`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000214: Sibling school experience

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state, component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Scope and order: this experiment asks whether marginal national-test classification changes sibling school experience. Use all grades 4,5,6,7,8,9. Each endpoint below is a separate slot in the unchanged 24-slot primary family; its ascertainment belongs to the separate 24-slot diagnostic family. No endpoint value activates another endpoint. After the native grade activation passes, first perform each endpoint's own calendar/construct/relative/provenance checks, then ascertainment, primary estimation, and mandatory robustness whenever its primary component is increase/decrease/uncertain/selection_limited. An evidenced primary boundary makes its robustness internally not_activated. Ascertainment can finish even when primary or robustness fails, and primary does not require an insignificant ascertainment test. Robustness no_result never becomes stable. Aggregate only after every scheduled component completes, is evidenced ineligible, or has a recorded operational terminal. Preserve completed components when another fails; if all scientific work fails operationally use Atom terminal no_result.

Internal relatives

- key: usable region: Pretest linkage semantics verified; all known relations have unique valid mappings and unknown roles are explicitly marked. says: Fixed recorded-parent/sibling targets can be studied with their baseline scope limitations.
- key: boundary region: Documentation establishes no dated parental linkage or incompatible key classes, so no baseline family target can be constructed. says:

Family outcomes cannot be attributed to the index child under this delivery; child outcomes remain eligible.

- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Use D7 fixed pretest BEF snapshot, MOR_ID/FAR_ID, FOED_DAG, PNR, FAMILIE_ID and BEFBOP dated address intervals. Parent IDs must share the child PNR linkage class. Assert each child has at most one recorded value per parent role per snapshot; missing roles are unknown, not childless/no carer. Construct sibling sets by nonmissing shared parent; establish baseline school-grade eligibility with prior-month absence. Scan index assessments chronologically with fixed hash ties as D7. Report resident/nonresident parent links, one/two known roles, eligible sibling sets, conflicts and baseline missingness. This is the scope of recorded kinship, not validation of genetic relatedness or caregiving. Output diagnostics.csv with linkage proportions and conflict dispositions. No substantive outcome needed; no p-values. Synthetic fixture: two children with missing fathers are not siblings, subsequent births are excluded, later parental diagnosis cannot change roster. A complete roster at birth does not guarantee future response. Family branch uses only scientifically interpretable pretest links.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000214/relatives/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

sibling_belonging / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.

- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000214, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events. For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000214/endpoints/sibling_belonging/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column

meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000214/endpoints/sibling_belonging/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000214/endpoints/sibling_belonging/primary/; ascertainment and robustness never overwrite primary judgments or scope.

sibling_belonging / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata. says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.
- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=sibling_belonging; family=family; fixed horizon=first_full_school_year; display unit=pp. Population and exact coding: Mean low-belonging outcome among fixed baseline siblings aged9–14 in grades4–7; no eligible siblings means outside this estimand. Incorporate D4/D7 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=binary; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must support the fitted operator; no renormalizing after a stratum fails. Report h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Sibling experience is independently consequential and does not identify resource diversion. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000214/endpoints/sibling_belonging/primary/ and remain governed until aggregate

disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values; exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000214. Exact component path: prereg/runtime/atom-000214/endpoints/sibling_belonging/primary/. Cross-component primary files are read from prereg/runtime/atom-000214/endpoints/sibling_belonging/primary/; ascertainment and robustness never overwrite primary judgments or scope.

sibling_belonging / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for sibling_belonging, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000214 and incorporated D4/D7. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=pp, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. Sibling experience is independently consequential and does not identify resource diversion.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000214/endpoints/sibling_belonging/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000214/endpoints/sibling_belonging/robustness/. Cross-component primary files are read from prereg/runtime/atom-000214/endpoints/sibling_belonging/primary/; ascertainment and robustness never overwrite primary judgments or scope.

The root component vector reports each endpoint primary direction/interval type, ascertainment decision, robustness decision, and measurement, horizon, selection and operational restrictions. Within this experiment, differing outcomes remain independently interpretable. Mixed signs across different horizons are side-by-side observed

contrasts, not common-population divergence. All graphical and manuscript bindings use the exact endpoint/component directory above.

Complete registration fields

```
id: atom-000214
topic: Sibling school experience
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: Does marginal classification change sibling school experience?
  rationale: Siblings' school belonging is an independently consequential
    spillover question on a baseline sibling roster; parental-care or resource
    failures cannot suppress it.
  assumption: Administrative recognition can affect opportunities, reporting
    and service contact through multiple routes; exact source semantics and
    continuity require evidence, not an estimator label. See literature.md
    and identification.md.
  target_strength: causal
  target_shape: comparison
  ratings:
    importance: 5
    novelty: 3
    feasibility: 2
    data_advantage: 4
    informativeness: 0.5
  tables:
  - BEF
  - BEFBOP
  - DOD
  - UDD_FOLKESKOLE_FRAVAER_STIL
  - UDD_ORDBLINDETEST
  - UDD_TRIVSEL_STORE_KLASSER
  - VNDS
  activation: state(atom-000001) == "ready" AND state(atom-000002) ==
  ↪  "compatible"
    AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000505) == "eligible_sharp" OR state(atom-000505) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000506) == "eligible_sharp" OR state(atom-000506) ==
    ↪  "eligible_nonsharp")
  verdicts:
  - key: sensitive
    region: At least one endpoint has a computed I4 sensitivity contradiction.
      This precedence applies even if another endpoint/variant fails.
```

```
  says: Name every affected endpoint and variant; retain all primary
  ↪ estimates
    and independent component failures without replacing a primary.
- key: mixed_direction
  region: No preceding region; at least one qualified increase and one
  ↪ qualified
    decrease among this experiment's endpoints. Qualified means valid
    ↪ primary
    interval/bounds and stable own robustness.
  says: Report the discordant endpoint directions in their original
  ↪ units/scopes;
    do not average or assign a common welfare sign.
- key: directional
  region: No preceding region; at least one endpoint is a qualified increase
    or decrease. Other endpoints may be uncertain, selected, boundary,
    ↪ failed
    or unresolved.
  says: Report only named qualified directions and every other endpoint's
    disposition. This does not imply the entire domain changed or that all
    endpoints were available.
- key: uncertain
  region: No preceding region; at least one endpoint has a valid primary
    interval/bounds, but no qualified direction.
  says: Report exact intervals and endpoint-specific robustness
  ↪ restrictions;
    zero-containing intervals and unresolved robustness remain different
    cases, neither equivalence.
- key: boundary
  region: No preceding region; every endpoint has an evidenced measurement
    or horizon/population boundary.
  says: This scientific question cannot be evaluated under the frozen
  ↪ target;
    report component-specific reasons, never a null.
- key: restricted
  region: No preceding region; at least one endpoint supplies completed
    evidence of selection_limited or unestimable inference.
  says: Report the surviving selected/unestimable evidence and independent
    failures; no all-eligible directional claim.
- key: otherwise
  region: otherwise
  says: The experiment remains unresolved. Preserve every component state,
    terminal and unavailable reason; operational failure is not
    ↪ insignificance.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪ Atoms or activation primitives. Execute every prescribed component
  ↪ that is scientifically eligible, independently of other component
  ↪ signs. Component outputs retain their own local decision, inference
  ↪ and operational status; only the native judgment.json at the Atom
  ↪ root supplies the Atom local state. No component failure can erase
  ↪ completed evidence in another component. When no scientific component
  ↪ completes because execution fails, set terminal no_result with no
  ↪ Atom local state. Otherwise aggregate only by the ordered registered
  ↪ regions and record every component's failure, boundary, unknown or
  ↪ inactive disposition. Pending necessary evidence stays pending; it is
  ↪ never coded as negative evidence. Internal failed work is not
  ↪ automatically retried.
```

```
Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
↪  definitions. These fix population, dates, table/field dictionaries,
↪  code versions, joins, inference, missingness, outputs and synthetic c
↪  hecks. A dictionary crosswalk is semantic verification before outcome
↪  values, not a new scientific choice. Keep all endpoint-specific
↪  units, horizons and Bonferroni allocations; grouping introduces no
↪  average outcome, composite score, new hypothesis or additional alpha.
↪  Write root audit.json, status.json, judgment.json and components.csv
↪  with component, outcome, component_state, component_terminal,
↪  inference_status, reason, evidence_path. Components.csv is an
↪  evidence index under this protocol, never a second experiment graph.
↪  Suppression is applied after governed adjudication, and cannot govern
↪  activation or disclose protected directions.

Scope and order: this experiment asks whether marginal national-test
↪  classification changes sibling school experience. Use all grades
↪  4,5,6,7,8,9. Each endpoint below is a separate slot in the unchanged
↪  24-slot primary family; its ascertainment belongs to the separate
↪  24-slot diagnostic family. No endpoint value activates another
↪  endpoint. After the native grade activation passes, first perform
↪  each endpoint's own calendar/construct/relative/provenance checks,
↪  then ascertainment, primary estimation, and mandatory robustness
↪  whenever its primary component is
↪  increase/decrease/uncertain/selection_limited. An evidenced primary
↪  boundary makes its robustness internally not_activated. Ascertainment
↪  can finish even when primary or robustness fails, and primary does
↪  not require an insignificant ascertainment test. Robustness no_result
↪  never becomes stable. Aggregate only after every scheduled component
↪  completes, is evidenced ineligible, or has a recorded operational
↪  terminal. Preserve completed components when another fails; if all
↪  scientific work fails operationally use Atom terminal no_result.

## Internal relatives
- key: usable
  region: Pretest linkage semantics verified; all known relations have
  ↪  unique valid
    mappings and unknown roles are explicitly marked.
  says: Fixed recorded-parent/sibling targets can be studied with their
  ↪  baseline scope
    limitations.
- key: boundary
  region: Documentation establishes no dated parental linkage or
  ↪  incompatible key
    classes, so no baseline family target can be constructed.
  says: Family outcomes cannot be attributed to the index child under
  ↪  this delivery;
    child outcomes remain eligible.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Use D7 fixed pretest BEF snapshot, MOR_ID/FAR_ID, FOED_DAG, PNR,
↪  FAMILIE_ID and BEFBOP dated address intervals. Parent IDs must share
↪  the child PNR linkage class. Assert each child has at most one
↪  recorded value per parent role per snapshot; missing roles are
↪  unknown, not childless/no carer. Construct sibling sets by nonmissing
↪  shared parent; establish baseline school-grade eligibility with
↪  prior-month absence. Scan index assessments chronologically with
↪  fixed hash ties as D7. Report resident/nonresident parent links,
↪  one/two known roles, eligible sibling sets, conflicts and baseline
↪  missingness. This is the scope of recorded kinship, not validation of
↪  genetic relatedness or caregiving. Output diagnostics.csv with
↪  linkage proportions and conflict dispositions. No substantive outcome
↪  needed; no p-values. Synthetic fixture: two children with missing
↪  fathers are not siblings, subsequent births are excluded, later
↪  parental diagnosis cannot change roster. A complete roster at birth
↪  does not guarantee future response. Family branch uses only
↪  scientifically interpretable pretest links.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000214/relat
↪  ives/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## sibling_belonging / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
```

```
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
Internal ascertainment diagnostic on exactly the baseline-eligible
↪  population and horizon of atom-000214, with the same
↪  table/field/version/join/exit definitions, fixed grades and baseline
↪  weights. Do not require that primary to finish and do not use its
↪  sign. First construct whether the registered endpoint is defined and
↪  observed for each baseline index; no value or realized employment
↪  changes eligibility. Atom-specific D9 calibration/correction checks
↪  still apply. For defined event-before-exit outcomes, complete event
↪  universe establishes observation even for zero events. For undefined
↪  after-death school/state outcomes, report undefined proportion
↪  separately; never classify death as a negative symptom. Apply I5
↪  constant handling to the observation indicator; documentary
↪  arithmetic can be structural_complete, observed constants have no
↪  p-value. Otherwise apply I3 as a binary outcome without outcome
↪  missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪  is distinct from the 24 primary outcomes and baseline48. Output
↪  ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪  diagnostics.csv, audit.json, judgment.json. Include observation
↪  fractions by side, undefined/death/emigration counts and
↪  denominators, exact horizon and p_raw/p_adjusted only for a valid
↪  contrast. A detected or undetected difference cannot choose a new
↪  endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪  all-unobserved, varying indicator and death-undefined fixtures test
↪  the local regions. Every state is narrated in Table S2 through its
↪  own result slot; no public suppressed value gates computation.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000214/endpoints/sibling_belonging/ascertainment/
↪  and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000214/endpoints/sibling_belong
↪  ing/ascertainment/. Cross-component primary files are read from
↪  prereg/runtime/atom-000214/endpoints/sibling_belonging/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## sibling_belonging / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪  demonstrably
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
```

```
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Inferential status: one prespecified directional slot in the 24-slot
↪  study-wide family; conditional causal interpretation for the spring
↪  2015 historical margin only. Endpoint=sibling_belonging;
↪  family=family; fixed horizon=first_full_school_year; display unit=pp.
↪  Population and exact coding: Mean low-belonging outcome among fixed
↪  baseline siblings aged9-14 in grades4-7; no eligible siblings means
↪  outside this estimand. Incorporate D4/D7 and D1-D3, including
↪  individual exclusions, date-based eligibility, join cardinalities,
↪  code dictionaries and missingness. D7 first-family indexing applies
↪  to relatives' outcomes. No actual graduation, employment, care use,
↪  intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the
↪  inclusive historical cutoff, pooled across the endpoint's fixed
↪  baseline-grade strata with pre-outcome count weights. It is neither
↪  the inherent effect of dyslexia nor the effect of a particular
↪  support program. Required identifying variation/assumptions are I1/I2
↪  and remain unproved by diagnostic passes. This endpoint uses no
↪  postbaseline controls. No fuzzy ratio is allowed even if recorded
↪  classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪  verify this endpoint's2015 calendar/dictionaries before values; form
↪  its baseline target and expected outcome row for every eligible
↪  index; assert D2 joins, invalid-code and duplicates dispositions;
↪  build endpoint plus observation/exit indicators; produce missingness
↪  diagnostics without removing the baseline row; apply RD from I3 with
↪  endpoint kind=binary; transform binary risk effects by100 once; fit
↪  available-case sensitivity only when missingness requires it;
↪  calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪  for a complete point estimand, or the simultaneous outer bound
↪  interval for a bounded partially observed endpoint; retain unbounded
↪  missingness as selection_limited. Do not choose another cohort, grade
↪  stratum, time window or definition if this fit lacks support. All
↪  grade strata required by this endpoint must support the fitted
↪  operator; no renormalizing after a stratum fails. Report h/b,
↪  support, clusters, effective n, censoring/exit fractions and
↪  conditional detectable contrast; no power pass threshold.
```

```
Output effects.csv, selection-sensitivity.csv (only when applicable),
↪  diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪  identified bounds put estimate/p values NA and use lower/upper as
↪  outer limits; a missing point estimate must never be plotted at zero.
↪  Required figure: the full causal forest, plus its own registered
↪  robustness display if the internal robustness rule is satisfied. Synt
↪  hetic check: score=0 belongs on red; complete binary endpoint agrees
↪  with ordinary RD after transformation; missing bounded endpoint
↪  widens the extreme interval; missing unbounded endpoint never
↪  produces a full-population causal p-value; dormant slots remain in
↪  the 24 denominator. Software failures get no_result, not uncertain.
↪  Permitted claim ceiling: Sibling experience is independently
↪  consequential and does not identify resource diversion. Directional
↪  local states do not establish practical importance. A confidence
↪  interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000214/endpoints/sibling_belonging/primary/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000214.
Exact component path: prereg/runtime/atom-000214/endpoints/sibling_belong
↪  ing/primary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000214/endpoints/sibling_belonging/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## sibling_belonging / robustness
- key: sensitive
```

```
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for sibling_belonging, not an additional
↪  primary discovery. Scope, unit, field/code mapping, population,
↪  estimand and missingness are exactly those of atom-000214 and
↪  incorporated D4/D7. Read its frozen analysis population, weights,
↪  primary h/b and saved aggregate influence outputs; do not reconstruct
↪  a more favorable cohort. For each fixed specification in I4
↪  (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-
↪  linear/bias-corrected operator with the specified h/b changes, same
↪  grade weights and primary 24-slot interval and exploratory nonprimary
↪  95% intervals as I4; exclude only x==0 for the donut, explicitly
↪  changing local extrapolation. Recompute cluster influence variance
↪  and missingness bounds as needed. No new covariates, grade filters or
↪  bandwidth search. If a specification has insufficient support, its
↪  status is unresolved, never silently omitted. No multiplicity claim
↪  is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all fou
↪  r rows in the sensitivity figure with units=pp, including noncomputed
↪  rows. Compare available scalar primary and variant estimates: a sign
↪  reversal or variant point outside the primary interval is sensitive.
↪  For partial bounds use disjoint intervals as sensitive; overlapping
↪  intervals alone cannot prove equality. All variants must be computed
↪  for stable. If primary is selection_limited, variants inherit that
↪  ceiling. Synthetic tests keep identical rows in primary and
↪  recomputation, respect inclusive zero except the expressly registered
↪  donut, and preserve a missing variant row. Consequence: stability is
↪  only consistency over these specified choices, while sensitivity
↪  limits a broad policy conclusion. Sibling experience is independently
↪  consequential and does not identify resource diversion.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000214/endpoints/sibling_belonging/robustness/
↪ and remain governed until aggregate disclosure approval. Write
↪ audit.json and judgment.json plus the named plot-ready table; G1/G2
↪ define status and column meanings. No numerical result is populated
↪ now. Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪ computable variant contradicts primary; all failed variants remain
↪ explicit with NA display rows. Stable never follows an unestimable
↪ primary or missing variant. No joint multi-specification coverage is
↪ claimed. Write inference_status and display status under G2,
↪ including unestimable numeric rows. Reproduce exact per-grade h/b
↪ from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000214/endpoints/sibling_belong
↪ ing/robustness/. Cross-component primary files are read from
↪ prereg/runtime/atom-000214/endpoints/sibling_belonging/primary/;
↪ ascertainment and robustness never overwrite primary judgments or
↪ scope.

The root component vector reports each endpoint primary direction/interva
↪ l type, ascertainment decision, robustness decision, and measurement,
↪ horizon, selection and operational restrictions. Within this
↪ experiment, differing outcomes remain independently interpretable.
↪ Mixed signs across different horizons are side-by-side observed
↪ contrasts, not common-population divergence. All graphical and
↪ manuscript bindings use the exact endpoint/component directory above.
```

Registered experiment

Does marginal classification change sibling school experience?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000214`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000215: Household material resources

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state, component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Scope and order: this experiment asks whether marginal national-test classification changes household material resources. Use all grades 4,5,6,7,8,9. Each endpoint below is a separate slot in the unchanged 24-slot primary family; its ascertainment belongs to the separate 24-slot diagnostic family. No endpoint value activates another endpoint. After the native grade activation passes, first perform each endpoint's own calendar/construct/relative/provenance checks, then ascertainment, primary estimation, and mandatory robustness whenever its primary component is increase/decrease/uncertain/selection_limited. An evidenced primary boundary makes its robustness internally not_activated. Ascertainment can finish even when primary or robustness fails, and primary does not require an insignificant ascertainment test. Robustness no_result never becomes stable. Aggregate only after every scheduled component completes, is evidenced ineligible, or has a recorded operational terminal. Preserve completed components when another fails; if all scientific work fails operationally use Atom terminal no_result.

Internal income-provenance

- key: corrected region: D9 exact delivery/variable/year correction provenance is complete. says: Interpret the delivered variable under the documented corrected definition; runtime value and join validity remain separate.

- key: known_uncorrected region: D9 provenance explicitly identifies the uncorrected historical variable. says: Use only the frozen recorded-income proxy interpretation; no intended-resource or welfare conclusion.
- key: unresolved region: Neither correction status is established, including contradictory or absent documentation. says: Retain a correction-unverified recorded-income proxy; do not infer corrected status from vintage or suffix.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Documentation-only pre-outcome judgment, unit delivery-variable-year. Incorporate D9 exactly. Check dated release notes and the allowed table provenance against the official DST income pages cited there. No rows or estimates needed. For FAIK.FAMAEKVIVADISP_13, primary year=2016; additionally report each affected descriptive year separately. Preserve PNR/year (IND) or FAMILIE_ID/year (FAIK) key class and D2 reference alignment; no row-level joins performed by this Atom. First match corrected, known_uncorrected, unresolved; otherwise covers contradictory execution evidence not a transport failure. No estimator, SE, multiplicity or equivalence test. Write correction.csv: table, variable, reference_year, delivery_id, correction_status, source_locator, criterion, status, reason. Required correction status is decided before related values are opened; no field substitution or municipality removal. Synthetic checks: a recent delivery and _13 alone yield unresolved; an explicit uncorrected manifest yields known_uncorrected; only exact documented propagation qualifies corrected. Effects retain the same numeric proxy under noncorrected states, with restrictions in the Molecule and paper. Missing variable becomes the consuming endpoint measurement_boundary; this Atom does not manufacture income.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000215/income-provenance/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Year-specific descriptive provenance: in addition to the primary 2016 judgment, correction.csv contains one adjudicated record for each delivered

FAIK.FAMAEKVIVADISP_13 reference year 2016–2024 used by atom-000113. No 2016 local state is propagated to another year. Apply D9 separately to the exact delivery-variable-year; preserve known year-specific recording issues, including the separately documented 2019 correction, rather than assuming every issue is the 2014–2016 error. corrected requires an exact dated provider provenance statement establishing the intended definition and resolution of applicable documented issues in that delivered year; merely being outside 2014–2016 or newly delivered is insufficient. known_uncorrected requires explicit affected-version evidence for that year; otherwise unresolved. This retains the three existing dispositions without assuming favorable later years. Add delivery_checksum and provenance_id (unique release-safe record identifier) to correction.csv; retain full source_locator and criterion in the governed record. Its unique key is (table,variable,reference_year,delivery_id), one record per key. Conflicting source claims are one adjudicated unresolved record, never duplicate conflicting rows. An omitted/inaccessible record is unavailable binding, distinct from an adjudicated unresolved correction. atom-000113 may perform this same documentation check locally when the primary-2016 diagnostic is unrun; it must preserve the same key and criteria in its own income-provenance.csv, not infer a local result for this Atom. Descriptive work is not globally gated by this Atom. The local D9 family-income audit state remains the 2016 judgment only; supplementary years are interface provenance, not new effect tests. ## family_resources / ascertainment - key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference. - key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible. - key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim. - key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random. - key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate. - key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000215, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Ascertainment requires each source-stratum construct and observation flag, not common-scale pooling or historical income correction. A reading calibration-link failure does not prevent judging whether a documented scheduled reading test was observed. Income correction uncertainty does not prevent judging presence of its recorded variable. Common-scale and intended-resource interpretations remain restricted in the primary Atom. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events.

For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000215/endpoints/family_resources/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000215/endpoints/family_resources/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000215/endpoints/family_resources/primary/; ascertainment and robustness never overwrite primary judgments or scope.

family_resources / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata. says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.
- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.

- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=family_resources; family=family; fixed horizon=calendar_year_after_test; display unit=1000_DKK. Population and exact coding: FAIK.FAMAEKVIVADISP_13/1000 via child current December FAMILIE_ID in year(t0)+1. Incorporate D7 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=unbounded; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must support the fitted operator; no renormalizing after a stratum fails. Report

h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Current equivalized family resources include household composition; they are not consumption or transfers. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000215/endpoints/family_resources/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values; exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000215. Read D9 family-income audit status before values. Corrected licenses the intended documented measure;

known_uncorrected/unresolved uses the frozen recorded-income proxy with correction_status preserved. An operationally failed status check prevents value analysis (no_result), not an assumed correction.

Mandatory figure interface: the G2 family-income display contract is part of this protocol. Copy correction_status, interpretation_ceiling, metadata_status and scope_id from the same frozen primary scope into every effects/robustness row, including unavailable specifications. Correction metadata cannot change with bandwidth or sign. In the governed exporter assert one-to-one scope binding and equality with D9 family-income audit; public scope_id is an opaque release-safe label, not a person-set digest. Corrected maps to documented_resources, known_uncorrected/unresolved maps to recorded_income_proxy. Missing evidence produces an explicit unavailable_metadata ceiling with NA values, never a resource claim. Preserve horizon and interval_alpha on each robustness row: primary .05/24, sensitivities .05. Figures6/7 must display the proxy and correction restriction visibly under G2. No estimator, endpoint or uncertainty allocation changes. Exact component path: prereg/runtime/atom-000215/endpoints/family_resources/primary/. Cross-component primary files are read from prereg/runtime/atom-000215/endpoints/family_resources/primary/; ascertainment and robustness never overwrite primary judgments or scope.

family_resources / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for family_resources, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000215 and incorporated D7. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=1000_DKK, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. Current equivalized family resources include household composition; they are not consumption or transfers.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000215/endpoints/family_resources/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys.

Mandatory figure interface: the G2 family-income display contract is part of this protocol. Copy correction_status, interpretation_ceiling, metadata_status and scope_id from the same frozen primary scope into every effects/robustness row, including unavailable specifications. Correction metadata cannot change with bandwidth or sign. In the governed exporter assert one-to-one scope binding and equality with D9 family-income audit; public scope_id is an opaque release-safe label, not a person-set digest. Corrected maps to documented_resources, known_uncorrected/unresolved maps to recorded_income_proxy. Missing evidence produces an explicit unavailable_metadata ceiling with NA

values, never a resource claim. Preserve horizon and interval_alpha on each robustness row: primary .05/24, sensitivities .05. Figures6/7 must display the proxy and correction restriction visibly under G2. No estimator, endpoint or uncertainty allocation changes. Exact component path: prereg/runtime/atom-000215/endpoints/family_resources/robustness/. Cross-component primary files are read from prereg/runtime/atom-000215/endpoints/family_resources/primary/; ascertainment and robustness never overwrite primary judgments or scope.

The root component vector reports each endpoint primary direction/interval type, ascertainment decision, robustness decision, and measurement, horizon, selection and operational restrictions. Within this experiment, differing outcomes remain independently interpretable. Mixed signs across different horizons are side-by-side observed contrasts, not common-population divergence. All graphical and manuscript bindings use the exact endpoint/component directory above.

Complete registration fields

```
id: atom-000215
topic: Household material resources
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: Does marginal classification change household material resources?
  rationale: Current household equivalized income addresses material
  ↪  circumstances
    and reconstitution; parents' earnings do not substitute for it. Provenance
    limits belong inside this experiment.
  assumption: Administrative recognition can affect opportunities, reporting
    and service contact through multiple routes; exact source semantics and
    continuity require evidence, not an estimator label. See literature.md
    and identification.md.
  target_strength: causal
  target_shape: comparison
  ratings:
    importance: 5
    novelty: 3
    feasibility: 2
    data_advantage: 4
    informativeness: 0.5
  tables:
  - BEF
  - BEFBOP
  - DOD
  - FAIK
  - UDD_FOLKESKOLE_FRAVAER_STIL
  - UDD_ORDBLINDETEST
  - VNDS
  activation: state(atom-000001) == "ready" AND state(atom-000002) ==
  ↪  "compatible"
```

```
  AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000505) == "eligible_sharp" OR state(atom-000505) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000506) == "eligible_sharp" OR state(atom-000506) ==
  ↪  "eligible_nonsharp")
verdicts:
- key: sensitive
  region: At least one endpoint has a computed I4 sensitivity contradiction.
    This precedence applies even if another endpoint/variant fails.
  says: Name every affected endpoint and variant; retain all primary
  ↪  estimates
    and independent component failures without replacing a primary.
- key: mixed_direction
  region: No preceding region; at least one qualified increase and one
  ↪  qualified
    decrease among this experiment's endpoints. Qualified means valid
    ↪  primary
    interval/bounds and stable own robustness.
  says: Report the discordant endpoint directions in their original
  ↪  units/scopes;
    do not average or assign a common welfare sign.
- key: directional
  region: No preceding region; at least one endpoint is a qualified increase
    or decrease. Other endpoints may be uncertain, selected, boundary,
    ↪  failed
    or unresolved.
  says: Report only named qualified directions and every other endpoint's
    disposition. This does not imply the entire domain changed or that all
    endpoints were available.
- key: uncertain
  region: No preceding region; at least one endpoint has a valid primary
    interval/bounds, but no qualified direction.
  says: Report exact intervals and endpoint-specific robustness
  ↪  restrictions;
    zero-containing intervals and unresolved robustness remain different
    cases, neither equivalence.
- key: boundary
  region: No preceding region; every endpoint has an evidenced measurement
    or horizon/population boundary.
  says: This scientific question cannot be evaluated under the frozen
  ↪  target;
    report component-specific reasons, never a null.
- key: restricted
  region: No preceding region; at least one endpoint supplies completed
    evidence of selection_limited or unestimable inference.
  says: Report the surviving selected/unestimable evidence and independent
    failures; no all-eligible directional claim.
- key: otherwise
  region: otherwise
  says: The experiment remains unresolved. Preserve every component state,
    terminal and unavailable reason; operational failure is not
    ↪  insignificance.
protocol: |2-
```

```
This is one scientific experiment. Internal components are not additional
↪  Atoms or activation primitives. Execute every prescribed component
↪  that is scientifically eligible, independently of other component
↪  signs. Component outputs retain their own local decision, inference
↪  and operational status; only the native judgment.json at the Atom
↪  root supplies the Atom local state. No component failure can erase
↪  completed evidence in another component. When no scientific component
↪  completes because execution fails, set terminal no_result with no
↪  Atom local state. Otherwise aggregate only by the ordered registered
↪  regions and record every component's failure, boundary, unknown or
↪  inactive disposition. Pending necessary evidence stays pending; it is
↪  never coded as negative evidence. Internal failed work is not
↪  automatically retried.
Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
↪  definitions. These fix population, dates, table/field dictionaries,
↪  code versions, joins, inference, missingness, outputs and synthetic c
↪  hecks. A dictionary crosswalk is semantic verification before outcome
↪  values, not a new scientific choice. Keep all endpoint-specific
↪  units, horizons and Bonferroni allocations; grouping introduces no
↪  average outcome, composite score, new hypothesis or additional alpha.
↪  Write root audit.json, status.json, judgment.json and components.csv
↪  with component, outcome, component_state, component_terminal,
↪  inference_status, reason, evidence_path. Components.csv is an
↪  evidence index under this protocol, never a second experiment graph.
↪  Suppression is applied after governed adjudication, and cannot govern
↪  activation or disclose protected directions.

Scope and order: this experiment asks whether marginal national-test
↪  classification changes household material resources. Use all grades
↪  4,5,6,7,8,9. Each endpoint below is a separate slot in the unchanged
↪  24-slot primary family; its ascertainment belongs to the separate
↪  24-slot diagnostic family. No endpoint value activates another
↪  endpoint. After the native grade activation passes, first perform
↪  each endpoint's own calendar/construct/relative/provenance checks,
↪  then ascertainment, primary estimation, and mandatory robustness
↪  whenever its primary component is
↪  increase/decrease/uncertain/selection_limited. An evidenced primary
↪  boundary makes its robustness internally not_activated. Ascertainment
↪  can finish even when primary or robustness fails, and primary does
↪  not require an insignificant ascertainment test. Robustness no_result
↪  never becomes stable. Aggregate only after every scheduled component
↪  completes, is evidenced ineligible, or has a recorded operational
↪  terminal. Preserve completed components when another fails; if all
↪  scientific work fails operationally use Atom terminal no_result.

## Internal income-provenance
- key: corrected
  region: D9 exact delivery/variable/year correction provenance is
  ↪  complete.
  says: Interpret the delivered variable under the documented corrected
  ↪  definition;
    runtime value and join validity remain separate.
- key: known_uncorrected
  region: D9 provenance explicitly identifies the uncorrected historical
  ↪  variable.
  says: Use only the frozen recorded-income proxy interpretation; no
  ↪  intended-resource
    or welfare conclusion.
```

```
- key: unresolved
  region: Neither correction status is established, including
  ↪  contradictory or absent
    documentation.
  says: Retain a correction-unverified recorded-income proxy; do not
  ↪  infer corrected
    status from vintage or suffix.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
Documentation-only pre-outcome judgment, unit delivery-variable-year.
↪  Incorporate D9 exactly. Check dated release notes and the allowed
↪  table provenance against the official DST income pages cited there.
↪  No rows or estimates needed. For FAIK.FAMAEKVIVADISP_13, primary
↪  year=2016; additionally report each affected descriptive year
↪  separately. Preserve PNR/year (IND) or FAMILIE_ID/year (FAIK) key
↪  class and D2 reference alignment; no row-level joins performed by
↪  this Atom. First match corrected, known_uncorrected, unresolved;
↪  otherwise covers contradictory execution evidence not a transport
↪  failure. No estimator, SE, multiplicity or equivalence test. Write
↪  correction.csv: table, variable, reference_year, delivery_id,
↪  correction_status, source_locator, criterion, status, reason.
↪  Required correction status is decided before related values are
↪  opened; no field substitution or municipality removal. Synthetic
↪  checks: a recent delivery and _13 alone yield unresolved; an explicit
↪  uncorrected manifest yields known_uncorrected; only exact documented
↪  propagation qualifies corrected. Effects retain the same numeric
↪  proxy under noncorrected states, with restrictions in the Molecule
↪  and paper. Missing variable becomes the consuming endpoint
↪  measurement_boundary; this Atom does not manufacture income.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and prereg/i
↪  dentification.md I1-I4 for estimands and inference. These shared
↪  definitions are part of this Atom's protocol, not optional guidance.
↪  Apply ordered checks before model fitting: delivered schema/dictionar
↪  y; date and unit semantics; unique keys and duplicate disposition;
↪  baseline and horizon eligibility; outcome construction; missingness
↪  and inference; local adjudication. Never inspect a postbaseline
↪  estimate to repair an earlier choice. A demonstrably incompatible
↪  construct is an evidenced boundary; unresolved documentation reaches
↪  otherwise. A transport/access/software failure yields terminal
↪  no_result with no local state. Apply the listed verdict regions in
↪  order, first matching region wins; otherwise is exhaustive. All
↪  future outputs go to prereg/runtime/atom-000215/income-provenance/
↪  and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

```
Year-specific descriptive provenance: in addition to the primary 2016
↪  judgment, correction.csv contains one adjudicated record for each
↪  delivered FAIK.FAMAEKVIVADISP_13 reference year 2016-2024 used by
↪  atom-000113. No 2016 local state is propagated to another year. Apply
↪  D9 separately to the exact delivery-variable-year; preserve known yea
↪  r-specific recording issues, including the separately documented 2019
↪  correction, rather than assuming every issue is the 2014-2016 error.
↪  corrected requires an exact dated provider provenance statement
↪  establishing the intended definition and resolution of applicable
↪  documented issues in that delivered year; merely being outside
↪  2014-2016 or newly delivered is insufficient. known_uncorrected
↪  requires explicit affected-version evidence for that year; otherwise
↪  unresolved. This retains the three existing dispositions without assu
↪  ming favorable later years. Add delivery_checksum and provenance_id
↪  (unique release-safe record identifier) to correction.csv; retain
↪  full source_locator and criterion in the governed record. Its unique
↪  key is (table,variable,reference_year,delivery_id), one record per
↪  key. Conflicting source claims are one adjudicated unresolved record,
↪  never duplicate conflicting rows. An omitted/inaccessible record is
↪  unavailable binding, distinct from an adjudicated unresolved
↪  correction. atom-000113 may perform this same documentation check
↪  locally when the primary-2016 diagnostic is unrun; it must preserve
↪  the same key and criteria in its own income-provenance.csv, not infer
↪  a local result for this Atom. Descriptive work is not globally gated
↪  by this Atom. The local D9 family-income audit state remains the 2016
↪  judgment only; supplementary years are interface provenance, not new
↪  effect tests.
## family_resources / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
```

