

Effects of Parental Death on Labor Market Outcomes — source-faithful native replication

Bolero

Abstract

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

Keywords: Pre-registration, research design

Effects of Parental Death on Labor Market Outcomes — source-faithful native replication

Replication pre-registration: the source paper’s results are known; no new replication outcomes have been observed.

Parental death, adult work and family support: protocol and statistical analysis plan

1. Study identity and registration history

This is a source-faithful replication of Mathias Fjællegaard Jensen and Ning Zhang, “Effects of Parental Death on Labor Market Outcomes,” *American Economic Review* 116(5), 2026, pp. 1811–1836, DOI 10.1257/aer.20240432. The scientific baseline is the supplied sealed v0.2.4 World. The September 10, 2026 amendment develops exposition, display allocation and computational planning; it introduces no scientific additions, regrouping or resolved source disagreements. The richer September 8 manuscript is reusable editorial material, not evidence of a separately sealed replication.

The campaign is **replica**, the registration mode is **canonical**, and the eleven Atom registrations and molecule-000001 membership/registration remain unchanged. The user exceptionally requested this constrained Blueprint before the current Transcriber; historical native text describing converter-to-Transcriber topology remains

preserved. This invocation does not change the ordinary lane topology. This narrative explains the native registrations and incorporated source specifications; it cannot override them.

The original authors are the authors of the source study. Replication investigator identities, institutional approvals, funding and registration-deposit identifiers have not been supplied. No OSF deposit, independent scientific acceptance or empirical replication is claimed. This is prospective planning of analysis using existing registers, not prospective collection of new observations.

2. Data existence, access and prior knowledge

The run boundary permits planning with all 531 curated FSV register tables. Eighteen distinct tables are named across the fixed Atom registrations; the list in each Atom determines that Atom's allowable inputs. `validated_tables` is empty. Catalogue existence does not establish mounted files, authentic historical extracts, field completeness, pseudonym correspondence, sample size, treatment variation or follow-up. Later seven- or 47-table boundaries from other lanes do not apply.

This preparation used schema documentation, the final published article, its 31-page journal-linked supplement, retained public author programs, and earlier source-fidelity records. Published findings are known. The preparation is therefore not blind to the source paper's results, even though no confidential rows or newly computed replication summaries have been read. Historical converter and September 8 knowledge are disclosed rather than erased. The source article's reported sample sizes and effects remain comparison targets only; they are not planning inputs for power, mock values or evidence in this replication.

The supplied supplement and 36 original author programs are portable source material with hashes and rights/status notes in `docs/sources/portable-sources.md`. The private main-article exemplar PDF is not distributed. Missing auxiliary dictionaries include inflation factors, educational levels/durations, psychology/psychiatry service mappings and the eleven-region geography crosswalk. Current LMDB PNR12 versus source PNR and cumulative death-register vintages require authenticated correspondence. No convenient replacement dictionary or newer register period is implied.

3. Background, theory and importance

Economic independence does not end an adult's relationship with a parent. A loss can affect concentration, health and treatment; remove practical or emotional support for raising children; create obligations toward a surviving parent; or change resources and preferences. These accounts need not predict the same labor adjustment. The end of prior caregiving can release time, and an inheritance can change desired work. An earnings decline alone cannot distinguish them.

The source places adult loss between research on fatal shocks to spouses or children, research on parental loss during childhood, and work on informal care. Childhood human-capital channels do not automatically describe a person already established in work. Denmark's historical public provision makes the family question informative:

medical coverage, subsidized childcare and municipal eldercare can support households without replacing every relationship or schedule gap. The original article’s institutional account, not a claim about current law, supplies this context.

GP referrals and psychology copayments mean treatment records reflect need, help-seeking and access. The source’s bereavement-related psychology referral window can affect treatment timing. Formal enrollment need not cover evenings, work-schedule gaps or a child’s illness. A surviving spouse can provide care and may retain an undivided estate, with exceptions. These institutions explain why health, childcare, eldercare and wealth comparisons are complementary; none establishes which account will dominate the replication.

4. Research questions, hypotheses and claim scope

The primary question is how sudden first parental death changes adult labor-market outcomes in the source population. The secondary comparisons assess health treatment, joint onset, childcare and surviving-parent circumstances. Other source modules describe population scope, uncontrolled event paths, wealth-related heterogeneity, family formation, spouse earnings and job choices. They remain distinct scientific questions within the one study.

Native unit	Question and scientific scope	Retained evidence
atom-000001	Who experiences first loss in the source death-period sample, and how do sudden/nonsudden groups compare? Descriptive.	B1–B4; Table 1, B1–B2; exact introductory shares
atom-000002	How do uncontrolled labor and prescription trajectories evolve around each death type? Descriptive.	B5, B23; external-scope discussion
atom-000003	What are the matched labor responses, parent/child-gender contrasts and source robustness? Conditional causal target.	F1–F2, B6–B8, B19–B22; Tables B3/B6; source prose robustness
atom-000004	How do recorded health services and prescriptions respond? Conditional causal effects on recorded use.	F3, B9–B11; psychiatrist prose target

Native unit	Question and scientific scope	Retained evidence
atom-000005	Do earnings-decline and treatment onsets occur jointly after loss? Conditional causal target for joint outcomes, no mediation.	F4, B12; immediate-year ratios
atom-000006	Do earnings responses vary with young children and does formal enrollment respond?	F5, B13–B14; no care-hour estimand
atom-000007	How do earnings and residence vary with surviving-parent illness? Selected/associational care comparison.	F6, B15–B16; illness share and mental-prescription prose targets
atom-000008	Does the earnings response vary with baseline family wealth? Associational channel evidence.	Table B4 and three prose wealth variants
atom-000009	Do cohabitation and linked child counts change? Conditional causal target.	B17
atom-000010	How do eligible spouses' earnings respond to parent-in-law loss? Separate matched population.	B18
atom-000011	Do occupational, firm and public-sector choices change? Source work-choice scope.	Table B5

The original channel predictions motivate these comparisons, but this amendment does not add directional tests, new subgroups, power criteria or a replication-success cutoff. All signed estimates and uncertainty must be reported, including incompatible and imprecise patterns. Intended causal strength in a registration describes a target under assumptions, not realized evidence.

5. Setting, population, eligibility and sampling

The principal unit is an adult-child person-year. Matched models represent person $\times$ match $\times$ year, retaining reused controls separately in each match. The labor source period is 1980–2019. Treated adults are aged 25–50 at sudden first parental death during 1985–2014, with two known parents and source-required birthdays and population presence before death. The ordinary balanced window contains exactly one record at each event year -5 through $+5$; eleven duplicate or incomplete rows do not satisfy it. This is a data-determined register cohort, not a chosen target sample size.

FAIN references 1981–1985 represent 1980–1984 after the source one-year shift. BEF supplies year-end snapshots thereafter. Birthday and family-link propagation follow the source chronology. Earlier mother/father death defines first loss. The code’s maternal tie assignment is retained as source evidence, while simultaneous-death scientific treatment remains A11. A second parental death within follow-up is allowed in the main design; the separately reported greater-than-five-year spacing robustness is incompletely specified and must not become a universal exclusion.

Analysis population/window	Source rule; meaning for comparison
B1 cumulative first-loss distribution	First deaths in 1985–2014; not restricted to the 25–50 balanced labor sample. Numerator/denominator precede source cell suppression.
Table 1/B1/B2 and B2–B4	Treated-only balanced adult sample, including sudden/nonsudden groups. Parent-age 100 restriction applies where analysis_2 imposes it, not to B4 which precedes it.
Main nearest-neighbor comparison	Final treated cohort plus source eligible controls, with pseudo-event clocks and source parent-presence/age/history rules. Matching remains unresolved.
Services and prescriptions	Services from 1990 require complete windows, normally event 1995–2014. Prescriptions from 1995 imply event 2000–2014 given the 2019 endpoint.
Nonpsychiatric hospital analyses	Complete 1994–2018 windows imply events 1999–2013. Psychiatric hospital coverage begins 1995 and has its own restrictions.
Co-occurrence	Additional earnings history at -6 ; complete 1995–2018 eleven-year window, event 2000–2013, then omit -5 from displayed estimates to show $-4\dots+5$.

Analysis population/window	Source rule; meaning for comparison
Formal childcare	Complete 2005–2019 window; event 2010–2014. Youngest-child identity and source age boundaries remain unresolved.
Surviving parent	Adults without young children, including childless adults in this module. Conflicting hospital endpoint and illness definitions remain unresolved; no repaired cohort is selected.
Spouses	Event-time partner and separate spouse matching; young-child restriction and complete eleven-year spouse histories from 1985, implying source events from 1990. A09 remains.
Geography, work and future-treated comparisons	Their exact source-specific periods, code versions and restrictions are in Atoms 3/10/11 and SI S7–S9; no common-sample harmonization.

6. Exposure, assignment and comparison

Exposure is sudden first parental death, not a policy assignment or randomized treatment. The final source cause49 set is 24, 25, 26, 29, 46, 47, 49. Broader intermediate cause and age pools are narrowed by explicit final source commands. Event time is calendar year minus death year; a death late in the year and a death early in the year share that annual coordinate. Do not replace it with time since an admission or an invented exact-day clock.

The journal describes exact sex, earnings-category and young-child matching followed by categorical Mahalanobis nearest neighbors over baseline socioeconomic/family characteristics and three-year histories. The public program coarsens some earnings/child categories into 34 groups and uses a different history vector. **matching-specification.md** preserves all matrices and source mechanics. C01 prevents choosing either description, running two “replications,” or selecting the better balance. A01 retains consequential tie/software/duplicate issues. Controls’ first death occurs after pseudo-event +5 or is unobserved; presence over the source window is distinct from asserting survival indefinitely.