```
    negative or favorable inference.
Internal ascertainment diagnostic on exactly the baseline-eligible
↪  population and horizon of atom-000215, with the same table/field/vers⌋
↪  ion/join/exit definitions, fixed grades and baseline weights. Do not
↪  require that primary to finish and do not use its sign. First constru⌋
↪  ct whether the registered endpoint is defined and observed for each
↪  baseline index; no value or realized employment changes eligibility.
↪  Ascertainment requires each source-stratum construct and observation
↪  flag, not common-scale pooling or historical income correction. A
↪  reading calibration-link failure does not prevent judging whether a
↪  documented scheduled reading test was observed. Income correction
↪  uncertainty does not prevent judging presence of its recorded
↪  variable. Common-scale and intended-resource interpretations remain
↪  restricted in the primary Atom. For defined event-before-exit
↪  outcomes, complete event universe establishes observation even for
↪  zero events. For undefined after-death school/state outcomes, report
↪  undefined proportion separately; never classify death as a negative
↪  symptom. Apply I5 constant handling to the observation indicator;
↪  documentary arithmetic can be structural_complete, observed constants
↪  have no p-value. Otherwise apply I3 as a binary outcome without
↪  outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This
↪  budget is distinct from the 24 primary outcomes and baseline48.
↪  Output ascertainment.csv (G2) plus estimator-components.csv for any
↪  fit, diagnostics.csv, audit.json, judgment.json. Include observation
↪  fractions by side, undefined/death/emigration counts and
↪  denominators, exact horizon and p_raw/p_adjusted only for a valid
↪  contrast. A detected or undetected difference cannot choose a new
↪  endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪  all-unobserved, varying indicator and death-undefined fixtures test
↪  the local regions. Every state is narrated in Table S2 through its
↪  own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000215/endpoints/family_resources/ascertainment/
↪  and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

```
Exact component path: prereg/runtime/atom-000215/endpoints/family_resourc
↪  es/ascertainment/. Cross-component primary files are read from
↪  prereg/runtime/atom-000215/endpoints/family_resources/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## family_resources / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪  demonstrably
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Inferential status: one prespecified directional slot in the 24-slot stud
↪ y-wide family; conditional causal interpretation for the spring 2015
↪ historical margin only. Endpoint=family_resources; family=family;
↪ fixed horizon=calendar_year_after_test; display unit=1000_DKK. Popula
↪ tion and exact coding: FAIK.FAMAEKVIVADISP_13/1000 via child current
↪ December FAMILIE_ID in year(t0)+1. Incorporate D7 and D1-D3, includin
↪ g individual exclusions, date-based eligibility, join cardinalities,
↪ code dictionaries and missingness. D7 first-family indexing applies
↪ to relatives' outcomes. No actual graduation, employment, care use,
↪ intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the
↪ inclusive historical cutoff, pooled across the endpoint's fixed
↪ baseline-grade strata with pre-outcome count weights. It is neither
↪ the inherent effect of dyslexia nor the effect of a particular
↪ support program. Required identifying variation/assumptions are I1/I2
↪ and remain unproved by diagnostic passes. This endpoint uses no
↪ postbaseline controls. No fuzzy ratio is allowed even if recorded
↪ classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪ verify this endpoint's2015 calendar/dictionaries before values; form
↪ its baseline target and expected outcome row for every eligible
↪ index; assert D2 joins, invalid-code and duplicates dispositions;
↪ build endpoint plus observation/exit indicators; produce missingness
↪ diagnostics without removing the baseline row; apply RD from I3 with
↪ endpoint kind=unbounded; transform binary risk effects by100 once;
↪ fit available-case sensitivity only when missingness requires it;
↪ calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪ for a complete point estimand, or the simultaneous outer bound
↪ interval for a bounded partially observed endpoint; retain unbounded
↪ missingness as selection_limited. Do not choose another cohort, grade
↪ stratum, time window or definition if this fit lacks support. All
↪ grade strata required by this endpoint must support the fitted
↪ operator; no renormalizing after a stratum fails. Report h/b,
↪ support, clusters, effective n, censoring/exit fractions and
↪ conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable),
↪ diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪ identified bounds put estimate/p values NA and use lower/upper as
↪ outer limits; a missing point estimate must never be plotted at zero.
↪ Required figure: the full causal forest, plus its own registered
↪ robustness display if the internal robustness rule is satisfied. Synt
↪ hetic check: score=0 belongs on red; complete binary endpoint agrees
↪ with ordinary RD after transformation; missing bounded endpoint
↪ widens the extreme interval; missing unbounded endpoint never
↪ produces a full-population causal p-value; dormant slots remain in
↪ the 24 denominator. Software failures get no_result, not uncertain.
↪ Permitted claim ceiling: Current equivalized family resources include
↪ household composition; they are not consumption or transfers. Directi
↪ onal local states do not establish practical importance. A confidence
↪ interval spanning zero never licenses no effect or equivalence.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000215/endpoints/family_resources/primary/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪ and the descriptive Atom do not gate this analysis. Write local_state
↪ =uncertain, inference_status=valid_interval, display status=uncertain
↪ when a valid interval spans zero; write local_state=uncertain,
↪ inference_status=unestimable, display status=unestimable and NA
↪ estimate/limits/p when completed evidence establishes no valid
↪ interval. Include the specific constant/support/rank/covariance
↪ reason. Failure to execute is no_result, never this scientific
↪ subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪ scalar bandwidth range substitutes for it. scope.json is frozen
↪ before outcome values; exits, selected-case and precision outputs use
↪ G2. Ascertainment is an internal component of atom-000215.
Read D9 family-income audit status before values. Corrected licenses the
↪ intended documented measure; known_uncorrected/unresolved uses the
↪ frozen recorded-income proxy with correction_status preserved. An
↪ operationally failed status check prevents value analysis
↪ (no_result), not an assumed correction.

Mandatory figure interface: the G2 family-income display contract is part
↪ of this protocol. Copy correction_status, interpretation_ceiling,
↪ metadata_status and scope_id from the same frozen primary scope into
↪ every effects/robustness row, including unavailable specifications.
↪ Correction metadata cannot change with bandwidth or sign. In the gove
↪ rned exporter assert one-to-one scope binding and equality with D9
↪ family-income audit; public scope_id is an opaque release-safe label,
↪ not a person-set digest. Corrected maps to documented_resources,
↪ known_uncorrected/unresolved maps to recorded_income_proxy. Missing
↪ evidence produces an explicit unavailable_metadata ceiling with NA
↪ values, never a resource claim. Preserve horizon and interval_alpha
↪ on each robustness row: primary .05/24, sensitivities .05. Figures6/7
↪ must display the proxy and correction restriction visibly under G2.
↪ No estimator, endpoint or uncertainty allocation changes.
```

```
Exact component path: prereg/runtime/atom-000215/endpoints/family_resourc
↪  es/primary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000215/endpoints/family_resources/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## family_resources / robustness
- key: sensitive
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for family_resources, not an additional
↪  primary discovery. Scope, unit, field/code mapping, population,
↪  estimand and missingness are exactly those of atom-000215 and
↪  incorporated D7. Read its frozen analysis population, weights,
↪  primary h/b and saved aggregate influence outputs; do not reconstruct
↪  a more favorable cohort. For each fixed specification in I4
↪  (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-
↪  linear/bias-corrected operator with the specified h/b changes, same
↪  grade weights and primary 24-slot interval and exploratory nonprimary
↪  95% intervals as I4; exclude only x==0 for the donut, explicitly
↪  changing local extrapolation. Recompute cluster influence variance
↪  and missingness bounds as needed. No new covariates, grade filters or
↪  bandwidth search. If a specification has insufficient support, its
↪  status is unresolved, never silently omitted. No multiplicity claim
↪  is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all
↪  four rows in the sensitivity figure with units=1000_DKK, including
↪  noncomputed rows. Compare available scalar primary and variant estima
↪  tes: a sign reversal or variant point outside the primary interval is
↪  sensitive. For partial bounds use disjoint intervals as sensitive;
↪  overlapping intervals alone cannot prove equality. All variants must
↪  be computed for stable. If primary is selection_limited, variants inh
↪  erit that ceiling. Synthetic tests keep identical rows in primary and
↪  recomputation, respect inclusive zero except the expressly registered
↪  donut, and preserve a missing variant row. Consequence: stability is
↪  only consistency over these specified choices, while sensitivity limi
↪  ts a broad policy conclusion. Current equivalized family resources
↪  include household composition; they are not consumption or transfers.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000215/endpoints/family_resources/robustness/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪ computable variant contradicts primary; all failed variants remain
↪ explicit with NA display rows. Stable never follows an unestimable
↪ primary or missing variant. No joint multi-specification coverage is
↪ claimed. Write inference_status and display status under G2,
↪ including unestimable numeric rows. Reproduce exact per-grade h/b
↪ from estimator-components.csv, and preserve all D10 scope keys.

Mandatory figure interface: the G2 family-income display contract is part
↪ of this protocol. Copy correction_status, interpretation_ceiling,
↪ metadata_status and scope_id from the same frozen primary scope into
↪ every effects/robustness row, including unavailable specifications.
↪ Correction metadata cannot change with bandwidth or sign. In the gove
↪ rned exporter assert one-to-one scope binding and equality with D9
↪ family-income audit; public scope_id is an opaque release-safe label,
↪ not a person-set digest. Corrected maps to documented_resources,
↪ known_uncorrected/unresolved maps to recorded_income_proxy. Missing
↪ evidence produces an explicit unavailable_metadata ceiling with NA
↪ values, never a resource claim. Preserve horizon and interval_alpha
↪ on each robustness row: primary .05/24, sensitivities .05. Figures6/7
↪ must display the proxy and correction restriction visibly under G2.
↪ No estimator, endpoint or uncertainty allocation changes.
Exact component path: prereg/runtime/atom-000215/endpoints/family_resourc
↪ es/robustness/. Cross-component primary files are read from
↪ prereg/runtime/atom-000215/endpoints/family_resources/primary/;
↪ ascertainment and robustness never overwrite primary judgments or
↪ scope.

The root component vector reports each endpoint primary direction/interva
↪ l type, ascertainment decision, robustness decision, and measurement,
↪ horizon, selection and operational restrictions. Within this
↪ experiment, differing outcomes remain independently interpretable.
↪ Mixed signs across different horizons are side-by-side observed
↪ contrasts, not common-population divergence. All graphical and
↪ manuscript bindings use the exact endpoint/component directory above.
```

Registered experiment

Does marginal classification change household material resources?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000215`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000216: Parental paid work

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state, component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Scope and order: this experiment asks whether marginal national-test classification changes parental paid work. Use all grades 4,5,6,7,8,9. Each endpoint below is a separate slot in the unchanged 24-slot primary family; its ascertainment belongs to the separate 24-slot diagnostic family. No endpoint value activates another endpoint. After the native grade activation passes, first perform each endpoint's own calendar/construct/relative/provenance checks, then ascertainment, primary estimation, and mandatory robustness whenever its primary component is increase/decrease/uncertain/selection_limited. An evidenced primary boundary makes its robustness internally not_activated. Ascertainment can finish even when primary or robustness fails, and primary does not require an insignificant ascertainment test. Robustness no_result never becomes stable. Aggregate only after every scheduled component completes, is evidenced ineligible, or has a recorded operational

terminal. Preserve completed components when another fails; if all scientific work fails operationally use Atom terminal no_result.

Internal relatives

- key: usable region: Pretest linkage semantics verified; all known relations have unique valid mappings and unknown roles are explicitly marked. says: Fixed recorded-parent/sibling targets can be studied with their baseline scope limitations.
- key: boundary region: Documentation establishes no dated parental linkage or incompatible key classes, so no baseline family target can be constructed. says: Family outcomes cannot be attributed to the index child under this delivery; child outcomes remain eligible.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Use D7 fixed pretest BEF snapshot, MOR_ID/FAR_ID, FOED_DAG, PNR, FAMILIE_ID and BEFBOP dated address intervals. Parent IDs must share the child PNR linkage class. Assert each child has at most one recorded value per parent role per snapshot; missing roles are unknown, not childless/no carer. Construct sibling sets by nonmissing shared parent; establish baseline school-grade eligibility with prior-month absence. Scan index assessments chronologically with fixed hash ties as D7. Report resident/nonresident parent links, one/two known roles, eligible sibling sets, conflicts and baseline missingness. This is the scope of recorded kinship, not validation of genetic relatedness or caregiving. Output diagnostics.csv with linkage proportions and conflict dispositions. No substantive outcome needed; no p-values. Synthetic fixture: two children with missing fathers are not siblings, subsequent births are excluded, later parental diagnosis cannot change roster. A complete roster at birth does not guarantee future response. Family branch uses only scientifically interpretable pretest links.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000216/relatives/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents

output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

parent_hours / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000216, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events. For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional

guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000216/endpoints/parent_hours/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000216/endpoints/parent_hours/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000216/endpoints/parent_hours/primary/; ascertainment and robustness never overwrite primary judgments or scope.

parent_hours / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata. says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.
- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the

exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=parent_hours; family=family; fixed horizon=calendar_year_after_test; display unit=hours. Population and exact coding: Mean annual sum AJO_LOENTIMER over fixed parents; retain imputed hours, report share, include validated employee zeros. Incorporate D7 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=unbounded; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must support the fitted operator; no renormalizing after a stratum fails. Report h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Employee hours cannot measure self-employment, advocacy time or total family welfare. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands

and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000216/endpoints/parent_hours/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values; exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000216. Exact component path: prereg/runtime/atom-000216/endpoints/parent_hours/primary/. Cross-component primary files are read from prereg/runtime/atom-000216/endpoints/parent_hours/primary/; ascertainment and robustness never overwrite primary judgments or scope.

parent_hours / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for parent_hours, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness

are exactly those of atom-000216 and incorporated D7. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=hours, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. Employee hours cannot measure self-employment, advocacy time or total family welfare.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000216/endpoints/parent_hours/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit

with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000216/endpoints/parent_hours/robustness/. Cross-component primary files are read from prereg/runtime/atom-000216/endpoints/parent_hours/primary/; ascertainment and robustness never overwrite primary judgments or scope.

parent_wages / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000216, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events. For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model,

waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000216/endpoints/parent_wages/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000216/endpoints/parent_wages/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000216/endpoints/parent_wages/primary/; ascertainment and robustness never overwrite primary judgments or scope.

parent_wages / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata. says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.
- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.

- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=parent_wages; family=family; fixed horizon=calendar_year_after_test; display unit=1000_DKK. Population and exact coding: Mean IND.LOENMV_13/1000 over fixed parents inyear(t0)+1, not employed-only; same resource missingness/annual-slice rules. Incorporate D7 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=unbounded; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must support the fitted operator; no renormalizing after a stratum fails. Report h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0

belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Wages are separate from paid hours and resources; neither identifies advocacy costs. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000216/endpoints/parent_wages/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values; exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000216. Exact component path: prereg/runtime/atom-000216/endpoints/parent_wages/primary/. Cross-component primary files are read from prereg/runtime/atom-000216/endpoints/parent_wages/primary/; ascertainment and robustness never overwrite primary judgments or scope.

parent_wages / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret

the contrast as sensitive to the registered local-support choice; no variant replaces primary.

- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for parent_wages, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000216 and incorporated D7. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=1000_DKK, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. Wages are separate from paid hours and resources; neither identifies advocacy costs.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000216/endpoints/parent_wages/robustness/ and remain governed until aggregate

disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000216/endpoints/parent_wages/robustness/. Cross-component primary files are read from prereg/runtime/atom-000216/endpoints/parent_wages/primary/; ascertainment and robustness never overwrite primary judgments or scope.

The root component vector reports each endpoint primary direction/interval type, ascertainment decision, robustness decision, and measurement, horizon, selection and operational restrictions. Within this experiment, differing outcomes remain independently interpretable. Mixed signs across different horizons are side-by-side observed contrasts, not common-population divergence. All graphical and manuscript bindings use the exact endpoint/component directory above.

Complete registration fields

```
id: atom-000216
topic: Parental paid work
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: Does marginal classification change parental paid work?
  rationale: Paid hours and wage income describe parents' paid-work response
    through quantity and remuneration. Their joint interpretation preserves
    units and discordance and cannot measure unpaid advocacy time.
  assumption: Administrative recognition can affect opportunities, reporting
    and service contact through multiple routes; exact source semantics and
    continuity require evidence, not an estimator label. See literature.md
    and identification.md.
  target_strength: causal
  target_shape: comparison
  ratings:
    importance: 5
    novelty: 3
    feasibility: 2
    data_advantage: 4
    informativeness: 0.5
```

```
tables:
- BEF
- BEFBOP
- BFL
- DOD
- IND
- UDD_FOLKESKOLE_FRAVAER_STIL
- UDD_ORDBLINDETEST
- VNDS
activation: state(atom-000001) == "ready" AND state(atom-000002) ==
↪  "compatible"
  AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000505) == "eligible_sharp" OR state(atom-000505) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000506) == "eligible_sharp" OR state(atom-000506) ==
  ↪  "eligible_nonsharp")
verdicts:
- key: sensitive
  region: At least one endpoint has a computed I4 sensitivity contradiction.
    This precedence applies even if another endpoint/variant fails.
  says: Name every affected endpoint and variant; retain all primary
  ↪  estimates
    and independent component failures without replacing a primary.
- key: mixed_direction
  region: No preceding region; at least one qualified increase and one
  ↪  qualified
    decrease among this experiment's endpoints. Qualified means valid
    ↪  primary
    interval/bounds and stable own robustness.
  says: Report the discordant endpoint directions in their original
  ↪  units/scopes;
    do not average or assign a common welfare sign.
- key: directional
  region: No preceding region; at least one endpoint is a qualified increase
    or decrease. Other endpoints may be uncertain, selected, boundary,
    ↪  failed
    or unresolved.
  says: Report only named qualified directions and every other endpoint's
    disposition. This does not imply the entire domain changed or that all
    endpoints were available.
- key: uncertain
  region: No preceding region; at least one endpoint has a valid primary
    interval/bounds, but no qualified direction.
  says: Report exact intervals and endpoint-specific robustness
  ↪  restrictions;
    zero-containing intervals and unresolved robustness remain different
    cases, neither equivalence.
- key: boundary
  region: No preceding region; every endpoint has an evidenced measurement
    or horizon/population boundary.
  says: This scientific question cannot be evaluated under the frozen
  ↪  target;
    report component-specific reasons, never a null.
```

```
- key: restricted
  region: No preceding region; at least one endpoint supplies completed
    evidence of selection_limited or unestimable inference.
  says: Report the surviving selected/unestimable evidence and independent
    failures; no all-eligible directional claim.
- key: otherwise
  region: otherwise
  says: The experiment remains unresolved. Preserve every component state,
    terminal and unavailable reason; operational failure is not
    ↪ insignificance.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪ Atoms or activation primitives. Execute every prescribed component
  ↪ that is scientifically eligible, independently of other component
  ↪ signs. Component outputs retain their own local decision, inference
  ↪ and operational status; only the native judgment.json at the Atom
  ↪ root supplies the Atom local state. No component failure can erase
  ↪ completed evidence in another component. When no scientific component
  ↪ completes because execution fails, set terminal no_result with no
  ↪ Atom local state. Otherwise aggregate only by the ordered registered
  ↪ regions and record every component's failure, boundary, unknown or
  ↪ inactive disposition. Pending necessary evidence stays pending; it is
  ↪ never coded as negative evidence. Internal failed work is not
  ↪ automatically retried.
  Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
  ↪ I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
  ↪ definitions. These fix population, dates, table/field dictionaries,
  ↪ code versions, joins, inference, missingness, outputs and synthetic c
  ↪ hecks. A dictionary crosswalk is semantic verification before outcome
  ↪ values, not a new scientific choice. Keep all endpoint-specific
  ↪ units, horizons and Bonferroni allocations; grouping introduces no
  ↪ average outcome, composite score, new hypothesis or additional alpha.
  ↪ Write root audit.json, status.json, judgment.json and components.csv
  ↪ with component, outcome, component_state, component_terminal,
  ↪ inference_status, reason, evidence_path. Components.csv is an
  ↪ evidence index under this protocol, never a second experiment graph.
  ↪ Suppression is applied after governed adjudication, and cannot govern
  ↪ activation or disclose protected directions.

  Scope and order: this experiment asks whether marginal national-test
  ↪ classification changes parental paid work. Use all grades
  ↪ 4,5,6,7,8,9. Each endpoint below is a separate slot in the unchanged
  ↪ 24-slot primary family; its ascertainment belongs to the separate
  ↪ 24-slot diagnostic family. No endpoint value activates another
  ↪ endpoint. After the native grade activation passes, first perform
  ↪ each endpoint's own calendar/construct/relative/provenance checks,
  ↪ then ascertainment, primary estimation, and mandatory robustness
  ↪ whenever its primary component is
  ↪ increase/decrease/uncertain/selection_limited. An evidenced primary
  ↪ boundary makes its robustness internally not_activated. Ascertainment
  ↪ can finish even when primary or robustness fails, and primary does
  ↪ not require an insignificant ascertainment test. Robustness no_result
  ↪ never becomes stable. Aggregate only after every scheduled component
  ↪ completes, is evidenced ineligible, or has a recorded operational
  ↪ terminal. Preserve completed components when another fails; if all
  ↪ scientific work fails operationally use Atom terminal no_result.

  ## Internal relatives
  - key: usable
```

```
  region: Pretest linkage semantics verified; all known relations have
  ↪  unique valid
    mappings and unknown roles are explicitly marked.
  says: Fixed recorded-parent/sibling targets can be studied with their
  ↪  baseline scope
    limitations.
- key: boundary
  region: Documentation establishes no dated parental linkage or
  ↪  incompatible key
    classes, so no baseline family target can be constructed.
  says: Family outcomes cannot be attributed to the index child under
  ↪  this delivery;
    child outcomes remain eligible.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Use D7 fixed pretest BEF snapshot, MOR_ID/FAR_ID, FOED_DAG, PNR,
↪  FAMILIE_ID and BEFBOP dated address intervals. Parent IDs must share
↪  the child PNR linkage class. Assert each child has at most one
↪  recorded value per parent role per snapshot; missing roles are
↪  unknown, not childless/no carer. Construct sibling sets by nonmissing
↪  shared parent; establish baseline school-grade eligibility with
↪  prior-month absence. Scan index assessments chronologically with
↪  fixed hash ties as D7. Report resident/nonresident parent links,
↪  one/two known roles, eligible sibling sets, conflicts and baseline
↪  missingness. This is the scope of recorded kinship, not validation of
↪  genetic relatedness or caregiving. Output diagnostics.csv with
↪  linkage proportions and conflict dispositions. No substantive outcome
↪  needed; no p-values. Synthetic fixture: two children with missing
↪  fathers are not siblings, subsequent births are excluded, later
↪  parental diagnosis cannot change roster. A complete roster at birth
↪  does not guarantee future response. Family branch uses only
↪  scientifically interpretable pretest links.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000216/relat
↪  ives/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## parent_hours / ascertainment
```

```
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
Internal ascertainment diagnostic on exactly the baseline-eligible
↪  population and horizon of atom-000216, with the same
↪  table/field/version/join/exit definitions, fixed grades and baseline
↪  weights. Do not require that primary to finish and do not use its
↪  sign. First construct whether the registered endpoint is defined and
↪  observed for each baseline index; no value or realized employment
↪  changes eligibility. Atom-specific D9 calibration/correction checks
↪  still apply. For defined event-before-exit outcomes, complete event
↪  universe establishes observation even for zero events. For undefined
↪  after-death school/state outcomes, report undefined proportion
↪  separately; never classify death as a negative symptom. Apply I5
↪  constant handling to the observation indicator; documentary
↪  arithmetic can be structural_complete, observed constants have no
↪  p-value. Otherwise apply I3 as a binary outcome without outcome
↪  missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪  is distinct from the 24 primary outcomes and baseline48. Output
↪  ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪  diagnostics.csv, audit.json, judgment.json. Include observation
↪  fractions by side, undefined/death/emigration counts and
↪  denominators, exact horizon and p_raw/p_adjusted only for a valid
↪  contrast. A detected or undetected difference cannot choose a new
↪  endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪  all-unobserved, varying indicator and death-undefined fixtures test
↪  the local regions. Every state is narrated in Table S2 through its
↪  own result slot; no public suppressed value gates computation.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000216/endpoints/parent_hours/ascertainment/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000216/endpoints/parent_hours/a
↪ scertainment/. Cross-component primary files are read from
↪ prereg/runtime/atom-000216/endpoints/parent_hours/primary/;
↪ ascertainment and robustness never overwrite primary judgments or
↪ scope.

## parent_hours / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪ demonstrably
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪ broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪ horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪ missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪ defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪ point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪ interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪ units, subject
    to the measurement and identification restrictions.
- key: decrease
```

```
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Inferential status: one prespecified directional slot in the 24-slot
↪  study-wide family; conditional causal interpretation for the spring
↪  2015 historical margin only. Endpoint=parent_hours; family=family;
↪  fixed horizon=calendar_year_after_test; display unit=hours.
↪  Population and exact coding: Mean annual sum AJO_LOENTIMER over fixed
↪  parents; retain imputed hours, report share, include validated
↪  employee zeros. Incorporate D7 and D1-D3, including individual
↪  exclusions, date-based eligibility, join cardinalities, code
↪  dictionaries and missingness. D7 first-family indexing applies to
↪  relatives' outcomes. No actual graduation, employment, care use,
↪  intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the
↪  inclusive historical cutoff, pooled across the endpoint's fixed
↪  baseline-grade strata with pre-outcome count weights. It is neither
↪  the inherent effect of dyslexia nor the effect of a particular
↪  support program. Required identifying variation/assumptions are I1/I2
↪  and remain unproved by diagnostic passes. This endpoint uses no
↪  postbaseline controls. No fuzzy ratio is allowed even if recorded
↪  classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪  verify this endpoint's2015 calendar/dictionaries before values; form
↪  its baseline target and expected outcome row for every eligible
↪  index; assert D2 joins, invalid-code and duplicates dispositions;
↪  build endpoint plus observation/exit indicators; produce missingness
↪  diagnostics without removing the baseline row; apply RD from I3 with
↪  endpoint kind=unbounded; transform binary risk effects by100 once;
↪  fit available-case sensitivity only when missingness requires it;
↪  calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪  for a complete point estimand, or the simultaneous outer bound
↪  interval for a bounded partially observed endpoint; retain unbounded
↪  missingness as selection_limited. Do not choose another cohort, grade
↪  stratum, time window or definition if this fit lacks support. All
↪  grade strata required by this endpoint must support the fitted
↪  operator; no renormalizing after a stratum fails. Report h/b,
↪  support, clusters, effective n, censoring/exit fractions and
↪  conditional detectable contrast; no power pass threshold.
```

```
Output effects.csv, selection-sensitivity.csv (only when applicable),
↪  diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪  identified bounds put estimate/p values NA and use lower/upper as
↪  outer limits; a missing point estimate must never be plotted at zero.
↪  Required figure: the full causal forest, plus its own registered
↪  robustness display if the internal robustness rule is satisfied.
↪  Synthetic check: score=0 belongs on red; complete binary endpoint
↪  agrees with ordinary RD after transformation; missing bounded
↪  endpoint widens the extreme interval; missing unbounded endpoint
↪  never produces a full-population causal p-value; dormant slots remain
↪  in the 24 denominator. Software failures get no_result, not
↪  uncertain. Permitted claim ceiling: Employee hours cannot measure
↪  self-employment, advocacy time or total family welfare. Directional
↪  local states do not establish practical importance. A confidence
↪  interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000216/endpoints/parent_hours/primary/ and remain
↪  governed until aggregate disclosure approval. Write audit.json and
↪  judgment.json plus the named plot-ready table; G1/G2 define status
↪  and column meanings. No numerical result is populated now. Before
↪  runtime use G3 synthetic join/date/missingness checks and verify
↪  row-order invariance; a failed check prevents output release. Every
↪  result constrains the Molecule under its composable rules; neither
↪  failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000216.
Exact component path: prereg/runtime/atom-000216/endpoints/parent_hours/p
↪  rimary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000216/endpoints/parent_hours/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## parent_hours / robustness
- key: sensitive
```

```
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for parent_hours, not an additional
↪  primary discovery. Scope, unit, field/code mapping, population,
↪  estimand and missingness are exactly those of atom-000216 and
↪  incorporated D7. Read its frozen analysis population, weights,
↪  primary h/b and saved aggregate influence outputs; do not reconstruct
↪  a more favorable cohort. For each fixed specification in I4
↪  (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-
↪  linear/bias-corrected operator with the specified h/b changes, same
↪  grade weights and primary 24-slot interval and exploratory nonprimary
↪  95% intervals as I4; exclude only x==0 for the donut, explicitly
↪  changing local extrapolation. Recompute cluster influence variance
↪  and missingness bounds as needed. No new covariates, grade filters or
↪  bandwidth search. If a specification has insufficient support, its
↪  status is unresolved, never silently omitted. No multiplicity claim
↪  is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all
↪  four rows in the sensitivity figure with units=hours, including nonco
↪  mputed rows. Compare available scalar primary and variant estimates:
↪  a sign reversal or variant point outside the primary interval is
↪  sensitive. For partial bounds use disjoint intervals as sensitive;
↪  overlapping intervals alone cannot prove equality. All variants must
↪  be computed for stable. If primary is selection_limited, variants
↪  inherit that ceiling. Synthetic tests keep identical rows in primary
↪  and recomputation, respect inclusive zero except the expressly
↪  registered donut, and preserve a missing variant row. Consequence:
↪  stability is only consistency over these specified choices, while
↪  sensitivity limits a broad policy conclusion. Employee hours cannot
↪  measure self-employment, advocacy time or total family welfare.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000216/endpoints/parent_hours/robustness/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪  computable variant contradicts primary; all failed variants remain
↪  explicit with NA display rows. Stable never follows an unestimable
↪  primary or missing variant. No joint multi-specification coverage is
↪  claimed. Write inference_status and display status under G2,
↪  including unestimable numeric rows. Reproduce exact per-grade h/b
↪  from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000216/endpoints/parent_hours/r⌋
↪  obustness/. Cross-component primary files are read from
↪  prereg/runtime/atom-000216/endpoints/parent_hours/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## parent_wages / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
```

```
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
Internal ascertainment diagnostic on exactly the baseline-eligible
↪  population and horizon of atom-000216, with the same
↪  table/field/version/join/exit definitions, fixed grades and baseline
↪  weights. Do not require that primary to finish and do not use its
↪  sign. First construct whether the registered endpoint is defined and
↪  observed for each baseline index; no value or realized employment
↪  changes eligibility. Atom-specific D9 calibration/correction checks
↪  still apply. For defined event-before-exit outcomes, complete event
↪  universe establishes observation even for zero events. For undefined
↪  after-death school/state outcomes, report undefined proportion
↪  separately; never classify death as a negative symptom. Apply I5
↪  constant handling to the observation indicator; documentary
↪  arithmetic can be structural_complete, observed constants have no
↪  p-value. Otherwise apply I3 as a binary outcome without outcome
↪  missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪  is distinct from the 24 primary outcomes and baseline48. Output
↪  ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪  diagnostics.csv, audit.json, judgment.json. Include observation
↪  fractions by side, undefined/death/emigration counts and
↪  denominators, exact horizon and p_raw/p_adjusted only for a valid
↪  contrast. A detected or undetected difference cannot choose a new
↪  endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪  all-unobserved, varying indicator and death-undefined fixtures test
↪  the local regions. Every state is narrated in Table S2 through its
↪  own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000216/endpoints/parent_wages/ascertainment/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

```
Exact component path: prereg/runtime/atom-000216/endpoints/parent_wages/a
↪  scertainment/. Cross-component primary files are read from
↪  prereg/runtime/atom-000216/endpoints/parent_wages/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## parent_wages / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪  demonstrably
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Inferential status: one prespecified directional slot in the 24-slot
↪ study-wide family; conditional causal interpretation for the spring
↪ 2015 historical margin only. Endpoint=parent_wages; family=family;
↪ fixed horizon=calendar_year_after_test; display unit=1000_DKK.
↪ Population and exact coding: Mean IND.LOENMV_13/1000 over fixed
↪ parents inyear(t0)+1, not employed-only; same resource
↪ missingness/annual-slice rules. Incorporate D7 and D1-D3, including
↪ individual exclusions, date-based eligibility, join cardinalities,
↪ code dictionaries and missingness. D7 first-family indexing applies
↪ to relatives' outcomes. No actual graduation, employment, care use,
↪ intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the
↪ inclusive historical cutoff, pooled across the endpoint's fixed
↪ baseline-grade strata with pre-outcome count weights. It is neither
↪ the inherent effect of dyslexia nor the effect of a particular
↪ support program. Required identifying variation/assumptions are I1/I2
↪ and remain unproved by diagnostic passes. This endpoint uses no
↪ postbaseline controls. No fuzzy ratio is allowed even if recorded
↪ classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪ verify this endpoint's2015 calendar/dictionaries before values; form
↪ its baseline target and expected outcome row for every eligible
↪ index; assert D2 joins, invalid-code and duplicates dispositions;
↪ build endpoint plus observation/exit indicators; produce missingness
↪ diagnostics without removing the baseline row; apply RD from I3 with
↪ endpoint kind=unbounded; transform binary risk effects by100 once;
↪ fit available-case sensitivity only when missingness requires it;
↪ calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪ for a complete point estimand, or the simultaneous outer bound
↪ interval for a bounded partially observed endpoint; retain unbounded
↪ missingness as selection_limited. Do not choose another cohort, grade
↪ stratum, time window or definition if this fit lacks support. All
↪ grade strata required by this endpoint must support the fitted
↪ operator; no renormalizing after a stratum fails. Report h/b,
↪ support, clusters, effective n, censoring/exit fractions and
↪ conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable),
↪ diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪ identified bounds put estimate/p values NA and use lower/upper as
↪ outer limits; a missing point estimate must never be plotted at zero.
↪ Required figure: the full causal forest, plus its own registered
↪ robustness display if the internal robustness rule is satisfied.
↪ Synthetic check: score=0 belongs on red; complete binary endpoint
↪ agrees with ordinary RD after transformation; missing bounded
↪ endpoint widens the extreme interval; missing unbounded endpoint
↪ never produces a full-population causal p-value; dormant slots remain
↪ in the 24 denominator. Software failures get no_result, not
↪ uncertain. Permitted claim ceiling: Wages are separate from paid
↪ hours and resources; neither identifies advocacy costs. Directional
↪ local states do not establish practical importance. A confidence
↪ interval spanning zero never licenses no effect or equivalence.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000216/endpoints/parent_wages/primary/ and remain
↪  governed until aggregate disclosure approval. Write audit.json and
↪  judgment.json plus the named plot-ready table; G1/G2 define status
↪  and column meanings. No numerical result is populated now. Before
↪  runtime use G3 synthetic join/date/missingness checks and verify
↪  row-order invariance; a failed check prevents output release. Every
↪  result constrains the Molecule under its composable rules; neither
↪  failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000216.
Exact component path: prereg/runtime/atom-000216/endpoints/parent_wages/p
↪  rimary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000216/endpoints/parent_wages/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## parent_wages / robustness
- key: sensitive
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
```

```
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for parent_wages, not an additional
↪  primary discovery. Scope, unit, field/code mapping, population,
↪  estimand and missingness are exactly those of atom-000216 and
↪  incorporated D7. Read its frozen analysis population, weights,
↪  primary h/b and saved aggregate influence outputs; do not reconstruct
↪  a more favorable cohort. For each fixed specification in I4
↪  (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-
↪  linear/bias-corrected operator with the specified h/b changes, same
↪  grade weights and primary 24-slot interval and exploratory nonprimary
↪  95% intervals as I4; exclude only x==0 for the donut, explicitly
↪  changing local extrapolation. Recompute cluster influence variance
↪  and missingness bounds as needed. No new covariates, grade filters or
↪  bandwidth search. If a specification has insufficient support, its
↪  status is unresolved, never silently omitted. No multiplicity claim
↪  is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all
↪  four rows in the sensitivity figure with units=1000_DKK, including
↪  noncomputed rows. Compare available scalar primary and variant estima
↪  tes: a sign reversal or variant point outside the primary interval is
↪  sensitive. For partial bounds use disjoint intervals as sensitive;
↪  overlapping intervals alone cannot prove equality. All variants must
↪  be computed for stable. If primary is selection_limited, variants
↪  inherit that ceiling. Synthetic tests keep identical rows in primary
↪  and recomputation, respect inclusive zero except the expressly
↪  registered donut, and preserve a missing variant row. Consequence:
↪  stability is only consistency over these specified choices, while
↪  sensitivity limits a broad policy conclusion. Wages are separate from
↪  paid hours and resources; neither identifies advocacy costs.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000216/endpoints/parent_wages/robustness/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

```
Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪  computable variant contradicts primary; all failed variants remain
↪  explicit with NA display rows. Stable never follows an unestimable
↪  primary or missing variant. No joint multi-specification coverage is
↪  claimed. Write inference_status and display status under G2,
↪  including unestimable numeric rows. Reproduce exact per-grade h/b
↪  from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000216/endpoints/parent_wages/r
↪  obustness/. Cross-component primary files are read from
↪  prereg/runtime/atom-000216/endpoints/parent_wages/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

The root component vector reports each endpoint primary direction/interva
↪  l type, ascertainment decision, robustness decision, and measurement,
↪  horizon, selection and operational restrictions. Within this
↪  experiment, differing outcomes remain independently interpretable.
↪  Mixed signs across different horizons are side-by-side observed
↪  contrasts, not common-population divergence. All graphical and
↪  manuscript bindings use the exact endpoint/component directory above.
```

Registered experiment

Does marginal classification change parental paid work?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000216`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000217: Parental recognition response

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state,

component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Scope and order: this experiment asks whether marginal national-test classification changes parental recognition response. Use all grades 4,5,6,7,8,9. Each endpoint below is a separate slot in the unchanged 24-slot primary family; its ascertainment belongs to the separate 24-slot diagnostic family. No endpoint value activates another endpoint. After the native grade activation passes, first perform each endpoint's own calendar/construct/relative/provenance checks, then ascertainment, primary estimation, and mandatory robustness whenever its primary component is increase/decrease/uncertain/selection_limited. An evidenced primary boundary makes its robustness internally not_activated. Ascertainment can finish even when primary or robustness fails, and primary does not require an insignificant ascertainment test. Robustness no_result never becomes stable. Aggregate only after every scheduled component completes, is evidenced ineligible, or has a recorded operational terminal. Preserve completed components when another fails; if all scientific work fails operationally use Atom terminal no_result.

Internal relatives

- key: usable region: Pretest linkage semantics verified; all known relations have unique valid mappings and unknown roles are explicitly marked. says: Fixed recorded-parent/sibling targets can be studied with their baseline scope limitations.
- key: boundary region: Documentation establishes no dated parental linkage or incompatible key classes, so no baseline family target can be constructed. says: Family outcomes cannot be attributed to the index child under this delivery; child outcomes remain eligible.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Use D7 fixed pretest BEF snapshot, MOR_ID/FAR_ID, FOED_DAG, PNR, FAMILIE_ID and BEFBOP dated address intervals. Parent IDs must share the child PNR linkage class. Assert each child has at most one recorded value per parent role per snapshot; missing roles are unknown, not childless/no carer. Construct sibling sets by nonmissing shared parent; establish baseline school-grade eligibility with prior-month absence. Scan index assessments chronologically with fixed hash ties as D7. Report resident/nonresident parent links, one/two known roles, eligible sibling sets, conflicts and baseline missingness. This is the scope of recorded kinship, not validation of genetic relatedness or caregiving. Output diagnostics.csv with linkage proportions and conflict dispositions. No substantive outcome needed; no p-values. Synthetic fixture: two children with missing fathers are not siblings, subsequent births are excluded, later parental diagnosis cannot change roster. A complete roster at birth does not guarantee future response. Family branch uses only scientifically interpretable pretest links.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000217/relatives/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

parent_assessment / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000217, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events. For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling

to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000217/endpoints/parent_assessment/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000217/endpoints/parent_assessment/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000217/endpoints/parent_assessment/primary/; ascertainment and robustness never overwrite primary judgments or scope.

parent_assessment / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata. says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.
- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.

- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=parent_assessment; family=family; fixed horizon=child_days1_to730; display unit=pp. Population and exact coding: Mean fixed-parent indicator of later retained national-test DATO; no pilot/reason inference. Incorporate D7 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=binary; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must

support the fitted operator; no renormalizing after a stratum fails. Report h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Subsequent retained assessment is a possible family-recognition response, not first lifetime dyslexia. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000217/endpoints/parent_assessment/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values;

exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000217. Exact component path: prereg/runtime/atom-000217/endpoints/parent_assessment/primary/. Cross-component primary files are read from prereg/runtime/atom-000217/endpoints/parent_assessment/primary/; ascertainment and robustness never overwrite primary judgments or scope.

parent_assessment / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for parent_assessment, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000217 and incorporated D7. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=pp, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. Subsequent retained assessment is a possible family-recognition response, not first lifetime dyslexia.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands

and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000217/endpoints/parent_assessment/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000217/endpoints/parent_assessment/robustness/. Cross-component primary files are read from prereg/runtime/atom-000217/endpoints/parent_assessment/primary/; ascertainment and robustness never overwrite primary judgments or scope.

The root component vector reports each endpoint primary direction/interval type, ascertainment decision, robustness decision, and measurement, horizon, selection and operational restrictions. Within this experiment, differing outcomes remain independently interpretable. Mixed signs across different horizons are side-by-side observed contrasts, not common-population divergence. All graphical and manuscript bindings use the exact endpoint/component directory above.

Complete registration fields


```
id: atom-000217
topic: Parental recognition response
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: Does marginal classification change parental recognition response?
  rationale: Subsequent retained parental assessment tests an own-recognition
```

```
  response, which can inform family interpretation without waiting for
  ↪ parental
  care, income or work.
assumption: Administrative recognition can affect opportunities, reporting
  and service contact through multiple routes; exact source semantics and
  continuity require evidence, not an estimator label. See literature.md
  and identification.md.
target_strength: causal
target_shape: comparison
ratings:
  importance: 5
  novelty: 3
  feasibility: 2
  data_advantage: 4
  informativeness: 0.5
tables:
- BEF
- BEFBOP
- DOD
- UDD_FOLKESKOLE_FRAVAER_STIL
- UDD_ORDBLINDETEST
- VNDS
activation: state(atom-000001) == "ready" AND state(atom-000002) ==
↪ "compatible"
  AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) ==
  ↪ "eligible_nonsharp")
  AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) ==
  ↪ "eligible_nonsharp")
  AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) ==
  ↪ "eligible_nonsharp")
  AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) ==
  ↪ "eligible_nonsharp")
  AND (state(atom-000505) == "eligible_sharp" OR state(atom-000505) ==
  ↪ "eligible_nonsharp")
  AND (state(atom-000506) == "eligible_sharp" OR state(atom-000506) ==
  ↪ "eligible_nonsharp")
verdicts:
- key: sensitive
  region: At least one endpoint has a computed I4 sensitivity contradiction.
    This precedence applies even if another endpoint/variant fails.
  says: Name every affected endpoint and variant; retain all primary
  ↪ estimates
    and independent component failures without replacing a primary.
- key: mixed_direction
  region: No preceding region; at least one qualified increase and one
  ↪ qualified
    decrease among this experiment's endpoints. Qualified means valid
    ↪ primary
    interval/bounds and stable own robustness.
  says: Report the discordant endpoint directions in their original
  ↪ units/scopes;
    do not average or assign a common welfare sign.
- key: directional
  region: No preceding region; at least one endpoint is a qualified increase
    or decrease. Other endpoints may be uncertain, selected, boundary,
    ↪ failed
    or unresolved.
  says: Report only named qualified directions and every other endpoint's
    disposition. This does not imply the entire domain changed or that all
    endpoints were available.
```

```
- key: uncertain
  region: No preceding region; at least one endpoint has a valid primary
    interval/bounds, but no qualified direction.
  says: Report exact intervals and endpoint-specific robustness
  ↪  restrictions;
    zero-containing intervals and unresolved robustness remain different
    cases, neither equivalence.
- key: boundary
  region: No preceding region; every endpoint has an evidenced measurement
    or horizon/population boundary.
  says: This scientific question cannot be evaluated under the frozen
  ↪  target;
    report component-specific reasons, never a null.
- key: restricted
  region: No preceding region; at least one endpoint supplies completed
    evidence of selection_limited or unestimable inference.
  says: Report the surviving selected/unestimable evidence and independent
    failures; no all-eligible directional claim.
- key: otherwise
  region: otherwise
  says: The experiment remains unresolved. Preserve every component state,
    terminal and unavailable reason; operational failure is not
    ↪  insignificance.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪  Atoms or activation primitives. Execute every prescribed component
  ↪  that is scientifically eligible, independently of other component
  ↪  signs. Component outputs retain their own local decision, inference
  ↪  and operational status; only the native judgment.json at the Atom
  ↪  root supplies the Atom local state. No component failure can erase
  ↪  completed evidence in another component. When no scientific component
  ↪  completes because execution fails, set terminal no_result with no
  ↪  Atom local state. Otherwise aggregate only by the ordered registered
  ↪  regions and record every component's failure, boundary, unknown or
  ↪  inactive disposition. Pending necessary evidence stays pending; it is
  ↪  never coded as negative evidence. Internal failed work is not
  ↪  automatically retried.
  Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
  ↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
  ↪  definitions. These fix population, dates, table/field dictionaries,
  ↪  code versions, joins, inference, missingness, outputs and synthetic c
  ↪  hecks. A dictionary crosswalk is semantic verification before outcome
  ↪  values, not a new scientific choice. Keep all endpoint-specific
  ↪  units, horizons and Bonferroni allocations; grouping introduces no
  ↪  average outcome, composite score, new hypothesis or additional alpha.
  ↪  Write root audit.json, status.json, judgment.json and components.csv
  ↪  with component, outcome, component_state, component_terminal,
  ↪  inference_status, reason, evidence_path. Components.csv is an
  ↪  evidence index under this protocol, never a second experiment graph.
  ↪  Suppression is applied after governed adjudication, and cannot govern
  ↪  activation or disclose protected directions.
```

```
Scope and order: this experiment asks whether marginal national-test
↪  classification changes parental recognition response. Use all grades
↪  4,5,6,7,8,9. Each endpoint below is a separate slot in the unchanged
↪  24-slot primary family; its ascertainment belongs to the separate
↪  24-slot diagnostic family. No endpoint value activates another
↪  endpoint. After the native grade activation passes, first perform
↪  each endpoint's own calendar/construct/relative/provenance checks,
↪  then ascertainment, primary estimation, and mandatory robustness
↪  whenever its primary component is
↪  increase/decrease/uncertain/selection_limited. An evidenced primary
↪  boundary makes its robustness internally not_activated. Ascertainment
↪  can finish even when primary or robustness fails, and primary does
↪  not require an insignificant ascertainment test. Robustness no_result
↪  never becomes stable. Aggregate only after every scheduled component
↪  completes, is evidenced ineligible, or has a recorded operational
↪  terminal. Preserve completed components when another fails; if all
↪  scientific work fails operationally use Atom terminal no_result.

## Internal relatives
- key: usable
  region: Pretest linkage semantics verified; all known relations have
  ↪  unique valid
    mappings and unknown roles are explicitly marked.
  says: Fixed recorded-parent/sibling targets can be studied with their
  ↪  baseline scope
    limitations.
- key: boundary
  region: Documentation establishes no dated parental linkage or
  ↪  incompatible key
    classes, so no baseline family target can be constructed.
  says: Family outcomes cannot be attributed to the index child under
  ↪  this delivery;
    child outcomes remain eligible.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Use D7 fixed pretest BEF snapshot, MOR_ID/FAR_ID, FOED_DAG, PNR,
↪  FAMILIE_ID and BEFBOP dated address intervals. Parent IDs must share
↪  the child PNR linkage class. Assert each child has at most one
↪  recorded value per parent role per snapshot; missing roles are
↪  unknown, not childless/no carer. Construct sibling sets by nonmissing
↪  shared parent; establish baseline school-grade eligibility with
↪  prior-month absence. Scan index assessments chronologically with
↪  fixed hash ties as D7. Report resident/nonresident parent links,
↪  one/two known roles, eligible sibling sets, conflicts and baseline
↪  missingness. This is the scope of recorded kinship, not validation of
↪  genetic relatedness or caregiving. Output diagnostics.csv with
↪  linkage proportions and conflict dispositions. No substantive outcome
↪  needed; no p-values. Synthetic fixture: two children with missing
↪  fathers are not siblings, subsequent births are excluded, later
↪  parental diagnosis cannot change roster. A complete roster at birth
↪  does not guarantee future response. Family branch uses only
↪  scientifically interpretable pretest links.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000217/relat
↪  ives/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## parent_assessment / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Internal ascertainment diagnostic on exactly the baseline-eligible
↪ population and horizon of atom-000217, with the same
↪ table/field/version/join/exit definitions, fixed grades and baseline
↪ weights. Do not require that primary to finish and do not use its
↪ sign. First construct whether the registered endpoint is defined and
↪ observed for each baseline index; no value or realized employment
↪ changes eligibility. Atom-specific D9 calibration/correction checks
↪ still apply. For defined event-before-exit outcomes, complete event
↪ universe establishes observation even for zero events. For undefined
↪ after-death school/state outcomes, report undefined proportion
↪ separately; never classify death as a negative symptom. Apply I5
↪ constant handling to the observation indicator; documentary
↪ arithmetic can be structural_complete, observed constants have no
↪ p-value. Otherwise apply I3 as a binary outcome without outcome
↪ missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪ is distinct from the 24 primary outcomes and baseline48. Output
↪ ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪ diagnostics.csv, audit.json, judgment.json. Include observation
↪ fractions by side, undefined/death/emigration counts and
↪ denominators, exact horizon and p_raw/p_adjusted only for a valid
↪ contrast. A detected or undetected difference cannot choose a new
↪ endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪ all-unobserved, varying indicator and death-undefined fixtures test
↪ the local regions. Every state is narrated in Table S2 through its
↪ own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000217/endpoints/parent_assessment/ascertainment/
↪ and remain governed until aggregate disclosure approval. Write
↪ audit.json and judgment.json plus the named plot-ready table; G1/G2
↪ define status and column meanings. No numerical result is populated
↪ now. Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000217/endpoints/parent_assessm
↪ ent/ascertainment/. Cross-component primary files are read from
↪ prereg/runtime/atom-000217/endpoints/parent_assessment/primary/;
↪ ascertainment and robustness never overwrite primary judgments or
↪ scope.

## parent_assessment / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪ demonstrably
```

```
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Inferential status: one prespecified directional slot in the 24-slot stud
↪  y-wide family; conditional causal interpretation for the spring 2015
↪  historical margin only. Endpoint=parent_assessment; family=family; fi
↪  xed horizon=child_days1_to730; display unit=pp. Population and exact
↪  coding: Mean fixed-parent indicator of later retained national-test
↪  DATO; no pilot/reason inference. Incorporate D7 and D1-D3, including
↪  individual exclusions, date-based eligibility, join cardinalities,
↪  code dictionaries and missingness. D7 first-family indexing applies
↪  to relatives' outcomes. No actual graduation, employment, care use,
↪  intact family or future response condition determines eligibility.
```

```
Estimand: red-minus-adjacent-yellow local policy contrast at the
↪ inclusive historical cutoff, pooled across the endpoint's fixed
↪ baseline-grade strata with pre-outcome count weights. It is neither
↪ the inherent effect of dyslexia nor the effect of a particular
↪ support program. Required identifying variation/assumptions are I1/I2
↪ and remain unproved by diagnostic passes. This endpoint uses no
↪ postbaseline controls. No fuzzy ratio is allowed even if recorded
↪ classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪ verify this endpoint's2015 calendar/dictionaries before values; form
↪ its baseline target and expected outcome row for every eligible
↪ index; assert D2 joins, invalid-code and duplicates dispositions;
↪ build endpoint plus observation/exit indicators; produce missingness
↪ diagnostics without removing the baseline row; apply RD from I3 with
↪ endpoint kind=binary; transform binary risk effects by100 once; fit
↪ available-case sensitivity only when missingness requires it;
↪ calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪ for a complete point estimand, or the simultaneous outer bound
↪ interval for a bounded partially observed endpoint; retain unbounded
↪ missingness as selection_limited. Do not choose another cohort, grade
↪ stratum, time window or definition if this fit lacks support. All
↪ grade strata required by this endpoint must support the fitted
↪ operator; no renormalizing after a stratum fails. Report h/b,
↪ support, clusters, effective n, censoring/exit fractions and
↪ conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable),
↪ diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪ identified bounds put estimate/p values NA and use lower/upper as
↪ outer limits; a missing point estimate must never be plotted at zero.
↪ Required figure: the full causal forest, plus its own registered
↪ robustness display if the internal robustness rule is satisfied. Synt
↪ hetic check: score=0 belongs on red; complete binary endpoint agrees
↪ with ordinary RD after transformation; missing bounded endpoint
↪ widens the extreme interval; missing unbounded endpoint never
↪ produces a full-population causal p-value; dormant slots remain in
↪ the 24 denominator. Software failures get no_result, not uncertain.
↪ Permitted claim ceiling: Subsequent retained assessment is a possible
↪ family-recognition response, not first lifetime dyslexia. Directional
↪ local states do not establish practical importance. A confidence
↪ interval spanning zero never licenses no effect or equivalence.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000217/endpoints/parent_assessment/primary/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000217.
Exact component path: prereg/runtime/atom-000217/endpoints/parent_assessm
↪  ent/primary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000217/endpoints/parent_assessment/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## parent_assessment / robustness
- key: sensitive
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
```

```
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for parent_assessment, not an additional
↪  primary discovery. Scope, unit, field/code mapping, population,
↪  estimand and missingness are exactly those of atom-000217 and
↪  incorporated D7. Read its frozen analysis population, weights,
↪  primary h/b and saved aggregate influence outputs; do not reconstruct
↪  a more favorable cohort. For each fixed specification in I4
↪  (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-
↪  linear/bias-corrected operator with the specified h/b changes, same
↪  grade weights and primary 24-slot interval and exploratory nonprimary
↪  95% intervals as I4; exclude only x==0 for the donut, explicitly
↪  changing local extrapolation. Recompute cluster influence variance
↪  and missingness bounds as needed. No new covariates, grade filters or
↪  bandwidth search. If a specification has insufficient support, its
↪  status is unresolved, never silently omitted. No multiplicity claim
↪  is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all fou
↪  r rows in the sensitivity figure with units=pp, including noncomputed
↪  rows. Compare available scalar primary and variant estimates: a sign
↪  reversal or variant point outside the primary interval is sensitive.
↪  For partial bounds use disjoint intervals as sensitive; overlapping
↪  intervals alone cannot prove equality. All variants must be computed
↪  for stable. If primary is selection_limited, variants inherit that
↪  ceiling. Synthetic tests keep identical rows in primary and
↪  recomputation, respect inclusive zero except the expressly registered
↪  donut, and preserve a missing variant row. Consequence: stability is
↪  only consistency over these specified choices, while sensitivity
↪  limits a broad policy conclusion. Subsequent retained assessment is a
↪  possible family-recognition response, not first lifetime dyslexia.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000217/endpoints/parent_assessment/robustness/
↪  and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

```
Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪  computable variant contradicts primary; all failed variants remain
↪  explicit with NA display rows. Stable never follows an unestimable
↪  primary or missing variant. No joint multi-specification coverage is
↪  claimed. Write inference_status and display status under G2,
↪  including unestimable numeric rows. Reproduce exact per-grade h/b
↪  from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000217/endpoints/parent_assessm
↪  ent/robustness/. Cross-component primary files are read from
↪  prereg/runtime/atom-000217/endpoints/parent_assessment/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

The root component vector reports each endpoint primary direction/interva
↪  l type, ascertainment decision, robustness decision, and measurement,
↪  horizon, selection and operational restrictions. Within this
↪  experiment, differing outcomes remain independently interpretable.
↪  Mixed signs across different horizons are side-by-side observed
↪  contrasts, not common-population divergence. All graphical and
↪  manuscript bindings use the exact endpoint/component directory above.
```

Registered experiment

Does marginal classification change parental recognition response?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000217`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000218: Educational progression and attainment

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state,

component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Scope and order: this experiment asks whether marginal national-test classification changes educational progression and attainment. Use all grades 4,5,6,7,8,9. Each endpoint below is a separate slot in the unchanged 24-slot primary family; its ascertainment belongs to the separate 24-slot diagnostic family. No endpoint value activates another endpoint. After the native grade activation passes, first perform each endpoint's own calendar/construct/relative/provenance checks, then ascertainment, primary estimation, and mandatory robustness whenever its primary component is increase/decrease/uncertain/selection_limited. An evidenced primary boundary makes its robustness internally not_activated. Ascertainment can finish even when primary or robustness fails, and primary does not require an insignificant ascertainment test. Robustness no_result never becomes stable. Aggregate only after every scheduled component completes, is evidenced ineligible, or has a recorded operational terminal. Preserve completed components when another fails; if all scientific work fails operationally use Atom terminal no_result.

education18 / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000218, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events. For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling

to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000218/endpoints/education18/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000218/endpoints/education18/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000218/endpoints/education18/primary/; ascertainment and robustness never overwrite primary judgments or scope.

education18 / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata. says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.
- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.

- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=education18; family=adulthood; fixed horizon=18th_birthday; display unit=pp. Population and exact coding: Covering KOTRE spell classified DISCED15 level3+ by dated UDD crosswalk. Incorporate D8 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=binary; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must

support the fitted operator; no renormalizing after a stratum fails. Report h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Educational participation at 18 is a benchmark and does not establish completed attainment. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000218/endpoints/education18/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values;

exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000218. Exact component path: prereg/runtime/atom-000218/endpoints/education18/primary/. Cross-component primary files are read from prereg/runtime/atom-000218/endpoints/education18/primary/; ascertainment and robustness never overwrite primary judgments or scope.

education18 / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for education18, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000218 and incorporated D8. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=pp, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. Educational participation at 18 is a benchmark and does not establish completed attainment.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands

and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000218/endpoints/education18/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000218/endpoints/education18/robustness/. Cross-component primary files are read from prereg/runtime/atom-000218/endpoints/education18/primary/; ascertainment and robustness never overwrite primary judgments or scope.

attainment20 / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of

atom-000218, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events. For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000218/endpoints/attainment20/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000218/endpoints/attainment20/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000218/endpoints/attainment20/primary/; ascertainment and robustness never overwrite primary judgments or scope.

attainment20 / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata. says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.
- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=attainment20; family=adulthood; fixed horizon=20th_birthday; display unit=pp. Population and exact coding: Valid HFAUDD spell on20th birthday classified at least upper-secondary completion, not an exit code alone. Incorporate D8 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce

missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=binary; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must support the fitted operator; no renormalizing after a stratum fails. Report h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Completion overlaps prior work; it does not establish material security. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000218/endpoints/attainment20/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display

status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values; exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000218. Exact component path: prereg/runtime/atom-000218/endpoints/attainment20/primary/. Cross-component primary files are read from prereg/runtime/atom-000218/endpoints/attainment20/primary/; ascertainment and robustness never overwrite primary judgments or scope.

attainment20 / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for attainment20, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000218 and incorporated D8. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=pp, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability

is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. Completion overlaps prior work; it does not establish material security.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000218/endpoints/attainment20/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000218/endpoints/attainment20/robustness/. Cross-component primary files are read from prereg/runtime/atom-000218/endpoints/attainment20/primary/; ascertainment and robustness never overwrite primary judgments or scope.

The root component vector reports each endpoint primary direction/interval type, ascertainment decision, robustness decision, and measurement, horizon, selection and operational restrictions. Within this experiment, differing outcomes remain independently interpretable. Mixed signs across different horizons are side-by-side observed contrasts, not common-population divergence. All graphical and manuscript bindings use the exact endpoint/component directory above.

Complete registration fields

```
id: atom-000218
topic: Educational progression and attainment
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
```

```
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: Does marginal classification change educational progression and
    attainment?
  rationale: Formal education at 18 and attained qualification by 20 jointly
    address progression and completion. Their distinct age/calendar
    ↪  eligibility,
    directions and unavailable horizons remain separate; neither requires
    the other to be observed.
  assumption: Administrative recognition can affect opportunities, reporting
    and service contact through multiple routes; exact source semantics and
    continuity require evidence, not an estimator label. See literature.md
    and identification.md.
  target_strength: causal
  target_shape: comparison
  ratings:
    importance: 5
    novelty: 3
    feasibility: 2
    data_advantage: 4
    informativeness: 0.5
  tables:
  - BEF
  - DOD
  - KOTRE
  - UDDA
  - UDDF
  - UDD_FOLKESKOLE_FRAVAER_STIL
  - UDD_ORDBLINDETEST
  - VNDS
  activation: state(atom-000001) == "ready" AND state(atom-000002) ==
  ↪  "compatible"
    AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000505) == "eligible_sharp" OR state(atom-000505) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000506) == "eligible_sharp" OR state(atom-000506) ==
    ↪  "eligible_nonsharp")
  verdicts:
  - key: sensitive
    region: At least one endpoint has a computed I4 sensitivity contradiction.
      This precedence applies even if another endpoint/variant fails.
    says: Name every affected endpoint and variant; retain all primary
    ↪  estimates
      and independent component failures without replacing a primary.
  - key: mixed_direction
    region: No preceding region; at least one qualified increase and one
    ↪  qualified
      decrease among this experiment's endpoints. Qualified means valid
      ↪  primary
      interval/bounds and stable own robustness.
```

```
  says: Report the discordant endpoint directions in their original
  ↪  units/scopes;
    do not average or assign a common welfare sign.
- key: directional
  region: No preceding region; at least one endpoint is a qualified increase
    or decrease. Other endpoints may be uncertain, selected, boundary,
    ↪  failed
    or unresolved.
  says: Report only named qualified directions and every other endpoint's
    disposition. This does not imply the entire domain changed or that all
    endpoints were available.
- key: uncertain
  region: No preceding region; at least one endpoint has a valid primary
    interval/bounds, but no qualified direction.
  says: Report exact intervals and endpoint-specific robustness
  ↪  restrictions;
    zero-containing intervals and unresolved robustness remain different
    cases, neither equivalence.
- key: boundary
  region: No preceding region; every endpoint has an evidenced measurement
    or horizon/population boundary.
  says: This scientific question cannot be evaluated under the frozen
  ↪  target;
    report component-specific reasons, never a null.
- key: restricted
  region: No preceding region; at least one endpoint supplies completed
    evidence of selection_limited or unestimable inference.
  says: Report the surviving selected/unestimable evidence and independent
    failures; no all-eligible directional claim.
- key: otherwise
  region: otherwise
  says: The experiment remains unresolved. Preserve every component state,
    terminal and unavailable reason; operational failure is not
    ↪  insignificance.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪  Atoms or activation primitives. Execute every prescribed component
  ↪  that is scientifically eligible, independently of other component
  ↪  signs. Component outputs retain their own local decision, inference
  ↪  and operational status; only the native judgment.json at the Atom
  ↪  root supplies the Atom local state. No component failure can erase
  ↪  completed evidence in another component. When no scientific component
  ↪  completes because execution fails, set terminal no_result with no
  ↪  Atom local state. Otherwise aggregate only by the ordered registered
  ↪  regions and record every component's failure, boundary, unknown or
  ↪  inactive disposition. Pending necessary evidence stays pending; it is
  ↪  never coded as negative evidence. Internal failed work is not
  ↪  automatically retried.
```

```
Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
↪  definitions. These fix population, dates, table/field dictionaries,
↪  code versions, joins, inference, missingness, outputs and synthetic c
↪  hecks. A dictionary crosswalk is semantic verification before outcome
↪  values, not a new scientific choice. Keep all endpoint-specific
↪  units, horizons and Bonferroni allocations; grouping introduces no
↪  average outcome, composite score, new hypothesis or additional alpha.
↪  Write root audit.json, status.json, judgment.json and components.csv
↪  with component, outcome, component_state, component_terminal,
↪  inference_status, reason, evidence_path. Components.csv is an
↪  evidence index under this protocol, never a second experiment graph.
↪  Suppression is applied after governed adjudication, and cannot govern
↪  activation or disclose protected directions.

Scope and order: this experiment asks whether marginal national-test
↪  classification changes educational progression and attainment. Use
↪  all grades 4,5,6,7,8,9. Each endpoint below is a separate slot in the
↪  unchanged 24-slot primary family; its ascertainment belongs to the
↪  separate 24-slot diagnostic family. No endpoint value activates
↪  another endpoint. After the native grade activation passes, first
↪  perform each endpoint's own calendar/construct/relative/provenance
↪  checks, then ascertainment, primary estimation, and mandatory
↪  robustness whenever its primary component is
↪  increase/decrease/uncertain/selection_limited. An evidenced primary
↪  boundary makes its robustness internally not_activated. Ascertainment
↪  can finish even when primary or robustness fails, and primary does
↪  not require an insignificant ascertainment test. Robustness no_result
↪  never becomes stable. Aggregate only after every scheduled component
↪  completes, is evidenced ineligible, or has a recorded operational
↪  terminal. Preserve completed components when another fails; if all
↪  scientific work fails operationally use Atom terminal no_result.

## education18 / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
```

```
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
Internal ascertainment diagnostic on exactly the baseline-eligible
↪  population and horizon of atom-000218, with the same
↪  table/field/version/join/exit definitions, fixed grades and baseline
↪  weights. Do not require that primary to finish and do not use its
↪  sign. First construct whether the registered endpoint is defined and
↪  observed for each baseline index; no value or realized employment
↪  changes eligibility. Atom-specific D9 calibration/correction checks
↪  still apply. For defined event-before-exit outcomes, complete event
↪  universe establishes observation even for zero events. For undefined
↪  after-death school/state outcomes, report undefined proportion
↪  separately; never classify death as a negative symptom. Apply I5
↪  constant handling to the observation indicator; documentary
↪  arithmetic can be structural_complete, observed constants have no
↪  p-value. Otherwise apply I3 as a binary outcome without outcome
↪  missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪  is distinct from the 24 primary outcomes and baseline48. Output
↪  ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪  diagnostics.csv, audit.json, judgment.json. Include observation
↪  fractions by side, undefined/death/emigration counts and
↪  denominators, exact horizon and p_raw/p_adjusted only for a valid
↪  contrast. A detected or undetected difference cannot choose a new
↪  endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪  all-unobserved, varying indicator and death-undefined fixtures test
↪  the local regions. Every state is narrated in Table S2 through its
↪  own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000218/endpoints/education18/ascertainment/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

```
Exact component path: prereg/runtime/atom-000218/endpoints/education18/as
↪  certainment/. Cross-component primary files are read from
↪  prereg/runtime/atom-000218/endpoints/education18/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## education18 / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪  demonstrably
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Inferential status: one prespecified directional slot in the 24-slot
↪ study-wide family; conditional causal interpretation for the spring
↪ 2015 historical margin only. Endpoint=education18; family=adulthood;
↪ fixed horizon=18th_birthday; display unit=pp. Population and exact
↪ coding: Covering KOTRE spell classified DISCED15 level3+ by dated UDD
↪ crosswalk. Incorporate D8 and D1-D3, including individual exclusions,
↪ date-based eligibility, join cardinalities, code dictionaries and
↪ missingness. D7 first-family indexing applies to relatives' outcomes.
↪ No actual graduation, employment, care use, intact family or future
↪ response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the
↪ inclusive historical cutoff, pooled across the endpoint's fixed
↪ baseline-grade strata with pre-outcome count weights. It is neither
↪ the inherent effect of dyslexia nor the effect of a particular
↪ support program. Required identifying variation/assumptions are I1/I2
↪ and remain unproved by diagnostic passes. This endpoint uses no
↪ postbaseline controls. No fuzzy ratio is allowed even if recorded
↪ classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪ verify this endpoint's2015 calendar/dictionaries before values; form
↪ its baseline target and expected outcome row for every eligible
↪ index; assert D2 joins, invalid-code and duplicates dispositions;
↪ build endpoint plus observation/exit indicators; produce missingness
↪ diagnostics without removing the baseline row; apply RD from I3 with
↪ endpoint kind=binary; transform binary risk effects by100 once; fit
↪ available-case sensitivity only when missingness requires it;
↪ calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪ for a complete point estimand, or the simultaneous outer bound
↪ interval for a bounded partially observed endpoint; retain unbounded
↪ missingness as selection_limited. Do not choose another cohort, grade
↪ stratum, time window or definition if this fit lacks support. All
↪ grade strata required by this endpoint must support the fitted
↪ operator; no renormalizing after a stratum fails. Report h/b,
↪ support, clusters, effective n, censoring/exit fractions and
↪ conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable),
↪ diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪ identified bounds put estimate/p values NA and use lower/upper as
↪ outer limits; a missing point estimate must never be plotted at zero.
↪ Required figure: the full causal forest, plus its own registered
↪ robustness display if the internal robustness rule is satisfied. Synt
↪ hetic check: score=0 belongs on red; complete binary endpoint agrees
↪ with ordinary RD after transformation; missing bounded endpoint
↪ widens the extreme interval; missing unbounded endpoint never
↪ produces a full-population causal p-value; dormant slots remain in
↪ the 24 denominator. Software failures get no_result, not uncertain.
↪ Permitted claim ceiling: Educational participation at 18 is a
↪ benchmark and does not establish completed attainment. Directional
↪ local states do not establish practical importance. A confidence
↪ interval spanning zero never licenses no effect or equivalence.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000218/endpoints/education18/primary/ and remain
↪  governed until aggregate disclosure approval. Write audit.json and
↪  judgment.json plus the named plot-ready table; G1/G2 define status
↪  and column meanings. No numerical result is populated now. Before
↪  runtime use G3 synthetic join/date/missingness checks and verify
↪  row-order invariance; a failed check prevents output release. Every
↪  result constrains the Molecule under its composable rules; neither
↪  failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000218.
Exact component path: prereg/runtime/atom-000218/endpoints/education18/pr
↪  imary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000218/endpoints/education18/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## education18 / robustness
- key: sensitive
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
```

```
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for education18, not an additional primary
↪  discovery. Scope, unit, field/code mapping, population, estimand and
↪  missingness are exactly those of atom-000218 and incorporated D8.
↪  Read its frozen analysis population, weights, primary h/b and saved
↪  aggregate influence outputs; do not reconstruct a more favorable
↪  cohort. For each fixed specification in I4 (primary,half_bandwidth,wi
↪  der_bandwidth,donut), rerun the same local-linear/bias-corrected
↪  operator with the specified h/b changes, same grade weights and
↪  primary 24-slot interval and exploratory nonprimary 95% intervals as
↪  I4; exclude only x==0 for the donut, explicitly changing local
↪  extrapolation. Recompute cluster influence variance and missingness
↪  bounds as needed. No new covariates, grade filters or bandwidth
↪  search. If a specification has insufficient support, its status is
↪  unresolved, never silently omitted. No multiplicity claim is made
↪  from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all fou
↪  r rows in the sensitivity figure with units=pp, including noncomputed
↪  rows. Compare available scalar primary and variant estimates: a sign
↪  reversal or variant point outside the primary interval is sensitive.
↪  For partial bounds use disjoint intervals as sensitive; overlapping
↪  intervals alone cannot prove equality. All variants must be computed
↪  for stable. If primary is selection_limited, variants inherit that
↪  ceiling. Synthetic tests keep identical rows in primary and
↪  recomputation, respect inclusive zero except the expressly registered
↪  donut, and preserve a missing variant row. Consequence: stability is
↪  only consistency over these specified choices, while sensitivity
↪  limits a broad policy conclusion. Educational participation at 18 is
↪  a benchmark and does not establish completed attainment.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000218/endpoints/education18/robustness/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

```
Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪  computable variant contradicts primary; all failed variants remain
↪  explicit with NA display rows. Stable never follows an unestimable
↪  primary or missing variant. No joint multi-specification coverage is
↪  claimed. Write inference_status and display status under G2,
↪  including unestimable numeric rows. Reproduce exact per-grade h/b
↪  from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000218/endpoints/education18/ro
↪  bustness/. Cross-component primary files are read from
↪  prereg/runtime/atom-000218/endpoints/education18/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## attainment20 / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Internal ascertainment diagnostic on exactly the baseline-eligible
↪ population and horizon of atom-000218, with the same
↪ table/field/version/join/exit definitions, fixed grades and baseline
↪ weights. Do not require that primary to finish and do not use its
↪ sign. First construct whether the registered endpoint is defined and
↪ observed for each baseline index; no value or realized employment
↪ changes eligibility. Atom-specific D9 calibration/correction checks
↪ still apply. For defined event-before-exit outcomes, complete event
↪ universe establishes observation even for zero events. For undefined
↪ after-death school/state outcomes, report undefined proportion
↪ separately; never classify death as a negative symptom. Apply I5
↪ constant handling to the observation indicator; documentary
↪ arithmetic can be structural_complete, observed constants have no
↪ p-value. Otherwise apply I3 as a binary outcome without outcome
↪ missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪ is distinct from the 24 primary outcomes and baseline48. Output
↪ ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪ diagnostics.csv, audit.json, judgment.json. Include observation
↪ fractions by side, undefined/death/emigration counts and
↪ denominators, exact horizon and p_raw/p_adjusted only for a valid
↪ contrast. A detected or undetected difference cannot choose a new
↪ endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪ all-unobserved, varying indicator and death-undefined fixtures test
↪ the local regions. Every state is narrated in Table S2 through its
↪ own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000218/endpoints/attainment20/ascertainment/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000218/endpoints/attainment20/a
↪ scertainment/. Cross-component primary files are read from
↪ prereg/runtime/atom-000218/endpoints/attainment20/primary/;
↪ ascertainment and robustness never overwrite primary judgments or
↪ scope.

## attainment20 / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪ demonstrably
```

```
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Inferential status: one prespecified directional slot in the 24-slot
↪  study-wide family; conditional causal interpretation for the spring
↪  2015 historical margin only. Endpoint=attainment20; family=adulthood;
↪  fixed horizon=20th_birthday; display unit=pp. Population and exact
↪  coding: Valid HFAUDD spell on20th birthday classified at least
↪  upper-secondary completion, not an exit code alone. Incorporate D8
↪  and D1-D3, including individual exclusions, date-based eligibility,
↪  join cardinalities, code dictionaries and missingness. D7
↪  first-family indexing applies to relatives' outcomes. No actual
↪  graduation, employment, care use, intact family or future response
↪  condition determines eligibility.
```

```
Estimand: red-minus-adjacent-yellow local policy contrast at the
↪ inclusive historical cutoff, pooled across the endpoint's fixed
↪ baseline-grade strata with pre-outcome count weights. It is neither
↪ the inherent effect of dyslexia nor the effect of a particular
↪ support program. Required identifying variation/assumptions are I1/I2
↪ and remain unproved by diagnostic passes. This endpoint uses no
↪ postbaseline controls. No fuzzy ratio is allowed even if recorded
↪ classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪ verify this endpoint's2015 calendar/dictionaries before values; form
↪ its baseline target and expected outcome row for every eligible
↪ index; assert D2 joins, invalid-code and duplicates dispositions;
↪ build endpoint plus observation/exit indicators; produce missingness
↪ diagnostics without removing the baseline row; apply RD from I3 with
↪ endpoint kind=binary; transform binary risk effects by100 once; fit
↪ available-case sensitivity only when missingness requires it;
↪ calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪ for a complete point estimand, or the simultaneous outer bound
↪ interval for a bounded partially observed endpoint; retain unbounded
↪ missingness as selection_limited. Do not choose another cohort, grade
↪ stratum, time window or definition if this fit lacks support. All
↪ grade strata required by this endpoint must support the fitted
↪ operator; no renormalizing after a stratum fails. Report h/b,
↪ support, clusters, effective n, censoring/exit fractions and
↪ conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable),
↪ diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪ identified bounds put estimate/p values NA and use lower/upper as
↪ outer limits; a missing point estimate must never be plotted at zero.
↪ Required figure: the full causal forest, plus its own registered
↪ robustness display if the internal robustness rule is satisfied.
↪ Synthetic check: score=0 belongs on red; complete binary endpoint
↪ agrees with ordinary RD after transformation; missing bounded
↪ endpoint widens the extreme interval; missing unbounded endpoint
↪ never produces a full-population causal p-value; dormant slots remain
↪ in the 24 denominator. Software failures get no_result, not
↪ uncertain. Permitted claim ceiling: Completion overlaps prior work;
↪ it does not establish material security. Directional local states do
↪ not establish practical importance. A confidence interval spanning
↪ zero never licenses no effect or equivalence.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000218/endpoints/attainment20/primary/ and remain
↪  governed until aggregate disclosure approval. Write audit.json and
↪  judgment.json plus the named plot-ready table; G1/G2 define status
↪  and column meanings. No numerical result is populated now. Before
↪  runtime use G3 synthetic join/date/missingness checks and verify
↪  row-order invariance; a failed check prevents output release. Every
↪  result constrains the Molecule under its composable rules; neither
↪  failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000218.
Exact component path: prereg/runtime/atom-000218/endpoints/attainment20/p
↪  rimary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000218/endpoints/attainment20/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## attainment20 / robustness
- key: sensitive
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
```

```
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for attainment20, not an additional
↪  primary discovery. Scope, unit, field/code mapping, population,
↪  estimand and missingness are exactly those of atom-000218 and
↪  incorporated D8. Read its frozen analysis population, weights,
↪  primary h/b and saved aggregate influence outputs; do not reconstruct
↪  a more favorable cohort. For each fixed specification in I4
↪  (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-
↪  linear/bias-corrected operator with the specified h/b changes, same
↪  grade weights and primary 24-slot interval and exploratory nonprimary
↪  95% intervals as I4; exclude only x==0 for the donut, explicitly
↪  changing local extrapolation. Recompute cluster influence variance
↪  and missingness bounds as needed. No new covariates, grade filters or
↪  bandwidth search. If a specification has insufficient support, its
↪  status is unresolved, never silently omitted. No multiplicity claim
↪  is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all fou
↪  r rows in the sensitivity figure with units=pp, including noncomputed
↪  rows. Compare available scalar primary and variant estimates: a sign
↪  reversal or variant point outside the primary interval is sensitive.
↪  For partial bounds use disjoint intervals as sensitive; overlapping
↪  intervals alone cannot prove equality. All variants must be computed
↪  for stable. If primary is selection_limited, variants inherit that
↪  ceiling. Synthetic tests keep identical rows in primary and
↪  recomputation, respect inclusive zero except the expressly registered
↪  donut, and preserve a missing variant row. Consequence: stability is
↪  only consistency over these specified choices, while sensitivity
↪  limits a broad policy conclusion. Completion overlaps prior work; it
↪  does not establish material security.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000218/endpoints/attainment20/robustness/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

```
Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪  computable variant contradicts primary; all failed variants remain
↪  explicit with NA display rows. Stable never follows an unestimable
↪  primary or missing variant. No joint multi-specification coverage is
↪  claimed. Write inference_status and display status under G2,
↪  including unestimable numeric rows. Reproduce exact per-grade h/b
↪  from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000218/endpoints/attainment20/r
↪  obustness/. Cross-component primary files are read from
↪  prereg/runtime/atom-000218/endpoints/attainment20/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

The root component vector reports each endpoint primary direction/interva
↪  l type, ascertainment decision, robustness decision, and measurement,
↪  horizon, selection and operational restrictions. Within this
↪  experiment, differing outcomes remain independently interpretable.
↪  Mixed signs across different horizons are side-by-side observed
↪  contrasts, not common-population divergence. All graphical and
↪  manuscript bindings use the exact endpoint/component directory above.
```

Registered experiment

Does marginal classification change educational progression and attainment?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000218`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000220: Early-adult paid work

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state,

component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Scope and order: this experiment asks whether marginal national-test classification changes early-adult paid work. Use all grades 4,5,6,7,8,9. Each endpoint below is a separate slot in the unchanged 24-slot primary family; its ascertainment belongs to the separate 24-slot diagnostic family. No endpoint value activates another endpoint. After the native grade activation passes, first perform each endpoint's own calendar/construct/relative/provenance checks, then ascertainment, primary estimation, and mandatory robustness whenever its primary component is increase/decrease/uncertain/selection_limited. An evidenced primary boundary makes its robustness internally not_activated. Ascertainment can finish even when primary or robustness fails, and primary does not require an insignificant ascertainment test. Robustness no_result never becomes stable. Aggregate only after every scheduled component completes, is evidenced ineligible, or has a recorded operational terminal. Preserve completed components when another fails; if all scientific work fails operationally use Atom terminal no_result.

employee20 / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000220, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events. For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling

to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000220/endpoints/employee20/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000220/endpoints/employee20/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000220/endpoints/employee20/primary/; ascertainment and robustness never overwrite primary judgments or scope.

employee20 / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata. says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.
- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.

- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=employee20; family=adulthood; fixed horizon=calendar_year_turning20; display unit=pp. Population and exact coding: Any positive validated employee paid hours in calendar year containing20th birthday; no graduation/employment selection. Incorporate D8 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=binary; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must

support the fitted operator; no renormalizing after a stratum fails. Report h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Employee participation is one component of inclusion and excludes unmeasured self-employment. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000220/endpoints/employee20/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values;

exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000220. Exact component path: prereg/runtime/atom-000220/endpoints/employee20/primary/. Cross-component primary files are read from prereg/runtime/atom-000220/endpoints/employee20/primary/; ascertainment and robustness never overwrite primary judgments or scope.

employee20 / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for employee20, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000220 and incorporated D8. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=pp, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. Employee participation is one component of inclusion and excludes unmeasured self-employment.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands

and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000220/endpoints/employee20/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000220/endpoints/employee20/robustness/. Cross-component primary files are read from prereg/runtime/atom-000220/endpoints/employee20/primary/; ascertainment and robustness never overwrite primary judgments or scope.

wages20 / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of

atom-000220, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events. For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000220/endpoints/wages20/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000220/endpoints/wages20/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000220/endpoints/wages20/primary/; ascertainment and robustness never overwrite primary judgments or scope.

wages20 / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata. says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.
- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=wages20; family=adulthood; fixed horizon=calendar_year_turning20; display unit=1000_DKK. Population and exact coding: Annual IND.LOENMV_13/1000, preserve negatives and verified zeros, no employed-only restriction. Incorporate D8 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code

and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=unbounded; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must support the fitted operator; no renormalizing after a stratum fails. Report h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Lower current wages may coexist with education; no lifetime-return or welfare inference. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000220/endpoints/wages20/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval

spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values; exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000220. Exact component path: prereg/runtime/atom-000220/endpoints/wages20/primary/. Cross-component primary files are read from prereg/runtime/atom-000220/endpoints/wages20/primary/; ascertainment and robustness never overwrite primary judgments or scope.

wages20 / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for wages20, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000220 and incorporated D8. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=1000_DKK, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability is only consistency over these specified choices, while sensitivity limits a broad policy

conclusion. Lower current wages may coexist with education; no lifetime-return or welfare inference.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000220/endpoints/wages20/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000220/endpoints/wages20/robustness/. Cross-component primary files are read from prereg/runtime/atom-000220/endpoints/wages20/primary/; ascertainment and robustness never overwrite primary judgments or scope.

The root component vector reports each endpoint primary direction/interval type, ascertainment decision, robustness decision, and measurement, horizon, selection and operational restrictions. Within this experiment, differing outcomes remain independently interpretable. Mixed signs across different horizons are side-by-side observed contrasts, not common-population divergence. All graphical and manuscript bindings use the exact endpoint/component directory above.

Complete registration fields

```
id: atom-000220
topic: Early-adult paid work
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
```

```
preregistration:
  version: 1
  mode: adaptive
  question: Does marginal classification change early-adult paid work?
  rationale: Employee participation and wages in the year of turning 20
  ↪  jointly
    describe paid-work entry and remuneration. Zero employee hours is not
    comprehensive nonemployment, and studying is not failure.
  assumption: Administrative recognition can affect opportunities, reporting
    and service contact through multiple routes; exact source semantics and
    continuity require evidence, not an estimator label. See literature.md
    and identification.md.
  target_strength: causal
  target_shape: comparison
  ratings:
    importance: 5
    novelty: 3
    feasibility: 2
    data_advantage: 4
    informativeness: 0.5
  tables:
  - BEF
  - BFL
  - DOD
  - IND
  - UDD_FOLKESKOLE_FRAVAER_STIL
  - UDD_ORDBLINDETEST
  - VNDS
  activation: state(atom-000001) == "ready" AND state(atom-000002) ==
  ↪  "compatible"
    AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000505) == "eligible_sharp" OR state(atom-000505) ==
    ↪  "eligible_nonsharp")
    AND (state(atom-000506) == "eligible_sharp" OR state(atom-000506) ==
    ↪  "eligible_nonsharp")
  verdicts:
  - key: sensitive
    region: At least one endpoint has a computed I4 sensitivity contradiction.
      This precedence applies even if another endpoint/variant fails.
    says: Name every affected endpoint and variant; retain all primary
    ↪  estimates
      and independent component failures without replacing a primary.
  - key: mixed_direction
    region: No preceding region; at least one qualified increase and one
    ↪  qualified
      decrease among this experiment's endpoints. Qualified means valid
      ↪  primary
      interval/bounds and stable own robustness.
    says: Report the discordant endpoint directions in their original
    ↪  units/scopes;
      do not average or assign a common welfare sign.
  - key: directional
    region: No preceding region; at least one endpoint is a qualified increase
```

```
    or decrease. Other endpoints may be uncertain, selected, boundary,
    ↪  failed
    or unresolved.
  says: Report only named qualified directions and every other endpoint's
    disposition. This does not imply the entire domain changed or that all
    endpoints were available.
- key: uncertain
  region: No preceding region; at least one endpoint has a valid primary
    interval/bounds, but no qualified direction.
  says: Report exact intervals and endpoint-specific robustness
  ↪  restrictions;
    zero-containing intervals and unresolved robustness remain different
    cases, neither equivalence.
- key: boundary
  region: No preceding region; every endpoint has an evidenced measurement
    or horizon/population boundary.
  says: This scientific question cannot be evaluated under the frozen
  ↪  target;
    report component-specific reasons, never a null.
- key: restricted
  region: No preceding region; at least one endpoint supplies completed
    evidence of selection_limited or unestimable inference.
  says: Report the surviving selected/unestimable evidence and independent
    failures; no all-eligible directional claim.
- key: otherwise
  region: otherwise
  says: The experiment remains unresolved. Preserve every component state,
    terminal and unavailable reason; operational failure is not
    ↪  insignificance.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪  Atoms or activation primitives. Execute every prescribed component
  ↪  that is scientifically eligible, independently of other component
  ↪  signs. Component outputs retain their own local decision, inference
  ↪  and operational status; only the native judgment.json at the Atom
  ↪  root supplies the Atom local state. No component failure can erase
  ↪  completed evidence in another component. When no scientific component
  ↪  completes because execution fails, set terminal no_result with no
  ↪  Atom local state. Otherwise aggregate only by the ordered registered
  ↪  regions and record every component's failure, boundary, unknown or
  ↪  inactive disposition. Pending necessary evidence stays pending; it is
  ↪  never coded as negative evidence. Internal failed work is not
  ↪  automatically retried.
  Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
  ↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
  ↪  definitions. These fix population, dates, table/field dictionaries,
  ↪  code versions, joins, inference, missingness, outputs and synthetic c
  ↪  hecks. A dictionary crosswalk is semantic verification before outcome
  ↪  values, not a new scientific choice. Keep all endpoint-specific
  ↪  units, horizons and Bonferroni allocations; grouping introduces no
  ↪  average outcome, composite score, new hypothesis or additional alpha.
  ↪  Write root audit.json, status.json, judgment.json and components.csv
  ↪  with component, outcome, component_state, component_terminal,
  ↪  inference_status, reason, evidence_path. Components.csv is an
  ↪  evidence index under this protocol, never a second experiment graph.
  ↪  Suppression is applied after governed adjudication, and cannot govern
  ↪  activation or disclose protected directions.
```

```
Scope and order: this experiment asks whether marginal national-test
↪  classification changes early-adult paid work. Use all grades
↪  4,5,6,7,8,9. Each endpoint below is a separate slot in the unchanged
↪  24-slot primary family; its ascertainment belongs to the separate
↪  24-slot diagnostic family. No endpoint value activates another
↪  endpoint. After the native grade activation passes, first perform
↪  each endpoint's own calendar/construct/relative/provenance checks,
↪  then ascertainment, primary estimation, and mandatory robustness
↪  whenever its primary component is
↪  increase/decrease/uncertain/selection_limited. An evidenced primary
↪  boundary makes its robustness internally not_activated. Ascertainment
↪  can finish even when primary or robustness fails, and primary does
↪  not require an insignificant ascertainment test. Robustness no_result
↪  never becomes stable. Aggregate only after every scheduled component
↪  completes, is evidenced ineligible, or has a recorded operational
↪  terminal. Preserve completed components when another fails; if all
↪  scientific work fails operationally use Atom terminal no_result.

## employee20 / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Internal ascertainment diagnostic on exactly the baseline-eligible
↪ population and horizon of atom-000220, with the same
↪ table/field/version/join/exit definitions, fixed grades and baseline
↪ weights. Do not require that primary to finish and do not use its
↪ sign. First construct whether the registered endpoint is defined and
↪ observed for each baseline index; no value or realized employment
↪ changes eligibility. Atom-specific D9 calibration/correction checks
↪ still apply. For defined event-before-exit outcomes, complete event
↪ universe establishes observation even for zero events. For undefined
↪ after-death school/state outcomes, report undefined proportion
↪ separately; never classify death as a negative symptom. Apply I5
↪ constant handling to the observation indicator; documentary
↪ arithmetic can be structural_complete, observed constants have no
↪ p-value. Otherwise apply I3 as a binary outcome without outcome
↪ missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪ is distinct from the 24 primary outcomes and baseline48. Output
↪ ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪ diagnostics.csv, audit.json, judgment.json. Include observation
↪ fractions by side, undefined/death/emigration counts and
↪ denominators, exact horizon and p_raw/p_adjusted only for a valid
↪ contrast. A detected or undetected difference cannot choose a new
↪ endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪ all-unobserved, varying indicator and death-undefined fixtures test
↪ the local regions. Every state is narrated in Table S2 through its
↪ own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000220/endpoints/employee20/ascertainment/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000220/endpoints/employee20/asc
↪ ertainment/. Cross-component primary files are read from
↪ prereg/runtime/atom-000220/endpoints/employee20/primary/;
↪ ascertainment and robustness never overwrite primary judgments or
↪ scope.

## employee20 / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪ demonstrably
```

```
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Inferential status: one prespecified directional slot in the 24-slot
↪  study-wide family; conditional causal interpretation for the spring
↪  2015 historical margin only. Endpoint=employee20; family=adulthood;
↪  fixed horizon=calendar_year_turning20; display unit=pp. Population
↪  and exact coding: Any positive validated employee paid hours in
↪  calendar year containing20th birthday; no graduation/employment
↪  selection. Incorporate D8 and D1-D3, including individual exclusions,
↪  date-based eligibility, join cardinalities, code dictionaries and
↪  missingness. D7 first-family indexing applies to relatives' outcomes.
↪  No actual graduation, employment, care use, intact family or future
↪  response condition determines eligibility.
```

```
Estimand: red-minus-adjacent-yellow local policy contrast at the
↪ inclusive historical cutoff, pooled across the endpoint's fixed
↪ baseline-grade strata with pre-outcome count weights. It is neither
↪ the inherent effect of dyslexia nor the effect of a particular
↪ support program. Required identifying variation/assumptions are I1/I2
↪ and remain unproved by diagnostic passes. This endpoint uses no
↪ postbaseline controls. No fuzzy ratio is allowed even if recorded
↪ classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪ verify this endpoint's2015 calendar/dictionaries before values; form
↪ its baseline target and expected outcome row for every eligible
↪ index; assert D2 joins, invalid-code and duplicates dispositions;
↪ build endpoint plus observation/exit indicators; produce missingness
↪ diagnostics without removing the baseline row; apply RD from I3 with
↪ endpoint kind=binary; transform binary risk effects by100 once; fit
↪ available-case sensitivity only when missingness requires it;
↪ calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪ for a complete point estimand, or the simultaneous outer bound
↪ interval for a bounded partially observed endpoint; retain unbounded
↪ missingness as selection_limited. Do not choose another cohort, grade
↪ stratum, time window or definition if this fit lacks support. All
↪ grade strata required by this endpoint must support the fitted
↪ operator; no renormalizing after a stratum fails. Report h/b,
↪ support, clusters, effective n, censoring/exit fractions and
↪ conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable),
↪ diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪ identified bounds put estimate/p values NA and use lower/upper as
↪ outer limits; a missing point estimate must never be plotted at zero.
↪ Required figure: the full causal forest, plus its own registered
↪ robustness display if the internal robustness rule is satisfied. Synt
↪ hetic check: score=0 belongs on red; complete binary endpoint agrees
↪ with ordinary RD after transformation; missing bounded endpoint
↪ widens the extreme interval; missing unbounded endpoint never
↪ produces a full-population causal p-value; dormant slots remain in
↪ the 24 denominator. Software failures get no_result, not uncertain.
↪ Permitted claim ceiling: Employee participation is one component of
↪ inclusion and excludes unmeasured self-employment. Directional local
↪ states do not establish practical importance. A confidence interval
↪ spanning zero never licenses no effect or equivalence.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000220/endpoints/employee20/primary/ and remain
↪  governed until aggregate disclosure approval. Write audit.json and
↪  judgment.json plus the named plot-ready table; G1/G2 define status
↪  and column meanings. No numerical result is populated now. Before
↪  runtime use G3 synthetic join/date/missingness checks and verify
↪  row-order invariance; a failed check prevents output release. Every
↪  result constrains the Molecule under its composable rules; neither
↪  failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000220.
Exact component path: prereg/runtime/atom-000220/endpoints/employee20/pri
↪  mary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000220/endpoints/employee20/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## employee20 / robustness
- key: sensitive
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
```

```
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for employee20, not an additional primary
↪  discovery. Scope, unit, field/code mapping, population, estimand and
↪  missingness are exactly those of atom-000220 and incorporated D8.
↪  Read its frozen analysis population, weights, primary h/b and saved
↪  aggregate influence outputs; do not reconstruct a more favorable
↪  cohort. For each fixed specification in I4 (primary,half_bandwidth,wi
↪  der_bandwidth,donut), rerun the same local-linear/bias-corrected
↪  operator with the specified h/b changes, same grade weights and
↪  primary 24-slot interval and exploratory nonprimary 95% intervals as
↪  I4; exclude only x==0 for the donut, explicitly changing local
↪  extrapolation. Recompute cluster influence variance and missingness
↪  bounds as needed. No new covariates, grade filters or bandwidth
↪  search. If a specification has insufficient support, its status is
↪  unresolved, never silently omitted. No multiplicity claim is made
↪  from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all fou
↪  r rows in the sensitivity figure with units=pp, including noncomputed
↪  rows. Compare available scalar primary and variant estimates: a sign
↪  reversal or variant point outside the primary interval is sensitive.
↪  For partial bounds use disjoint intervals as sensitive; overlapping
↪  intervals alone cannot prove equality. All variants must be computed
↪  for stable. If primary is selection_limited, variants inherit that
↪  ceiling. Synthetic tests keep identical rows in primary and
↪  recomputation, respect inclusive zero except the expressly registered
↪  donut, and preserve a missing variant row. Consequence: stability is
↪  only consistency over these specified choices, while sensitivity
↪  limits a broad policy conclusion. Employee participation is one
↪  component of inclusion and excludes unmeasured self-employment.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000220/endpoints/employee20/robustness/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

```
Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪  computable variant contradicts primary; all failed variants remain
↪  explicit with NA display rows. Stable never follows an unestimable
↪  primary or missing variant. No joint multi-specification coverage is
↪  claimed. Write inference_status and display status under G2,
↪  including unestimable numeric rows. Reproduce exact per-grade h/b
↪  from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000220/endpoints/employee20/rob
↪  ustness/. Cross-component primary files are read from
↪  prereg/runtime/atom-000220/endpoints/employee20/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## wages20 / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Internal ascertainment diagnostic on exactly the baseline-eligible
↪ population and horizon of atom-000220, with the same
↪ table/field/version/join/exit definitions, fixed grades and baseline
↪ weights. Do not require that primary to finish and do not use its
↪ sign. First construct whether the registered endpoint is defined and
↪ observed for each baseline index; no value or realized employment
↪ changes eligibility. Atom-specific D9 calibration/correction checks
↪ still apply. For defined event-before-exit outcomes, complete event
↪ universe establishes observation even for zero events. For undefined
↪ after-death school/state outcomes, report undefined proportion
↪ separately; never classify death as a negative symptom. Apply I5
↪ constant handling to the observation indicator; documentary
↪ arithmetic can be structural_complete, observed constants have no
↪ p-value. Otherwise apply I3 as a binary outcome without outcome
↪ missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪ is distinct from the 24 primary outcomes and baseline48. Output
↪ ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪ diagnostics.csv, audit.json, judgment.json. Include observation
↪ fractions by side, undefined/death/emigration counts and
↪ denominators, exact horizon and p_raw/p_adjusted only for a valid
↪ contrast. A detected or undetected difference cannot choose a new
↪ endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪ all-unobserved, varying indicator and death-undefined fixtures test
↪ the local regions. Every state is narrated in Table S2 through its
↪ own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000220/endpoints/wages20/ascertainment/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000220/endpoints/wages20/ascert
↪ ainment/. Cross-component primary files are read from
↪ prereg/runtime/atom-000220/endpoints/wages20/primary/; ascertainment
↪ and robustness never overwrite primary judgments or scope.

## wages20 / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪ demonstrably
    incompatible, including missing required grade strata.
```

```
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Inferential status: one prespecified directional slot in the 24-slot
↪  study-wide family; conditional causal interpretation for the spring
↪  2015 historical margin only. Endpoint=wages20; family=adulthood;
↪  fixed horizon=calendar_year_turning20; display unit=1000_DKK.
↪  Population and exact coding: Annual IND.LOENMV_13/1000, preserve
↪  negatives and verified zeros, no employed-only restriction.
↪  Incorporate D8 and D1-D3, including individual exclusions, date-based
↪  eligibility, join cardinalities, code dictionaries and missingness.
↪  D7 first-family indexing applies to relatives' outcomes. No actual
↪  graduation, employment, care use, intact family or future response
↪  condition determines eligibility.
```

```
Estimand: red-minus-adjacent-yellow local policy contrast at the
↪ inclusive historical cutoff, pooled across the endpoint's fixed
↪ baseline-grade strata with pre-outcome count weights. It is neither
↪ the inherent effect of dyslexia nor the effect of a particular
↪ support program. Required identifying variation/assumptions are I1/I2
↪ and remain unproved by diagnostic passes. This endpoint uses no
↪ postbaseline controls. No fuzzy ratio is allowed even if recorded
↪ classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪ verify this endpoint's2015 calendar/dictionaries before values; form
↪ its baseline target and expected outcome row for every eligible
↪ index; assert D2 joins, invalid-code and duplicates dispositions;
↪ build endpoint plus observation/exit indicators; produce missingness
↪ diagnostics without removing the baseline row; apply RD from I3 with
↪ endpoint kind=unbounded; transform binary risk effects by100 once;
↪ fit available-case sensitivity only when missingness requires it;
↪ calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪ for a complete point estimand, or the simultaneous outer bound
↪ interval for a bounded partially observed endpoint; retain unbounded
↪ missingness as selection_limited. Do not choose another cohort, grade
↪ stratum, time window or definition if this fit lacks support. All
↪ grade strata required by this endpoint must support the fitted
↪ operator; no renormalizing after a stratum fails. Report h/b,
↪ support, clusters, effective n, censoring/exit fractions and
↪ conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable),
↪ diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪ identified bounds put estimate/p values NA and use lower/upper as
↪ outer limits; a missing point estimate must never be plotted at zero.
↪ Required figure: the full causal forest, plus its own registered
↪ robustness display if the internal robustness rule is satisfied.
↪ Synthetic check: score=0 belongs on red; complete binary endpoint
↪ agrees with ordinary RD after transformation; missing bounded
↪ endpoint widens the extreme interval; missing unbounded endpoint
↪ never produces a full-population causal p-value; dormant slots remain
↪ in the 24 denominator. Software failures get no_result, not
↪ uncertain. Permitted claim ceiling: Lower current wages may coexist
↪ with education; no lifetime-return or welfare inference. Directional
↪ local states do not establish practical importance. A confidence
↪ interval spanning zero never licenses no effect or equivalence.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and prereg/i
↪  dentification.md I1-I4 for estimands and inference. These shared
↪  definitions are part of this Atom's protocol, not optional guidance.
↪  Apply ordered checks before model fitting: delivered schema/dictionar
↪  y; date and unit semantics; unique keys and duplicate disposition;
↪  baseline and horizon eligibility; outcome construction; missingness
↪  and inference; local adjudication. Never inspect a postbaseline
↪  estimate to repair an earlier choice. A demonstrably incompatible
↪  construct is an evidenced boundary; unresolved documentation reaches
↪  otherwise. A transport/access/software failure yields terminal no_res
↪  ult with no local state. Apply the listed verdict regions in order,
↪  first matching region wins; otherwise is exhaustive. All future
↪  outputs go to prereg/runtime/atom-000220/endpoints/wages20/primary/
↪  and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000220.
Exact component path: prereg/runtime/atom-000220/endpoints/wages20/primar
↪  y/. Cross-component primary files are read from
↪  prereg/runtime/atom-000220/endpoints/wages20/primary/; ascertainment
↪  and robustness never overwrite primary judgments or scope.

## wages20 / robustness
- key: sensitive
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
```

```
Registered robustness judgment for wages20, not an additional primary
↪ discovery. Scope, unit, field/code mapping, population, estimand and
↪ missingness are exactly those of atom-000220 and incorporated D8.
↪ Read its frozen analysis population, weights, primary h/b and saved
↪ aggregate influence outputs; do not reconstruct a more favorable
↪ cohort. For each fixed specification in I4 (primary,half_bandwidth,wi
↪ der_bandwidth,donut), rerun the same local-linear/bias-corrected
↪ operator with the specified h/b changes, same grade weights and
↪ primary 24-slot interval and exploratory nonprimary 95% intervals as
↪ I4; exclude only x==0 for the donut, explicitly changing local
↪ extrapolation. Recompute cluster influence variance and missingness
↪ bounds as needed. No new covariates, grade filters or bandwidth
↪ search. If a specification has insufficient support, its status is
↪ unresolved, never silently omitted. No multiplicity claim is made
↪ from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all
↪ four rows in the sensitivity figure with units=1000_DKK, including
↪ noncomputed rows. Compare available scalar primary and variant estima
↪ tes: a sign reversal or variant point outside the primary interval is
↪ sensitive. For partial bounds use disjoint intervals as sensitive;
↪ overlapping intervals alone cannot prove equality. All variants must
↪ be computed for stable. If primary is selection_limited, variants
↪ inherit that ceiling. Synthetic tests keep identical rows in primary
↪ and recomputation, respect inclusive zero except the expressly
↪ registered donut, and preserve a missing variant row. Consequence:
↪ stability is only consistency over these specified choices, while
↪ sensitivity limits a broad policy conclusion. Lower current wages may
↪ coexist with education; no lifetime-return or welfare inference.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000220/endpoints/wages20/robustness/ and remain
↪ governed until aggregate disclosure approval. Write audit.json and
↪ judgment.json plus the named plot-ready table; G1/G2 define status
↪ and column meanings. No numerical result is populated now. Before
↪ runtime use G3 synthetic join/date/missingness checks and verify
↪ row-order invariance; a failed check prevents output release. Every
↪ result constrains the Molecule under its composable rules; neither
↪ failure nor nonactivation means statistical insignificance.
```

```
Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪  computable variant contradicts primary; all failed variants remain
↪  explicit with NA display rows. Stable never follows an unestimable
↪  primary or missing variant. No joint multi-specification coverage is
↪  claimed. Write inference_status and display status under G2,
↪  including unestimable numeric rows. Reproduce exact per-grade h/b
↪  from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000220/endpoints/wages20/robust
↪  ness/. Cross-component primary files are read from
↪  prereg/runtime/atom-000220/endpoints/wages20/primary/; ascertainment
↪  and robustness never overwrite primary judgments or scope.

The root component vector reports each endpoint primary direction/interva
↪  l type, ascertainment decision, robustness decision, and measurement,
↪  horizon, selection and operational restrictions. Within this
↪  experiment, differing outcomes remain independently interpretable.
↪  Mixed signs across different horizons are side-by-side observed
↪  contrasts, not common-population divergence. All graphical and
↪  manuscript bindings use the exact endpoint/component directory above.
```

Registered experiment

Does marginal classification change early-adult paid work?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000220`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000222: Early-adult household circumstances

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state, component_terminal, inference_status, reason, evidence_path. Components.csv is

an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Scope and order: this experiment asks whether marginal national-test classification changes early-adult household circumstances. Use all grades 4,5,6,7,8,9. Each endpoint below is a separate slot in the unchanged 24-slot primary family; its ascertainment belongs to the separate 24-slot diagnostic family. No endpoint value activates another endpoint. After the native grade activation passes, first perform each endpoint's own calendar/construct/relative/provenance checks, then ascertainment, primary estimation, and mandatory robustness whenever its primary component is increase/decrease/uncertain/selection_limited. An evidenced primary boundary makes its robustness internally not_activated. Ascertainment can finish even when primary or robustness fails, and primary does not require an insignificant ascertainment test. Robustness no_result never becomes stable. Aggregate only after every scheduled component completes, is evidenced ineligible, or has a recorded operational terminal. Preserve completed components when another fails; if all scientific work fails operationally use Atom terminal no_result.

Internal relatives

- key: usable region: Pretest linkage semantics verified; all known relations have unique valid mappings and unknown roles are explicitly marked. says: Fixed recorded-parent/sibling targets can be studied with their baseline scope limitations.
- key: boundary region: Documentation establishes no dated parental linkage or incompatible key classes, so no baseline family target can be constructed. says: Family outcomes cannot be attributed to the index child under this delivery; child outcomes remain eligible.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Use D7 fixed pretest BEF snapshot, MOR_ID/FAR_ID, FOED_DAG, PNR, FAMILIE_ID and BEFBOP dated address intervals. Parent IDs must share the child PNR linkage class. Assert each child has at most one recorded value per parent role per snapshot; missing roles are unknown, not childless/no carer. Construct sibling sets by nonmissing shared parent; establish baseline school-grade eligibility with prior-month absence. Scan index assessments chronologically with fixed hash ties as D7. Report resident/nonresident parent links, one/two known roles, eligible sibling sets, conflicts and baseline missingness. This is the scope of recorded kinship, not validation of genetic relatedness or caregiving. Output diagnostics.csv with linkage proportions and conflict dispositions. No substantive outcome needed; no p-values. Synthetic fixture: two children with missing fathers are not siblings, subsequent births are excluded, later parental diagnosis cannot change roster. A complete roster at birth does not guarantee future response. Family branch uses only scientifically interpretable pretest links.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000222/relatives/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

resources20 / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000222, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events. For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling

to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000222/endpoints/resources20/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000222/endpoints/resources20/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000222/endpoints/resources20/primary/; ascertainment and robustness never overwrite primary judgments or scope.

resources20 / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata. says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.
- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.

- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=resources20; family=adulthood; fixed horizon=calendar_year_turning20; display unit=1000_DKK. Population and exact coding: Annual IND.AEKVIVADISP_13/1000 in20th-birthday calendar year. Incorporate D8 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=unbounded; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must support the fitted operator; no renormalizing after a stratum fails. Report

h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Resources reflect family composition and registry equivalization, not direct parental insurance. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000222/endpoints/resources20/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values; exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000222. Exact component path: prereg/runtime/atom-000222/endpoints/resources20/primary/. Cross-component primary files are read

from prereg/runtime/atom-000222/endpoints/resources20/primary/; ascertainment and robustness never overwrite primary judgments or scope.

resources20 / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for resources20, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000222 and incorporated D8. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=1000_DKK, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. Resources reflect family composition and registry equivalization, not direct parental insurance.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary;

date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000222/endpoints/resources20/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000222/endpoints/resources20/robustness/. Cross-component primary files are read from prereg/runtime/atom-000222/endpoints/resources20/primary/; ascertainment and robustness never overwrite primary judgments or scope.

coresidence20 / ascertainment

- key: differential region: Valid observation-indicator Bonferroni24 interval excludes zero. says: Observation varies at the threshold; bounds/selection ceilings remain mandatory, with no latent-health inference.
- key: structural_complete region: Documented complete universe plus all eligible outcomes defined and observed. says: No missing-outcome selection in this recorded construct; measurement error and detection remain possible.
- key: constant_observed region: Observation indicator is globally constant without documentary completeness, including all missing. says: Report its arithmetic value and denominator; no inferential balance or absence-of-selection claim.
- key: not_flagged region: Valid observation interval includes zero. says: No detected discontinuity in this observation indicator; no proof of missing at random.
- key: boundary region: Required horizon, construct or indicator is demonstrably undefined. says: This observation question is bounded; no manufactured missingness rate.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Internal ascertainment diagnostic on exactly the baseline-eligible population and horizon of atom-000222, with the same table/field/version/join/exit definitions, fixed grades and baseline weights. Do not require that primary to finish and do not use its

sign. First construct whether the registered endpoint is defined and observed for each baseline index; no value or realized employment changes eligibility. Atom-specific D9 calibration/correction checks still apply. For defined event-before-exit outcomes, complete event universe establishes observation even for zero events. For undefined after-death school/state outcomes, report undefined proportion separately; never classify death as a negative symptom. Apply I5 constant handling to the observation indicator; documentary arithmetic can be structural_complete, observed constants have no p-value. Otherwise apply I3 as a binary outcome without outcome missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget is distinct from the 24 primary outcomes and baseline48. Output ascertainment.csv (G2) plus estimator-components.csv for any fit, diagnostics.csv, audit.json, judgment.json. Include observation fractions by side, undefined/death/emigration counts and denominators, exact horizon and p_raw/p_adjusted only for a valid contrast. A detected or undetected difference cannot choose a new endpoint/model, waive bounds or identify MAR. Synthetic all-complete, all-unobserved, varying indicator and death-undefined fixtures test the local regions. Every state is narrated in Table S2 through its own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000222/endpoints/coresidence20/ascertainment/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000222/endpoints/coresidence20/ascertainment/. Cross-component primary files are read from prereg/runtime/atom-000222/endpoints/coresidence20/primary/; ascertainment and robustness never overwrite primary judgments or scope.

coresidence20 / primary

- key: measurement_boundary region: The2015 endpoint dictionary, source era or required link is demonstrably incompatible, including missing required grade strata.

says: The causal endpoint is unavailable under this frozen margin; broader cohort descriptions do not repair it.

- key: horizon_boundary region: No baseline-eligible2015 index has the prespecified nominal horizon or baseline-relative target. says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited region: Endpoint is unbounded and any unresolved postbaseline endpoint missingness remains, or the endpoint is undefined after a competing exit without defensible bounds. says: Available-case jumps may be described, but no all-eligible causal point or directional claim is licensed.
- key: increase region: A valid study-wide simultaneous primary interval or outer bound interval has lower>0. says: Positive local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: decrease region: A valid study-wide simultaneous primary interval or outer bound interval has upper<0. says: Negative local threshold-policy contrast in these registered units, subject to the measurement and identification restrictions.
- key: uncertain region: A valid interval contains zero, OR a completed arithmetic/rank/support assessment establishes an unestimable/degenerate endpoint with no valid directional interval. Software/access exceptions are no_result instead. says: The registered evidence does not resolve direction; report magnitude, width, missingness and no equivalence conclusion.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Inferential status: one prespecified directional slot in the 24-slot study-wide family; conditional causal interpretation for the spring 2015 historical margin only. Endpoint=coresidence20; family=adulthood; fixed horizon=20th_birthday; display unit=pp. Population and exact coding: Shared valid address with either fixed baseline recorded parent; preserve unknown addresses. Incorporate D8 and D1–D3, including individual exclusions, date-based eligibility, join cardinalities, code dictionaries and missingness. D7 first-family indexing applies to relatives' outcomes. No actual graduation, employment, care use, intact family or future response condition determines eligibility.

Estimand: red-minus-adjacent-yellow local policy contrast at the inclusive historical cutoff, pooled across the endpoint's fixed baseline-grade strata with pre-outcome count weights. It is neither the inherent effect of dyslexia nor the effect of a particular support program. Required identifying variation/assumptions are I1/I2 and remain unproved by diagnostic passes. This endpoint uses no postbaseline controls. No fuzzy ratio is allowed even if recorded classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace; verify this endpoint's2015 calendar/dictionaries before values; form its baseline target and expected outcome row for every eligible index; assert D2 joins, invalid-code and duplicates dispositions; build endpoint plus observation/exit indicators; produce missingness diagnostics without removing the baseline row; apply RD from I3 with endpoint kind=binary; transform binary risk effects by100 once; fit available-case sensitivity only when missingness requires it; calculate Bonferroni directional interval and p-adjusted=min(1,24*p) for a complete point estimand, or the simultaneous outer

bound interval for a bounded partially observed endpoint; retain unbounded missingness as selection_limited. Do not choose another cohort, grade stratum, time window or definition if this fit lacks support. All grade strata required by this endpoint must support the fitted operator; no renormalizing after a stratum fails. Report h/b, support, clusters, effective n, censoring/exit fractions and conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable), diagnostics.csv, audit.json and judgment.json with G2 interfaces. For identified bounds put estimate/p values NA and use lower/upper as outer limits; a missing point estimate must never be plotted at zero. Required figure: the full causal forest, plus its own registered robustness display if the internal robustness rule is satisfied. Synthetic check: score=0 belongs on red; complete binary endpoint agrees with ordinary RD after transformation; missing bounded endpoint widens the extreme interval; missing unbounded endpoint never produces a full-population causal p-value; dormant slots remain in the 24 denominator. Software failures get no_result, not uncertain. Permitted claim ceiling: Co-residence does not identify constraint, dependence, preference or reduced autonomy. Directional local states do not establish practical importance. A confidence interval spanning zero never licenses no effect or equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000222/endpoints/coresidence20/primary/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status and the descriptive Atom do not gate this analysis. Write local_state=uncertain, inference_status=valid_interval, display status=uncertain when a valid interval spans zero; write local_state=uncertain, inference_status=unestimable, display status=unestimable and NA estimate/limits/p when completed evidence establishes no valid interval. Include the specific constant/support/rank/covariance

reason. Failure to execute is no_result, never this scientific subcase. Per-grade h,b and weights go in estimator-components.csv; no scalar bandwidth range substitutes for it. scope.json is frozen before outcome values; exits, selected-case and precision outputs use G2. Ascertainment is an internal component of atom-000222. Exact component path: prereg/runtime/atom-000222/endpoints/coresidence20/primary/. Cross-component primary files are read from prereg/runtime/atom-000222/endpoints/coresidence20/primary/; ascertainment and robustness never overwrite primary judgments or scope.

coresidence20 / robustness

- key: sensitive region: 'First priority: any computable variant meets the I4 sensitivity contradiction, even if another variant failed. Preserve both reasons.' says: Interpret the contrast as sensitive to the registered local-support choice; no variant replaces primary.
- key: stable region: No sensitivity contradiction, all variants computable with valid uncertainty and unchanged claim ceilings, and primary inference is valid. says: These specified perturbations do not materially contradict the primary contrast; this is not proof of identification or equivalence.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Registered robustness judgment for coresidence20, not an additional primary discovery. Scope, unit, field/code mapping, population, estimand and missingness are exactly those of atom-000222 and incorporated D8. Read its frozen analysis population, weights, primary h/b and saved aggregate influence outputs; do not reconstruct a more favorable cohort. For each fixed specification in I4 (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-linear/bias-corrected operator with the specified h/b changes, same grade weights and primary 24-slot interval and exploratory nonprimary 95% intervals as I4; exclude only x==0 for the donut, explicitly changing local extrapolation. Recompute cluster influence variance and missingness bounds as needed. No new covariates, grade filters or bandwidth search. If a specification has insufficient support, its status is unresolved, never silently omitted. No multiplicity claim is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all four rows in the sensitivity figure with units=pp, including noncomputed rows. Compare available scalar primary and variant estimates: a sign reversal or variant point outside the primary interval is sensitive. For partial bounds use disjoint intervals as sensitive; overlapping intervals alone cannot prove equality. All variants must be computed for stable. If primary is selection_limited, variants inherit that ceiling. Synthetic tests keep identical rows in primary and recomputation, respect inclusive zero except the expressly registered donut, and preserve a missing variant row. Consequence: stability is only consistency over these specified choices, while sensitivity limits a broad policy conclusion. Co-residence does not identify constraint, dependence, preference or reduced autonomy.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000222/endpoints/coresidence20/robustness/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Mixed-evidence precedence is I4: sensitive outranks unresolved when one computable variant contradicts primary; all failed variants remain explicit with NA display rows. Stable never follows an unestimable primary or missing variant. No joint multi-specification coverage is claimed. Write inference_status and display status under G2, including unestimable numeric rows. Reproduce exact per-grade h/b from estimator-components.csv, and preserve all D10 scope keys. Exact component path: prereg/runtime/atom-000222/endpoints/coresidence20/robustness/. Cross-component primary files are read from prereg/runtime/atom-000222/endpoints/coresidence20/primary/; ascertainment and robustness never overwrite primary judgments or scope.

The root component vector reports each endpoint primary direction/interval type, ascertainment decision, robustness decision, and measurement, horizon, selection and operational restrictions. Within this experiment, differing outcomes remain independently interpretable. Mixed signs across different horizons are side-by-side observed contrasts, not common-population divergence. All graphical and manuscript bindings use the exact endpoint/component directory above.

Complete registration fields


```
id: atom-000222
topic: Early-adult household circumstances
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
```

```
mode: adaptive
question: Does marginal classification change early-adult household
↪  circumstances?
rationale: Equivalized income and parental co-residence jointly describe
  material and residential circumstances in early adulthood. Different
  ↪  annual/birthday
  clocks and independent address/parent-link failures are retained; no
  ↪  dependency
  or welfare index is constructed.
assumption: Administrative recognition can affect opportunities, reporting
  and service contact through multiple routes; exact source semantics and
  continuity require evidence, not an estimator label. See literature.md
  and identification.md.
target_strength: causal
target_shape: comparison
ratings:
  importance: 5
  novelty: 3
  feasibility: 2
  data_advantage: 4
  informativeness: 0.5
tables:
- BEF
- BEFBOP
- DOD
- IND
- UDD_FOLKESKOLE_FRAVAER_STIL
- UDD_ORDBLINDETEST
- VNDS
activation: state(atom-000001) == "ready" AND state(atom-000002) ==
↪  "compatible"
  AND (state(atom-000501) == "eligible_sharp" OR state(atom-000501) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000502) == "eligible_sharp" OR state(atom-000502) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000503) == "eligible_sharp" OR state(atom-000503) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000504) == "eligible_sharp" OR state(atom-000504) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000505) == "eligible_sharp" OR state(atom-000505) ==
  ↪  "eligible_nonsharp")
  AND (state(atom-000506) == "eligible_sharp" OR state(atom-000506) ==
  ↪  "eligible_nonsharp")
verdicts:
- key: sensitive
  region: At least one endpoint has a computed I4 sensitivity contradiction.
    This precedence applies even if another endpoint/variant fails.
  says: Name every affected endpoint and variant; retain all primary
  ↪  estimates
    and independent component failures without replacing a primary.
- key: mixed_direction
  region: No preceding region; at least one qualified increase and one
  ↪  qualified
    decrease among this experiment's endpoints. Qualified means valid
    ↪  primary
    interval/bounds and stable own robustness.
  says: Report the discordant endpoint directions in their original
  ↪  units/scopes;
    do not average or assign a common welfare sign.
- key: directional
```

```
  region: No preceding region; at least one endpoint is a qualified increase
    or decrease. Other endpoints may be uncertain, selected, boundary,
    ↪ failed
    or unresolved.
  says: Report only named qualified directions and every other endpoint's
    disposition. This does not imply the entire domain changed or that all
    endpoints were available.
- key: uncertain
  region: No preceding region; at least one endpoint has a valid primary
    interval/bounds, but no qualified direction.
  says: Report exact intervals and endpoint-specific robustness
  ↪ restrictions;
    zero-containing intervals and unresolved robustness remain different
    cases, neither equivalence.
- key: boundary
  region: No preceding region; every endpoint has an evidenced measurement
    or horizon/population boundary.
  says: This scientific question cannot be evaluated under the frozen
  ↪ target;
    report component-specific reasons, never a null.
- key: restricted
  region: No preceding region; at least one endpoint supplies completed
    evidence of selection_limited or unestimable inference.
  says: Report the surviving selected/unestimable evidence and independent
    failures; no all-eligible directional claim.
- key: otherwise
  region: otherwise
  says: The experiment remains unresolved. Preserve every component state,
    terminal and unavailable reason; operational failure is not
    ↪ insignificance.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪ Atoms or activation primitives. Execute every prescribed component
  ↪ that is scientifically eligible, independently of other component
  ↪ signs. Component outputs retain their own local decision, inference
  ↪ and operational status; only the native judgment.json at the Atom
  ↪ root supplies the Atom local state. No component failure can erase
  ↪ completed evidence in another component. When no scientific component
  ↪ completes because execution fails, set terminal no_result with no
  ↪ Atom local state. Otherwise aggregate only by the ordered registered
  ↪ regions and record every component's failure, boundary, unknown or
  ↪ inactive disposition. Pending necessary evidence stays pending; it is
  ↪ never coded as negative evidence. Internal failed work is not
  ↪ automatically retried.
  Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
  ↪ I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
  ↪ definitions. These fix population, dates, table/field dictionaries,
  ↪ code versions, joins, inference, missingness, outputs and synthetic c
  ↪ hecks. A dictionary crosswalk is semantic verification before outcome
  ↪ values, not a new scientific choice. Keep all endpoint-specific
  ↪ units, horizons and Bonferroni allocations; grouping introduces no
  ↪ average outcome, composite score, new hypothesis or additional alpha.
  ↪ Write root audit.json, status.json, judgment.json and components.csv
  ↪ with component, outcome, component_state, component_terminal,
  ↪ inference_status, reason, evidence_path. Components.csv is an
  ↪ evidence index under this protocol, never a second experiment graph.
  ↪ Suppression is applied after governed adjudication, and cannot govern
  ↪ activation or disclose protected directions.
```

```
Scope and order: this experiment asks whether marginal national-test
↪  classification changes early-adult household circumstances. Use all
↪  grades 4,5,6,7,8,9. Each endpoint below is a separate slot in the
↪  unchanged 24-slot primary family; its ascertainment belongs to the
↪  separate 24-slot diagnostic family. No endpoint value activates
↪  another endpoint. After the native grade activation passes, first
↪  perform each endpoint's own calendar/construct/relative/provenance
↪  checks, then ascertainment, primary estimation, and mandatory
↪  robustness whenever its primary component is
↪  increase/decrease/uncertain/selection_limited. An evidenced primary
↪  boundary makes its robustness internally not_activated. Ascertainment
↪  can finish even when primary or robustness fails, and primary does
↪  not require an insignificant ascertainment test. Robustness no_result
↪  never becomes stable. Aggregate only after every scheduled component
↪  completes, is evidenced ineligible, or has a recorded operational
↪  terminal. Preserve completed components when another fails; if all
↪  scientific work fails operationally use Atom terminal no_result.