The conditional causal interpretation requires comparable untreated trajectories and no relevant anticipation that invalidates the contrast. Matching and fixed effects address observed histories and persistent levels; pre-event paths can challenge but cannot prove the counterfactual assumption. Parents can be ill without dying within a control’s window. The future-treated source comparison addresses that concern using a six-year separation, without proving random timing. Descriptive Eq1 estimates

use no matched counterfactual. Care/wealth subgroup comparisons cannot identify a controlled mediator effect.

7. Outcomes, measurements and operationalization

Exact source fields, date semantics, code lists, vintages, construction order and gaps are incorporated in `data-contract.md` D1–D5 and `replication/schema-evidence.md`; those documents remain unchanged. The following reader dictionary preserves the distinctions that affect interpretation.

Construct	Fields/source construction	Units, denominator and limit
Employment and ATP	IDAP ATPXX/source ATP_AAR; positive indicator; early 1980/81 factor 1167/432; source annual p99 cap	Probability; ATP units conditional on positive contributions or including zeros as the target requires. No measured-hours conversion.
Earnings	IND ERHVERVSINDK_GL through 1986 and ERHVERVSINDK_13 thereafter; source inflation and p1/p99 transformation at each consuming module's stage	Thousands of real 2020 DKK; index 100 relative to source sex or subgroup baseline; annual rank percentile. No universal winsorized panel.
Earnings rank	Annual source population ages 20–55 with known birth/sex; mean tied rank	$100(r-1)/(N-1)$; not a sex/cohort-specific rank; $N=1$ is undefined.
Health contacts	SYSI/SSSY SPECIALE/YDLANT; fixed 22 GP codes and missing private-service map; LPR_ADM admission/discharge/diagnosis; PSYK_ADM historical cumulative source	Counts per person-year; source listwise/vintage rules. Private and combined psychiatry remain distinct.

Construct	Fields/source construction	Units, denominator and limit
Prescriptions	LMDB source PNR, annual reference and ATC prefixes N05/N06A/N06B/N06C, N02A, N07BB	Any-use for mental/opioid main panels; count of N07BB records for B9. Treatment/dispensing, not diagnosis, ingestion or measured misuse.
Screening	Admission diagnoses containing DZ00 or DZ01 from 1994; final consuming nonscreening = total – screening	Hospital visits including inpatient/outpatient; residual category is not a pure measure of incident illness.
Annual decline and onset	Source earnings ratio $(Y_t - Y_{t-1})/Y_{t-1}$ –0.05; onset = decline now and not last year	Binary annual state/onset; undefined ratio follows the source zero rule only within verified coverage. Not “below baseline” and not lifetime first onset.
Joint health/earnings	Product of same-person, same-year earnings-onset and treatment-onset indicators	Probability; hospital B12 E/F instead use visit count and count $\times$ earnings-onset. Never multiply estimated effects to construct outcomes.
Children/cohabitation	MOR_ID/FAR_ID/birth links; E_FAELE_ID nonempty; target-specific count caps	Child-count stock, cohabitation probability; no new fertility rate or marriage-only outcome.
Formal enrollment	DAGI YDELSE young 151/152/154/200/201, older 153/224/225/226/227; BOERNFB/BOERNSB child/year records	Youngest-child enrollment probability; not hours, prices or grandparent help. A06 remains.
Surviving-parent health/proximity	Union of inclusive hospital days per person/year; same eleven-region residence	Source illness accumulation/threshold/calendar conflict remains C07; residence is not relocation distance or care time.

Construct	Fields/source construction	Units, denominator and limit
Wealth	FORM 1984–1997, FORMREST_NY05 from 1998; source maximum and inflation; parental baseline assets	Net assets exclude pension wealth; ownership and 1,000/10,000 DKK scale remain C08. Bequests unobserved.
Work choices	IDAN/IDAS main-job/ownership rules; AKM source occupation; source history comparisons	Occupation switching, adjacent valid firm transition, public sector conditional on ATP employment. A10 ordering unresolved; no added DISCO harmonization.

Education uses UDDA HFAUDD/HF_VFRA with the actual author cross-walk and latest-within-year/carry-forward rule. The source’s youngest-age sentinels, descriptive count caps, parental marriage coding and historical geography are explained in SI S1. Source-covered absence may be a zero; missing extracts are not non-events.

8. Evidence sequence and planned displays

The paper asks first what adult loss changes, then what kinds of evidence can explain those changes. Population descriptions and uncontrolled event paths establish scope and motivate a counterfactual; matched dynamics distinguish participation, conditional labor input and absolute/relative earnings. Parent/child-gender comparisons motivate health and family-support questions rather than establishing a mechanism themselves.

Health-service levels, dynamic profiles and screening comparisons distinguish recorded treatment from a simple medical-monitoring account. Onset and joint-onset paths ask whether the same person-years record both changes. Child-age earnings contrasts and later formal-enrollment responses jointly address demand for informal support and observable substitution, without equating their populations. Surviving-parent health and residence consider care flowing in the opposite direction. Wealth, family formation, spouses, jobs, proximity and alternative controls preserve rival explanations and the limits of transport.

Main text retains Figures 1–6 beside their argument. SI retains all B1–B23 displays and all seven original tables (Table B3 in two readable panels), with main-text pointers. `docs/story/blueprint.md` gives every display’s reader question, form, panel order, units, placement and transition and maps actual paragraphs to evidence. `docs/paper/results-map.md` retains all 63 empirical slots and exact output bindings.

Display placement does not depend on future significance or agreement with the source.

9. Estimands and statistical models

Let i index adults, m matches, y calendar years, D_m the treated event year, and $k=y-D_m$. T_im identifies the treated member. All formulas express the source models, not alternative specifications chosen for this refresh.

The descriptive model is fitted separately by sex without an untreated comparison group:

$$Y_{iyk} = \sum_{h=-5, h \neq -1}^5 \delta_h \mathbf{1}\{k = h\} + \text{AgeYear}_{iy} + \text{EduYear}_{iy} + \varepsilon_{iyk}.$$

Its percentage display divides each coefficient and its interval by the source fitted counterfactual mean and multiplies by 100. C04 leaves that prediction population unresolved. Unscaled fitted coefficients cannot replace the registered percentage path.

Define the matched nuisance component

$$F_{imy} = \alpha_{im} + \lambda_k + \tau_y + \eta_{\text{age}(i,y)}.$$

The dynamic matched specification (source Eq2) is

$$Y_{imy} = F_{imy} + \sum_{h=-5, h \neq -1}^5 \beta_h T_{im} \mathbf{1}\{k = h\} + \varepsilon_{imy}.$$

Each β_h is a treatment-control contrast relative to omitted event year -1 , conditional on the source model. Co-occurrence displays use their registered $-4\dots+5$ coordinates. The omitted reference is a normalization, not an estimated zero with zero uncertainty.

Source Eq3 replaces the dynamic terms with $\beta_T T_im \text{ Post_}k$. Eq4 uses $\beta_M M_im \text{ Post_}k + \beta_F P_im \text{ Post_}k$, where M and P identify treated mother-first and father-first deaths. Both are sex-specific and use the same source nuisance effects. Post remains a symbolic unresolved quantity: the code uses $0\dots5$ inclusive, while the prose refers to five years after death. A03 prevents choosing a pooled convention or the immediate-year ratio coordinate. A02 remains for age/calendar/person normalization; a different numerical representation is permitted only if it preserves treatment estimates and variance. C05 retains caption/program disagreement where applicable.

For the earnings index, $Z=100Y/\text{mean}(Y \text{ at } -1 \text{ in the source group})$. Childcare and some geography models use group-specific denominators; surviving-parent comparisons use sex-specific, not illness-specific means. Earnings winsorization occurs at the source-prescribed stage for each module. Wealth models retain treatment $\times$ post and its interaction with baseline wealth, with the source fixed effects and columns; C08/U04 prevent guessed units, ownership or auxiliary models. The source subgroup contrast models and joint covariance, rather than subtraction of independent estimates, determine displayed differences.

Define d_t as the registered annual earnings-decline indicator, $e_t=d_t(1-d_t\{t-1\})$, h_t as a source treatment-start indicator and $j_t=e_t h_t$.

Effects on e, h and j are separate source outcomes. The prose ratios are the immediate-year effect on j divided by the effect on e or h, separately by sex. Their exact event year remains unresolved; a zero denominator is undefined and no offset, regularization or new ratio interval is introduced. These are ratios of effects, not identified fractions of individuals with jointly nonzero causal effects or a mediated earnings share.

All source variants and code-level pseudocode remain inside their unchanged Atoms, with matching matrices in the incorporated specification. This narrative adds no alternate estimator, IPW, new health controls, sample pooling or causal decomposition.

10. Uncertainty, multiplicity and design sensitivity

Eq1 uses the source heteroskedasticity-robust inference. Matched source models cluster person $\times$ match; spouse models cluster spouse $\times$ match. Reused controls retain their source match representation. The future-treated captions/program disagree about individual versus person $\times$ stack clustering, so no substitute is selected.

Dynamic intervals follow the literal coefficient ± 1.96 SE convention. Pooled coefficient displays require source coefplot/reghdfe residual-degree-of-freedom semantics. Tables with SE only retain SE only. Printed differences, F statistics and p-values use the consuming joint model's covariance and degrees of freedom. A computable CR0 covariance is not source-equivalent uncertainty; unknown software/singleton/df semantics remain boundaries.

No new multiplicity correction, significance selection, joint pretrend threshold, equivalence band, replication-success tolerance, power calculation or sample-size target is registered. These omissions are faithful source limitations, not a claim that multiple comparisons are harmless. Report the complete source vector and interpret uncertainty across it. Nonsignificance does not establish an economically negligible effect; reported source sample sizes do not establish this replication's precision.

11. Missingness, exclusions and competing events

Perform source-specified exclusions in the source order. Verify unique units and exact year sets before target-specific outcome deletion. Do not silently force-drop conflicting duplicates, fill absent register-years, reinterpret source sentinels or select a convenient event partner. Different outcomes retain their own valid windows, so one unavailable health series does not erase independently interpretable population/ATP outputs.

Absence in a verified complete source event register can follow its explicit zero rule. An unavailable year, namespace mismatch or missing required mapping cannot. Source date selection and admission counting differ from the later valid-interval filter for hospital days: a reversed interval may count as a visit in the literal program but contributes no day span. Tied latest-discharge diagnoses and missing discharge remain source correspondence limits. Interval-union engineering must preserve this order.

Balanced-panel eligibility can select on residence/presence over time. The source does not provide new attrition weights, competing-risk models or bounds to add here. Unknown later parent death does not prove indefinite survival; second loss is not excluded globally. Current runtime coverage, migration/death handling and

consequential collisions must follow the exact retained source rules or receive their existing no-estimate disposition. Any sample redesign requires a separate disclosed authorization.

12. Diagnostics, sensitivity and rival explanations

The source's comparability tables, pre-event paths, unconditional ATP, ranks, parent-specific dynamics, screening split, onset comparisons, child-age/enrollment, prior-parent-health and proximity contrasts remain included. Table B6 keeps its cause, age and calendar models. B21–B22 keep future-treated controls, with unresolved source choices. These are source analyses, not a newly added diagnostic battery. Original rematching, second-death and linear-control prose targets stay visible even though their full execution specifications are unavailable.

Unchanged ledger entries	Consequential limitation and affected scope
U01/U02	Historical coverage/key/field correspondence and missing auxiliary dictionaries; target-specific input boundaries.
C01; A01/A02	Matching construction, ties/software, normalization; no guessed matched population or inference.
A03; C05	Pooled window/immediate ratio clock and mismatched model references; dynamic coordinates are not blocked solely by A03.
C02/C03/A04	Under-six versus 6 rows; parent-age clock; cumulative shares/bin labels/edges. Other supported descriptive rows remain retained.
C04; A05	Descriptive percentage prediction population; private versus combined psychiatry.
C06/A06	Childless eligibility and youngest-child/enrollment boundaries; no invented childless comparison.
C07	Surviving-parent illness accumulation, threshold, years and B16 pre/post assignment.
U03	Unspecified rematching/second-death/linear-control and illness-specific mental-treatment analyses.

Unchanged ledger entries	Consequential limitation and affected scope
C08/U04	Wealth unit/owner and incompletely specified own/deceased/surviving wealth variants.
C09/A07	Geography and pooled contrast mismatch; fixed versus recalculated age split.
C10/A08	Future-treated window, cluster, earnings tails and source execution discrepancy.
A09/A10/A11	Spouse population/order/model, occupation chronology, simultaneous death/duplicates/missingness.

The full ledger preserves exact locators and dispositions. No finding in this amendment removes a gate. For example, nonscreening = total – screening is already a source-explicit final command; it is not a new resolution. The source’s lower-bound and generalization arguments remain arguments requiring assumptions, not identified bounds or additional experiments.

13. Canonical schedule and result-dependent decisions

Every Atom has activation **TRUE**, exactly as in the baseline. Shared preparation creates computational dependencies without making one Atom’s result a scientific prerequisite for another. The paper’s narrative order likewise does not determine runtime activation. Default standalone execution respects activation; an explicitly selected direct dispatch bypasses only the outer scheduler check, never scientific input or conflict checks. Host guidance retains `campaign.mode=replica` and `campaign.init_world=null`.

For each source target in inventory order, authenticate definitions and inputs; retain unresolved source/input reasons; form the exact authorized sample only where determined; verify source unit/year/key semantics; estimate the prescribed model and inference if identified; export every keyed estimate and required uncertainty; and report unavailable targets beside available ones. A software crash or timeout is operational, leaves evidence pending and does not satisfy `done()`.

All Atoms use the unchanged local coverage partitions: **evidence** when all retained targets have actual source-qualified evidence; **partial** when some have evidence and others a conclusive source/input no-estimate disposition; **boundary** when none are estimable after a conclusive boundary; **otherwise** for residual scientific scope. These are not signs, significance categories or replication verdicts. An imprecise estimate remains evidence. No preview, source number or local-construction diagnostic supplies an empirical result state.

14. Interpretation under alternative results

Molecule restrictions apply first, then compatible primary and supplementary statements, with a residual statement naming unresolved scope. The primary labor vector determines what adjustment needs explaining. Health/timing and care evidence can qualify that adjustment but cannot identify its mediated shares. Wealth, household and work comparisons each retain their own uncertainty. Population/descriptive evidence delimits scope without acquiring matched causal interpretation.

`docs/paper/results-map.md` contains usable alternative wording attached to these existing rules. A sustained labor response would be reported only over the registered horizon and alongside its margins. Short-lived, mixed or imprecise paths change the description, not the display roster. A health response without labor evidence cannot establish a health-driven earnings loss; labor evidence with weak treatment responses does not prove health irrelevant. Joint onset adds within-person-year information but not mediation. Child-age heterogeneity with limited enrollment movement is compatible with help outside formal schedules but cannot quantify it. Illness-based differences remain selected. Small wealth/job coefficients cannot eliminate those channels.

When matched reconstruction remains unavailable, the title/abstract identify a source-faithful replication with unresolved matched evidence; independently supported descriptive results can still be reported as such. A boundary neither confirms nor refutes the original paper. In all cases retain missing targets, contradictory estimates and operationally unrun scope rather than telling the source’s realized positive story in advance.

15. Reproducibility, code and deviations

`docs/execution/README.md` indexes every Atom’s substantive implementation, command, required inputs, outputs and unresolved scope. `docs/engineering/computational-handoff.md` specifies projection, cardinality, shared preparation, interval unions, matching complexity, fixed-effect memory and lane resource allocation. The delivered entry points implement shared, projected SQL preparation with bounded model-table conversion. Synthetic oracle and scaling checks establish the recorded engineering behavior only; no full matched replication, target-container availability or national-scale performance is certified.

Original author programs and source-fidelity records remain unmodified. The current reference adapters preserve source meaning and unresolved choices. Tests cover numerical oracle comparisons, complete/partial/missing inputs, duplicates, clock boundaries, copied-workspace dispatch and bounded scaling; actual coverage and limits are recorded in `docs/provenance/paper-handoff.md`. Synthetic inputs and detailed logs stay outside delivery; reusable generators/tests and visibly labeled rendered exhibit previews are included. The combined manuscript and full preregistration reports are freshly built from current material, with rendered inspection coverage recorded in that handoff.

The current authorized portable-source collection includes the original supplement and 36 unchanged local author programs, with source hashes and rights recorded under

`docs/sources/`. Embedded original source-access statements about inspection-only use or non-redistribution describe the earlier conversion record; they do not describe the present portable collection. No private exemplar publisher PDF is included.

Every unforeseen substantive change must state its source, date, reason, affected targets and knowledge history before dependent analysis. This invocation does not authorize conflict resolution or new scientific comparisons. Meaning-preserving implementation changes retain the unchanged registration identity and result interfaces while updating mutable code/document material bindings for the new editorial baseline. Engineering provenance must not masquerade as scientific acceptance.

16. Ethics, access and dissemination

No confidential data access, contact with participants, external messaging or publication occurred in this stage. Existing register data require governed access and disclosure checks; exact access approvals and identifiers remain unknown. The paper uses source-period institutional context and observational register reporting detail, without claiming a trial protocol, a new clinical intervention or a journal-approved Registered Report.

The delivered World contains only `atoms/`, `molecules/`, `docs/` and `README.md`. It includes current protocol/story, reusable reference code, portable authorized source material and concise provenance. Private exemplar PDFs, previous reports, synthetic datasets and operational audit/build records remain outside it. The host owns subsequent integrity checks, sealing, ZIP, replacement of only this bundle and publication. All authoritative replication results remain pending.

References

Jensen and Zhang (2026), final AER article, [publisher page](#); [journal-linked supplement](#); [data/code deposit identity](#). Original source hashes and retrieval limits are retained in `docs/replication/` and the portable-source index. The complete source-inherited contextual bibliography is in the combined manuscript, clearly distinguished from independently searched literature. The dated search/access record is `docs/sources/search-log.md`.

This narrative follows the maintained local protocol/SAP template’s sixteen topics. Exact Atom protocols, local result partitions, Molecule membership/interpretation and derived graph are supplied by their native files for the full preregistration report; they are not duplicated as a second authority here.

Registered protocol appendices

The preceding protocol and statistical analysis plan are the reader-facing explanation. The exact Atom protocols, local result rules, and Molecule registration below retain the executable scientific authority.