## Internal relatives
- key: usable
  region: Pretest linkage semantics verified; all known relations have
  ↪  unique valid
    mappings and unknown roles are explicitly marked.
  says: Fixed recorded-parent/sibling targets can be studied with their
  ↪  baseline scope
    limitations.
- key: boundary
  region: Documentation establishes no dated parental linkage or
  ↪  incompatible key
    classes, so no baseline family target can be constructed.
  says: Family outcomes cannot be attributed to the index child under
  ↪  this delivery;
    child outcomes remain eligible.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Use D7 fixed pretest BEF snapshot, MOR_ID/FAR_ID, FOED_DAG, PNR,
↪  FAMILIE_ID and BEFBOP dated address intervals. Parent IDs must share
↪  the child PNR linkage class. Assert each child has at most one
↪  recorded value per parent role per snapshot; missing roles are
↪  unknown, not childless/no carer. Construct sibling sets by nonmissing
↪  shared parent; establish baseline school-grade eligibility with
↪  prior-month absence. Scan index assessments chronologically with
↪  fixed hash ties as D7. Report resident/nonresident parent links,
↪  one/two known roles, eligible sibling sets, conflicts and baseline
↪  missingness. This is the scope of recorded kinship, not validation of
↪  genetic relatedness or caregiving. Output diagnostics.csv with
↪  linkage proportions and conflict dispositions. No substantive outcome
↪  needed; no p-values. Synthetic fixture: two children with missing
↪  fathers are not siblings, subsequent births are excluded, later
↪  parental diagnosis cannot change roster. A complete roster at birth
↪  does not guarantee future response. Family branch uses only
↪  scientifically interpretable pretest links.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000222/relat
↪  ives/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## resources20 / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Internal ascertainment diagnostic on exactly the baseline-eligible
↪ population and horizon of atom-000222, with the same
↪ table/field/version/join/exit definitions, fixed grades and baseline
↪ weights. Do not require that primary to finish and do not use its
↪ sign. First construct whether the registered endpoint is defined and
↪ observed for each baseline index; no value or realized employment
↪ changes eligibility. Atom-specific D9 calibration/correction checks
↪ still apply. For defined event-before-exit outcomes, complete event
↪ universe establishes observation even for zero events. For undefined
↪ after-death school/state outcomes, report undefined proportion
↪ separately; never classify death as a negative symptom. Apply I5
↪ constant handling to the observation indicator; documentary
↪ arithmetic can be structural_complete, observed constants have no
↪ p-value. Otherwise apply I3 as a binary outcome without outcome
↪ missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪ is distinct from the 24 primary outcomes and baseline48. Output
↪ ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪ diagnostics.csv, audit.json, judgment.json. Include observation
↪ fractions by side, undefined/death/emigration counts and
↪ denominators, exact horizon and p_raw/p_adjusted only for a valid
↪ contrast. A detected or undetected difference cannot choose a new
↪ endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪ all-unobserved, varying indicator and death-undefined fixtures test
↪ the local regions. Every state is narrated in Table S2 through its
↪ own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000222/endpoints/resources20/ascertainment/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000222/endpoints/resources20/as
↪ certainment/. Cross-component primary files are read from
↪ prereg/runtime/atom-000222/endpoints/resources20/primary/;
↪ ascertainment and robustness never overwrite primary judgments or
↪ scope.

## resources20 / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪ demonstrably
```

```
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Inferential status: one prespecified directional slot in the 24-slot
↪  study-wide family; conditional causal interpretation for the spring
↪  2015 historical margin only. Endpoint=resources20; family=adulthood;
↪  fixed horizon=calendar_year_turning20; display unit=1000_DKK.
↪  Population and exact coding: Annual IND.AEKVIVADISP_13/1000
↪  in20th-birthday calendar year. Incorporate D8 and D1-D3, including
↪  individual exclusions, date-based eligibility, join cardinalities,
↪  code dictionaries and missingness. D7 first-family indexing applies
↪  to relatives' outcomes. No actual graduation, employment, care use,
↪  intact family or future response condition determines eligibility.
```

```
Estimand: red-minus-adjacent-yellow local policy contrast at the
↪ inclusive historical cutoff, pooled across the endpoint's fixed
↪ baseline-grade strata with pre-outcome count weights. It is neither
↪ the inherent effect of dyslexia nor the effect of a particular
↪ support program. Required identifying variation/assumptions are I1/I2
↪ and remain unproved by diagnostic passes. This endpoint uses no
↪ postbaseline controls. No fuzzy ratio is allowed even if recorded
↪ classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪ verify this endpoint's2015 calendar/dictionaries before values; form
↪ its baseline target and expected outcome row for every eligible
↪ index; assert D2 joins, invalid-code and duplicates dispositions;
↪ build endpoint plus observation/exit indicators; produce missingness
↪ diagnostics without removing the baseline row; apply RD from I3 with
↪ endpoint kind=unbounded; transform binary risk effects by100 once;
↪ fit available-case sensitivity only when missingness requires it;
↪ calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪ for a complete point estimand, or the simultaneous outer bound
↪ interval for a bounded partially observed endpoint; retain unbounded
↪ missingness as selection_limited. Do not choose another cohort, grade
↪ stratum, time window or definition if this fit lacks support. All
↪ grade strata required by this endpoint must support the fitted
↪ operator; no renormalizing after a stratum fails. Report h/b,
↪ support, clusters, effective n, censoring/exit fractions and
↪ conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable),
↪ diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪ identified bounds put estimate/p values NA and use lower/upper as
↪ outer limits; a missing point estimate must never be plotted at zero.
↪ Required figure: the full causal forest, plus its own registered
↪ robustness display if the internal robustness rule is satisfied. Synt
↪ hetic check: score=0 belongs on red; complete binary endpoint agrees
↪ with ordinary RD after transformation; missing bounded endpoint
↪ widens the extreme interval; missing unbounded endpoint never
↪ produces a full-population causal p-value; dormant slots remain in
↪ the 24 denominator. Software failures get no_result, not uncertain.
↪ Permitted claim ceiling: Resources reflect family composition and
↪ registry equivalization, not direct parental insurance. Directional
↪ local states do not establish practical importance. A confidence
↪ interval spanning zero never licenses no effect or equivalence.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000222/endpoints/resources20/primary/ and remain
↪  governed until aggregate disclosure approval. Write audit.json and
↪  judgment.json plus the named plot-ready table; G1/G2 define status
↪  and column meanings. No numerical result is populated now. Before
↪  runtime use G3 synthetic join/date/missingness checks and verify
↪  row-order invariance; a failed check prevents output release. Every
↪  result constrains the Molecule under its composable rules; neither
↪  failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000222.
Exact component path: prereg/runtime/atom-000222/endpoints/resources20/pr
↪  imary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000222/endpoints/resources20/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## resources20 / robustness
- key: sensitive
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
```

```
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for resources20, not an additional primary
↪  discovery. Scope, unit, field/code mapping, population, estimand and
↪  missingness are exactly those of atom-000222 and incorporated D8.
↪  Read its frozen analysis population, weights, primary h/b and saved
↪  aggregate influence outputs; do not reconstruct a more favorable
↪  cohort. For each fixed specification in I4 (primary,half_bandwidth,wi⌋
↪  der_bandwidth,donut), rerun the same local-linear/bias-corrected
↪  operator with the specified h/b changes, same grade weights and
↪  primary 24-slot interval and exploratory nonprimary 95% intervals as
↪  I4; exclude only x==0 for the donut, explicitly changing local
↪  extrapolation. Recompute cluster influence variance and missingness
↪  bounds as needed. No new covariates, grade filters or bandwidth
↪  search. If a specification has insufficient support, its status is
↪  unresolved, never silently omitted. No multiplicity claim is made
↪  from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all
↪  four rows in the sensitivity figure with units=1000_DKK, including
↪  noncomputed rows. Compare available scalar primary and variant estima⌋
↪  tes: a sign reversal or variant point outside the primary interval is
↪  sensitive. For partial bounds use disjoint intervals as sensitive;
↪  overlapping intervals alone cannot prove equality. All variants must
↪  be computed for stable. If primary is selection_limited, variants inh⌋
↪  erit that ceiling. Synthetic tests keep identical rows in primary and
↪  recomputation, respect inclusive zero except the expressly registered
↪  donut, and preserve a missing variant row. Consequence: stability is
↪  only consistency over these specified choices, while sensitivity limi⌋
↪  ts a broad policy conclusion. Resources reflect family composition
↪  and registry equivalization, not direct parental insurance.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000222/endpoints/resources20/robustness/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

```
Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪  computable variant contradicts primary; all failed variants remain
↪  explicit with NA display rows. Stable never follows an unestimable
↪  primary or missing variant. No joint multi-specification coverage is
↪  claimed. Write inference_status and display status under G2,
↪  including unestimable numeric rows. Reproduce exact per-grade h/b
↪  from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000222/endpoints/resources20/ro
↪  bustness/. Cross-component primary files are read from
↪  prereg/runtime/atom-000222/endpoints/resources20/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## coresidence20 / ascertainment
- key: differential
  region: Valid observation-indicator Bonferroni24 interval excludes zero.
  says: Observation varies at the threshold; bounds/selection ceilings
  ↪  remain mandatory,
    with no latent-health inference.
- key: structural_complete
  region: Documented complete universe plus all eligible outcomes defined
  ↪  and observed.
  says: No missing-outcome selection in this recorded construct;
  ↪  measurement error
    and detection remain possible.
- key: constant_observed
  region: Observation indicator is globally constant without documentary
  ↪  completeness,
    including all missing.
  says: Report its arithmetic value and denominator; no inferential
  ↪  balance or absence-of-selection
    claim.
- key: not_flagged
  region: Valid observation interval includes zero.
  says: No detected discontinuity in this observation indicator; no proof
  ↪  of missing
    at random.
- key: boundary
  region: Required horizon, construct or indicator is demonstrably
  ↪  undefined.
  says: This observation question is bounded; no manufactured missingness
  ↪  rate.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Internal ascertainment diagnostic on exactly the baseline-eligible
↪ population and horizon of atom-000222, with the same
↪ table/field/version/join/exit definitions, fixed grades and baseline
↪ weights. Do not require that primary to finish and do not use its
↪ sign. First construct whether the registered endpoint is defined and
↪ observed for each baseline index; no value or realized employment
↪ changes eligibility. Atom-specific D9 calibration/correction checks
↪ still apply. For defined event-before-exit outcomes, complete event
↪ universe establishes observation even for zero events. For undefined
↪ after-death school/state outcomes, report undefined proportion
↪ separately; never classify death as a negative symptom. Apply I5
↪ constant handling to the observation indicator; documentary
↪ arithmetic can be structural_complete, observed constants have no
↪ p-value. Otherwise apply I3 as a binary outcome without outcome
↪ missingness, and 24-slot Bonferroni diagnostic FWER .05. This budget
↪ is distinct from the 24 primary outcomes and baseline48. Output
↪ ascertainment.csv (G2) plus estimator-components.csv for any fit,
↪ diagnostics.csv, audit.json, judgment.json. Include observation
↪ fractions by side, undefined/death/emigration counts and
↪ denominators, exact horizon and p_raw/p_adjusted only for a valid
↪ contrast. A detected or undetected difference cannot choose a new
↪ endpoint/model, waive bounds or identify MAR. Synthetic all-complete,
↪ all-unobserved, varying indicator and death-undefined fixtures test
↪ the local regions. Every state is narrated in Table S2 through its
↪ own result slot; no public suppressed value gates computation.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and
↪ prereg/identification.md I1-I4 for estimands and inference. These
↪ shared definitions are part of this Atom's protocol, not optional
↪ guidance. Apply ordered checks before model fitting: delivered
↪ schema/dictionary; date and unit semantics; unique keys and duplicate
↪ disposition; baseline and horizon eligibility; outcome construction;
↪ missingness and inference; local adjudication. Never inspect a
↪ postbaseline estimate to repair an earlier choice. A demonstrably
↪ incompatible construct is an evidenced boundary; unresolved
↪ documentation reaches otherwise. A transport/access/software failure
↪ yields terminal no_result with no local state. Apply the listed
↪ verdict regions in order, first matching region wins; otherwise is
↪ exhaustive. All future outputs go to
↪ prereg/runtime/atom-000222/endpoints/coresidence20/ascertainment/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

Exact component path: prereg/runtime/atom-000222/endpoints/coresidence20/
↪ ascertainment/. Cross-component primary files are read from
↪ prereg/runtime/atom-000222/endpoints/coresidence20/primary/;
↪ ascertainment and robustness never overwrite primary judgments or
↪ scope.

## coresidence20 / primary
- key: measurement_boundary
  region: The2015 endpoint dictionary, source era or required link is
  ↪ demonstrably
```

```
    incompatible, including missing required grade strata.
  says: The causal endpoint is unavailable under this frozen margin;
  ↪  broader cohort
    descriptions do not repair it.
- key: horizon_boundary
  region: No baseline-eligible2015 index has the prespecified nominal
  ↪  horizon or baseline-relative
    target.
  says: The specific age/horizon effect cannot be evaluated.
- key: selection_limited
  region: Endpoint is unbounded and any unresolved postbaseline endpoint
  ↪  missingness
    remains, or the endpoint is undefined after a competing exit without
    ↪  defensible
    bounds.
  says: Available-case jumps may be described, but no all-eligible causal
  ↪  point or
    directional claim is licensed.
- key: increase
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has lower>0.
  says: Positive local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: decrease
  region: A valid study-wide simultaneous primary interval or outer bound
  ↪  interval
    has upper<0.
  says: Negative local threshold-policy contrast in these registered
  ↪  units, subject
    to the measurement and identification restrictions.
- key: uncertain
  region: A valid interval contains zero, OR a completed
  ↪  arithmetic/rank/support assessment
    establishes an unestimable/degenerate endpoint with no valid
    ↪  directional interval.
    Software/access exceptions are no_result instead.
  says: The registered evidence does not resolve direction; report
  ↪  magnitude, width,
    missingness and no equivalence conclusion.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Inferential status: one prespecified directional slot in the 24-slot stud
↪  y-wide family; conditional causal interpretation for the spring 2015
↪  historical margin only. Endpoint=coresidence20; family=adulthood;
↪  fixed horizon=20th_birthday; display unit=pp. Population and exact
↪  coding: Shared valid address with either fixed baseline recorded pare
↪  nt; preserve unknown addresses. Incorporate D8 and D1-D3, including
↪  individual exclusions, date-based eligibility, join cardinalities,
↪  code dictionaries and missingness. D7 first-family indexing applies
↪  to relatives' outcomes. No actual graduation, employment, care use,
↪  intact family or future response condition determines eligibility.
```

```
Estimand: red-minus-adjacent-yellow local policy contrast at the
↪ inclusive historical cutoff, pooled across the endpoint's fixed
↪ baseline-grade strata with pre-outcome count weights. It is neither
↪ the inherent effect of dyslexia nor the effect of a particular
↪ support program. Required identifying variation/assumptions are I1/I2
↪ and remain unproved by diagnostic passes. This endpoint uses no
↪ postbaseline controls. No fuzzy ratio is allowed even if recorded
↪ classification is nonsharp.

Ordered pseudocode: confirm activation and preserve its full state trace;
↪ verify this endpoint's2015 calendar/dictionaries before values; form
↪ its baseline target and expected outcome row for every eligible
↪ index; assert D2 joins, invalid-code and duplicates dispositions;
↪ build endpoint plus observation/exit indicators; produce missingness
↪ diagnostics without removing the baseline row; apply RD from I3 with
↪ endpoint kind=binary; transform binary risk effects by100 once; fit
↪ available-case sensitivity only when missingness requires it;
↪ calculate Bonferroni directional interval and p-adjusted=min(1,24*p)
↪ for a complete point estimand, or the simultaneous outer bound
↪ interval for a bounded partially observed endpoint; retain unbounded
↪ missingness as selection_limited. Do not choose another cohort, grade
↪ stratum, time window or definition if this fit lacks support. All
↪ grade strata required by this endpoint must support the fitted
↪ operator; no renormalizing after a stratum fails. Report h/b,
↪ support, clusters, effective n, censoring/exit fractions and
↪ conditional detectable contrast; no power pass threshold.

Output effects.csv, selection-sensitivity.csv (only when applicable),
↪ diagnostics.csv, audit.json and judgment.json with G2 interfaces. For
↪ identified bounds put estimate/p values NA and use lower/upper as
↪ outer limits; a missing point estimate must never be plotted at zero.
↪ Required figure: the full causal forest, plus its own registered
↪ robustness display if the internal robustness rule is satisfied.
↪ Synthetic check: score=0 belongs on red; complete binary endpoint
↪ agrees with ordinary RD after transformation; missing bounded
↪ endpoint widens the extreme interval; missing unbounded endpoint
↪ never produces a full-population causal p-value; dormant slots remain
↪ in the 24 denominator. Software failures get no_result, not
↪ uncertain. Permitted claim ceiling: Co-residence does not identify
↪ constraint, dependence, preference or reduced autonomy. Directional
↪ local states do not establish practical importance. A confidence
↪ interval spanning zero never licenses no effect or equivalence.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000222/endpoints/coresidence20/primary/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

Mandatory D9/D10 and G2 typed interfaces apply. Public disclosure status
↪  and the descriptive Atom do not gate this analysis. Write local_state
↪  =uncertain, inference_status=valid_interval, display status=uncertain
↪  when a valid interval spans zero; write local_state=uncertain,
↪  inference_status=unestimable, display status=unestimable and NA
↪  estimate/limits/p when completed evidence establishes no valid
↪  interval. Include the specific constant/support/rank/covariance
↪  reason. Failure to execute is no_result, never this scientific
↪  subcase. Per-grade h,b and weights go in estimator-components.csv; no
↪  scalar bandwidth range substitutes for it. scope.json is frozen
↪  before outcome values; exits, selected-case and precision outputs use
↪  G2. Ascertainment is an internal component of atom-000222.
Exact component path: prereg/runtime/atom-000222/endpoints/coresidence20/
↪  primary/. Cross-component primary files are read from
↪  prereg/runtime/atom-000222/endpoints/coresidence20/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

## coresidence20 / robustness
- key: sensitive
  region: 'First priority: any computable variant meets the I4
  ↪  sensitivity contradiction,
    even if another variant failed. Preserve both reasons.'
  says: Interpret the contrast as sensitive to the registered
  ↪  local-support choice;
    no variant replaces primary.
- key: stable
  region: No sensitivity contradiction, all variants computable with
  ↪  valid uncertainty
    and unchanged claim ceilings, and primary inference is valid.
  says: These specified perturbations do not materially contradict the
  ↪  primary contrast;
    this is not proof of identification or equivalence.
- key: otherwise
  region: otherwise
```

```
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Registered robustness judgment for coresidence20, not an additional
↪  primary discovery. Scope, unit, field/code mapping, population,
↪  estimand and missingness are exactly those of atom-000222 and
↪  incorporated D8. Read its frozen analysis population, weights,
↪  primary h/b and saved aggregate influence outputs; do not reconstruct
↪  a more favorable cohort. For each fixed specification in I4
↪  (primary,half_bandwidth,wider_bandwidth,donut), rerun the same local-
↪  linear/bias-corrected operator with the specified h/b changes, same
↪  grade weights and primary 24-slot interval and exploratory nonprimary
↪  95% intervals as I4; exclude only x==0 for the donut, explicitly
↪  changing local extrapolation. Recompute cluster influence variance
↪  and missingness bounds as needed. No new covariates, grade filters or
↪  bandwidth search. If a specification has insufficient support, its
↪  status is unresolved, never silently omitted. No multiplicity claim
↪  is made from finding a favorable robustness specification.

Output robustness.csv (G2), audit.json and judgment.json. Display all fou
↪  r rows in the sensitivity figure with units=pp, including noncomputed
↪  rows. Compare available scalar primary and variant estimates: a sign
↪  reversal or variant point outside the primary interval is sensitive.
↪  For partial bounds use disjoint intervals as sensitive; overlapping
↪  intervals alone cannot prove equality. All variants must be computed
↪  for stable. If primary is selection_limited, variants inherit that
↪  ceiling. Synthetic tests keep identical rows in primary and
↪  recomputation, respect inclusive zero except the expressly registered
↪  donut, and preserve a missing variant row. Consequence: stability is
↪  only consistency over these specified choices, while sensitivity
↪  limits a broad policy conclusion. Co-residence does not identify
↪  constraint, dependence, preference or reduced autonomy.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to
↪  prereg/runtime/atom-000222/endpoints/coresidence20/robustness/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

```
Mixed-evidence precedence is I4: sensitive outranks unresolved when one
↪  computable variant contradicts primary; all failed variants remain
↪  explicit with NA display rows. Stable never follows an unestimable
↪  primary or missing variant. No joint multi-specification coverage is
↪  claimed. Write inference_status and display status under G2,
↪  including unestimable numeric rows. Reproduce exact per-grade h/b
↪  from estimator-components.csv, and preserve all D10 scope keys.
Exact component path: prereg/runtime/atom-000222/endpoints/coresidence20/
↪  robustness/. Cross-component primary files are read from
↪  prereg/runtime/atom-000222/endpoints/coresidence20/primary/;
↪  ascertainment and robustness never overwrite primary judgments or
↪  scope.

The root component vector reports each endpoint primary direction/interva
↪  l type, ascertainment decision, robustness decision, and measurement,
↪  horizon, selection and operational restrictions. Within this
↪  experiment, differing outcomes remain independently interpretable.
↪  Mixed signs across different horizons are side-by-side observed
↪  contrasts, not common-population divergence. All graphical and
↪  manuscript bindings use the exact endpoint/component directory above.
```

Registered experiment

Does marginal classification change early-adult household circumstances?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000222`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000501: Grade 4 margin validity

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state,

component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Scientific scope: grade 4 only; no cross-grade aggregate gates its result. First audit original-score support. If continuous, execute density, baseline and classification components independently; a flagged density does not prevent recording baseline or label evidence. If support fails or is unresolved, their numerical fits are internally not_activated for that exact reason; documented sharp-label equality may still be described but cannot clear support. Baseline correction provenance precedes income values and may be reused across grade units only with identical checksum/table/variable/year. Each grade owns the applied audit; no grade waits for another. Use fixed six density, 48 baseline, six classification multiplicity slots.

income-provenance

- key: corrected region: D9 exact delivery/variable/year correction provenance is complete. says: Interpret the delivered variable under the documented corrected definition; runtime value and join validity remain separate.
- key: known_uncorrected region: D9 provenance explicitly identifies the uncorrected historical variable. says: Use only the frozen recorded-income proxy interpretation; no intended-resource or welfare conclusion.
- key: unresolved region: Neither correction status is established, including contradictory or absent documentation. says: Retain a correction-unverified recorded-income proxy; do not infer corrected status from vintage or suffix.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Documentation-only pre-outcome judgment, unit delivery-variable-year. Incorporate D9 exactly. Check dated release notes and the allowed table provenance against the official DST income pages cited there. No rows or estimates needed. For IND.AEKVIVADISP_13, primary year=2014; additionally report each affected descriptive year separately. Preserve PNR/year (IND) or FAMILIE_ID/year (FAIK) key class and D2 reference alignment; no row-level joins performed by this Atom. First match corrected, known_uncorrected, unresolved; otherwise covers contradictory execution evidence not a transport failure. No estimator, SE, multiplicity or equivalence test. Write correction.csv: table, variable, reference_year, delivery_id, correction_status, source_locator, criterion, status, reason. Required correction status is decided before related values are opened; no field substitution or municipality removal. Synthetic checks: a recent delivery and _13 alone yield unresolved; an explicit uncorrected manifest yields known_uncorrected; only exact documented propagation qualifies corrected. Effects retain the same numeric proxy under noncorrected states, with restrictions in the Molecule and paper. Missing variable becomes the consuming endpoint measurement_boundary; this Atom does not manufacture income.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000501/income-provenance/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

support

- key: discrete region: Known rounding exceeds 0.5 or this grade fails any registered I5/D1 full-window support safeguard. says: The continuity-based estimator is not defensible under this registered policy; descriptive score distributions remain informative.
- key: continuous region: Original precision and every full-window support safeguard for this grade are met. says: Recorded support permits the proposed local approximation; continuity is still an assumption.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Population: D1 spring2015 children with documented baseline grade 4, before outcome inspection. Use UDD_ORDBLINDETEST SCORE,DATO,PNR,UDDANNELSESNIVEAU; prior-month absence INSTITUTIONSNUMMER/KLASSETRIN; BEF parental-link clusters. Only this grade is judged. Apply Molecule score-support summary original safeguards independently: precision <=0.5 original point; >=20 distinct scores on each side of |x|<=6; >=30 schools and >=30 family components in this grade; largest side mass-point fraction <=.20. No jitter or local-randomization substitution. Document maximum gap and rounding, counts and mass shares; no p-values. Output support.csv with G2 typed per-grade/side keys and diagnostics.csv. Constant integer-valued float scores must fail precision/support checks. A grade outside a later endpoint target cannot block that endpoint.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands

and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000501/support/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

density

- key: flagged region: This grade valid Bonferroni-six density p_adjusted < .01. says: Score sorting flags continuity for endpoints requiring this grade.
- key: not_flagged region: This grade has a valid density difference/SE/p and p_adjusted >= .01. says: No flag on this diagnostic; no proof of absence of sorting.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Use the fixed grade 4 sample from atom-000501, exact SCORE and r=-x. Execute I5 rddensity3.0 options, cap/refit and Bonferroni-six allocation; do not wait for other grades or recycle their alpha. Report density in 1/original-score-point, no logarithm. Required output density.csv with grade,h_red,h_yellow,density_red,density_yellow,difference,se,p_raw,p_adjusted,lower,upper,n_red,n_
  diagnostics.csv mirrors this without inventing a sign for failed fits. Positive finite SE and postcap support are required. No outcomes/joins beyond the inherited one-child score sample. Synthetic checks verify reflection/equality convention and distinct density versus log units. A failure limits this grade, not unrelated grade sets.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local

state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000501/density/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

balance

- key: flagged region: Any valid registered grade comparison has p_adjusted<.01 under the fixed48 budget, or an arithmetic_difference exists. says: Predetermined sorting challenges continuity in this grade.
- key: not_flagged region: Every slot is either a valid unflagged contrast, structural_complete, or global constant_observed under I5; no unresolved/unavailable slot remains. says: No registered flag; constant slots supply noninferential evidence only, and proxy income does not clear true-resource continuity.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Use grade 4, D1 initial margin and D2/D6/D9 exact fields. Four variables: BEF.FOED_DAG-derived age in days, BEF.KOEN, IND.AEKVIVADISP_13 in2014, and any D6 DF32/33/40/41/43 encounter in (t0-365,t0]. Baseline care strictly precedes t0; on-day events excluded, so implement [t0-365,t0). Each variable plus its missingness is a separate diagnostic slot. Apply all I5 constant/structural/unavailable/numerical rules and I3 numerical operator with one grade; alpha=.01/48 remains fixed. Correction status from D9 baseline-income audit must be available before reading income: no_result leaves balance otherwise, never corrected by assumption. No conditioning later endpoint eligibility on the observed baseline values; original-variable complete-case fits and full-denominator missingness comparisons remain separate. Output balance.csv with the G2 eight enumerated checks, status, arithmetic extrema, denominators, p-values only for valid fits; diagnostics.csv. Synthetic all-complete, mixed-complete, global constant, differing side constants, unavailable field and nonconstant fit failure must reach the I5 exact routes. No inferred zero SE or balance equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local

state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000501/balance/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

classification

- key: sharp_recording region: All eligible records have known category and category==Z exactly under a verified deterministic category dictionary. says: Threshold assignment coincides with recorded classification in this margin; support receipt remains unmeasured.
- key: nonsharp_jump region: Not sharp_recording; the valid grade-specific 1-.01/6 interval has lower>.10. says: A threshold-policy reduced form is interpretable under the other gates, but not an effect per recorded label or support received.
- key: unresolved_jump region: A valid grade-specific 1-.01/6 interval exists and lower<=.10. says: The proposed meaningful recorded-classification discontinuity is not established; this is not a health or policy null.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Population and exact fields as atom-000501, using TESTRESULTAT/TESTRESULTATNIVEAU and their frozen dictionaries. Evaluate complete known-label equality to Z=1[SCORE<=cutoff] first. Exact equality under a deterministic dictionary is sharp_recording without a manufactured SE. Otherwise apply I3 one-grade category jump using I5 six-slot .01 alpha; all missing labels must be bounded as [0,1], never deleted; use two one-sided limits splitting .01/6 when bounds are necessary. A lower bound>.10 permits nonsharp_jump, never a support-effect ratio. Output classification.csv: grade,agreement_fraction,n_agree,n_known,n_total,category_missing_fraction,estimate,lower,upper,se,
  Synthetic unknown/disagreeing labels cannot satisfy sharp_recording; SCORE==c remains red.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise

is exhaustive. All future outputs go to prereg/runtime/atom-000501/classification/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Complete registration fields

```
id: atom-000501
topic: Grade 4 margin validity
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: Can the grade-4 score margin support a credible local
  ↪  classification-policy
    contrast?
  rationale: The complete grade-specific margin validation is one shared
  ↪  scientific
    diagnostic. Precision, density, baseline continuity and label response
    are evidence for that judgment, not separate experiments. Grades remain
    independent because the registered outcome grade sets differ and a
    ↪  later-grade
    failure must not suppress earlier-grade knowledge.
  assumption: Administrative recognition can affect opportunities, reporting
    and service contact through multiple routes; exact source semantics and
    continuity require evidence, not an estimator label. See literature.md
    and identification.md.
  target_strength: descriptive
  target_shape: comparison
  ratings:
    importance: 4
    novelty: 3
    feasibility: 3
    data_advantage: 4
    informativeness: 0.5
  tables:
  - BEF
  - IND
  - LPR_ADM
  - LPR_DIAG
  - PSYK_ADM
  - PSYK_DIAG
  - UDD_FOLKESKOLE_FRAVAER_STIL
  - UDD_ORDBLINDETEST
  activation: state(atom-000002) == "compatible" OR state(atom-000002) ==
    "selected" OR state(atom-000002) == "retention_unresolved"
  verdicts:
  - key: support_boundary
```

```
  region: Support component=discrete under its documented
  ↪  precision/full-window
    rules.
  says: This grade does not support the registered continuity estimator;
    preserve its score description.
- key: design_flagged
  region: No preceding region; density=flagged or baseline=flagged,
  ↪  including
    a deterministic side difference.
  says: A registered threat constrains this grade; report other component
    failures as well.
- key: eligible_sharp
  region: Support=continuous, density=not_flagged, baseline=not_flagged,
    classification=sharp_recording.
  says: This grade may enter its prespecified policy targets, conditional
    on initial-margin provenance and untested causal assumptions.
- key: eligible_nonsharp
  region: Support=continuous, density=not_flagged, baseline=not_flagged,
    classification=nonsharp_jump.
  says: Only a reduced-form threshold-policy contrast is licensed, never
    a classification or support-receipt ratio.
- key: classification_unresolved
  region: No preceding region; classification=unresolved_jump from a valid
    registered interval.
  says: The required recorded-classification jump is not established; this
    is not a substantive outcome null.
- key: otherwise
  region: otherwise
  says: The grade is not cleared; preserve partial diagnostic evidence and
    operational failures explicitly.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪  Atoms or activation primitives. Execute every prescribed component
  ↪  that is scientifically eligible, independently of other component
  ↪  signs. Component outputs retain their own local decision, inference
  ↪  and operational status; only the native judgment.json at the Atom
  ↪  root supplies the Atom local state. No component failure can erase
  ↪  completed evidence in another component. When no scientific component
  ↪  completes because execution fails, set terminal no_result with no
  ↪  Atom local state. Otherwise aggregate only by the ordered registered
  ↪  regions and record every component's failure, boundary, unknown or
  ↪  inactive disposition. Pending necessary evidence stays pending; it is
  ↪  never coded as negative evidence. Internal failed work is not
  ↪  automatically retried.
  Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
  ↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
  ↪  definitions. These fix population, dates, table/field dictionaries,
  ↪  code versions, joins, inference, missingness, outputs and synthetic c
  ↪  hecks. A dictionary crosswalk is semantic verification before outcome
  ↪  values, not a new scientific choice. Keep all endpoint-specific
  ↪  units, horizons and Bonferroni allocations; grouping introduces no
  ↪  average outcome, composite score, new hypothesis or additional alpha.
  ↪  Write root audit.json, status.json, judgment.json and components.csv
  ↪  with component, outcome, component_state, component_terminal,
  ↪  inference_status, reason, evidence_path. Components.csv is an
  ↪  evidence index under this protocol, never a second experiment graph.
  ↪  Suppression is applied after governed adjudication, and cannot govern
  ↪  activation or disclose protected directions.
```

```
Scientific scope: grade 4 only; no cross-grade aggregate gates its result
↪  . First audit original-score support. If continuous, execute density,
↪  baseline and classification components independently; a flagged
↪  density does not prevent recording baseline or label evidence. If
↪  support fails or is unresolved, their numerical fits are internally
↪  not_activated for that exact reason; documented sharp-label equality
↪  may still be described but cannot clear support. Baseline correction
↪  provenance precedes income values and may be reused across grade
↪  units only with identical checksum/table/variable/year. Each grade
↪  owns the applied audit; no grade waits for another. Use fixed six
↪  density, 48 baseline, six classification multiplicity slots.

## income-provenance
- key: corrected
  region: D9 exact delivery/variable/year correction provenance is
  ↪  complete.
  says: Interpret the delivered variable under the documented corrected
  ↪  definition;
    runtime value and join validity remain separate.
- key: known_uncorrected
  region: D9 provenance explicitly identifies the uncorrected historical
  ↪  variable.
  says: Use only the frozen recorded-income proxy interpretation; no
  ↪  intended-resource
    or welfare conclusion.
- key: unresolved
  region: Neither correction status is established, including
  ↪  contradictory or absent
    documentation.
  says: Retain a correction-unverified recorded-income proxy; do not
  ↪  infer corrected
    status from vintage or suffix.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
Documentation-only pre-outcome judgment, unit delivery-variable-year.
↪  Incorporate D9 exactly. Check dated release notes and the allowed
↪  table provenance against the official DST income pages cited there.
↪  No rows or estimates needed. For IND.AEKVIVADISP_13, primary
↪  year=2014; additionally report each affected descriptive year
↪  separately. Preserve PNR/year (IND) or FAMILIE_ID/year (FAIK) key
↪  class and D2 reference alignment; no row-level joins performed by
↪  this Atom. First match corrected, known_uncorrected, unresolved;
↪  otherwise covers contradictory execution evidence not a transport
↪  failure. No estimator, SE, multiplicity or equivalence test. Write
↪  correction.csv: table, variable, reference_year, delivery_id,
↪  correction_status, source_locator, criterion, status, reason.
↪  Required correction status is decided before related values are
↪  opened; no field substitution or municipality removal. Synthetic
↪  checks: a recent delivery and _13 alone yield unresolved; an explicit
↪  uncorrected manifest yields known_uncorrected; only exact documented
↪  propagation qualifies corrected. Effects retain the same numeric
↪  proxy under noncorrected states, with restrictions in the Molecule
↪  and paper. Missing variable becomes the consuming endpoint
↪  measurement_boundary; this Atom does not manufacture income.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and prereg/i
↪ dentification.md I1-I4 for estimands and inference. These shared
↪ definitions are part of this Atom's protocol, not optional guidance.
↪ Apply ordered checks before model fitting: delivered schema/dictionar
↪ y; date and unit semantics; unique keys and duplicate disposition;
↪ baseline and horizon eligibility; outcome construction; missingness
↪ and inference; local adjudication. Never inspect a postbaseline
↪ estimate to repair an earlier choice. A demonstrably incompatible
↪ construct is an evidenced boundary; unresolved documentation reaches
↪ otherwise. A transport/access/software failure yields terminal
↪ no_result with no local state. Apply the listed verdict regions in
↪ order, first matching region wins; otherwise is exhaustive. All
↪ future outputs go to prereg/runtime/atom-000501/income-provenance/
↪ and remain governed until aggregate disclosure approval. Write
↪ audit.json and judgment.json plus the named plot-ready table; G1/G2
↪ define status and column meanings. No numerical result is populated
↪ now. Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.