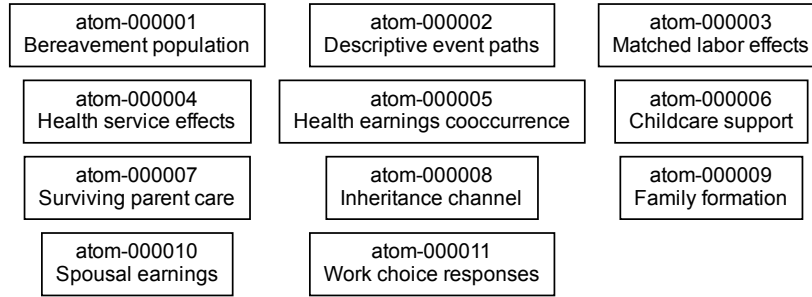


Fig. 1 Registered Atom dependencies

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.

Source literature and access

Jensen, Mathias Fjællegaard, and Ning Zhang.2026. “Effects of Parental Death on Labor Market Outcomes.” *American Economic Review*116(5):1811–1836. DOI10.1257/aer.20240432. [Publisher article](#). Supplied26-page original journal PDF was read in full; its exact hash is in replication/source-provenance.yaml. The local article Markdown was read as a navigation aid and hash-checked; the original PDF governs scientific reading.

Jensen and Zhang, journal-linked Supplemental Appendix,31 pages, AEA material25093, [publisher material link](#), retrieved2026-09-05; SHA2567cebe88f0cdef5b8e8865d457f2abea64aad2691dbc8e9cf94f3faf5f1c51105. Full text and all source display pages were inspected. Contains Appendix A.A–G, FiguresB1–B23, TablesB1–B6. No original supplement is redistributed in this World.

Jensen and Zhang.2026. Data and Code for the article. ICPSR versionv1, DOI10.3886/E239029V1, [DataCite metadata](#). Publisher linking and metadata establish repository identity; archive access returned403, so remote byte correspondence and missing input files remain unverified. All36 available local author .do files were read, including sibling cleaning/analysis and FN programs; see replication/code-inspection-index.csv. Supplied analysis5/matching15 hashes match provenance. Programs are inspection-only and not redistributed.

The paper’s references provide its prior-work framing (bereavement, health shocks, child penalties and informal family care). This conversion makes no new novelty or comparative-literature claim and does not import scientific defaults from those works.

In particular, the source FN robustness is extracted from this article/appendix and author programs, not redesigned from Fadlon–Nielsen papers. Earlier working-paper versions surfaced in live searches but are not the scientific specification for this journal conversion. Historical replication manuals/decks and earlier replica drafts are not sources.

Live retrieval queries, UTC dates, HTTP outcomes and access limitations are in replication/retrieval-log.md. OpenAlex exact-DOI lookup⁴²⁹; PMC exact-DOI search⁰ records; these are access/index outcomes, not evidence that a source or science is absent. The relevant publisher supplement was retrieved successfully. FSV metadata and official variable pages establish documentation only; see schema-evidence.md.

Shared data and result contract

This document is incorporated by reference into every Atom protocol. All 531 tables in the unchanged supplied boundary are allowed for planning; none is validated as mounted. Only documented fields and author source code were read. No row, micro-data summary, model estimate or empirical program was accessed/executed. The final package is a canonical pre-data replica registration, not a feasibility certificate. Each consuming Atom owns its linkage/coverage checks and their consequences. No separate diagnostic experiment is created.

D1. People, time, family and treatment

Unit of the main study is adult-child person-year; matched models duplicate a reused control separately for every source pair and cluster at person $\times$ match, as specified. Event year D is calendar year of first parental death, $t = \text{year} - D$. Balanced 11-year means exactly one valid person-year at each $t = -5$ through 5, not merely 11 possibly duplicated rows. Replacing a count assertion by explicit key/year-set equality is meaning-preserving engineering; a mismatch stops that target, it does not license deduplication. Population source: FAIN 1981–85 references are assigned year-1 for 1980–84; BEF 1985 onward uses year-end snapshots, including December quarters in 2008+. Use source PNR, MOR_ID, FAR_ID, FOED_DAG, KOEN, ALDER, E_FAELE_ID, CIVST, KOM, REG. Historical date imputation in clean_6 uses Jan1(year-age) before precise birthdays; later available birthdays/gender/parent IDs are propagated as code. These are source definitions, not a permission to replace uncertain identities. Parental links must exist for both parents; parent birthdays and population presence in $t = -1$ are required. Source death records are DOD-SAARS2001 cumulative extract (PNR, C_LISTE_49, D_DODSDTO, C_SEX) and DODSAASG2019 cumulative extract (PNR, C_LISTE49, D_STATDATO, C_SEX). The catalog's current cumulative extract vintage differs; current data must not be presumed equal.

First death is the earlier linked mother/father death date. Source chooses mother if dates tie; keep A11 because the journal scientific treatment in simultaneous death is unspecified. Final sudden cause49-list codes are 24, 25, 26, 29, 46, 47, 49. The intermediate clean_8 list also includes 27/28, but final sample removes them in clean_15

lines558–560 and descriptive consuming programs: this staged restriction is not a conflict. Final treated age25–50 at event, first death1985–2014; code initially allows25–55 before final filtering. Original labor panel spans1980–2019. Do not extend it to newer documented years. Second parental death within the main treated window is allowed in the main design; the source >5-year-gap robustness remains U03, not a universal exclusion. Control candidate first parental death is after D+5 or unknown, both parents remain in the population through the source pseudo window, and birth/age rules in matching-specification.md apply. Unknown future death is not invented survival beyond observed source follow-up.

D2. Education, geography and family fields

UDDA HFAUDD/HF_VFRA: choose latest education in year; source carries education forward, excludes HFAUDD1, maps DISCED level0/1/2 to below high school,3/5 to high-school/vocational,6/7/8 to college+. Years of schooling use author crosswalk months/12. Missing crosswalks are U02, not permission to infer categories from code digits. Cohabitation is nonempty source spouse/partner ID, not a newly restricted marriage variable. Married parent CIVST G or P is1, remaining/missing states0 in source; match-stage missing category2 applies where the variable is still missing. Child-parent records from MOR_ID/FAR_ID construct number of linked children born by each calendar year; source permits same-sex parental links. Youngest age is based on latest birth; integer age over20 is capped21 and no-child sentinel22 in matching. Source youngest-child tie identity remains A11/A06 where enrollment depends on it. Main analytical child count, descriptive cap5 and spouse cap5 are distinct consuming rules.

Geography uses source5-region REG, municipality KOM, and author crosswalk for11-region NUTS3. clean_6 maps old FAIN municipalities through BEF1986, explicitly patches municipalities793/719 to81 and627 to82; modern KOM/REG were revised historically according to FSV documentation. The exact vintage and crosswalk are required. Detailed municipality/11-region data begin1985. No distance in kilometers, updated boundary or geographic imputation is registered.

D3. Earnings, employment, jobs and wealth

Annual gross labor earnings including employment/self-employment are IND ERHVERVSINDK_GL1980–86, ERHVERVSINDK_13 from1987; clean_11 source converts to real2020DKK using the absent inflation factors and divides by1000 for raw earnings graphs. Source rank calculation among population ages20–55 with known birth/sex ranks ERHVERVSINDK_13 within calendar year with mean tied ranks, then $100 \cdot (\text{rank} - 1) / (N - 1)$; no sex or birth-cohort rank denominator. Different annual extract definitions require provenance, not an automatic mapping. Source missing income joins are zero in the balanced sample only when absence is interpretable under a verified complete source extract. Genuine unspecified duplicate records stop rather than select a new row.

ATP employment=positive ATPXX (ATP_AAR alias in source vintage). Missing/negative ATP is0 as source; years1980/81 multiply1167/432; intensive margin

capped at each year's 99th percentile. Unconditional ATP includes zeros; conditional ATP retains positive observations. These are pension-contribution proxies, not observed work hours. Earnings p1/p99 winsorization applies in each specified analysis after its stated restrictions; index100 uses t=-1 mean over T/C by sex, except source group-specific denominators in childcare/geography. No universal preprocessing sample can replace the explicit module rules. The FN p5/p95 inconsistency is C10.

IDAN person-job records link PNR/year/LBNR to IDAS early ownership; owner07/08/09 is public; 2007 owner99 carries prior08 as source. Early main job rule uses author IDANTYPE, drops E/B, selects type3 if multiple and prioritizes H. Later TYPE_2008 selects A/E/H/M/N/S; prioritizes H then E and wage where programmed. Author abbreviation TYPE may resolve TYPE_2008 under Stata varabbrev; this is not asserted to be a nonexistent-variable bug. Later sector classification excludes source8 prefixes and 32/42/52/62/99. The exact source sector tests must remain with their version (schema evidence). LBNR all-zero is missing; firm changes require adjacent valid different LBNRs. Public indicators after missing recode are conditioned on ATP employment where the source table requests it. AKM BESKST/BESKST13 identifies self-employment01/02, and employee/self-employed DISCO codes are chosen as source; there is no new code harmonization at 2010.

Wealth: IND FORM1984-97, FORMREST_NY05 from 1998, source maximum asset record within PNR/year, real2020DKK. Net wealth is measured excluding pension wealth per documentation, not an observed bequest. TableB4's 1000DKK versus code10000DKK is C08. Missing author inflation factors blocks real amounts and source matching where real income is consumed; no constant source means or published values fill the gap.

D4. Health event aggregation

Hospital LPR_ADM source named LPRADM in paths: read1980-2018, PNR,C_ADIAG,D_INDDTO,D_UDDTO. Source removes invalid/missing dates, deduplicates PNR/admission keeping latest discharge; unresolved tied records that alter diagnosis retain A11. Annual visits count admissions by admission year. Screening is diagnosis containing DZ00/DZ01 since 1994; final nonscreening is total-minus-screening in analysis_6. Days measure expands inclusive admission-to-discharge days, unions PNR/day to avoid overlap, counts by calendar year; outpatient visits are included. Do not reinterpret as inpatient bed-days. PSYK_ADM2019 cumulative source counts 1995-2018 psychiatric admissions after same-date deduplication. No LPR3 substitution after 2018 is authorized.

SYSI1990-2005 plus SSSY2006-2020: aggregate YDLANT by PNR/year and six-digit SPECIALE. GP codes are 800100, 800101, 800102, 800105, 800124, 800125, 800126, 800200, 800201, 800202, 800203, 800204, 800500, 800501, 800411, 800421, 800431, 800441, 800451, 800461, 800471, 800491 (22 codes as written in clean_4). Private psychology/psychiatry uses prefix63/24 followed by the missing author service mapping; prefixes alone do not replace that mapping. Negative count values set 0 and source pooled 99th-percentile cap where clean_3/4 applies. LMDB1995-2021 source: row counts by PNR/year, ATC prefix mental N05/N06A/N06B/N06C, opioid N02A,

alcohol N07BB. Derive any-use only for targets requesting it; B9 alcohol uses count. The current LMDB PNR12 requires an authenticated link map to source PNR. Dispensing/service use is not a clinical diagnosis or proof of ingestion.

D5. Childcare

DAGI1995–2014 PNR/YDELSE: source young codes151/152/154/200/201; older153/224/225/226/227. BOERNFB2015–2020 marks young enrollment by child-PNR/year; BOERNSB2015–2020 older enrollment. Deduplicate only identical person-year enrollment events for any-use. Missing rows are source0 within complete available enrollment tables; absent years cannot be0. Formal-care analyses restrict2005–2019 as source and require full11-year panels, not a new uptake study spanning all documented years. Current table coverage through2021/2024 does not change original follow-up. Author variable abbreviation formal_child_care can resolve formal_child_care_old5; do not invent a bug from abbreviation alone. Youngest-child identity, age boundaries and actual lookup coverage remain gates.

D6. Source estimator and uncertainty translation

Eq1: sex-specific OLS, sum event indicators $k! = -1$, $\text{age} \times \text{year}$ and $\text{education} \times \text{year}$ categorical controls; robust SE. Eq2: $Y = \sum[k=-5..5, k! = -1] k T1(t=k) + \text{eventFE} + \text{person} \times \text{matchFE} + \text{yearFE} + \text{ageFE} + \text{error}$; source event range changes only as specified in Atom5. Eq3: $Y = T_{\text{post}} + \text{same FE}$. Eq4 replaces *Tpost by mother-firstTpost and father-firstTpost* jointly; same FE, split by adult sex. Post definition A03 and normalization A02 are retained explicitly. Cluster at $\text{person} \times \text{match}$ except spouse uses $\text{spouse} \times \text{match}$ and disputed FN source cluster C10. Source code's unweighted OLS is preserved; reused controls remain separate pair records. No bootstrap, randomization inference, IPW, alternative DiD, extra controls or multiplicity procedure is added.

Event plots explicitly compute $\text{coefficient} \pm 1.96 * \text{SE}$ in author code; source pooled coefficient plots request95% using `coefplot/reghdfe e(df_r)` semantics, so export author-corresponding CI endpoints and `df/method` rather than hard-code1.96 for every interval. Tables with SE only retain SE; do not add new CIs or tests. Source printed F/p differences use the consuming joint-model covariance, never a synthetic difference from independent estimates. If `software/version/df` is unavailable, affected interval/contrast is unavailable even if a coefficient is known. Dynamic reference $t = -1$ is labelled omitted; no estimated zero or zero-width interval. Baselines, observation counts and reference units are target metadata. No p-value threshold, replication-success band, power calculation or minimum detectable effect is introduced.

D7. Pseudocode execution and failure boundaries

```
for target in the frozen inventory order:
  identify its source module, rows/panels, model and documented input years
  inspect only authorized runtime schema/metadata before requesting
    ↪ confidential computation
  if a scientific definition is unresolved: write no-estimate with exact
    ↪ gap ID; do not fit
```

```

if required vintage, key, crosswalk or register-year is absent: write
  ↳ no-estimate with reason
otherwise form precisely the source person/year/pair universe and
  ↳ transformations
assert prescribed join cardinality, year set and source-identifiable
  ↳ treatment/covariates
if the source model is unidentified or prescribed cells empty: retain
  ↳ unavailable target
if software crashes, permissions fail or output is corrupt: record
  ↳ operational failure;
    no scientific verdict and no done() transition are implied
else execute only the extracted, fully determined source specification
export every expected result and its actual uncertainty, including mixed
  ↳ findings
fill no missing result with a published number, fitted alternative, zero
  ↳ or interpolated point

```

Assertions verify implementation of the source unit and existing estimand. They are not empirical balance thresholds or new diagnostic studies. Runtime may not solve scientific ambiguities, regroup Atoms or choose a source branch. Resolution needs additional source-supported detail or separately authorized user extension, with a traceable amendment before dependent analysis. Such an extension is not currently authorized.

D8. Actual-result interface and local states

No actual-result file exists in this pre-data World. At runtime each Atom produces **results.csv**, **target-status.csv**, **interpretation.md** and the plot-ready outputs named in **figures.yaml**. CSV result key is **target_id,panel,series,x,statistic,term;retain outcome,estimand,sample_id,model_id,estimate,se,lower,upper,ci_method,df,unit,n,denominator,source_locator,status,reason,gap_ids**. Numeric values null for unavailable rows. Source tables may have no interval or SE by design; use explicit **uncertainty=not_in_source, not0**. Source-reported **F,p,baseline,N,pooledDID** and derived shares are separately keyed rows. **target-status.csv** records expected/available cells and exact non-estimate reason, never a success percentage used as evidence. **interpretation.md** cites actual row keys and distinguishes signed magnitude, uncertainty, subgroup contrasts and limitations. It must never infer a mediator from service utilization alone.

Local terminal states **evidence**, **partial**, **boundary** describe result coverage only: respectively all retained requested targets available; some available and some scientifically unavailable; no target estimable after a conclusive source/input boundary. The complete actual vector and source-qualified interpretation remain authoritative inside that state. **otherwise** is reserved for unresolved/inconclusive scope when a scientific disposition is possible; an operational failure is recorded separately and leaves the Atom pending, not done. Statistical imprecision is an actual estimate with its interval, not an unavailable target. No state denotes confirmed/refuted replication; mixed results stay mixed. All birth **atom_result** values remain prereg, with null strength/shape, empty evidence paths and no registered_state.

Figure input schemas are fixed output tables, not a new activation/control schema. Native activation is TRUE for every Atom; shared input construction entails no

dependence on another Atom’s scientific result. All target-specific gates are inside the consuming protocol. Molecule interpretation combines actual evidence vectors and restrictions using canonical grammar, never chooses execution from significance.

Identification and scope

The source question is fixed: the labor-market consequences of sudden first parental death and the health/family-support evidence discussed by Jensen and Zhang2026. The main design compares adults25–50 whose first parent dies suddenly1985–2014 with source-matched controls whose parents do not die during the comparison window. Matching, units, age/parent filters, fixed effects, clustering and actual event-time definitions are in data-contract.md and the Atom registrations. C01/A01/A02 prevent silently deciding disputed matching or normalization. No alternative design is added.

The source causal interpretation requires counterfactual labor trajectories of treated and matched controls to evolve similarly after the event, with sufficient overlap and no relevant anticipation of sudden loss. Predetermined matching variables are part of the source algorithm. Event-study pre-period estimates are presented as in the paper; there is no additional pretrend test or numerical acceptance threshold. Avoiding already-treated controls alone does not establish all DiD identification assumptions. Repeated controls retain the source person $\times$ match cluster; do not silently choose person-level clustering even where that seems attractive.

Source descriptive Eq1 estimates use no matched controls and remain descriptive. Population age-at-death distributions are conditional on the source event sample. Source service use and medication measures are proxies, not diagnoses or direct care hours. Childcare/proximity heterogeneity and post-event surviving-parent illness can reflect selection; they do not identify controlled direct effects or causal mediation. Joint onsets and source ratios are associational evidence. Parental wealth is not observed inheritance, and no null or small interaction proves absence of inheritance effects.

All source outcome modules and reported robustness are retained, but an unspecified model, matching vector, chronology, crosswalk or subgroup remains no-estimate. No new control, estimator, sensitivity battery, equivalence band, significance rule or power claim fills a source gap. The data boundary authorizes schema-only planning across531 tables; it does not establish runtime access, overlap, follow-up or identifying variation. Routine key/window/model-identification checks live inside consuming Atoms and add no new experimental unit.

The registered target_strength for matched effects denotes the source intended causal target conditional on its assumptions. It is not a realized empirical strength. Molecule interpretation must read actual estimates and uncertainty and restrict conclusions to available, source-determined outputs. No outcome is currently observed.

Governance of this source-faithful refresh

The user’s September 10, 2026 instruction authorizes a constrained Blueprint followed by the current Transcriber for the existing Parental Death replica. It supersedes the default replica topology for this invocation only and the earlier manuscript byte-freeze for meaning-preserving editorial/reference-code changes. It does not authorize

new science, an upstream debate, a source-choice resolution or modification of the baseline/prior revision.