## support
- key: discrete
  region: Known rounding exceeds 0.5 or this grade fails any registered
  ↪ I5/D1 full-window
    support safeguard.
  says: The continuity-based estimator is not defensible under this
  ↪ registered policy;
    descriptive score distributions remain informative.
- key: continuous
  region: Original precision and every full-window support safeguard for
  ↪ this grade
    are met.
  says: Recorded support permits the proposed local approximation;
  ↪ continuity is still
    an assumption.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪ negative
    finding is inferred; report the exact reason.
Population: D1 spring2015 children with documented baseline grade 4,
↪ before outcome inspection. Use UDD_ORDBLINDETEST
↪ SCORE,DATO,PNR,UDDANNELSESNIVEAU; prior-month absence
↪ INSTITUTIONSNUMMER/KLASSETRIN; BEF parental-link clusters. Only this
↪ grade is judged. Apply Molecule score-support summary original
↪ safeguards independently: precision <=0.5 original point; >=20
↪ distinct scores on each side of |x|<=6; >=30 schools and >=30 family
↪ components in this grade; largest side mass-point fraction <=.20. No
↪ jitter or local-randomization substitution. Document maximum gap and
↪ rounding, counts and mass shares; no p-values. Output support.csv
↪ with G2 typed per-grade/side keys and diagnostics.csv. Constant
↪ integer-valued float scores must fail precision/support checks. A
↪ grade outside a later endpoint target cannot block that endpoint.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000501/suppo
↪  rt/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## density
- key: flagged
  region: This grade valid Bonferroni-six density p_adjusted < .01.
  says: Score sorting flags continuity for endpoints requiring this grade.
- key: not_flagged
  region: This grade has a valid density difference/SE/p and p_adjusted
  ↪  >= .01.
  says: No flag on this diagnostic; no proof of absence of sorting.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
Use the fixed grade 4 sample from atom-000501, exact SCORE and r=-x. Exec
↪  ute I5 rddensity3.0 options, cap/refit and Bonferroni-six allocation;
↪  do not wait for other grades or recycle their alpha. Report density
↪  in 1/original-score-point, no logarithm. Required output density.csv
↪  with grade,h_red,h_yellow,density_red,density_yellow,difference,se,p_
↪  raw,p_adjusted,lower,upper,n_red,n_yellow,status,reason;
↪  diagnostics.csv mirrors this without inventing a sign for failed
↪  fits. Positive finite SE and postcap support are required. No outcome
↪  s/joins beyond the inherited one-child score sample. Synthetic checks
↪  verify reflection/equality convention and distinct density versus log
↪  units. A failure limits this grade, not unrelated grade sets.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000501/densi
↪  ty/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## balance
- key: flagged
  region: Any valid registered grade comparison has p_adjusted<.01 under
  ↪  the fixed48
    budget, or an arithmetic_difference exists.
  says: Predetermined sorting challenges continuity in this grade.
- key: not_flagged
  region: Every slot is either a valid unflagged contrast,
  ↪  structural_complete, or
    global constant_observed under I5; no unresolved/unavailable slot
    ↪  remains.
  says: No registered flag; constant slots supply noninferential evidence
  ↪  only, and
    proxy income does not clear true-resource continuity.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
Use grade 4, D1 initial margin and D2/D6/D9 exact fields. Four variables:
↪  BEF.FOED_DAG-derived age in days, BEF.KOEN, IND.AEKVIVADISP_13 in2014
↪  , and any D6 DF32/33/40/41/43 encounter in (t0-365,t0]. Baseline care
↪  strictly precedes t0; on-day events excluded, so implement [t0-365,t0
↪  ). Each variable plus its missingness is a separate diagnostic slot.
↪  Apply all I5 constant/structural/unavailable/numerical rules and I3
↪  numerical operator with one grade; alpha=.01/48 remains fixed.
↪  Correction status from D9 baseline-income audit must be available
↪  before reading income: no_result leaves balance otherwise, never
↪  corrected by assumption. No conditioning later endpoint eligibility
↪  on the observed baseline values; original-variable complete-case fits
↪  and full-denominator missingness comparisons remain separate. Output
↪  balance.csv with the G2 eight enumerated checks, status, arithmetic
↪  extrema, denominators, p-values only for valid fits; diagnostics.csv.
↪  Synthetic all-complete, mixed-complete, global constant, differing
↪  side constants, unavailable field and nonconstant fit failure must
↪  reach the I5 exact routes. No inferred zero SE or balance equivalence.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000501/balan
↪  ce/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## classification
- key: sharp_recording
  region: All eligible records have known category and category==Z
  ↪  exactly under a
    verified deterministic category dictionary.
  says: Threshold assignment coincides with recorded classification in
  ↪  this margin;
    support receipt remains unmeasured.
- key: nonsharp_jump
  region: Not sharp_recording; the valid grade-specific 1-.01/6 interval
  ↪  has lower>.10.
  says: A threshold-policy reduced form is interpretable under the other
  ↪  gates, but
    not an effect per recorded label or support received.
- key: unresolved_jump
  region: A valid grade-specific 1-.01/6 interval exists and lower<=.10.
  says: The proposed meaningful recorded-classification discontinuity is
  ↪  not established;
    this is not a health or policy null.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Population and exact fields as atom-000501, using
↪  TESTRESULTAT/TESTRESULTATNIVEAU and their frozen dictionaries.
↪  Evaluate complete known-label equality to Z=1[SCORE<=cutoff] first.
↪  Exact equality under a deterministic dictionary is sharp_recording
↪  without a manufactured SE. Otherwise apply I3 one-grade category jump
↪  using I5 six-slot .01 alpha; all missing labels must be bounded as
↪  [0,1], never deleted; use two one-sided limits splitting .01/6 when
↪  bounds are necessary. A lower bound>.10 permits nonsharp_jump, never
↪  a support-effect ratio. Output classification.csv:
↪  grade,agreement_fraction,n_agree,n_known,n_total,category_missing_fra
↪  ction,estimate,lower,upper,se,p_raw,p_adjusted,status,reason.
↪  Synthetic unknown/disagreeing labels cannot satisfy sharp_recording;
↪  SCORE==c remains red.
```

```
Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪ the population clock, versions, identifiers, joins and observation;
↪ incorporate the explicitly cited construct clauses below and prereg/i
↪ dentification.md I1-I4 for estimands and inference. These shared
↪ definitions are part of this Atom's protocol, not optional guidance.
↪ Apply ordered checks before model fitting: delivered schema/dictionar
↪ y; date and unit semantics; unique keys and duplicate disposition;
↪ baseline and horizon eligibility; outcome construction; missingness
↪ and inference; local adjudication. Never inspect a postbaseline
↪ estimate to repair an earlier choice. A demonstrably incompatible
↪ construct is an evidenced boundary; unresolved documentation reaches
↪ otherwise. A transport/access/software failure yields terminal
↪ no_result with no local state. Apply the listed verdict regions in
↪ order, first matching region wins; otherwise is exhaustive. All
↪ future outputs go to prereg/runtime/atom-000501/classification/ and
↪ remain governed until aggregate disclosure approval. Write audit.json
↪ and judgment.json plus the named plot-ready table; G1/G2 define
↪ status and column meanings. No numerical result is populated now.
↪ Before runtime use G3 synthetic join/date/missingness checks and
↪ verify row-order invariance; a failed check prevents output release.
↪ Every result constrains the Molecule under its composable rules;
↪ neither failure nor nonactivation means statistical insignificance.
```

Registered experiment

Can the grade-4 score margin support a credible local classification-policy contrast?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000501`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000502: Grade 5 margin validity

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units,

horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state, component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Scientific scope: grade 5 only; no cross-grade aggregate gates its result. First audit original-score support. If continuous, execute density, baseline and classification components independently; a flagged density does not prevent recording baseline or label evidence. If support fails or is unresolved, their numerical fits are internally not_activated for that exact reason; documented sharp-label equality may still be described but cannot clear support. Baseline correction provenance precedes income values and may be reused across grade units only with identical checksum/table/variable/year. Each grade owns the applied audit; no grade waits for another. Use fixed six density, 48 baseline, six classification multiplicity slots.

income-provenance

- key: corrected region: D9 exact delivery/variable/year correction provenance is complete. says: Interpret the delivered variable under the documented corrected definition; runtime value and join validity remain separate.
- key: known_uncorrected region: D9 provenance explicitly identifies the uncorrected historical variable. says: Use only the frozen recorded-income proxy interpretation; no intended-resource or welfare conclusion.
- key: unresolved region: Neither correction status is established, including contradictory or absent documentation. says: Retain a correction-unverified recorded-income proxy; do not infer corrected status from vintage or suffix.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Documentation-only pre-outcome judgment, unit delivery-variable-year. Incorporate D9 exactly. Check dated release notes and the allowed table provenance against the official DST income pages cited there. No rows or estimates needed. For IND.AEKVIVADISP_13, primary year=2014; additionally report each affected descriptive year separately. Preserve PNR/year (IND) or FAMILIE_ID/year (FAIK) key class and D2 reference alignment; no row-level joins performed by this Atom. First match corrected, known_uncorrected, unresolved; otherwise covers contradictory execution evidence not a transport failure. No estimator, SE, multiplicity or equivalence test. Write correction.csv: table, variable, reference_year, delivery_id, correction_status, source_locator, criterion, status, reason. Required correction status is decided before related values are opened; no field substitution or municipality removal. Synthetic checks: a recent delivery and _13 alone yield unresolved; an explicit uncorrected manifest yields known_uncorrected; only exact documented propagation qualifies corrected. Effects retain the same numeric proxy under noncorrected states, with restrictions in the Molecule and paper. Missing

variable becomes the consuming endpoint measurement_boundary; this Atom does not manufacture income.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000502/income-provenance/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

support

- key: discrete region: Known rounding exceeds 0.5 or this grade fails any registered I5/D1 full-window support safeguard. says: The continuity-based estimator is not defensible under this registered policy; descriptive score distributions remain informative.
- key: continuous region: Original precision and every full-window support safeguard for this grade are met. says: Recorded support permits the proposed local approximation; continuity is still an assumption.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Population: D1 spring2015 children with documented baseline grade 5, before outcome inspection. Use UDD_ORDBLINDETEST SCORE,DATO,PNR,UDDANNELSESNIVEAU; prior-month absence INSTITUTIONSNUMMER/KLASSETRIN; BEF parental-link clusters. Only this grade is judged. Apply Molecule score-support summary original safeguards independently: precision <=0.5 original point; >=20 distinct scores on each side of |x|<=6; >=30 schools and >=30 family components in this grade; largest side mass-point fraction <=.20. No jitter or local-randomization substitution. Document maximum gap and rounding, counts and mass shares; no p-values. Output support.csv with G2 typed per-grade/side keys and diagnostics.csv. Constant integer-valued float scores must fail precision/support checks. A grade outside a later endpoint target cannot block that endpoint.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000502/support/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

density

- key: flagged region: This grade valid Bonferroni-six density p_adjusted < .01. says: Score sorting flags continuity for endpoints requiring this grade.
- key: not_flagged region: This grade has a valid density difference/SE/p and p_adjusted >= .01. says: No flag on this diagnostic; no proof of absence of sorting.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Use the fixed grade 5 sample from atom-000502, exact SCORE and r=-x. Execute I5 rddensity3.0 options, cap/refit and Bonferroni-six allocation; do not wait for other grades or recycle their alpha. Report density in 1/original-score-point, no logarithm. Required output density.csv with grade,h_red,h_yellow,density_red,density_yellow,difference,se,p_raw,p_adjusted,lower,upper,n_red,n_yellow diagnostics.csv mirrors this without inventing a sign for failed fits. Positive finite SE and postcap support are required. No outcomes/joins beyond the inherited one-child score sample. Synthetic checks verify reflection/equality convention and distinct density versus log units. A failure limits this grade, not unrelated grade sets.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably

incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000502/density/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

balance

- key: flagged region: Any valid registered grade comparison has p_adjusted<.01 under the fixed48 budget, or an arithmetic_difference exists. says: Predetermined sorting challenges continuity in this grade.
- key: not_flagged region: Every slot is either a valid unflagged contrast, structural_complete, or global constant_observed under I5; no unresolved/unavailable slot remains. says: No registered flag; constant slots supply noninferential evidence only, and proxy income does not clear true-resource continuity.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Use grade 5, D1 initial margin and D2/D6/D9 exact fields. Four variables: BEF.FOED_DAG-derived age in days, BEF.KOEN, IND.AEKVIVADISP_13 in2014, and any D6 DF32/33/40/41/43 encounter in (t0-365,t0]. Baseline care strictly precedes t0; on-day events excluded, so implement [t0-365,t0). Each variable plus its missingness is a separate diagnostic slot. Apply all I5 constant/structural/unavailable/numerical rules and I3 numerical operator with one grade; alpha=.01/48 remains fixed. Correction status from D9 baseline-income audit must be available before reading income: no_result leaves balance otherwise, never corrected by assumption. No conditioning later endpoint eligibility on the observed baseline values; original-variable complete-case fits and full-denominator missingness comparisons remain separate. Output balance.csv with the G2 eight enumerated checks, status, arithmetic extrema, denominators, p-values only for valid fits; diagnostics.csv. Synthetic all-complete, mixed-complete, global constant, differing side constants, unavailable field and nonconstant fit failure must reach the I5 exact routes. No inferred zero SE or balance equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably

incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000502/balance/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

classification

- key: sharp_recording region: All eligible records have known category and category==Z exactly under a verified deterministic category dictionary. says: Threshold assignment coincides with recorded classification in this margin; support receipt remains unmeasured.
- key: nonsharp_jump region: Not sharp_recording; the valid grade-specific 1-.01/6 interval has lower>.10. says: A threshold-policy reduced form is interpretable under the other gates, but not an effect per recorded label or support received.
- key: unresolved_jump region: A valid grade-specific 1-.01/6 interval exists and lower<=.10. says: The proposed meaningful recorded-classification discontinuity is not established; this is not a health or policy null.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Population and exact fields as atom-000502, using TESTRESULTAT/TESTRESULTATNIVEAU and their frozen dictionaries. Evaluate complete known-label equality to Z=1[SCORE<=cutoff] first. Exact equality under a deterministic dictionary is sharp_recording without a manufactured SE. Otherwise apply I3 one-grade category jump using I5 six-slot .01 alpha; all missing labels must be bounded as [0,1], never deleted; use two one-sided limits splitting .01/6 when bounds are necessary. A lower bound>.10 permits nonsharp_jump, never a support-effect ratio. Output classification.csv: grade,agreement_fraction,n_agree,n_known,n_total,category_missing_fraction,estimate,lower,upper,se,p_raw Synthetic unknown/disagreeing labels cannot satisfy sharp_recording; SCORE==c remains red.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches

otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000502/classification/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Complete registration fields

```
id: atom-000502
topic: Grade 5 margin validity
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: Can the grade-5 score margin support a credible local
  ↪  classification-policy
    contrast?
  rationale: The complete grade-specific margin validation is one shared
  ↪  scientific
    diagnostic. Precision, density, baseline continuity and label response
    are evidence for that judgment, not separate experiments. Grades remain
    independent because the registered outcome grade sets differ and a
    ↪  later-grade
    failure must not suppress earlier-grade knowledge.
  assumption: Administrative recognition can affect opportunities, reporting
    and service contact through multiple routes; exact source semantics and
    continuity require evidence, not an estimator label. See literature.md
    and identification.md.
  target_strength: descriptive
  target_shape: comparison
  ratings:
    importance: 4
    novelty: 3
    feasibility: 3
    data_advantage: 4
    informativeness: 0.5
  tables:
  - BEF
  - IND
  - LPR_ADM
  - LPR_DIAG
  - PSYK_ADM
  - PSYK_DIAG
  - UDD_FOLKESKOLE_FRAVAER_STIL
  - UDD_ORDBLINDETEST
  activation: state(atom-000002) == "compatible" OR state(atom-000002) ==
    "selected" OR state(atom-000002) == "retention_unresolved"
```

```
verdicts:
- key: support_boundary
  region: Support component=discrete under its documented
  ↪  precision/full-window
    rules.
  says: This grade does not support the registered continuity estimator;
    preserve its score description.
- key: design_flagged
  region: No preceding region; density=flagged or baseline=flagged,
  ↪  including
    a deterministic side difference.
  says: A registered threat constrains this grade; report other component
    failures as well.
- key: eligible_sharp
  region: Support=continuous, density=not_flagged, baseline=not_flagged,
    classification=sharp_recording.
  says: This grade may enter its prespecified policy targets, conditional
    on initial-margin provenance and untested causal assumptions.
- key: eligible_nonsharp
  region: Support=continuous, density=not_flagged, baseline=not_flagged,
    classification=nonsharp_jump.
  says: Only a reduced-form threshold-policy contrast is licensed, never
    a classification or support-receipt ratio.
- key: classification_unresolved
  region: No preceding region; classification=unresolved_jump from a valid
    registered interval.
  says: The required recorded-classification jump is not established; this
    is not a substantive outcome null.
- key: otherwise
  region: otherwise
  says: The grade is not cleared; preserve partial diagnostic evidence and
    operational failures explicitly.
protocol: |2-

  This is one scientific experiment. Internal components are not additional
  ↪  Atoms or activation primitives. Execute every prescribed component
  ↪  that is scientifically eligible, independently of other component
  ↪  signs. Component outputs retain their own local decision, inference
  ↪  and operational status; only the native judgment.json at the Atom
  ↪  root supplies the Atom local state. No component failure can erase
  ↪  completed evidence in another component. When no scientific component
  ↪  completes because execution fails, set terminal no_result with no
  ↪  Atom local state. Otherwise aggregate only by the ordered registered
  ↪  regions and record every component's failure, boundary, unknown or
  ↪  inactive disposition. Pending necessary evidence stays pending; it is
  ↪  never coded as negative evidence. Internal failed work is not
  ↪  automatically retried.
```

```
Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
↪  definitions. These fix population, dates, table/field dictionaries,
↪  code versions, joins, inference, missingness, outputs and synthetic c
↪  hecks. A dictionary crosswalk is semantic verification before outcome
↪  values, not a new scientific choice. Keep all endpoint-specific
↪  units, horizons and Bonferroni allocations; grouping introduces no
↪  average outcome, composite score, new hypothesis or additional alpha.
↪  Write root audit.json, status.json, judgment.json and components.csv
↪  with component, outcome, component_state, component_terminal,
↪  inference_status, reason, evidence_path. Components.csv is an
↪  evidence index under this protocol, never a second experiment graph.
↪  Suppression is applied after governed adjudication, and cannot govern
↪  activation or disclose protected directions.

Scientific scope: grade 5 only; no cross-grade aggregate gates its result
↪  . First audit original-score support. If continuous, execute density,
↪  baseline and classification components independently; a flagged
↪  density does not prevent recording baseline or label evidence. If
↪  support fails or is unresolved, their numerical fits are internally
↪  not_activated for that exact reason; documented sharp-label equality
↪  may still be described but cannot clear support. Baseline correction
↪  provenance precedes income values and may be reused across grade
↪  units only with identical checksum/table/variable/year. Each grade
↪  owns the applied audit; no grade waits for another. Use fixed six
↪  density, 48 baseline, six classification multiplicity slots.

## income-provenance
- key: corrected
  region: D9 exact delivery/variable/year correction provenance is
  ↪  complete.
  says: Interpret the delivered variable under the documented corrected
  ↪  definition;
    runtime value and join validity remain separate.
- key: known_uncorrected
  region: D9 provenance explicitly identifies the uncorrected historical
  ↪  variable.
  says: Use only the frozen recorded-income proxy interpretation; no
  ↪  intended-resource
    or welfare conclusion.
- key: unresolved
  region: Neither correction status is established, including
  ↪  contradictory or absent
    documentation.
  says: Retain a correction-unverified recorded-income proxy; do not
  ↪  infer corrected
    status from vintage or suffix.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Documentation-only pre-outcome judgment, unit delivery-variable-year.
↪  Incorporate D9 exactly. Check dated release notes and the allowed
↪  table provenance against the official DST income pages cited there.
↪  No rows or estimates needed. For IND.AEKVIVADISP_13, primary
↪  year=2014; additionally report each affected descriptive year
↪  separately. Preserve PNR/year (IND) or FAMILIE_ID/year (FAIK) key
↪  class and D2 reference alignment; no row-level joins performed by
↪  this Atom. First match corrected, known_uncorrected, unresolved;
↪  otherwise covers contradictory execution evidence not a transport
↪  failure. No estimator, SE, multiplicity or equivalence test. Write
↪  correction.csv: table, variable, reference_year, delivery_id,
↪  correction_status, source_locator, criterion, status, reason.
↪  Required correction status is decided before related values are
↪  opened; no field substitution or municipality removal. Synthetic
↪  checks: a recent delivery and _13 alone yield unresolved; an explicit
↪  uncorrected manifest yields known_uncorrected; only exact documented
↪  propagation qualifies corrected. Effects retain the same numeric
↪  proxy under noncorrected states, with restrictions in the Molecule
↪  and paper. Missing variable becomes the consuming endpoint
↪  measurement_boundary; this Atom does not manufacture income.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and prereg/i
↪  dentification.md I1-I4 for estimands and inference. These shared
↪  definitions are part of this Atom's protocol, not optional guidance.
↪  Apply ordered checks before model fitting: delivered schema/dictionar
↪  y; date and unit semantics; unique keys and duplicate disposition;
↪  baseline and horizon eligibility; outcome construction; missingness
↪  and inference; local adjudication. Never inspect a postbaseline
↪  estimate to repair an earlier choice. A demonstrably incompatible
↪  construct is an evidenced boundary; unresolved documentation reaches
↪  otherwise. A transport/access/software failure yields terminal
↪  no_result with no local state. Apply the listed verdict regions in
↪  order, first matching region wins; otherwise is exhaustive. All
↪  future outputs go to prereg/runtime/atom-000502/income-provenance/
↪  and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## support
- key: discrete
  region: Known rounding exceeds 0.5 or this grade fails any registered
  ↪  I5/D1 full-window
    support safeguard.
  says: The continuity-based estimator is not defensible under this
  ↪  registered policy;
    descriptive score distributions remain informative.
- key: continuous
  region: Original precision and every full-window support safeguard for
  ↪  this grade
    are met.
  says: Recorded support permits the proposed local approximation;
  ↪  continuity is still
    an assumption.
- key: otherwise
```

```
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Population: D1 spring2015 children with documented baseline grade 5,
↪  before outcome inspection. Use UDD_ORDBLINDETEST
↪  SCORE,DATO,PNR,UDDANNELSESNIVEAU; prior-month absence
↪  INSTITUTIONSNUMMER/KLASSETRIN; BEF parental-link clusters. Only this
↪  grade is judged. Apply Molecule score-support summary original
↪  safeguards independently: precision <=0.5 original point; >=20
↪  distinct scores on each side of |x|<=6; >=30 schools and >=30 family
↪  components in this grade; largest side mass-point fraction <=.20. No
↪  jitter or local-randomization substitution. Document maximum gap and
↪  rounding, counts and mass shares; no p-values. Output support.csv
↪  with G2 typed per-grade/side keys and diagnostics.csv. Constant
↪  integer-valued float scores must fail precision/support checks. A
↪  grade outside a later endpoint target cannot block that endpoint.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000502/suppo
↪  rt/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## density
- key: flagged
  region: This grade valid Bonferroni-six density p_adjusted < .01.
  says: Score sorting flags continuity for endpoints requiring this grade.
- key: not_flagged
  region: This grade has a valid density difference/SE/p and p_adjusted
  ↪  >= .01.
  says: No flag on this diagnostic; no proof of absence of sorting.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Use the fixed grade 5 sample from atom-000502, exact SCORE and r=-x. Exec
↪  ute I5 rddensity3.0 options, cap/refit and Bonferroni-six allocation;
↪  do not wait for other grades or recycle their alpha. Report density
↪  in 1/original-score-point, no logarithm. Required output density.csv
↪  with grade,h_red,h_yellow,density_red,density_yellow,difference,se,p_
↪  raw,p_adjusted,lower,upper,n_red,n_yellow,status,reason;
↪  diagnostics.csv mirrors this without inventing a sign for failed
↪  fits. Positive finite SE and postcap support are required. No outcome
↪  s/joins beyond the inherited one-child score sample. Synthetic checks
↪  verify reflection/equality convention and distinct density versus log
↪  units. A failure limits this grade, not unrelated grade sets.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000502/densi
↪  ty/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## balance
- key: flagged
  region: Any valid registered grade comparison has p_adjusted<.01 under
  ↪  the fixed48
    budget, or an arithmetic_difference exists.
  says: Predetermined sorting challenges continuity in this grade.
- key: not_flagged
  region: Every slot is either a valid unflagged contrast,
  ↪  structural_complete, or
    global constant_observed under I5; no unresolved/unavailable slot
    ↪  remains.
  says: No registered flag; constant slots supply noninferential evidence
  ↪  only, and
    proxy income does not clear true-resource continuity.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Use grade 5, D1 initial margin and D2/D6/D9 exact fields. Four variables:
↪  BEF.FOED_DAG-derived age in days, BEF.KOEN, IND.AEKVIVADISP_13 in2014
↪  , and any D6 DF32/33/40/41/43 encounter in (t0-365,t0]. Baseline care
↪  strictly precedes t0; on-day events excluded, so implement [t0-365,t0
↪  ). Each variable plus its missingness is a separate diagnostic slot.
↪  Apply all I5 constant/structural/unavailable/numerical rules and I3
↪  numerical operator with one grade; alpha=.01/48 remains fixed.
↪  Correction status from D9 baseline-income audit must be available
↪  before reading income: no_result leaves balance otherwise, never
↪  corrected by assumption. No conditioning later endpoint eligibility
↪  on the observed baseline values; original-variable complete-case fits
↪  and full-denominator missingness comparisons remain separate. Output
↪  balance.csv with the G2 eight enumerated checks, status, arithmetic
↪  extrema, denominators, p-values only for valid fits; diagnostics.csv.
↪  Synthetic all-complete, mixed-complete, global constant, differing
↪  side constants, unavailable field and nonconstant fit failure must
↪  reach the I5 exact routes. No inferred zero SE or balance equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000502/balan
↪  ce/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## classification
- key: sharp_recording
  region: All eligible records have known category and category==Z
  ↪  exactly under a
    verified deterministic category dictionary.
  says: Threshold assignment coincides with recorded classification in
  ↪  this margin;
    support receipt remains unmeasured.
- key: nonsharp_jump
  region: Not sharp_recording; the valid grade-specific 1-.01/6 interval
  ↪  has lower>.10.
  says: A threshold-policy reduced form is interpretable under the other
  ↪  gates, but
    not an effect per recorded label or support received.
- key: unresolved_jump
  region: A valid grade-specific 1-.01/6 interval exists and lower<=.10.
  says: The proposed meaningful recorded-classification discontinuity is
  ↪  not established;
    this is not a health or policy null.
```

```
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Population and exact fields as atom-000502, using
↪  TESTRESULTAT/TESTRESULTATNIVEAU and their frozen dictionaries.
↪  Evaluate complete known-label equality to Z=1[SCORE<=cutoff] first.
↪  Exact equality under a deterministic dictionary is sharp_recording
↪  without a manufactured SE. Otherwise apply I3 one-grade category jump
↪  using I5 six-slot .01 alpha; all missing labels must be bounded as
↪  [0,1], never deleted; use two one-sided limits splitting .01/6 when
↪  bounds are necessary. A lower bound>.10 permits nonsharp_jump, never
↪  a support-effect ratio. Output classification.csv:
↪  grade,agreement_fraction,n_agree,n_known,n_total,category_missing_fra
↪  ction,estimate,lower,upper,se,p_raw,p_adjusted,status,reason.
↪  Synthetic unknown/disagreeing labels cannot satisfy sharp_recording;
↪  SCORE==c remains red.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and prereg/i
↪  dentification.md I1-I4 for estimands and inference. These shared
↪  definitions are part of this Atom's protocol, not optional guidance.
↪  Apply ordered checks before model fitting: delivered schema/dictionar
↪  y; date and unit semantics; unique keys and duplicate disposition;
↪  baseline and horizon eligibility; outcome construction; missingness
↪  and inference; local adjudication. Never inspect a postbaseline
↪  estimate to repair an earlier choice. A demonstrably incompatible
↪  construct is an evidenced boundary; unresolved documentation reaches
↪  otherwise. A transport/access/software failure yields terminal
↪  no_result with no local state. Apply the listed verdict regions in
↪  order, first matching region wins; otherwise is exhaustive. All
↪  future outputs go to prereg/runtime/atom-000502/classification/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

Registered experiment

Can the grade-5 score margin support a credible local classification-policy contrast?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000502`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000503: Grade 6 margin validity

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state, component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Scientific scope: grade 6 only; no cross-grade aggregate gates its result. First audit original-score support. If continuous, execute density, baseline and classification components independently; a flagged density does not prevent recording baseline or label evidence. If support fails or is unresolved, their numerical fits are internally not_activated for that exact reason; documented sharp-label equality may still be described but cannot clear support. Baseline correction provenance precedes income values and may be reused across grade units only with identical checksum/table/variable/year. Each grade owns the applied audit; no grade waits for another. Use fixed six density, 48 baseline, six classification multiplicity slots.

income-provenance

- key: corrected region: D9 exact delivery/variable/year correction provenance is complete. says: Interpret the delivered variable under the documented corrected definition; runtime value and join validity remain separate.
- key: known_uncorrected region: D9 provenance explicitly identifies the uncorrected historical variable. says: Use only the frozen recorded-income proxy interpretation; no intended-resource or welfare conclusion.
- key: unresolved region: Neither correction status is established, including contradictory or absent documentation. says: Retain a correction-unverified recorded-income proxy; do not infer corrected status from vintage or suffix.

- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Documentation-only pre-outcome judgment, unit delivery-variable-year. Incorporate D9 exactly. Check dated release notes and the allowed table provenance against the official DST income pages cited there. No rows or estimates needed. For IND.AEKVIVADISP_13, primary year=2014; additionally report each affected descriptive year separately. Preserve PNR/year (IND) or FAMILIE_ID/year (FAIK) key class and D2 reference alignment; no row-level joins performed by this Atom. First match corrected, known_uncorrected, unresolved; otherwise covers contradictory execution evidence not a transport failure. No estimator, SE, multiplicity or equivalence test. Write correction.csv: table, variable, reference_year, delivery_id, correction_status, source_locator, criterion, status, reason. Required correction status is decided before related values are opened; no field substitution or municipality removal. Synthetic checks: a recent delivery and _13 alone yield unresolved; an explicit uncorrected manifest yields known_uncorrected; only exact documented propagation qualifies corrected. Effects retain the same numeric proxy under noncorrected states, with restrictions in the Molecule and paper. Missing variable becomes the consuming endpoint measurement_boundary; this Atom does not manufacture income.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000503/income-provenance/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

support

- key: discrete region: Known rounding exceeds 0.5 or this grade fails any registered I5/D1 full-window support safeguard. says: The continuity-based estimator is not defensible under this registered policy; descriptive score distributions remain informative.

- key: continuous region: Original precision and every full-window support safeguard for this grade are met. says: Recorded support permits the proposed local approximation; continuity is still an assumption.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Population: D1 spring2015 children with documented baseline grade 6, before outcome inspection. Use UDD_ORDBLINDETEST SCORE,DATO,PNR,UDDANNELSESNIVEAU; prior-month absence INSTITUTIONSNUMMER/KLASSETRIN; BEF parental-link clusters. Only this grade is judged. Apply Molecule score-support summary original safeguards independently: precision <=0.5 original point; >=20 distinct scores on each side of |x|<=6; >=30 schools and >=30 family components in this grade; largest side mass-point fraction <=.20. No jitter or local-randomization substitution. Document maximum gap and rounding, counts and mass shares; no p-values. Output support.csv with G2 typed per-grade/side keys and diagnostics.csv. Constant integer-valued float scores must fail precision/support checks. A grade outside a later endpoint target cannot block that endpoint.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000503/support/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

density

- key: flagged region: This grade valid Bonferroni-six density p_adjusted < .01. says: Score sorting flags continuity for endpoints requiring this grade.
- key: not_flagged region: This grade has a valid density difference/SE/p and p_adjusted >= .01. says: No flag on this diagnostic; no proof of absence of sorting.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Use the fixed grade 6 sample from atom-000503, exact SCORE and

r=-x. Execute I5 rddensity3.0 options, cap/refit and Bonferroni-six allocation; do not wait for other grades or recycle their alpha. Report density in 1/original-score-point, no logarithm. Required output density.csv with grade,h_red,h_yellow,density_red,density_yellow,difference,se,p_raw,p_adjusted,lower,upper,n_red,n_yellow diagnostics.csv mirrors this without inventing a sign for failed fits. Positive finite SE and postcap support are required. No outcomes/joins beyond the inherited one-child score sample. Synthetic checks verify reflection/equality convention and distinct density versus log units. A failure limits this grade, not unrelated grade sets.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000503/density/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

balance

- key: flagged region: Any valid registered grade comparison has p_adjusted<.01 under the fixed48 budget, or an arithmetic_difference exists. says: Predetermined sorting challenges continuity in this grade.
- key: not_flagged region: Every slot is either a valid unflagged contrast, structural_complete, or global constant_observed under I5; no unresolved/unavailable slot remains. says: No registered flag; constant slots supply noninferential evidence only, and proxy income does not clear true-resource continuity.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Use grade 6, D1 initial margin and D2/D6/D9 exact fields. Four variables: BEF.FOED_DAG-derived age in days, BEF.KOEN, IND.AEKVIVADISP_13 in2014, and any D6 DF32/33/40/41/43 encounter in (t0-365,t0]. Baseline care strictly precedes t0; on-day events excluded, so implement [t0-365,t0). Each variable plus its missingness is a separate diagnostic slot. Apply all I5 constant/structural/unavailable/numerical

rules and I3 numerical operator with one grade; alpha=.01/48 remains fixed. Correction status from D9 baseline-income audit must be available before reading income: no_result leaves balance otherwise, never corrected by assumption. No conditioning later endpoint eligibility on the observed baseline values; original-variable complete-case fits and full-denominator missingness comparisons remain separate. Output balance.csv with the G2 eight enumerated checks, status, arithmetic extrema, denominators, p-values only for valid fits; diagnostics.csv. Synthetic all-complete, mixed-complete, global constant, differing side constants, unavailable field and nonconstant fit failure must reach the I5 exact routes. No inferred zero SE or balance equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000503/balance/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

classification

- key: sharp_recording region: All eligible records have known category and category==Z exactly under a verified deterministic category dictionary. says: Threshold assignment coincides with recorded classification in this margin; support receipt remains unmeasured.
- key: nonsharp_jump region: Not sharp_recording; the valid grade-specific 1-.01/6 interval has lower>.10. says: A threshold-policy reduced form is interpretable under the other gates, but not an effect per recorded label or support received.
- key: unresolved_jump region: A valid grade-specific 1-.01/6 interval exists and lower<=.10. says: The proposed meaningful recorded-classification discontinuity is not established; this is not a health or policy null.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Population and exact fields as atom-000503, using TESTRESULTAT/TESTRESULTATNIVEAU and their frozen dictionaries. Evaluate complete