The Atom files and Molecule file remain byte-identical to the sealed baseline, including original scientific protocols, all TRUE activation, result partitions and interpretation rules. Incorporated data definitions, identification, matching specification, source map, target inventory and source-conflict ledger are retained unchanged. Transcription can reorganize determined exposition and implement the source-supported algorithms, but cannot add treatments, outcomes, cohorts, subgroups, inference rules, comparisons or an empirically selected activation. All 63 RESULT names, 29 machine figure IDs and scientific I/O bindings remain fixed.

The [protocol/SAP](#) explains these commitments. The [Blueprint](#) and [result map](#) derive manuscript allocation and wording from them; they are not competing registration authorities. A contradictory paraphrase must be corrected to the native source commitments, not resolved by changing them. Retain unavailable/partial/operational-failure distinctions without relabelling them statistical nulls.

Source findings were known during preparation. No confidential rows or computed replication summaries were accessed. The authorized boundary is the complete 531-table FSV planning boundary, with no validated runtime tables. Missing fields, years, namespaces, mappings and original scientific choices remain explicit. Any future scientific resolution requires separate source-supported, disclosed authority, not a renderer flag or a synthetic fixture.

The Transcriber owns three coordinated engineering builders, synthetic tests outside delivery, complete in-place hypothetical previews and both fresh report builds/inspection. Reference code's mutable material bindings must be updated for current code/prose; scientific registration digests remain fixed. This World is not sealed and carries no inherited review acceptance or current-build claim. The host owns archive verification, replacement of only the Parental Death bundle and external publication.

Legacy native text contains `prereg/` locators and old engineering-review pointers. These are preserved to protect native bytes. Their current scientific counterparts are under `docs/protocol/`, `docs/replication/` and `docs/execution/`; the source review record remains internal. Portable locator resolution is an engineering task, not an instruction to ship historical verdicts or create a second top-level directory. Supporting filenames never become new scientific or Harness startup gates.

Source ambiguities, conflicts and unavailable targets

These are stop dispositions, not authorizations to repair or add science. E=source-explicit, T=meaning-preserving engineering, A=unresolved ambiguity, C=conflict, U=unavailable target/input. Only E/T authorize implementation. All rows below remain unresolved in this conversion. No paper/code preference is silently applied.

U01 — unavailable target input

Affected: All register analyses.

Source: Journal II; all cleaning programs; schema-evidence.md.

Missing decision: Historical extracts, common pseudonym namespace, field vintages and complete covered years have not been inspected. LMDb code uses PNR while current documentation exposes PNR12; early IDAN code uses IDANTYPE while current schema exposes TYPE.

Disposition: Obtain source-corresponding metadata and an authorized runtime field/link map. Do not equate differently named person keys or fabricate historical coverage. No affected estimate until verified.

U02 — unavailable target input

Affected: Education/matching; real earnings/wealth; psychology; 11-region geography.

Source: `clean_3`, `clean_6`, `clean_10`, `clean_11`; `set_globals`.

Missing decision: Missing `psychology_psychiatry.dta`, `inflation_factor_2020.dta`, `n_audd_level_1114_k.dta`, `n_audd_pria_111x_k.dta` and `c_komlan_v4_k.dta`, with their versions. The journal describes PRIS112 and 2020 prices but does not give the complete factor series.

Disposition: Stop each consuming derivation. Do not replace with guessed specialty, education, geography or inflation crosswalks. A checked equivalent supplied mapping is engineering only when it preserves every source category/value.

C01 — source-code conflict

Affected: All NN matched targets, including Table B.3 and spouse targets where shared construction is consumed.

Source: Journal III p1820 and `fn14`; `clean_15_matching.do` lines249–366.

Missing decision: Journal describes exact earnings and under-six groups and three-year earnings/employment matching. The code combines some earnings cells and young/childless/older-child cells into 34 groups; its distance list contains $t=-3$ earnings but no separate three annual employment indicators. The public sources do not identify which construction generated the journal results.

Disposition: Block NN sample-dependent estimates until the intended strata and history vector are established. Keep both descriptions in the audit; do not run two scientific variants or silently choose code.

A01 — unresolved source ambiguity

Affected: All matching-dependent targets.

Source: `clean_15` lines363–440; `clean_16`; `set_globals`; `do_all`.

Missing decision: Nearest-neighbor ties are reduced to `match_id1` following sorting and seed123456. Stata and `teffects/ado` versions are absent. Reused controls are relabelled with a finite duplicate-handling loop. Conflicting duplicate demographic/income rows have force/first-row rules without a stable full tie order.

Disposition: Require source software semantics and deterministic selected edges when a consequential tie/duplicate occurs. An isomorphic pair ID relabel is engineering; an altered match edge or tie selection is not. Stop affected targets if correspondence cannot be proved.

A02 — unresolved source ambiguity

Affected: Matched Eq2–4 estimates and source linear-controls robustness.

Source: Journal fn16 p1821; analysis_5 and consuming reghdfe calls.

Missing decision: The text illustrates equal effects for two ages and two years without fixing which constraints apply to each restricted sample; code absorbs age/year/person effects without those explicit constraints. The separate linear-age/year robustness has no complete program or output specification.

Disposition: An algebraic demonstration that treatment coefficients and their variance are invariant under the source normalizations may establish engineering equivalence. Until then retain the exact missing normalization; never add a selected constraint or linear model. The prose robustness is no-estimate.

A03 — unresolved source ambiguity

Affected: Eq3/4 post-period summaries and co-occurrence immediate-year ratios.

Source: Journal equations3/4: after death/five years; analysis_5 post=time>=0; Figure4 discussion; analysis_14.

Missing decision: Code includes event year0 through5 (six annual cells). Narrative uses after death/five years. Co-occurrence discussion says immediately following while code graphs a year0 spike.

Disposition: Event-time coordinates are explicit. Do not silently call six cells five years, or bind a prose ratio to year0 rather than1. Block ambiguous aggregate/ratio targets pending source clarification; dynamic targets are not blocked solely by this wording.

C02 — source-code conflict

Affected: Under-six rows in Table1, TableB1, TableB2, TableB3.

Source: Captions/row labels; analysis_2 and analysis_15 share_young construction.

Missing decision: Table labels say under6; code uses youngest age<=6.

Disposition: No estimate for this row until the age boundary is settled. Preserve other summary rows if their own dependencies are available.

C03 — source-code conflict

Affected: FigureB3 sudden-death age distribution.

Source: FigureB3 p9; analysis_2 histogram commands.

Missing decision: Non-sudden histogram uses parent age at death; sudden histogram uses first_death_age measured at t=-1.

Disposition: Block affected histogram comparison; do not shift one distribution by a year as a repair.

A04 — unresolved source ambiguity

Affected: FigureB1 and introductory91%/age shares; histogram endpoints.

Source: Journal p1811 and fn10; appendix B1/B3/B4; analysis_1/2.

Missing decision: B1 code forms cumulative age-at-first-death shares among deaths 1985–2014, not an age-specific population risk. The prose 91% at 19+ is not determined by plotted five-year bins alone. Histogram bin 26/default origins and suppression order lack a pinned Stata version.

Disposition: Use the source-defined conditional denominator for B1; explicitly describe it. Retain prose-only exact-age shares as unavailable if their exact denominator/year restriction cannot be determined. Do not read them from plotted bars or infer an age-specific death risk. Require source histogram algorithm/edges before reproducing bins.

C04 — source-code conflict

Affected: Figures B5/B23 percentage-scaled descriptive paths.

Source: Journal Eq1 and figure captions; analysis_3/4 prediction and collapse blocks.

Missing decision: Regressions are sex-specific but predict without an estimation-sample restriction and then collapse both sexes before relabelling sex. This differs from the sex-specific counterfactual denominator described by the paper.

Disposition: Block plotted relative paths until prediction population and denominator are determined. Unscaled fitted coefficients are retained as protocol detail, not substituted into the published percentage display.

C05 — source-code conflict

Affected: Dynamic Figures 4, B7, B12; Figure 6 and B15 model labels.

Source: Figures 4/B7/B12 captions cite Eq4 although panels and analysis_14/5 use Eq2 dynamics. Figure 6/B15 captions cite parent-type Eq4 while analysis_12 uses illness-by-treatment Eq3-style terms.

Missing decision: The caption and program cannot jointly specify the reported model.

Disposition: Keep exact displayed estimands and candidate source formulations in protocols; block conflicting figure coefficients rather than correcting equation citations silently.

A05 — unresolved source ambiguity

Affected: Psychiatrist consultations prose target; Table B3 psychiatry row.

Source: Journal fn22 p1825; clean_2/3; analysis_6/15.

Missing decision: Text refers to private psychiatrist consultations; code creates a combined private-plus-hospital psychiatry measure. The private-service crosswalk is missing, and the intended combined/private target cannot be fully established.

Disposition: Retain a no-estimate disposition for the unresolved consultation target. Do not substitute all psychiatric encounters.

C06 — source-code conflict

Affected: Figure 5; Figure B13 eligibility inherited from analysis 8.

Source: Journal V.B: with/without young children; analysis_8 lines18–21.

Missing decision: Code drops childless adults before classifying young/older children. The stated without-young group does not explicitly exclude childless adults.

Disposition: Block the affected earnings subgroup comparison pending eligibility clarification; do not invent a childless stratum or silently exclude it.

A06 — unresolved source ambiguity

Affected: FigureB14 childcare uptake.

Source: FigureB14 under5/above5 labels; V.B age0–5; clean_9; analysis_8 final childcare sections.