known-label equality to Z=1[SCORE<=cutoff] first. Exact equality under a deterministic dictionary is sharp_recording without a manufactured SE. Otherwise apply I3 one-grade category jump using I5 six-slot .01 alpha; all missing labels must be bounded as [0,1], never deleted; use two one-sided limits splitting .01/6 when bounds are necessary. A lower bound>.10 permits nonsharp_jump, never a support-effect ratio. Output classification.csv: grade,agreement_fraction,n_agree,n_known,n_total,category_missing_fraction,estimate,lower,upper,se,p_raw Synthetic unknown/disagreeing labels cannot satisfy sharp_recording; SCORE==c remains red.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000503/classification/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Complete registration fields

```
id: atom-000503
topic: Grade 6 margin validity
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: Can the grade-6 score margin support a credible local
  ↪  classification-policy
    contrast?
  rationale: The complete grade-specific margin validation is one shared
  ↪  scientific
    diagnostic. Precision, density, baseline continuity and label response
    are evidence for that judgment, not separate experiments. Grades remain
    independent because the registered outcome grade sets differ and a
    ↪  later-grade
```

```
  failure must not suppress earlier-grade knowledge.
assumption: Administrative recognition can affect opportunities, reporting
  and service contact through multiple routes; exact source semantics and
  continuity require evidence, not an estimator label. See literature.md
  and identification.md.
target_strength: descriptive
target_shape: comparison
ratings:
  importance: 4
  novelty: 3
  feasibility: 3
  data_advantage: 4
  informativeness: 0.5
tables:
- BEF
- IND
- LPR_ADM
- LPR_DIAG
- PSYK_ADM
- PSYK_DIAG
- UDD_FOLKESKOLE_FRAVAER_STIL
- UDD_ORDBLINDETEST
activation: state(atom-000002) == "compatible" OR state(atom-000002) ==
  "selected" OR state(atom-000002) == "retention_unresolved"
verdicts:
- key: support_boundary
  region: Support component=discrete under its documented
  ↪  precision/full-window
    rules.
  says: This grade does not support the registered continuity estimator;
    preserve its score description.
- key: design_flagged
  region: No preceding region; density=flagged or baseline=flagged,
  ↪  including
    a deterministic side difference.
  says: A registered threat constrains this grade; report other component
    failures as well.
- key: eligible_sharp
  region: Support=continuous, density=not_flagged, baseline=not_flagged,
    classification=sharp_recording.
  says: This grade may enter its prespecified policy targets, conditional
    on initial-margin provenance and untested causal assumptions.
- key: eligible_nonsharp
  region: Support=continuous, density=not_flagged, baseline=not_flagged,
    classification=nonsharp_jump.
  says: Only a reduced-form threshold-policy contrast is licensed, never
    a classification or support-receipt ratio.
- key: classification_unresolved
  region: No preceding region; classification=unresolved_jump from a valid
    registered interval.
  says: The required recorded-classification jump is not established; this
    is not a substantive outcome null.
- key: otherwise
  region: otherwise
  says: The grade is not cleared; preserve partial diagnostic evidence and
    operational failures explicitly.
protocol: |2-
```

```
This is one scientific experiment. Internal components are not additional
↪  Atoms or activation primitives. Execute every prescribed component
↪  that is scientifically eligible, independently of other component
↪  signs. Component outputs retain their own local decision, inference
↪  and operational status; only the native judgment.json at the Atom
↪  root supplies the Atom local state. No component failure can erase
↪  completed evidence in another component. When no scientific component
↪  completes because execution fails, set terminal no_result with no
↪  Atom local state. Otherwise aggregate only by the ordered registered
↪  regions and record every component's failure, boundary, unknown or
↪  inactive disposition. Pending necessary evidence stays pending; it is
↪  never coded as negative evidence. Internal failed work is not
↪  automatically retried.
Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
↪  definitions. These fix population, dates, table/field dictionaries,
↪  code versions, joins, inference, missingness, outputs and synthetic c
↪  hecks. A dictionary crosswalk is semantic verification before outcome
↪  values, not a new scientific choice. Keep all endpoint-specific
↪  units, horizons and Bonferroni allocations; grouping introduces no
↪  average outcome, composite score, new hypothesis or additional alpha.
↪  Write root audit.json, status.json, judgment.json and components.csv
↪  with component, outcome, component_state, component_terminal,
↪  inference_status, reason, evidence_path. Components.csv is an
↪  evidence index under this protocol, never a second experiment graph.
↪  Suppression is applied after governed adjudication, and cannot govern
↪  activation or disclose protected directions.

Scientific scope: grade 6 only; no cross-grade aggregate gates its result
↪  . First audit original-score support. If continuous, execute density,
↪  baseline and classification components independently; a flagged
↪  density does not prevent recording baseline or label evidence. If
↪  support fails or is unresolved, their numerical fits are internally
↪  not_activated for that exact reason; documented sharp-label equality
↪  may still be described but cannot clear support. Baseline correction
↪  provenance precedes income values and may be reused across grade
↪  units only with identical checksum/table/variable/year. Each grade
↪  owns the applied audit; no grade waits for another. Use fixed six
↪  density, 48 baseline, six classification multiplicity slots.

## income-provenance
- key: corrected
  region: D9 exact delivery/variable/year correction provenance is
  ↪  complete.
  says: Interpret the delivered variable under the documented corrected
  ↪  definition;
    runtime value and join validity remain separate.
- key: known_uncorrected
  region: D9 provenance explicitly identifies the uncorrected historical
  ↪  variable.
  says: Use only the frozen recorded-income proxy interpretation; no
  ↪  intended-resource
    or welfare conclusion.
- key: unresolved
  region: Neither correction status is established, including
  ↪  contradictory or absent
    documentation.
  says: Retain a correction-unverified recorded-income proxy; do not
  ↪  infer corrected
    status from vintage or suffix.
```

```
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
Documentation-only pre-outcome judgment, unit delivery-variable-year.
↪  Incorporate D9 exactly. Check dated release notes and the allowed
↪  table provenance against the official DST income pages cited there.
↪  No rows or estimates needed. For IND.AEKVIVADISP_13, primary
↪  year=2014; additionally report each affected descriptive year
↪  separately. Preserve PNR/year (IND) or FAMILIE_ID/year (FAIK) key
↪  class and D2 reference alignment; no row-level joins performed by
↪  this Atom. First match corrected, known_uncorrected, unresolved;
↪  otherwise covers contradictory execution evidence not a transport
↪  failure. No estimator, SE, multiplicity or equivalence test. Write
↪  correction.csv: table, variable, reference_year, delivery_id,
↪  correction_status, source_locator, criterion, status, reason.
↪  Required correction status is decided before related values are
↪  opened; no field substitution or municipality removal. Synthetic
↪  checks: a recent delivery and _13 alone yield unresolved; an explicit
↪  uncorrected manifest yields known_uncorrected; only exact documented
↪  propagation qualifies corrected. Effects retain the same numeric
↪  proxy under noncorrected states, with restrictions in the Molecule
↪  and paper. Missing variable becomes the consuming endpoint
↪  measurement_boundary; this Atom does not manufacture income.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and prereg/i
↪  dentification.md I1-I4 for estimands and inference. These shared
↪  definitions are part of this Atom's protocol, not optional guidance.
↪  Apply ordered checks before model fitting: delivered schema/dictionar
↪  y; date and unit semantics; unique keys and duplicate disposition;
↪  baseline and horizon eligibility; outcome construction; missingness
↪  and inference; local adjudication. Never inspect a postbaseline
↪  estimate to repair an earlier choice. A demonstrably incompatible
↪  construct is an evidenced boundary; unresolved documentation reaches
↪  otherwise. A transport/access/software failure yields terminal
↪  no_result with no local state. Apply the listed verdict regions in
↪  order, first matching region wins; otherwise is exhaustive. All
↪  future outputs go to prereg/runtime/atom-000503/income-provenance/
↪  and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## support
- key: discrete
  region: Known rounding exceeds 0.5 or this grade fails any registered
  ↪  I5/D1 full-window
    support safeguard.
  says: The continuity-based estimator is not defensible under this
  ↪  registered policy;
    descriptive score distributions remain informative.
- key: continuous
  region: Original precision and every full-window support safeguard for
  ↪  this grade
```

```
    are met.
  says: Recorded support permits the proposed local approximation;
  ↪  continuity is still
    an assumption.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Population: D1 spring2015 children with documented baseline grade 6,
↪  before outcome inspection. Use UDD_ORDBLINDETEST
↪  SCORE,DATO,PNR,UDDANNELSESNIVEAU; prior-month absence
↪  INSTITUTIONSNUMMER/KLASSETRIN; BEF parental-link clusters. Only this
↪  grade is judged. Apply Molecule score-support summary original
↪  safeguards independently: precision <=0.5 original point; >=20
↪  distinct scores on each side of |x|<=6; >=30 schools and >=30 family
↪  components in this grade; largest side mass-point fraction <=.20. No
↪  jitter or local-randomization substitution. Document maximum gap and
↪  rounding, counts and mass shares; no p-values. Output support.csv
↪  with G2 typed per-grade/side keys and diagnostics.csv. Constant
↪  integer-valued float scores must fail precision/support checks. A
↪  grade outside a later endpoint target cannot block that endpoint.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000503/suppo
↪  rt/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## density
- key: flagged
  region: This grade valid Bonferroni-six density p_adjusted < .01.
  says: Score sorting flags continuity for endpoints requiring this grade.
- key: not_flagged
  region: This grade has a valid density difference/SE/p and p_adjusted
  ↪  >= .01.
  says: No flag on this diagnostic; no proof of absence of sorting.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Use the fixed grade 6 sample from atom-000503, exact SCORE and r=-x. Exec
↪  ute I5 rddensity3.0 options, cap/refit and Bonferroni-six allocation;
↪  do not wait for other grades or recycle their alpha. Report density
↪  in 1/original-score-point, no logarithm. Required output density.csv
↪  with grade,h_red,h_yellow,density_red,density_yellow,difference,se,p_
↪  raw,p_adjusted,lower,upper,n_red,n_yellow,status,reason;
↪  diagnostics.csv mirrors this without inventing a sign for failed
↪  fits. Positive finite SE and postcap support are required. No outcome
↪  s/joins beyond the inherited one-child score sample. Synthetic checks
↪  verify reflection/equality convention and distinct density versus log
↪  units. A failure limits this grade, not unrelated grade sets.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000503/densi
↪  ty/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## balance
- key: flagged
  region: Any valid registered grade comparison has p_adjusted<.01 under
  ↪  the fixed48
    budget, or an arithmetic_difference exists.
  says: Predetermined sorting challenges continuity in this grade.
- key: not_flagged
  region: Every slot is either a valid unflagged contrast,
  ↪  structural_complete, or
    global constant_observed under I5; no unresolved/unavailable slot
    ↪  remains.
  says: No registered flag; constant slots supply noninferential evidence
  ↪  only, and
    proxy income does not clear true-resource continuity.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Use grade 6, D1 initial margin and D2/D6/D9 exact fields. Four variables:
↪  BEF.FOED_DAG-derived age in days, BEF.KOEN, IND.AEKVIVADISP_13 in2014
↪  , and any D6 DF32/33/40/41/43 encounter in (t0-365,t0]. Baseline care
↪  strictly precedes t0; on-day events excluded, so implement [t0-365,t0
↪  ). Each variable plus its missingness is a separate diagnostic slot.
↪  Apply all I5 constant/structural/unavailable/numerical rules and I3
↪  numerical operator with one grade; alpha=.01/48 remains fixed.
↪  Correction status from D9 baseline-income audit must be available
↪  before reading income: no_result leaves balance otherwise, never
↪  corrected by assumption. No conditioning later endpoint eligibility
↪  on the observed baseline values; original-variable complete-case fits
↪  and full-denominator missingness comparisons remain separate. Output
↪  balance.csv with the G2 eight enumerated checks, status, arithmetic
↪  extrema, denominators, p-values only for valid fits; diagnostics.csv.
↪  Synthetic all-complete, mixed-complete, global constant, differing
↪  side constants, unavailable field and nonconstant fit failure must
↪  reach the I5 exact routes. No inferred zero SE or balance equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000503/balan
↪  ce/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## classification
- key: sharp_recording
  region: All eligible records have known category and category==Z
  ↪  exactly under a
    verified deterministic category dictionary.
  says: Threshold assignment coincides with recorded classification in
  ↪  this margin;
    support receipt remains unmeasured.
- key: nonsharp_jump
  region: Not sharp_recording; the valid grade-specific 1-.01/6 interval
  ↪  has lower>.10.
  says: A threshold-policy reduced form is interpretable under the other
  ↪  gates, but
    not an effect per recorded label or support received.
- key: unresolved_jump
  region: A valid grade-specific 1-.01/6 interval exists and lower<=.10.
  says: The proposed meaningful recorded-classification discontinuity is
  ↪  not established;
    this is not a health or policy null.
```

```
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Population and exact fields as atom-000503, using
↪  TESTRESULTAT/TESTRESULTATNIVEAU and their frozen dictionaries.
↪  Evaluate complete known-label equality to Z=1[SCORE<=cutoff] first.
↪  Exact equality under a deterministic dictionary is sharp_recording
↪  without a manufactured SE. Otherwise apply I3 one-grade category jump
↪  using I5 six-slot .01 alpha; all missing labels must be bounded as
↪  [0,1], never deleted; use two one-sided limits splitting .01/6 when
↪  bounds are necessary. A lower bound>.10 permits nonsharp_jump, never
↪  a support-effect ratio. Output classification.csv:
↪  grade,agreement_fraction,n_agree,n_known,n_total,category_missing_fra
↪  ction,estimate,lower,upper,se,p_raw,p_adjusted,status,reason.
↪  Synthetic unknown/disagreeing labels cannot satisfy sharp_recording;
↪  SCORE==c remains red.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and prereg/i
↪  dentification.md I1-I4 for estimands and inference. These shared
↪  definitions are part of this Atom's protocol, not optional guidance.
↪  Apply ordered checks before model fitting: delivered schema/dictionar
↪  y; date and unit semantics; unique keys and duplicate disposition;
↪  baseline and horizon eligibility; outcome construction; missingness
↪  and inference; local adjudication. Never inspect a postbaseline
↪  estimate to repair an earlier choice. A demonstrably incompatible
↪  construct is an evidenced boundary; unresolved documentation reaches
↪  otherwise. A transport/access/software failure yields terminal
↪  no_result with no local state. Apply the listed verdict regions in
↪  order, first matching region wins; otherwise is exhaustive. All
↪  future outputs go to prereg/runtime/atom-000503/classification/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

Registered experiment

Can the grade-6 score margin support a credible local classification-policy contrast?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000503`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000504: Grade 7 margin validity

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state, component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Scientific scope: grade 7 only; no cross-grade aggregate gates its result. First audit original-score support. If continuous, execute density, baseline and classification components independently; a flagged density does not prevent recording baseline or label evidence. If support fails or is unresolved, their numerical fits are internally not_activated for that exact reason; documented sharp-label equality may still be described but cannot clear support. Baseline correction provenance precedes income values and may be reused across grade units only with identical checksum/table/variable/year. Each grade owns the applied audit; no grade waits for another. Use fixed six density, 48 baseline, six classification multiplicity slots.

income-provenance

- key: corrected region: D9 exact delivery/variable/year correction provenance is complete. says: Interpret the delivered variable under the documented corrected definition; runtime value and join validity remain separate.
- key: known_uncorrected region: D9 provenance explicitly identifies the uncorrected historical variable. says: Use only the frozen recorded-income proxy interpretation; no intended-resource or welfare conclusion.
- key: unresolved region: Neither correction status is established, including contradictory or absent documentation. says: Retain a correction-unverified recorded-income proxy; do not infer corrected status from vintage or suffix.

- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Documentation-only pre-outcome judgment, unit delivery-variable-year. Incorporate D9 exactly. Check dated release notes and the allowed table provenance against the official DST income pages cited there. No rows or estimates needed. For IND.AEKVIVADISP_13, primary year=2014; additionally report each affected descriptive year separately. Preserve PNR/year (IND) or FAMILIE_ID/year (FAIK) key class and D2 reference alignment; no row-level joins performed by this Atom. First match corrected, known_uncorrected, unresolved; otherwise covers contradictory execution evidence not a transport failure. No estimator, SE, multiplicity or equivalence test. Write correction.csv: table, variable, reference_year, delivery_id, correction_status, source_locator, criterion, status, reason. Required correction status is decided before related values are opened; no field substitution or municipality removal. Synthetic checks: a recent delivery and _13 alone yield unresolved; an explicit uncorrected manifest yields known_uncorrected; only exact documented propagation qualifies corrected. Effects retain the same numeric proxy under noncorrected states, with restrictions in the Molecule and paper. Missing variable becomes the consuming endpoint measurement_boundary; this Atom does not manufacture income.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000504/income-provenance/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

support

- key: discrete region: Known rounding exceeds 0.5 or this grade fails any registered I5/D1 full-window support safeguard. says: The continuity-based estimator is not defensible under this registered policy; descriptive score distributions remain informative.

- key: continuous region: Original precision and every full-window support safeguard for this grade are met. says: Recorded support permits the proposed local approximation; continuity is still an assumption.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Population: D1 spring2015 children with documented baseline grade 7, before outcome inspection. Use UDD_ORDBLINDETEST SCORE,DATO,PNR,UDDANNELSESNIVEAU; prior-month absence INSTITUTIONSNUMMER/KLASSETRIN; BEF parental-link clusters. Only this grade is judged. Apply Molecule score-support summary original safeguards independently: precision <=0.5 original point; >=20 distinct scores on each side of |x|<=6; >=30 schools and >=30 family components in this grade; largest side mass-point fraction <=.20. No jitter or local-randomization substitution. Document maximum gap and rounding, counts and mass shares; no p-values. Output support.csv with G2 typed per-grade/side keys and diagnostics.csv. Constant integer-valued float scores must fail precision/support checks. A grade outside a later endpoint target cannot block that endpoint.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000504/support/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

density

- key: flagged region: This grade valid Bonferroni-six density p_adjusted < .01. says: Score sorting flags continuity for endpoints requiring this grade.
- key: not_flagged region: This grade has a valid density difference/SE/p and p_adjusted >= .01. says: No flag on this diagnostic; no proof of absence of sorting.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Use the fixed grade 7 sample from atom-000504, exact SCORE and

r=-x. Execute I5 rddensity3.0 options, cap/refit and Bonferroni-six allocation; do not wait for other grades or recycle their alpha. Report density in 1/original-score-point, no logarithm. Required output density.csv with grade,h_red,h_yellow,density_red,density_yellow,difference,se,p_raw,p_adjusted,lower,upper,n_red,n_y diagnostics.csv mirrors this without inventing a sign for failed fits. Positive finite SE and postcap support are required. No outcomes/joins beyond the inherited one-child score sample. Synthetic checks verify reflection/equality convention and distinct density versus log units. A failure limits this grade, not unrelated grade sets.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000504/density/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

balance

- key: flagged region: Any valid registered grade comparison has p_adjusted<.01 under the fixed48 budget, or an arithmetic_difference exists. says: Predetermined sorting challenges continuity in this grade.
- key: not_flagged region: Every slot is either a valid unflagged contrast, structural_complete, or global constant_observed under I5; no unresolved/unavailable slot remains. says: No registered flag; constant slots supply noninferential evidence only, and proxy income does not clear true-resource continuity.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Use grade 7, D1 initial margin and D2/D6/D9 exact fields. Four variables: BEF.FOED_DAG-derived age in days, BEF.KOEN, IND.AEKVIVADISP_13 in2014, and any D6 DF32/33/40/41/43 encounter in (t0-365,t0]. Baseline care strictly precedes t0; on-day events excluded, so implement [t0-365,t0). Each variable plus its missingness is a separate diagnostic slot. Apply all I5 constant/structural/unavailable/numerical

rules and I3 numerical operator with one grade; alpha=.01/48 remains fixed. Correction status from D9 baseline-income audit must be available before reading income: no_result leaves balance otherwise, never corrected by assumption. No conditioning later endpoint eligibility on the observed baseline values; original-variable complete-case fits and full-denominator missingness comparisons remain separate. Output balance.csv with the G2 eight enumerated checks, status, arithmetic extrema, denominators, p-values only for valid fits; diagnostics.csv. Synthetic all-complete, mixed-complete, global constant, differing side constants, unavailable field and nonconstant fit failure must reach the I5 exact routes. No inferred zero SE or balance equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000504/balance/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

classification

- key: sharp_recording region: All eligible records have known category and category==Z exactly under a verified deterministic category dictionary. says: Threshold assignment coincides with recorded classification in this margin; support receipt remains unmeasured.
- key: nonsharp_jump region: Not sharp_recording; the valid grade-specific 1-.01/6 interval has lower>.10. says: A threshold-policy reduced form is interpretable under the other gates, but not an effect per recorded label or support received.
- key: unresolved_jump region: A valid grade-specific 1-.01/6 interval exists and lower<=.10. says: The proposed meaningful recorded-classification discontinuity is not established; this is not a health or policy null.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Population and exact fields as atom-000504, using TESTRESULTAT/TESTRESULTATNIVEAU and their frozen dictionaries. Evaluate complete

known-label equality to Z=1[SCORE<=cutoff] first. Exact equality under a deterministic dictionary is sharp_recording without a manufactured SE. Otherwise apply I3 one-grade category jump using I5 six-slot .01 alpha; all missing labels must be bounded as [0,1], never deleted; use two one-sided limits splitting .01/6 when bounds are necessary. A lower bound>.10 permits nonsharp_jump, never a support-effect ratio. Output classification.csv: grade,agreement_fraction,n_agree,n_known,n_total,category_missing_fraction,estimate,lower,upper,se,
Synthetic unknown/disagreeing labels cannot satisfy sharp_recording; SCORE==c remains red.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000504/classification/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Complete registration fields

```
id: atom-000504
topic: Grade 7 margin validity
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: Can the grade-7 score margin support a credible local
  ↪  classification-policy
    contrast?
  rationale: The complete grade-specific margin validation is one shared
  ↪  scientific
    diagnostic. Precision, density, baseline continuity and label response
    are evidence for that judgment, not separate experiments. Grades remain
    independent because the registered outcome grade sets differ and a
    ↪  later-grade
```

```
  failure must not suppress earlier-grade knowledge.
assumption: Administrative recognition can affect opportunities, reporting
  and service contact through multiple routes; exact source semantics and
  continuity require evidence, not an estimator label. See literature.md
  and identification.md.
target_strength: descriptive
target_shape: comparison
ratings:
  importance: 4
  novelty: 3
  feasibility: 3
  data_advantage: 4
  informativeness: 0.5
tables:
- BEF
- IND
- LPR_ADM
- LPR_DIAG
- PSYK_ADM
- PSYK_DIAG
- UDD_FOLKESKOLE_FRAVAER_STIL
- UDD_ORDBLINDETEST
activation: state(atom-000002) == "compatible" OR state(atom-000002) ==
  "selected" OR state(atom-000002) == "retention_unresolved"
verdicts:
- key: support_boundary
  region: Support component=discrete under its documented
  ↪  precision/full-window
    rules.
  says: This grade does not support the registered continuity estimator;
    preserve its score description.
- key: design_flagged
  region: No preceding region; density=flagged or baseline=flagged,
  ↪  including
    a deterministic side difference.
  says: A registered threat constrains this grade; report other component
    failures as well.
- key: eligible_sharp
  region: Support=continuous, density=not_flagged, baseline=not_flagged,
    classification=sharp_recording.
  says: This grade may enter its prespecified policy targets, conditional
    on initial-margin provenance and untested causal assumptions.
- key: eligible_nonsharp
  region: Support=continuous, density=not_flagged, baseline=not_flagged,
    classification=nonsharp_jump.
  says: Only a reduced-form threshold-policy contrast is licensed, never
    a classification or support-receipt ratio.
- key: classification_unresolved
  region: No preceding region; classification=unresolved_jump from a valid
    registered interval.
  says: The required recorded-classification jump is not established; this
    is not a substantive outcome null.
- key: otherwise
  region: otherwise
  says: The grade is not cleared; preserve partial diagnostic evidence and
    operational failures explicitly.
protocol: |2-
```

```
This is one scientific experiment. Internal components are not additional
↪  Atoms or activation primitives. Execute every prescribed component
↪  that is scientifically eligible, independently of other component
↪  signs. Component outputs retain their own local decision, inference
↪  and operational status; only the native judgment.json at the Atom
↪  root supplies the Atom local state. No component failure can erase
↪  completed evidence in another component. When no scientific component
↪  completes because execution fails, set terminal no_result with no
↪  Atom local state. Otherwise aggregate only by the ordered registered
↪  regions and record every component's failure, boundary, unknown or
↪  inactive disposition. Pending necessary evidence stays pending; it is
↪  never coded as negative evidence. Internal failed work is not
↪  automatically retried.
Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
↪  definitions. These fix population, dates, table/field dictionaries,
↪  code versions, joins, inference, missingness, outputs and synthetic c
↪  hecks. A dictionary crosswalk is semantic verification before outcome
↪  values, not a new scientific choice. Keep all endpoint-specific
↪  units, horizons and Bonferroni allocations; grouping introduces no
↪  average outcome, composite score, new hypothesis or additional alpha.
↪  Write root audit.json, status.json, judgment.json and components.csv
↪  with component, outcome, component_state, component_terminal,
↪  inference_status, reason, evidence_path. Components.csv is an
↪  evidence index under this protocol, never a second experiment graph.
↪  Suppression is applied after governed adjudication, and cannot govern
↪  activation or disclose protected directions.

Scientific scope: grade 7 only; no cross-grade aggregate gates its result
↪  . First audit original-score support. If continuous, execute density,
↪  baseline and classification components independently; a flagged
↪  density does not prevent recording baseline or label evidence. If
↪  support fails or is unresolved, their numerical fits are internally
↪  not_activated for that exact reason; documented sharp-label equality
↪  may still be described but cannot clear support. Baseline correction
↪  provenance precedes income values and may be reused across grade
↪  units only with identical checksum/table/variable/year. Each grade
↪  owns the applied audit; no grade waits for another. Use fixed six
↪  density, 48 baseline, six classification multiplicity slots.

## income-provenance
- key: corrected
  region: D9 exact delivery/variable/year correction provenance is
  ↪  complete.
  says: Interpret the delivered variable under the documented corrected
  ↪  definition;
    runtime value and join validity remain separate.
- key: known_uncorrected
  region: D9 provenance explicitly identifies the uncorrected historical
  ↪  variable.
  says: Use only the frozen recorded-income proxy interpretation; no
  ↪  intended-resource
    or welfare conclusion.
- key: unresolved
  region: Neither correction status is established, including
  ↪  contradictory or absent
    documentation.
  says: Retain a correction-unverified recorded-income proxy; do not
  ↪  infer corrected
    status from vintage or suffix.
```

```
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
Documentation-only pre-outcome judgment, unit delivery-variable-year.
↪  Incorporate D9 exactly. Check dated release notes and the allowed
↪  table provenance against the official DST income pages cited there.
↪  No rows or estimates needed. For IND.AEKVIVADISP_13, primary
↪  year=2014; additionally report each affected descriptive year
↪  separately. Preserve PNR/year (IND) or FAMILIE_ID/year (FAIK) key
↪  class and D2 reference alignment; no row-level joins performed by
↪  this Atom. First match corrected, known_uncorrected, unresolved;
↪  otherwise covers contradictory execution evidence not a transport
↪  failure. No estimator, SE, multiplicity or equivalence test. Write
↪  correction.csv: table, variable, reference_year, delivery_id,
↪  correction_status, source_locator, criterion, status, reason.
↪  Required correction status is decided before related values are
↪  opened; no field substitution or municipality removal. Synthetic
↪  checks: a recent delivery and _13 alone yield unresolved; an explicit
↪  uncorrected manifest yields known_uncorrected; only exact documented
↪  propagation qualifies corrected. Effects retain the same numeric
↪  proxy under noncorrected states, with restrictions in the Molecule
↪  and paper. Missing variable becomes the consuming endpoint
↪  measurement_boundary; this Atom does not manufacture income.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and prereg/i
↪  dentification.md I1-I4 for estimands and inference. These shared
↪  definitions are part of this Atom's protocol, not optional guidance.
↪  Apply ordered checks before model fitting: delivered schema/dictionar
↪  y; date and unit semantics; unique keys and duplicate disposition;
↪  baseline and horizon eligibility; outcome construction; missingness
↪  and inference; local adjudication. Never inspect a postbaseline
↪  estimate to repair an earlier choice. A demonstrably incompatible
↪  construct is an evidenced boundary; unresolved documentation reaches
↪  otherwise. A transport/access/software failure yields terminal
↪  no_result with no local state. Apply the listed verdict regions in
↪  order, first matching region wins; otherwise is exhaustive. All
↪  future outputs go to prereg/runtime/atom-000504/income-provenance/
↪  and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## support
- key: discrete
  region: Known rounding exceeds 0.5 or this grade fails any registered
  ↪  I5/D1 full-window
    support safeguard.
  says: The continuity-based estimator is not defensible under this
  ↪  registered policy;
    descriptive score distributions remain informative.
- key: continuous
  region: Original precision and every full-window support safeguard for
  ↪  this grade
```

```
    are met.
  says: Recorded support permits the proposed local approximation;
  ↪  continuity is still
    an assumption.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Population: D1 spring2015 children with documented baseline grade 7,
↪  before outcome inspection. Use UDD_ORDBLINDETEST
↪  SCORE,DATO,PNR,UDDANNELSESNIVEAU; prior-month absence
↪  INSTITUTIONSNUMMER/KLASSETRIN; BEF parental-link clusters. Only this
↪  grade is judged. Apply Molecule score-support summary original
↪  safeguards independently: precision <=0.5 original point; >=20
↪  distinct scores on each side of |x|<=6; >=30 schools and >=30 family
↪  components in this grade; largest side mass-point fraction <=.20. No
↪  jitter or local-randomization substitution. Document maximum gap and
↪  rounding, counts and mass shares; no p-values. Output support.csv
↪  with G2 typed per-grade/side keys and diagnostics.csv. Constant
↪  integer-valued float scores must fail precision/support checks. A
↪  grade outside a later endpoint target cannot block that endpoint.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000504/suppo
↪  rt/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## density
- key: flagged
  region: This grade valid Bonferroni-six density p_adjusted < .01.
  says: Score sorting flags continuity for endpoints requiring this grade.
- key: not_flagged
  region: This grade has a valid density difference/SE/p and p_adjusted
  ↪  >= .01.
  says: No flag on this diagnostic; no proof of absence of sorting.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Use the fixed grade 7 sample from atom-000504, exact SCORE and r=-x. Exec
↪  ute I5 rddensity3.0 options, cap/refit and Bonferroni-six allocation;
↪  do not wait for other grades or recycle their alpha. Report density
↪  in 1/original-score-point, no logarithm. Required output density.csv
↪  with grade,h_red,h_yellow,density_red,density_yellow,difference,se,p_
↪  raw,p_adjusted,lower,upper,n_red,n_yellow,status,reason;
↪  diagnostics.csv mirrors this without inventing a sign for failed
↪  fits. Positive finite SE and postcap support are required. No outcome
↪  s/joins beyond the inherited one-child score sample. Synthetic checks
↪  verify reflection/equality convention and distinct density versus log
↪  units. A failure limits this grade, not unrelated grade sets.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000504/densi
↪  ty/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## balance
- key: flagged
  region: Any valid registered grade comparison has p_adjusted<.01 under
  ↪  the fixed48
    budget, or an arithmetic_difference exists.
  says: Predetermined sorting challenges continuity in this grade.
- key: not_flagged
  region: Every slot is either a valid unflagged contrast,
  ↪  structural_complete, or
    global constant_observed under I5; no unresolved/unavailable slot
    ↪  remains.
  says: No registered flag; constant slots supply noninferential evidence
  ↪  only, and
    proxy income does not clear true-resource continuity.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Use grade 7, D1 initial margin and D2/D6/D9 exact fields. Four variables:
↪  BEF.FOED_DAG-derived age in days, BEF.KOEN, IND.AEKVIVADISP_13 in2014
↪  , and any D6 DF32/33/40/41/43 encounter in (t0-365,t0]. Baseline care
↪  strictly precedes t0; on-day events excluded, so implement [t0-365,t0
↪  ). Each variable plus its missingness is a separate diagnostic slot.
↪  Apply all I5 constant/structural/unavailable/numerical rules and I3
↪  numerical operator with one grade; alpha=.01/48 remains fixed.
↪  Correction status from D9 baseline-income audit must be available
↪  before reading income: no_result leaves balance otherwise, never
↪  corrected by assumption. No conditioning later endpoint eligibility
↪  on the observed baseline values; original-variable complete-case fits
↪  and full-denominator missingness comparisons remain separate. Output
↪  balance.csv with the G2 eight enumerated checks, status, arithmetic
↪  extrema, denominators, p-values only for valid fits; diagnostics.csv.
↪  Synthetic all-complete, mixed-complete, global constant, differing
↪  side constants, unavailable field and nonconstant fit failure must
↪  reach the I5 exact routes. No inferred zero SE or balance equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000504/balan
↪  ce/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## classification
- key: sharp_recording
  region: All eligible records have known category and category==Z
  ↪  exactly under a
    verified deterministic category dictionary.
  says: Threshold assignment coincides with recorded classification in
  ↪  this margin;
    support receipt remains unmeasured.
- key: nonsharp_jump
  region: Not sharp_recording; the valid grade-specific 1-.01/6 interval
  ↪  has lower>.10.
  says: A threshold-policy reduced form is interpretable under the other
  ↪  gates, but
    not an effect per recorded label or support received.
- key: unresolved_jump
  region: A valid grade-specific 1-.01/6 interval exists and lower<=.10.
  says: The proposed meaningful recorded-classification discontinuity is
  ↪  not established;
    this is not a health or policy null.
```

```
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Population and exact fields as atom-000504, using
↪  TESTRESULTAT/TESTRESULTATNIVEAU and their frozen dictionaries.
↪  Evaluate complete known-label equality to Z=1[SCORE<=cutoff] first.
↪  Exact equality under a deterministic dictionary is sharp_recording
↪  without a manufactured SE. Otherwise apply I3 one-grade category jump
↪  using I5 six-slot .01 alpha; all missing labels must be bounded as
↪  [0,1], never deleted; use two one-sided limits splitting .01/6 when
↪  bounds are necessary. A lower bound>.10 permits nonsharp_jump, never
↪  a support-effect ratio. Output classification.csv:
↪  grade,agreement_fraction,n_agree,n_known,n_total,category_missing_fra
↪  ction,estimate,lower,upper,se,p_raw,p_adjusted,status,reason.
↪  Synthetic unknown/disagreeing labels cannot satisfy sharp_recording;
↪  SCORE==c remains red.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and prereg/i
↪  dentification.md I1-I4 for estimands and inference. These shared
↪  definitions are part of this Atom's protocol, not optional guidance.
↪  Apply ordered checks before model fitting: delivered schema/dictionar
↪  y; date and unit semantics; unique keys and duplicate disposition;
↪  baseline and horizon eligibility; outcome construction; missingness
↪  and inference; local adjudication. Never inspect a postbaseline
↪  estimate to repair an earlier choice. A demonstrably incompatible
↪  construct is an evidenced boundary; unresolved documentation reaches
↪  otherwise. A transport/access/software failure yields terminal
↪  no_result with no local state. Apply the listed verdict regions in
↪  order, first matching region wins; otherwise is exhaustive. All
↪  future outputs go to prereg/runtime/atom-000504/classification/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

Registered experiment

Can the grade-7 score margin support a credible local classification-policy contrast?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000504`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000505: Grade 8 margin validity

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state, component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Scientific scope: grade 8 only; no cross-grade aggregate gates its result. First audit original-score support. If continuous, execute density, baseline and classification components independently; a flagged density does not prevent recording baseline or label evidence. If support fails or is unresolved, their numerical fits are internally not_activated for that exact reason; documented sharp-label equality may still be described but cannot clear support. Baseline correction provenance precedes income values and may be reused across grade units only with identical checksum/table/variable/year. Each grade owns the applied audit; no grade waits for another. Use fixed six density, 48 baseline, six classification multiplicity slots.

income-provenance

- key: corrected region: D9 exact delivery/variable/year correction provenance is complete. says: Interpret the delivered variable under the documented corrected definition; runtime value and join validity remain separate.
- key: known_uncorrected region: D9 provenance explicitly identifies the uncorrected historical variable. says: Use only the frozen recorded-income proxy interpretation; no intended-resource or welfare conclusion.
- key: unresolved region: Neither correction status is established, including contradictory or absent documentation. says: Retain a correction-unverified recorded-income proxy; do not infer corrected status from vintage or suffix.

- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Documentation-only pre-outcome judgment, unit delivery-variable-year. Incorporate D9 exactly. Check dated release notes and the allowed table provenance against the official DST income pages cited there. No rows or estimates needed. For IND.AEKVIVADISP_13, primary year=2014; additionally report each affected descriptive year separately. Preserve PNR/year (IND) or FAMILIE_ID/year (FAIK) key class and D2 reference alignment; no row-level joins performed by this Atom. First match corrected, known_uncorrected, unresolved; otherwise covers contradictory execution evidence not a transport failure. No estimator, SE, multiplicity or equivalence test. Write correction.csv: table, variable, reference_year, delivery_id, correction_status, source_locator, criterion, status, reason. Required correction status is decided before related values are opened; no field substitution or municipality removal. Synthetic checks: a recent delivery and _13 alone yield unresolved; an explicit uncorrected manifest yields known_uncorrected; only exact documented propagation qualifies corrected. Effects retain the same numeric proxy under noncorrected states, with restrictions in the Molecule and paper. Missing variable becomes the consuming endpoint measurement_boundary; this Atom does not manufacture income.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000505/income-provenance/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

support

- key: discrete region: Known rounding exceeds 0.5 or this grade fails any registered I5/D1 full-window support safeguard. says: The continuity-based estimator is not defensible under this registered policy; descriptive score distributions remain informative.