Missing decision: Code uses youngest ≤ 5 and older6–10 at event; wording under5 is inconsistent at age5. Exact youngest-child identity for ties can affect uptake. Source empties age-ineligible values then codes missing uptake0.

Disposition: Preserve source6–10 and0–5 as code evidence, but block disputed eligibility/ambiguous youngest-child identity. No guessed age5 rule, tie child or substitute childcare measure.

C07 — source-code conflict

Affected: Figure6,B15,B16 and eldercare interpretation.

Source: Journal V.C and Fig6; appendix B15/16; analysis_12 illness/calendar blocks.

Missing decision: Paper describes more than three months within five years; code flags any single annual hospital-days value ≥ 90 , includes t=0 in the post interval, and permits2019 although days end2018 then fills missing0. B16 does not specify whether its displayed illness split is the pre or post definition; code produces both.

Disposition: Block illness-stratified outputs until accumulation window, strictness, calendar end and B16 definition are determined. Never fill an unavailable hospital year with zero or add a repaired definition.

U03 — unavailable target specification

Affected: Mental-prescription effects by surviving-parent illness; inpatient-health rematching; own-health rematching; second-death restriction; linear controls.

Source: Journal pp1820–21 fn14–16; p1831 eldercare paragraph.

Missing decision: These are reported in prose without complete corresponding programs/output definitions. Missing: inpatient-only count/codes and lookback, exact rematching vector/combinations and years, which outcomes/specifications were rerun, and the precise linear-control formulation. The second-death-gap >5 restriction is stated, but rematching/reuse and the full output set are not.

Disposition: Inventory all claims, with no-estimate rows. Do not infer a sensitivity battery from one or more health variables. The supplied threshold >5 is preserved; missing design decisions remain unresolved.

C08 — source-code conflict

Affected: TableB4 parental wealth interactions.

Source: Appendix A.A/TableB4 p30; analysis_9 lines21–31,75.

Missing decision: Table labels parental wealth in1000DKK; clean_12 retains DKK and analysis_9 divides by10000. Pair-level max baseline wealth is not restricted to the treated member, potentially selecting control-side values.

Disposition: Block interaction coefficients and their interpretation pending unit and owner definition. No factor-ten coefficient repair or arbitrary selection of treated wealth.

U04 — unavailable target specification

Affected: Own assets, deceased-only assets, surviving-only assets interactions.

Source: Appendix A.A and fn29.

Missing decision: No consuming programs for three prose variants; timing/change-versus-level of own assets, scaling, interaction construction and estimators are not fully specified.

Disposition: Keep separate unavailable targets inside inheritance Atom. Do not invent own-wealth change or assign the main wealth specification to them.

C09 — source-code conflict

Affected: FigureB19 regional heterogeneity and displayed comparisons.

Source: Appendix B19 caption p25; analysis_10.

Missing decision: Caption says five regions, code uses11-region proximity. Group-specific models interact fixed effects with proximity while pooled gender-contrast models use a different FE structure; one displayed men p-value is assigned an F statistic in code.

Disposition: Block conflicting coefficients/contrasts pending geography and contrast-model correspondence. Do not switch to5 regions or repair the p-value assignment.

A07 — unresolved source ambiguity

Affected: TableB6 parent/child age heterogeneity.

Source: TableB6 p31; analysis_11 median splits.

Missing decision: Printed rows name70/38; code recalculates sample medians. The sources do not state whether printed cutpoints are fixed scientific bins or source-realized median labels.

Disposition: Retain cause and calendar strata as explicit. Block age-stratum targets pending fixed-versus-recomputed threshold clarification; no new cutpoints.

C10 — source-code conflict

Affected: FigureB21 future-treated comparison; FigureB22.

Source: Appendix A.F p5/B21/22; FN_clean; FN_analysis.

Missing decision: A.F example uses event window-3..5 while code uses-5..5. Cap-
tions cluster at individual level; code clusters person×stack. FN earnings code
winsorizes p5/p95 while main98% rule is p1/p99 and text says same specifications.

Disposition: Block affected FN targets until window, cluster and earnings tail
rules are determined. Employment has no winsor conflict but retains window/cluster
ambiguity. No alternative-estimator experiment.

A08 — unresolved source-code execution

Affected: FN targets.

Source: FN_clean_1_treatment_controls.do fertility block.

Missing decision: The program drops age_of_youngest after merging fertility and
subsequently references it. This is separate from the scientific window/cluster/winsor
conflicts.

Disposition: Do not execute or silently fix author code. The translated inde-
pendent earnings specification remains documented; do not infer a missing fertility
construction.

A09 — unresolved source ambiguity

Affected: FigureB18 spouse sample and comparisons.

Source: Appendix A.C/B18; clean_16; analysis_16.

Missing decision: Spouse matching includes own-parent population presence rather
than explicit survival, while prose says own parents alive; consecutive cohabitation
duration lacks an explicit chronological sort; duplicate event partners are force-
dropped. Separate spouse models absorb spouse age, whereas pooled gender tests use
bereaved partner age and extra parental variables.

Disposition: Block source-dependent spouse estimates/contrasts until matching,
tie/order and model consistency are determined. Do not equate presence with survival
or repair pooled controls.

A10 — unresolved source ambiguity

Affected: Occupation switching columns in TableB5.

Source: Appendix A.D/B5; analysis_13.

Missing decision: Code compares four-digit occupation with up to eight earlier
nonmissing records, but the within-person-match sort omits year. Source does not
supply a stable ordering or a DISCO transition crosswalk.

Disposition: Block order-dependent occupation switching; do not invent a last-year
rule or harmonization. Firm and sector targets remain separately retainable subject
to shared matching/input gates.

A11 — unresolved source ambiguity

Affected: Record-dependent targets involving simultaneous deaths, duplicate IDs,
missing outcomes or fractional ages.

Source: clean_6–8,11,13,15/16; source notes.

Missing decision: Code sometimes force-drops duplicates, assigns maternal first death on equal death dates and treats missing values as zero. Documentation cannot establish whether these cases occur or are genuine covered non-events.

Disposition: Retain each source rule and exact collision context. If a row has ambiguous identity or an unavailable register-year, stop the consuming target; do not impute or choose a new tie rule. Absence inside a verified complete source event register may follow the explicit source zero rule.

Resolved inspection questions, not source repairs

The final sudden-cause filter and final treated-age25–50 filter supersede broader intermediate construction by explicit author commands. Nonscreening hospital visits are explicitly overwritten by total-minus-screening in the consuming program. Stata unique abbreviations can explain TYPE/TYPE_2008 and formal_child_care/formal_child_care_old5; they are not automatically undefined-variable errors. The mistaken father-child gap in an intermediate field does not establish erroneous matching father age: matching uses father’s actual birthday, and balance code recalculates it. FN age is explicitly recomputed in its analysis. Rank is $100 \cdot (\text{rank} - 1) / (N - 1)$, verified against clean_11 line76. These checks prevent false conflict claims. No empirical execution was used.

Published rounding and point values are comparison targets only. Rebuilding every source target is currently underdetermined; a complete conversion preserves these boundaries rather than filling them. No scientific extension is authorized.

A04 additional exact display detail

analysis_1 labels the $\text{floor}(\text{age}/5)=8$ category40–45 although its coded ages are40–44. Preserve the printed label and record the disagreement; the affected bin target remains no-estimate until its intended boundary is established. No silent label repair is authorized. B1 cumulative numerator/denominator are calculated before the source<5 suppression. analysis_2 B3 explicitly sets width2; B4 sets26 bins. These specified parameters are retained, while source bin origins/edges and suppression/model correspondence remain gates.

Matching specification and unresolved correspondence

This is a transcription of source logic, not runnable author code and not permission to select code over journal. C01/A01/A02/A09 apply before scientific implementation. Main matching serves Atoms3–9/11; Atom10 constructs a separate spouse sample. Shared construction creates input dependencies, not a scientific-evidence dependency or an extra Atom.

Main source clean_15: candidate treated age25–55 initially, final25–50; final sudden codes24/25/26/29/46/47/49. Candidate controls receive pseudo D1985–2014, first parental death>D+5 or not observed, two known parent birthdays, both parents present all11 pseudo years, adult ages20–61 in source pool and pseudo-event age<=55, baseline t=-1 age>=24. Panel construction and final checks are in D1. For each D

and sex concatenate treated/controls, retain source eligible baseline history and use three annual earnings categories at $t=-3,-2,-1$. Each category is 0 unless both earnings >0 and ATP participation >0 ; otherwise pooled sex/year-specific positive-income tercile. Earnings category 0 thus need not literally mean zero earnings; this is another exact-stratum correspondence issue within C01.

Let r =earnings category at-2, c =category at-1. Rows/columns below are 0,1,2,3; entries are source group IDs. Young child at-1 means age <6 ; older 6–21; childless sentinel 22. These matrices document the literal code and are not authorized scientific alternatives to the journal exact-match statement.

Youngest category	Group matrix (rows r , columns c)
Young	[[1,2,3,3],[4,5,6,7],[8,8,9,10],[11,11,12,13]]
Childless	[[14,15,3,3],[16,17,18,19],[20,20,21,22],[11,11,23,24]]
Older	[[25,26,3,3],[27,28,29,19],[30,30,31,32],[11,11,33,34]]

Within sex,D,group, source teffects nnmatch uses Mahalanobis distance over categorical indicators for $t=-3$ earnings category; floor(adult age at-1/5); child count at-1; cohabitation,5-region,public,education at-1; youngest-age category floor(age/5) with 21- >5 , 22- >6 ; floor(parent age/5). Source parent-age matching fields are constructed from D minus parent birth year and therefore fixed over the prehistory; do not silently shift to $t=-1$ in code transcription. Missing region- >0 , education- >0 , public- >2 in match preparation; source arrays include extra variables/categories not consumed by the NN distance. Their presence is not permission to add them. SortPNR, source seed123456, retain first generated nearest-control index, handle reused controls with source matching/relabel logic. The matching call has a constant placeholder outcome 0; it is a device to request match indices, not a scientific outcome. Preserve one treated/control pair and 11-year records only after source correspondence of ties/duplicates is established. There is no new caliper, propensity model, exact-match repair, weight or balance threshold.