- key: continuous region: Original precision and every full-window support safeguard for this grade are met. says: Recorded support permits the proposed local approximation; continuity is still an assumption.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Population: D1 spring2015 children with documented baseline grade 8, before outcome inspection. Use UDD_ORDBLINDETEST SCORE,DATO,PNR,UDDANNELSESNIVEAU; prior-month absence INSTITUTIONSNUMMER/KLASSETRIN; BEF parental-link clusters. Only this grade is judged. Apply Molecule score-support summary original safeguards independently: precision <=0.5 original point; >=20 distinct scores on each side of |x|<=6; >=30 schools and >=30 family components in this grade; largest side mass-point fraction <=.20. No jitter or local-randomization substitution. Document maximum gap and rounding, counts and mass shares; no p-values. Output support.csv with G2 typed per-grade/side keys and diagnostics.csv. Constant integer-valued float scores must fail precision/support checks. A grade outside a later endpoint target cannot block that endpoint.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000505/support/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

density

- key: flagged region: This grade valid Bonferroni-six density p_adjusted < .01. says: Score sorting flags continuity for endpoints requiring this grade.
- key: not_flagged region: This grade has a valid density difference/SE/p and p_adjusted >= .01. says: No flag on this diagnostic; no proof of absence of sorting.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Use the fixed grade 8 sample from atom-000505, exact SCORE and

r=-x. Execute I5 rddensity3.0 options, cap/refit and Bonferroni-six allocation; do not wait for other grades or recycle their alpha. Report density in 1/original-score-point, no logarithm. Required output density.csv with grade,h_red,h_yellow,density_red,density_yellow,difference,se,p_raw,p_adjusted,lower,upper,n_red,n_yellow diagnostics.csv mirrors this without inventing a sign for failed fits. Positive finite SE and postcap support are required. No outcomes/joins beyond the inherited one-child score sample. Synthetic checks verify reflection/equality convention and distinct density versus log units. A failure limits this grade, not unrelated grade sets.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000505/density/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

balance

- key: flagged region: Any valid registered grade comparison has p_adjusted<.01 under the fixed48 budget, or an arithmetic_difference exists. says: Predetermined sorting challenges continuity in this grade.
- key: not_flagged region: Every slot is either a valid unflagged contrast, structural_complete, or global constant_observed under I5; no unresolved/unavailable slot remains. says: No registered flag; constant slots supply noninferential evidence only, and proxy income does not clear true-resource continuity.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Use grade 8, D1 initial margin and D2/D6/D9 exact fields. Four variables: BEF.FOED_DAG-derived age in days, BEF.KOEN, IND.AEKVIVADISP_13 in2014, and any D6 DF32/33/40/41/43 encounter in (t0-365,t0]. Baseline care strictly precedes t0; on-day events excluded, so implement [t0-365,t0). Each variable plus its missingness is a separate diagnostic slot. Apply all I5 constant/structural/unavailable/numerical

rules and I3 numerical operator with one grade; alpha=.01/48 remains fixed. Correction status from D9 baseline-income audit must be available before reading income: no_result leaves balance otherwise, never corrected by assumption. No conditioning later endpoint eligibility on the observed baseline values; original-variable complete-case fits and full-denominator missingness comparisons remain separate. Output balance.csv with the G2 eight enumerated checks, status, arithmetic extrema, denominators, p-values only for valid fits; diagnostics.csv. Synthetic all-complete, mixed-complete, global constant, differing side constants, unavailable field and nonconstant fit failure must reach the I5 exact routes. No inferred zero SE or balance equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000505/balance/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

classification

- key: sharp_recording region: All eligible records have known category and category==Z exactly under a verified deterministic category dictionary. says: Threshold assignment coincides with recorded classification in this margin; support receipt remains unmeasured.
- key: nonsharp_jump region: Not sharp_recording; the valid grade-specific 1-.01/6 interval has lower>.10. says: A threshold-policy reduced form is interpretable under the other gates, but not an effect per recorded label or support received.
- key: unresolved_jump region: A valid grade-specific 1-.01/6 interval exists and lower<=.10. says: The proposed meaningful recorded-classification discontinuity is not established; this is not a health or policy null.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Population and exact fields as atom-000505, using TESTRESULTAT/TESTRESULTATNIVEAU and their frozen dictionaries. Evaluate complete

known-label equality to Z=1[SCORE<=cutoff] first. Exact equality under a deterministic dictionary is sharp_recording without a manufactured SE. Otherwise apply I3 one-grade category jump using I5 six-slot .01 alpha; all missing labels must be bounded as [0,1], never deleted; use two one-sided limits splitting .01/6 when bounds are necessary. A lower bound>.10 permits nonsharp_jump, never a support-effect ratio. Output classification.csv: grade,agreement_fraction,n_agree,n_known,n_total,category_missing_fraction,estimate,lower,upper,se,p_raw Synthetic unknown/disagreeing labels cannot satisfy sharp_recording; SCORE==c remains red.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000505/classification/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Complete registration fields

```
id: atom-000505
topic: Grade 8 margin validity
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: Can the grade-8 score margin support a credible local
  ↪  classification-policy
    contrast?
  rationale: The complete grade-specific margin validation is one shared
  ↪  scientific
    diagnostic. Precision, density, baseline continuity and label response
    are evidence for that judgment, not separate experiments. Grades remain
    independent because the registered outcome grade sets differ and a
    ↪  later-grade
```

```
  failure must not suppress earlier-grade knowledge.
assumption: Administrative recognition can affect opportunities, reporting
  and service contact through multiple routes; exact source semantics and
  continuity require evidence, not an estimator label. See literature.md
  and identification.md.
target_strength: descriptive
target_shape: comparison
ratings:
  importance: 4
  novelty: 3
  feasibility: 3
  data_advantage: 4
  informativeness: 0.5
tables:
- BEF
- IND
- LPR_ADM
- LPR_DIAG
- PSYK_ADM
- PSYK_DIAG
- UDD_FOLKESKOLE_FRAVAER_STIL
- UDD_ORDBLINDETEST
activation: state(atom-000002) == "compatible" OR state(atom-000002) ==
  "selected" OR state(atom-000002) == "retention_unresolved"
verdicts:
- key: support_boundary
  region: Support component=discrete under its documented
  ↪  precision/full-window
    rules.
  says: This grade does not support the registered continuity estimator;
    preserve its score description.
- key: design_flagged
  region: No preceding region; density=flagged or baseline=flagged,
  ↪  including
    a deterministic side difference.
  says: A registered threat constrains this grade; report other component
    failures as well.
- key: eligible_sharp
  region: Support=continuous, density=not_flagged, baseline=not_flagged,
    classification=sharp_recording.
  says: This grade may enter its prespecified policy targets, conditional
    on initial-margin provenance and untested causal assumptions.
- key: eligible_nonsharp
  region: Support=continuous, density=not_flagged, baseline=not_flagged,
    classification=nonsharp_jump.
  says: Only a reduced-form threshold-policy contrast is licensed, never
    a classification or support-receipt ratio.
- key: classification_unresolved
  region: No preceding region; classification=unresolved_jump from a valid
    registered interval.
  says: The required recorded-classification jump is not established; this
    is not a substantive outcome null.
- key: otherwise
  region: otherwise
  says: The grade is not cleared; preserve partial diagnostic evidence and
    operational failures explicitly.
protocol: |2-
```

```
This is one scientific experiment. Internal components are not additional
↪  Atoms or activation primitives. Execute every prescribed component
↪  that is scientifically eligible, independently of other component
↪  signs. Component outputs retain their own local decision, inference
↪  and operational status; only the native judgment.json at the Atom
↪  root supplies the Atom local state. No component failure can erase
↪  completed evidence in another component. When no scientific component
↪  completes because execution fails, set terminal no_result with no
↪  Atom local state. Otherwise aggregate only by the ordered registered
↪  regions and record every component's failure, boundary, unknown or
↪  inactive disposition. Pending necessary evidence stays pending; it is
↪  never coded as negative evidence. Internal failed work is not
↪  automatically retried.
Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
↪  definitions. These fix population, dates, table/field dictionaries,
↪  code versions, joins, inference, missingness, outputs and synthetic c
↪  hecks. A dictionary crosswalk is semantic verification before outcome
↪  values, not a new scientific choice. Keep all endpoint-specific
↪  units, horizons and Bonferroni allocations; grouping introduces no
↪  average outcome, composite score, new hypothesis or additional alpha.
↪  Write root audit.json, status.json, judgment.json and components.csv
↪  with component, outcome, component_state, component_terminal,
↪  inference_status, reason, evidence_path. Components.csv is an
↪  evidence index under this protocol, never a second experiment graph.
↪  Suppression is applied after governed adjudication, and cannot govern
↪  activation or disclose protected directions.

Scientific scope: grade 8 only; no cross-grade aggregate gates its result
↪  . First audit original-score support. If continuous, execute density,
↪  baseline and classification components independently; a flagged
↪  density does not prevent recording baseline or label evidence. If
↪  support fails or is unresolved, their numerical fits are internally
↪  not_activated for that exact reason; documented sharp-label equality
↪  may still be described but cannot clear support. Baseline correction
↪  provenance precedes income values and may be reused across grade
↪  units only with identical checksum/table/variable/year. Each grade
↪  owns the applied audit; no grade waits for another. Use fixed six
↪  density, 48 baseline, six classification multiplicity slots.

## income-provenance
- key: corrected
  region: D9 exact delivery/variable/year correction provenance is
  ↪  complete.
  says: Interpret the delivered variable under the documented corrected
  ↪  definition;
    runtime value and join validity remain separate.
- key: known_uncorrected
  region: D9 provenance explicitly identifies the uncorrected historical
  ↪  variable.
  says: Use only the frozen recorded-income proxy interpretation; no
  ↪  intended-resource
    or welfare conclusion.
- key: unresolved
  region: Neither correction status is established, including
  ↪  contradictory or absent
    documentation.
  says: Retain a correction-unverified recorded-income proxy; do not
  ↪  infer corrected
    status from vintage or suffix.
```

```
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
Documentation-only pre-outcome judgment, unit delivery-variable-year.
↪  Incorporate D9 exactly. Check dated release notes and the allowed
↪  table provenance against the official DST income pages cited there.
↪  No rows or estimates needed. For IND.AEKVIVADISP_13, primary
↪  year=2014; additionally report each affected descriptive year
↪  separately. Preserve PNR/year (IND) or FAMILIE_ID/year (FAIK) key
↪  class and D2 reference alignment; no row-level joins performed by
↪  this Atom. First match corrected, known_uncorrected, unresolved;
↪  otherwise covers contradictory execution evidence not a transport
↪  failure. No estimator, SE, multiplicity or equivalence test. Write
↪  correction.csv: table, variable, reference_year, delivery_id,
↪  correction_status, source_locator, criterion, status, reason.
↪  Required correction status is decided before related values are
↪  opened; no field substitution or municipality removal. Synthetic
↪  checks: a recent delivery and _13 alone yield unresolved; an explicit
↪  uncorrected manifest yields known_uncorrected; only exact documented
↪  propagation qualifies corrected. Effects retain the same numeric
↪  proxy under noncorrected states, with restrictions in the Molecule
↪  and paper. Missing variable becomes the consuming endpoint
↪  measurement_boundary; this Atom does not manufacture income.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and prereg/i
↪  dentification.md I1-I4 for estimands and inference. These shared
↪  definitions are part of this Atom's protocol, not optional guidance.
↪  Apply ordered checks before model fitting: delivered schema/dictionar
↪  y; date and unit semantics; unique keys and duplicate disposition;
↪  baseline and horizon eligibility; outcome construction; missingness
↪  and inference; local adjudication. Never inspect a postbaseline
↪  estimate to repair an earlier choice. A demonstrably incompatible
↪  construct is an evidenced boundary; unresolved documentation reaches
↪  otherwise. A transport/access/software failure yields terminal
↪  no_result with no local state. Apply the listed verdict regions in
↪  order, first matching region wins; otherwise is exhaustive. All
↪  future outputs go to prereg/runtime/atom-000505/income-provenance/
↪  and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## support
- key: discrete
  region: Known rounding exceeds 0.5 or this grade fails any registered
  ↪  I5/D1 full-window
    support safeguard.
  says: The continuity-based estimator is not defensible under this
  ↪  registered policy;
    descriptive score distributions remain informative.
- key: continuous
  region: Original precision and every full-window support safeguard for
  ↪  this grade
```

```
    are met.
  says: Recorded support permits the proposed local approximation;
  ↪  continuity is still
    an assumption.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Population: D1 spring2015 children with documented baseline grade 8,
↪  before outcome inspection. Use UDD_ORDBLINDETEST
↪  SCORE,DATO,PNR,UDDANNELSESNIVEAU; prior-month absence
↪  INSTITUTIONSNUMMER/KLASSETRIN; BEF parental-link clusters. Only this
↪  grade is judged. Apply Molecule score-support summary original
↪  safeguards independently: precision <=0.5 original point; >=20
↪  distinct scores on each side of |x|<=6; >=30 schools and >=30 family
↪  components in this grade; largest side mass-point fraction <=.20. No
↪  jitter or local-randomization substitution. Document maximum gap and
↪  rounding, counts and mass shares; no p-values. Output support.csv
↪  with G2 typed per-grade/side keys and diagnostics.csv. Constant
↪  integer-valued float scores must fail precision/support checks. A
↪  grade outside a later endpoint target cannot block that endpoint.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000505/suppo
↪  rt/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## density
- key: flagged
  region: This grade valid Bonferroni-six density p_adjusted < .01.
  says: Score sorting flags continuity for endpoints requiring this grade.
- key: not_flagged
  region: This grade has a valid density difference/SE/p and p_adjusted
  ↪  >= .01.
  says: No flag on this diagnostic; no proof of absence of sorting.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Use the fixed grade 8 sample from atom-000505, exact SCORE and r=-x. Exec
↪  ute I5 rddensity3.0 options, cap/refit and Bonferroni-six allocation;
↪  do not wait for other grades or recycle their alpha. Report density
↪  in 1/original-score-point, no logarithm. Required output density.csv
↪  with grade,h_red,h_yellow,density_red,density_yellow,difference,se,p_
↪  raw,p_adjusted,lower,upper,n_red,n_yellow,status,reason;
↪  diagnostics.csv mirrors this without inventing a sign for failed
↪  fits. Positive finite SE and postcap support are required. No outcome
↪  s/joins beyond the inherited one-child score sample. Synthetic checks
↪  verify reflection/equality convention and distinct density versus log
↪  units. A failure limits this grade, not unrelated grade sets.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000505/densi
↪  ty/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## balance
- key: flagged
  region: Any valid registered grade comparison has p_adjusted<.01 under
  ↪  the fixed48
    budget, or an arithmetic_difference exists.
  says: Predetermined sorting challenges continuity in this grade.
- key: not_flagged
  region: Every slot is either a valid unflagged contrast,
  ↪  structural_complete, or
    global constant_observed under I5; no unresolved/unavailable slot
    ↪  remains.
  says: No registered flag; constant slots supply noninferential evidence
  ↪  only, and
    proxy income does not clear true-resource continuity.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Use grade 8, D1 initial margin and D2/D6/D9 exact fields. Four variables:
↪  BEF.FOED_DAG-derived age in days, BEF.KOEN, IND.AEKVIVADISP_13 in2014
↪  , and any D6 DF32/33/40/41/43 encounter in (t0-365,t0]. Baseline care
↪  strictly precedes t0; on-day events excluded, so implement [t0-365,t0
↪  ). Each variable plus its missingness is a separate diagnostic slot.
↪  Apply all I5 constant/structural/unavailable/numerical rules and I3
↪  numerical operator with one grade; alpha=.01/48 remains fixed.
↪  Correction status from D9 baseline-income audit must be available
↪  before reading income: no_result leaves balance otherwise, never
↪  corrected by assumption. No conditioning later endpoint eligibility
↪  on the observed baseline values; original-variable complete-case fits
↪  and full-denominator missingness comparisons remain separate. Output
↪  balance.csv with the G2 eight enumerated checks, status, arithmetic
↪  extrema, denominators, p-values only for valid fits; diagnostics.csv.
↪  Synthetic all-complete, mixed-complete, global constant, differing
↪  side constants, unavailable field and nonconstant fit failure must
↪  reach the I5 exact routes. No inferred zero SE or balance equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000505/balan
↪  ce/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## classification
- key: sharp_recording
  region: All eligible records have known category and category==Z
  ↪  exactly under a
    verified deterministic category dictionary.
  says: Threshold assignment coincides with recorded classification in
  ↪  this margin;
    support receipt remains unmeasured.
- key: nonsharp_jump
  region: Not sharp_recording; the valid grade-specific 1-.01/6 interval
  ↪  has lower>.10.
  says: A threshold-policy reduced form is interpretable under the other
  ↪  gates, but
    not an effect per recorded label or support received.
- key: unresolved_jump
  region: A valid grade-specific 1-.01/6 interval exists and lower<=.10.
  says: The proposed meaningful recorded-classification discontinuity is
  ↪  not established;
    this is not a health or policy null.
```

```
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Population and exact fields as atom-000505, using
↪  TESTRESULTAT/TESTRESULTATNIVEAU and their frozen dictionaries.
↪  Evaluate complete known-label equality to Z=1[SCORE<=cutoff] first.
↪  Exact equality under a deterministic dictionary is sharp_recording
↪  without a manufactured SE. Otherwise apply I3 one-grade category jump
↪  using I5 six-slot .01 alpha; all missing labels must be bounded as
↪  [0,1], never deleted; use two one-sided limits splitting .01/6 when
↪  bounds are necessary. A lower bound>.10 permits nonsharp_jump, never
↪  a support-effect ratio. Output classification.csv:
↪  grade,agreement_fraction,n_agree,n_known,n_total,category_missing_fra
↪  ction,estimate,lower,upper,se,p_raw,p_adjusted,status,reason.
↪  Synthetic unknown/disagreeing labels cannot satisfy sharp_recording;
↪  SCORE==c remains red.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and prereg/i
↪  dentification.md I1-I4 for estimands and inference. These shared
↪  definitions are part of this Atom's protocol, not optional guidance.
↪  Apply ordered checks before model fitting: delivered schema/dictionar
↪  y; date and unit semantics; unique keys and duplicate disposition;
↪  baseline and horizon eligibility; outcome construction; missingness
↪  and inference; local adjudication. Never inspect a postbaseline
↪  estimate to repair an earlier choice. A demonstrably incompatible
↪  construct is an evidenced boundary; unresolved documentation reaches
↪  otherwise. A transport/access/software failure yields terminal
↪  no_result with no local state. Apply the listed verdict regions in
↪  order, first matching region wins; otherwise is exhaustive. All
↪  future outputs go to prereg/runtime/atom-000505/classification/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

Registered experiment

Can the grade-8 score margin support a credible local classification-policy contrast?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000505`: execution index. See engineering review. This pointer does not amend the registered protocol.

atom-000506: Grade 9 margin validity

This is one scientific experiment. Internal components are not additional Atoms or activation primitives. Execute every prescribed component that is scientifically eligible, independently of other component signs. Component outputs retain their own local decision, inference and operational status; only the native judgment.json at the Atom root supplies the Atom local state. No component failure can erase completed evidence in another component. When no scientific component completes because execution fails, set terminal no_result with no Atom local state. Otherwise aggregate only by the ordered registered regions and record every component's failure, boundary, unknown or inactive disposition. Pending necessary evidence stays pending; it is never coded as negative evidence. Internal failed work is not automatically retried. Incorporate prereg/data-contract.md D1–D10, prereg/identification.md I1–I5 and prereg/governance.md G1–G4 as exact shared protocol definitions. These fix population, dates, table/field dictionaries, code versions, joins, inference, missingness, outputs and synthetic checks. A dictionary crosswalk is semantic verification before outcome values, not a new scientific choice. Keep all endpoint-specific units, horizons and Bonferroni allocations; grouping introduces no average outcome, composite score, new hypothesis or additional alpha. Write root audit.json, status.json, judgment.json and components.csv with component, outcome, component_state, component_terminal, inference_status, reason, evidence_path. Components.csv is an evidence index under this protocol, never a second experiment graph. Suppression is applied after governed adjudication, and cannot govern activation or disclose protected directions.

Scientific scope: grade 9 only; no cross-grade aggregate gates its result. First audit original-score support. If continuous, execute density, baseline and classification components independently; a flagged density does not prevent recording baseline or label evidence. If support fails or is unresolved, their numerical fits are internally not_activated for that exact reason; documented sharp-label equality may still be described but cannot clear support. Baseline correction provenance precedes income values and may be reused across grade units only with identical checksum/table/variable/year. Each grade owns the applied audit; no grade waits for another. Use fixed six density, 48 baseline, six classification multiplicity slots.

income-provenance

- key: corrected region: D9 exact delivery/variable/year correction provenance is complete. says: Interpret the delivered variable under the documented corrected definition; runtime value and join validity remain separate.
- key: known_uncorrected region: D9 provenance explicitly identifies the uncorrected historical variable. says: Use only the frozen recorded-income proxy interpretation; no intended-resource or welfare conclusion.
- key: unresolved region: Neither correction status is established, including contradictory or absent documentation. says: Retain a correction-unverified recorded-income proxy; do not infer corrected status from vintage or suffix.

- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Documentation-only pre-outcome judgment, unit delivery-variable-year. Incorporate D9 exactly. Check dated release notes and the allowed table provenance against the official DST income pages cited there. No rows or estimates needed. For IND.AEKVIVADISP_13, primary year=2014; additionally report each affected descriptive year separately. Preserve PNR/year (IND) or FAMILIE_ID/year (FAIK) key class and D2 reference alignment; no row-level joins performed by this Atom. First match corrected, known_uncorrected, unresolved; otherwise covers contradictory execution evidence not a transport failure. No estimator, SE, multiplicity or equivalence test. Write correction.csv: table, variable, reference_year, delivery_id, correction_status, source_locator, criterion, status, reason. Required correction status is decided before related values are opened; no field substitution or municipality removal. Synthetic checks: a recent delivery and _13 alone yield unresolved; an explicit uncorrected manifest yields known_uncorrected; only exact documented propagation qualifies corrected. Effects retain the same numeric proxy under noncorrected states, with restrictions in the Molecule and paper. Missing variable becomes the consuming endpoint measurement_boundary; this Atom does not manufacture income.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000506/income-provenance/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

support

- key: discrete region: Known rounding exceeds 0.5 or this grade fails any registered I5/D1 full-window support safeguard. says: The continuity-based estimator is not defensible under this registered policy; descriptive score distributions remain informative.

- key: continuous region: Original precision and every full-window support safeguard for this grade are met. says: Recorded support permits the proposed local approximation; continuity is still an assumption.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Population: D1 spring2015 children with documented baseline grade 9, before outcome inspection. Use UDD_ORDBLINDETEST SCORE,DATO,PNR,UDDANNELSESNIVEAU; prior-month absence INSTITUTIONSNUMMER/KLASSETRIN; BEF parental-link clusters. Only this grade is judged. Apply Molecule score-support summary original safeguards independently: precision <=0.5 original point; >=20 distinct scores on each side of |x|<=6; >=30 schools and >=30 family components in this grade; largest side mass-point fraction <=.20. No jitter or local-randomization substitution. Document maximum gap and rounding, counts and mass shares; no p-values. Output support.csv with G2 typed per-grade/side keys and diagnostics.csv. Constant integer-valued float scores must fail precision/support checks. A grade outside a later endpoint target cannot block that endpoint.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000506/support/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

density

- key: flagged region: This grade valid Bonferroni-six density p_adjusted < .01. says: Score sorting flags continuity for endpoints requiring this grade.
- key: not_flagged region: This grade has a valid density difference/SE/p and p_adjusted >= .01. says: No flag on this diagnostic; no proof of absence of sorting.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Use the fixed grade 9 sample from atom-000506, exact SCORE and

r=-x. Execute I5 rddensity3.0 options, cap/refit and Bonferroni-six allocation; do not wait for other grades or recycle their alpha. Report density in 1/original-score-point, no logarithm. Required output density.csv with grade,h_red,h_yellow,density_red,density_yellow,difference,se,p_raw,p_adjusted,lower,upper,n_red,n_y diagnostics.csv mirrors this without inventing a sign for failed fits. Positive finite SE and postcap support are required. No outcomes/joins beyond the inherited one-child score sample. Synthetic checks verify reflection/equality convention and distinct density versus log units. A failure limits this grade, not unrelated grade sets.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000506/density/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

balance

- key: flagged region: Any valid registered grade comparison has p_adjusted<.01 under the fixed48 budget, or an arithmetic_difference exists. says: Predetermined sorting challenges continuity in this grade.
- key: not_flagged region: Every slot is either a valid unflagged contrast, structural_complete, or global constant_observed under I5; no unresolved/unavailable slot remains. says: No registered flag; constant slots supply noninferential evidence only, and proxy income does not clear true-resource continuity.
- key: otherwise region: otherwise says: The registered judgment remains unresolved; report its exact limitation, without negative or favorable inference. Use grade 9, D1 initial margin and D2/D6/D9 exact fields. Four variables: BEF.FOED_DAG-derived age in days, BEF.KOEN, IND.AEKVIVADISP_13 in2014, and any D6 DF32/33/40/41/43 encounter in (t0-365,t0]. Baseline care strictly precedes t0; on-day events excluded, so implement [t0-365,t0). Each variable plus its missingness is a separate diagnostic slot. Apply all I5 constant/structural/unavailable/numerical

rules and I3 numerical operator with one grade; alpha=.01/48 remains fixed. Correction status from D9 baseline-income audit must be available before reading income: no_result leaves balance otherwise, never corrected by assumption. No conditioning later endpoint eligibility on the observed baseline values; original-variable complete-case fits and full-denominator missingness comparisons remain separate. Output balance.csv with the G2 eight enumerated checks, status, arithmetic extrema, denominators, p-values only for valid fits; diagnostics.csv. Synthetic all-complete, mixed-complete, global constant, differing side constants, unavailable field and nonconstant fit failure must reach the I5 exact routes. No inferred zero SE or balance equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000506/balance/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

classification

- key: sharp_recording region: All eligible records have known category and category==Z exactly under a verified deterministic category dictionary. says: Threshold assignment coincides with recorded classification in this margin; support receipt remains unmeasured.
- key: nonsharp_jump region: Not sharp_recording; the valid grade-specific 1-.01/6 interval has lower>.10. says: A threshold-policy reduced form is interpretable under the other gates, but not an effect per recorded label or support received.
- key: unresolved_jump region: A valid grade-specific 1-.01/6 interval exists and lower<=.10. says: The proposed meaningful recorded-classification discontinuity is not established; this is not a health or policy null.
- key: otherwise region: otherwise says: The evidence is unresolved under the frozen rule. No favorable or negative finding is inferred; report the exact reason. Population and exact fields as atom-000506, using TESTRESULTAT/TESTRESULTATNIVEAU and their frozen dictionaries. Evaluate complete

known-label equality to Z=1[SCORE<=cutoff] first. Exact equality under a deterministic dictionary is sharp_recording without a manufactured SE. Otherwise apply I3 one-grade category jump using I5 six-slot .01 alpha; all missing labels must be bounded as [0,1], never deleted; use two one-sided limits splitting .01/6 when bounds are necessary. A lower bound>.10 permits nonsharp_jump, never a support-effect ratio. Output classification.csv: grade,agreement_fraction,n_agree,n_known,n_total,category_missing_fraction,estimate,lower,upper,se,
Synthetic unknown/disagreeing labels cannot satisfy sharp_recording; SCORE==c remains red.

Implementation contract. Incorporate prereg/data-contract.md D1–D3 for the population clock, versions, identifiers, joins and observation; incorporate the explicitly cited construct clauses below and prereg/identification.md I1–I4 for estimands and inference. These shared definitions are part of this Atom's protocol, not optional guidance. Apply ordered checks before model fitting: delivered schema/dictionary; date and unit semantics; unique keys and duplicate disposition; baseline and horizon eligibility; outcome construction; missingness and inference; local adjudication. Never inspect a postbaseline estimate to repair an earlier choice. A demonstrably incompatible construct is an evidenced boundary; unresolved documentation reaches otherwise. A transport/access/software failure yields terminal no_result with no local state. Apply the listed verdict regions in order, first matching region wins; otherwise is exhaustive. All future outputs go to prereg/runtime/atom-000506/classification/ and remain governed until aggregate disclosure approval. Write audit.json and judgment.json plus the named plot-ready table; G1/G2 define status and column meanings. No numerical result is populated now. Before runtime use G3 synthetic join/date/missingness checks and verify row-order invariance; a failed check prevents output release. Every result constrains the Molecule under its composable rules; neither failure nor nonactivation means statistical insignificance.

Complete registration fields

```
id: atom-000506
topic: Grade 9 margin validity
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: adaptive
  question: Can the grade-9 score margin support a credible local
  ↪  classification-policy
    contrast?
  rationale: The complete grade-specific margin validation is one shared
  ↪  scientific
    diagnostic. Precision, density, baseline continuity and label response
    are evidence for that judgment, not separate experiments. Grades remain
    independent because the registered outcome grade sets differ and a
    ↪  later-grade
```

```
  failure must not suppress earlier-grade knowledge.
assumption: Administrative recognition can affect opportunities, reporting
  and service contact through multiple routes; exact source semantics and
  continuity require evidence, not an estimator label. See literature.md
  and identification.md.
target_strength: descriptive
target_shape: comparison
ratings:
  importance: 4
  novelty: 3
  feasibility: 3
  data_advantage: 4
  informativeness: 0.5
tables:
- BEF
- IND
- LPR_ADM
- LPR_DIAG
- PSYK_ADM
- PSYK_DIAG
- UDD_FOLKESKOLE_FRAVAER_STIL
- UDD_ORDBLINDETEST
activation: state(atom-000002) == "compatible" OR state(atom-000002) ==
  "selected" OR state(atom-000002) == "retention_unresolved"
verdicts:
- key: support_boundary
  region: Support component=discrete under its documented
  ↪  precision/full-window
    rules.
  says: This grade does not support the registered continuity estimator;
    preserve its score description.
- key: design_flagged
  region: No preceding region; density=flagged or baseline=flagged,
  ↪  including
    a deterministic side difference.
  says: A registered threat constrains this grade; report other component
    failures as well.
- key: eligible_sharp
  region: Support=continuous, density=not_flagged, baseline=not_flagged,
    classification=sharp_recording.
  says: This grade may enter its prespecified policy targets, conditional
    on initial-margin provenance and untested causal assumptions.
- key: eligible_nonsharp
  region: Support=continuous, density=not_flagged, baseline=not_flagged,
    classification=nonsharp_jump.
  says: Only a reduced-form threshold-policy contrast is licensed, never
    a classification or support-receipt ratio.
- key: classification_unresolved
  region: No preceding region; classification=unresolved_jump from a valid
    registered interval.
  says: The required recorded-classification jump is not established; this
    is not a substantive outcome null.
- key: otherwise
  region: otherwise
  says: The grade is not cleared; preserve partial diagnostic evidence and
    operational failures explicitly.
protocol: |2-
```

```
This is one scientific experiment. Internal components are not additional
↪  Atoms or activation primitives. Execute every prescribed component
↪  that is scientifically eligible, independently of other component
↪  signs. Component outputs retain their own local decision, inference
↪  and operational status; only the native judgment.json at the Atom
↪  root supplies the Atom local state. No component failure can erase
↪  completed evidence in another component. When no scientific component
↪  completes because execution fails, set terminal no_result with no
↪  Atom local state. Otherwise aggregate only by the ordered registered
↪  regions and record every component's failure, boundary, unknown or
↪  inactive disposition. Pending necessary evidence stays pending; it is
↪  never coded as negative evidence. Internal failed work is not
↪  automatically retried.
Incorporate prereg/data-contract.md D1-D10, prereg/identification.md
↪  I1-I5 and prereg/governance.md G1-G4 as exact shared protocol
↪  definitions. These fix population, dates, table/field dictionaries,
↪  code versions, joins, inference, missingness, outputs and synthetic c
↪  hecks. A dictionary crosswalk is semantic verification before outcome
↪  values, not a new scientific choice. Keep all endpoint-specific
↪  units, horizons and Bonferroni allocations; grouping introduces no
↪  average outcome, composite score, new hypothesis or additional alpha.
↪  Write root audit.json, status.json, judgment.json and components.csv
↪  with component, outcome, component_state, component_terminal,
↪  inference_status, reason, evidence_path. Components.csv is an
↪  evidence index under this protocol, never a second experiment graph.
↪  Suppression is applied after governed adjudication, and cannot govern
↪  activation or disclose protected directions.

Scientific scope: grade 9 only; no cross-grade aggregate gates its result
↪  . First audit original-score support. If continuous, execute density,
↪  baseline and classification components independently; a flagged
↪  density does not prevent recording baseline or label evidence. If
↪  support fails or is unresolved, their numerical fits are internally
↪  not_activated for that exact reason; documented sharp-label equality
↪  may still be described but cannot clear support. Baseline correction
↪  provenance precedes income values and may be reused across grade
↪  units only with identical checksum/table/variable/year. Each grade
↪  owns the applied audit; no grade waits for another. Use fixed six
↪  density, 48 baseline, six classification multiplicity slots.

## income-provenance
- key: corrected
  region: D9 exact delivery/variable/year correction provenance is
  ↪  complete.
  says: Interpret the delivered variable under the documented corrected
  ↪  definition;
    runtime value and join validity remain separate.
- key: known_uncorrected
  region: D9 provenance explicitly identifies the uncorrected historical
  ↪  variable.
  says: Use only the frozen recorded-income proxy interpretation; no
  ↪  intended-resource
    or welfare conclusion.
- key: unresolved
  region: Neither correction status is established, including
  ↪  contradictory or absent
    documentation.
  says: Retain a correction-unverified recorded-income proxy; do not
  ↪  infer corrected
    status from vintage or suffix.
```

```
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
Documentation-only pre-outcome judgment, unit delivery-variable-year.
↪  Incorporate D9 exactly. Check dated release notes and the allowed
↪  table provenance against the official DST income pages cited there.
↪  No rows or estimates needed. For IND.AEKVIVADISP_13, primary
↪  year=2014; additionally report each affected descriptive year
↪  separately. Preserve PNR/year (IND) or FAMILIE_ID/year (FAIK) key
↪  class and D2 reference alignment; no row-level joins performed by
↪  this Atom. First match corrected, known_uncorrected, unresolved;
↪  otherwise covers contradictory execution evidence not a transport
↪  failure. No estimator, SE, multiplicity or equivalence test. Write
↪  correction.csv: table, variable, reference_year, delivery_id,
↪  correction_status, source_locator, criterion, status, reason.
↪  Required correction status is decided before related values are
↪  opened; no field substitution or municipality removal. Synthetic
↪  checks: a recent delivery and _13 alone yield unresolved; an explicit
↪  uncorrected manifest yields known_uncorrected; only exact documented
↪  propagation qualifies corrected. Effects retain the same numeric
↪  proxy under noncorrected states, with restrictions in the Molecule
↪  and paper. Missing variable becomes the consuming endpoint
↪  measurement_boundary; this Atom does not manufacture income.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and prereg/i
↪  dentification.md I1-I4 for estimands and inference. These shared
↪  definitions are part of this Atom's protocol, not optional guidance.
↪  Apply ordered checks before model fitting: delivered schema/dictionar
↪  y; date and unit semantics; unique keys and duplicate disposition;
↪  baseline and horizon eligibility; outcome construction; missingness
↪  and inference; local adjudication. Never inspect a postbaseline
↪  estimate to repair an earlier choice. A demonstrably incompatible
↪  construct is an evidenced boundary; unresolved documentation reaches
↪  otherwise. A transport/access/software failure yields terminal
↪  no_result with no local state. Apply the listed verdict regions in
↪  order, first matching region wins; otherwise is exhaustive. All
↪  future outputs go to prereg/runtime/atom-000506/income-provenance/
↪  and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## support
- key: discrete
  region: Known rounding exceeds 0.5 or this grade fails any registered
  ↪  I5/D1 full-window
    support safeguard.
  says: The continuity-based estimator is not defensible under this
  ↪  registered policy;
    descriptive score distributions remain informative.
- key: continuous
  region: Original precision and every full-window support safeguard for
  ↪  this grade
```

```
    are met.
  says: Recorded support permits the proposed local approximation;
  ↪  continuity is still
    an assumption.
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Population: D1 spring2015 children with documented baseline grade 9,
↪  before outcome inspection. Use UDD_ORDBLINDETEST
↪  SCORE,DATO,PNR,UDDANNELSESNIVEAU; prior-month absence
↪  INSTITUTIONSNUMMER/KLASSETRIN; BEF parental-link clusters. Only this
↪  grade is judged. Apply Molecule score-support summary original
↪  safeguards independently: precision <=0.5 original point; >=20
↪  distinct scores on each side of |x|<=6; >=30 schools and >=30 family
↪  components in this grade; largest side mass-point fraction <=.20. No
↪  jitter or local-randomization substitution. Document maximum gap and
↪  rounding, counts and mass shares; no p-values. Output support.csv
↪  with G2 typed per-grade/side keys and diagnostics.csv. Constant
↪  integer-valued float scores must fail precision/support checks. A
↪  grade outside a later endpoint target cannot block that endpoint.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000506/suppo
↪  rt/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## density
- key: flagged
  region: This grade valid Bonferroni-six density p_adjusted < .01.
  says: Score sorting flags continuity for endpoints requiring this grade.
- key: not_flagged
  region: This grade has a valid density difference/SE/p and p_adjusted
  ↪  >= .01.
  says: No flag on this diagnostic; no proof of absence of sorting.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Use the fixed grade 9 sample from atom-000506, exact SCORE and r=-x. Exec
↪  ute I5 rddensity3.0 options, cap/refit and Bonferroni-six allocation;
↪  do not wait for other grades or recycle their alpha. Report density
↪  in 1/original-score-point, no logarithm. Required output density.csv
↪  with grade,h_red,h_yellow,density_red,density_yellow,difference,se,p_
↪  raw,p_adjusted,lower,upper,n_red,n_yellow,status,reason;
↪  diagnostics.csv mirrors this without inventing a sign for failed
↪  fits. Positive finite SE and postcap support are required. No outcome
↪  s/joins beyond the inherited one-child score sample. Synthetic checks
↪  verify reflection/equality convention and distinct density versus log
↪  units. A failure limits this grade, not unrelated grade sets.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000506/densi
↪  ty/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## balance
- key: flagged
  region: Any valid registered grade comparison has p_adjusted<.01 under
  ↪  the fixed48
    budget, or an arithmetic_difference exists.
  says: Predetermined sorting challenges continuity in this grade.
- key: not_flagged
  region: Every slot is either a valid unflagged contrast,
  ↪  structural_complete, or
    global constant_observed under I5; no unresolved/unavailable slot
    ↪  remains.
  says: No registered flag; constant slots supply noninferential evidence
  ↪  only, and
    proxy income does not clear true-resource continuity.
- key: otherwise
  region: otherwise
  says: The registered judgment remains unresolved; report its exact
  ↪  limitation, without
    negative or favorable inference.
```

```
Use grade 9, D1 initial margin and D2/D6/D9 exact fields. Four variables:
↪  BEF.FOED_DAG-derived age in days, BEF.KOEN, IND.AEKVIVADISP_13 in2014
↪  , and any D6 DF32/33/40/41/43 encounter in (t0-365,t0]. Baseline care
↪  strictly precedes t0; on-day events excluded, so implement [t0-365,t0
↪  ). Each variable plus its missingness is a separate diagnostic slot.
↪  Apply all I5 constant/structural/unavailable/numerical rules and I3
↪  numerical operator with one grade; alpha=.01/48 remains fixed.
↪  Correction status from D9 baseline-income audit must be available
↪  before reading income: no_result leaves balance otherwise, never
↪  corrected by assumption. No conditioning later endpoint eligibility
↪  on the observed baseline values; original-variable complete-case fits
↪  and full-denominator missingness comparisons remain separate. Output
↪  balance.csv with the G2 eight enumerated checks, status, arithmetic
↪  extrema, denominators, p-values only for valid fits; diagnostics.csv.
↪  Synthetic all-complete, mixed-complete, global constant, differing
↪  side constants, unavailable field and nonconstant fit failure must
↪  reach the I5 exact routes. No inferred zero SE or balance equivalence.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and
↪  prereg/identification.md I1-I4 for estimands and inference. These
↪  shared definitions are part of this Atom's protocol, not optional
↪  guidance. Apply ordered checks before model fitting: delivered
↪  schema/dictionary; date and unit semantics; unique keys and duplicate
↪  disposition; baseline and horizon eligibility; outcome construction;
↪  missingness and inference; local adjudication. Never inspect a
↪  postbaseline estimate to repair an earlier choice. A demonstrably
↪  incompatible construct is an evidenced boundary; unresolved
↪  documentation reaches otherwise. A transport/access/software failure
↪  yields terminal no_result with no local state. Apply the listed
↪  verdict regions in order, first matching region wins; otherwise is
↪  exhaustive. All future outputs go to prereg/runtime/atom-000506/balan
↪  ce/ and remain governed until aggregate disclosure approval. Write
↪  audit.json and judgment.json plus the named plot-ready table; G1/G2
↪  define status and column meanings. No numerical result is populated
↪  now. Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.

## classification
- key: sharp_recording
  region: All eligible records have known category and category==Z
  ↪  exactly under a
    verified deterministic category dictionary.
  says: Threshold assignment coincides with recorded classification in
  ↪  this margin;
    support receipt remains unmeasured.
- key: nonsharp_jump
  region: Not sharp_recording; the valid grade-specific 1-.01/6 interval
  ↪  has lower>.10.
  says: A threshold-policy reduced form is interpretable under the other
  ↪  gates, but
    not an effect per recorded label or support received.
- key: unresolved_jump
  region: A valid grade-specific 1-.01/6 interval exists and lower<=.10.
  says: The proposed meaningful recorded-classification discontinuity is
  ↪  not established;
    this is not a health or policy null.
```

```
- key: otherwise
  region: otherwise
  says: The evidence is unresolved under the frozen rule. No favorable or
  ↪  negative
    finding is inferred; report the exact reason.
Population and exact fields as atom-000506, using
↪  TESTRESULTAT/TESTRESULTATNIVEAU and their frozen dictionaries.
↪  Evaluate complete known-label equality to Z=1[SCORE<=cutoff] first.
↪  Exact equality under a deterministic dictionary is sharp_recording
↪  without a manufactured SE. Otherwise apply I3 one-grade category jump
↪  using I5 six-slot .01 alpha; all missing labels must be bounded as
↪  [0,1], never deleted; use two one-sided limits splitting .01/6 when
↪  bounds are necessary. A lower bound>.10 permits nonsharp_jump, never
↪  a support-effect ratio. Output classification.csv:
↪  grade,agreement_fraction,n_agree,n_known,n_total,category_missing_fra
↪  ction,estimate,lower,upper,se,p_raw,p_adjusted,status,reason.
↪  Synthetic unknown/disagreeing labels cannot satisfy sharp_recording;
↪  SCORE==c remains red.

Implementation contract. Incorporate prereg/data-contract.md D1-D3 for
↪  the population clock, versions, identifiers, joins and observation;
↪  incorporate the explicitly cited construct clauses below and prereg/i
↪  dentification.md I1-I4 for estimands and inference. These shared
↪  definitions are part of this Atom's protocol, not optional guidance.
↪  Apply ordered checks before model fitting: delivered schema/dictionar
↪  y; date and unit semantics; unique keys and duplicate disposition;
↪  baseline and horizon eligibility; outcome construction; missingness
↪  and inference; local adjudication. Never inspect a postbaseline
↪  estimate to repair an earlier choice. A demonstrably incompatible
↪  construct is an evidenced boundary; unresolved documentation reaches
↪  otherwise. A transport/access/software failure yields terminal
↪  no_result with no local state. Apply the listed verdict regions in
↪  order, first matching region wins; otherwise is exhaustive. All
↪  future outputs go to prereg/runtime/atom-000506/classification/ and
↪  remain governed until aggregate disclosure approval. Write audit.json
↪  and judgment.json plus the named plot-ready table; G1/G2 define
↪  status and column meanings. No numerical result is populated now.
↪  Before runtime use G3 synthetic join/date/missingness checks and
↪  verify row-order invariance; a failed check prevents output release.
↪  Every result constrains the Molecule under its composable rules;
↪  neither failure nor nonactivation means statistical insignificance.
```

Registered experiment

Can the grade-9 score margin support a credible local classification-policy contrast?

Prospective registration. No study values or empirical results have been observed.

Reference implementation

Entry point and supported/unresolved components for `atom-000506`: execution index. See engineering review. This pointer does not amend the registered protocol.