Spouse source clean_16 additionally requires spouse baseline age ≥ 24 (both treatment/control), main and spouse source histories, event-time partner and a full 11-row spouse window; it caps spouse children 5. Age bins use floor(age/3) for spouse and biological adult. Main/spouse annual earnings use two positive-income categories conditional ATP >0 ; otherwise 0. Source group matrices below use spouse earnings r at-2, c at-1 in 0,1,2. Different year blocks are retained because the source actually uses distinct coarsening. Nearest-distance vector uses main earnings at-1, main ATP at-1, main age bin, main education at-1; spouse earnings/ATP at-3, spouse public/age bin/education at-1, spouse own-father/mother-in-pop at-1, youngest-age category, cohabitation tenure at-1. All are categorical source terms. Sort spouse ID; retain source first matching edge. A09 prevents substituting own-parent death indicators or a newly sorted tenure algorithm.

Spouse source years 1985,1990–2009,2011–2014

- Childless: [[1, 2, 2], [3, 4, 5], [6, 6, 7]]

- Young: [[8, 9, 9], [10, 11, 12], [13, 13, 14]]
- Older: [[15, 16, 16], [17, 18, 19], [20, 20, 21]]

Spouse source years 1986–1989

- Childless: [[1, 2, 2], [3, 4, 5], [6, 6, 7]]
- Young: [[8, 9, 9], [10, 11, 12], [13, 13, 14]]
- Older: [[15, 15, 15], [16, 16, 16], [17, 17, 17]]

Spouse source years 2010

- Childless: [[1, 1, 1], [2, 3, 4], [5, 5, 6]]
- Young: [[7, 8, 8], [9, 10, 11], [12, 12, 13]]
- Older: [[14, 14, 14], [15, 15, 16], [17, 17, 17]]

These are source-explicit candidate algorithms. They remain behind the documented source-consistency gates; runtime may not choose a matrix or matching construction based on observed balance or results.

Published reference values, not replication results

These checked anchors identify the source displays and interpretation targets. They are not current estimates, sample-size assumptions, runtime tuning criteria or manuscript result-slot values. Every source target remains in target-inventory.md even when its printed value is not transcribed here. A later comparison may show source and actual values with their original units and printed rounding; no numerical pass/fail band is registered.

Source locator	Reference quantity	Published value	Role
Journal Table 1, p1819	Sudden-death observations	206,286	Source descriptive population count only
Journal Table 1, p1819	Non-sudden-death observations	528,057	Source descriptive population count only
Journal Table 1, p1819	Total observations	734,343	Source descriptive population count only
Supplement Table B3, p13	Treated and matched-control baseline counts	206,282 each	Source matching table count; not automatically equal to Table 1
Journal Figure 1D, p1823	Men, indexed-earnings pooled DiD (SE)	−1.509 (0.148)	Source figure annotation; post aggregation remains A03

Source locator	Reference quantity	Published value	Role
Journal Figure 1D, p1823	Women, indexed-earnings pooled DiD (SE)	−2.041 (0.171)	Source figure annotation; no assumed replication effect
Journal p1827	Joint onset / earnings-onset comparison, women / men	36% / 21%	Source prose ratios; event mapping remains A03
Journal fn25, p1827	Joint onset / mental-treatment-onset comparison, women / men	17% / 30%	Source prose ratios, no new ratio inference
Supplement Table B6, p31	Printed parent-age and adult-age splits	70 and 38 years	Published labels; fixed-versus-recomputed cutpoints remain A07

Source point estimates and uncertainty elsewhere in the paper/supplement are inventory targets at their exact locators. This reference note deliberately contains no actual-result CSV, Atom evidence path or filled replication slot. It is not a substitute for reading the source figure/table when a source comparison is eventually prepared.

Live retrieval and access log

Date2026-09-05 UTC. Queries were restricted to source identity/version, missing supplement/code inputs, and documentation semantics; no novelty search or scientific extension.

- **aea:** <https://www.aeaweb.org/articles?id=10.1257/aer.20240432>; 2026-09-05T11:55:08.873719+00:00; HTTP 200; final <https://www.aeaweb.org/articles?id=10.1257/aer.20240432>; SHA256 `f6a2bd250915d56b5c4a71e650c2d904dc08df5998672613c9c5502a4260bf9d`.
- **appendix:** https://www.aeaweb.org/doi/suppl/10.1257/aer.20240432/suppl_file/aer.20240432_app.pdf; 2026-09-05T11:55:08.759823+00:00; HTTP 404; final https://www.aeaweb.org/doi/suppl/10.1257/aer.20240432/suppl_file/aer.20240432_app.pdf; SHA256 `e55ff97d6642a9e0700c40fd5e398c463a3fafdee41d40ccaaa2600d7c1918a6`.
- **appendix_pubs:** https://pubs.aeaweb.org/doi/suppl/10.1257/aer.20240432/suppl_file/aer.20240432_app.pdf; 2026-09-05T11:55:08.583244+00:00; HTTP 403; final https://pubs.aeaweb.org/doi/suppl/10.1257/aer.20240432/suppl_file/aer.20240432_app.pdf; SHA256 `35877fbe8efa32fd4fadb9bce6336ca24d98b08dd100a511c787fe56c6d4269b`.

- **icpsr:** <https://www.openicpsr.org/openicpsr/project/239029/version/V1/view>; 2026-09-05T11:55:08.800461+00:00; HTTP 403; final <https://www.openicpsr.org/openicpsr/project/239029/version/V1/view>; SHA256 934c6500b3a6a5b2c33f143b753d7f9b37f6874f08353e7321b01f1a20c9a40e.
- **openalex:** <https://api.openalex.org/works/https://doi.org/10.1257/aer.20240432>; 2026-09-05T11:55:08.594267+00:00; HTTP 429; final <https://api.openalex.org/works/https://doi.org/10.1257/aer.20240432>; SHA256 ea277d2335bab904012158e3e1510fd3ff41415a8f5fca5ee845bd61e5006362.
- **pmc:** <https://eutils.ncbi.nlm.nih.gov/entrez/eutils/esearch.fcgi?db=pmc&term=10.1257%2Faer.20240432&retmode=json>; 2026-09-05T11:55:08.785626+00:00; HTTP 200; final <https://eutils.ncbi.nlm.nih.gov/entrez/eutils/esearch.fcgi?db=pmc&term=10.1257%2Faer.20240432&retmode=json>; SHA256 c15df2d63636aa4e802fce4cbda9485c478675a298d140db238eec2626befa39.
- **supplement:** <https://www.aeaweb.org/articles/materials/25093>; 2026-09-05T11:55:24.643363+00:00; HTTP 200; final <https://assets.aeaweb.org/asset-server/files/24591.pdf>; SHA256 7cebe88f0cdef5b8e8865d457f2abea64aad2691dbc8e9cf94f3faf5f1c51105.
- **live_article:** <https://www.aeaweb.org/articles/pdf/doi/10.1257/aer.20240432>; 2026-09-05T12:00:48.859935+00:00; HTTP 403; final <https://pubs.aeaweb.org/doi/pdfplus/10.1257/aer.20240432>; SHA256 fd08ca40dded0c6be5ac6e83c57c367c55cce330647d1fcf485be73505fcb47a.
- **datacite:** <https://api.datacite.org/doi/10.3886/E239029V1>; 2026-09-05T12:00:49.304564+00:00; HTTP 200; final <https://api.datacite.org/doi/10.3886/E239029V1>; SHA256 ef3ec3315320ecd55f2cfb155f13f4a2542aa7e3d890812ea7e0547d2b0e6123.
- **stata_abbrev:** <https://www.stata.com/manuals/pvarabbrev.pdf>; 2026-09-05T12:00:49.417259+00:00; HTTP 200; final <https://www.stata.com/manuals/pvarabbrev.pdf>; SHA256 6b6f79d301855ba67e1cd748465b204318c7cbcd5783aee6ff45f15a660a086b.
- **dst_BEf:** <https://www.dst.dk/extranet/ForskningVariabellister/BEf%20-%20Befolkningen.html>; 2026-09-05T12:01:17.463196+00:00; HTTP 200; final <https://www.dst.dk/extranet/ForskningVariabellister/BEf%20-%20Befolkningen.html>; SHA256 dd2fc8451d85f606d7280372da59f5f26644522803b9b63f1dbf14948e6308ac.
- **dst_LMDB:** <https://www.dst.dk/extranet/ForskningVariabellister/LMDB%20-%20Lægemiddeldatabasen.html>; 2026-09-05T12:01:17.472417+00:00; HTTP 200; final <https://www.dst.dk/extranet/ForskningVariabellister/LMDB%20-%20Lægemiddeldatabasen.html>; SHA256 fa642aef21574c8ab44a7aef2ff26a0a7af02674b0f63444baa2a72dfd5932b8.
- **dst_IDAN:** <https://www.dst.dk/extranet/ForskningVariabellister/IDAN%20-%20IDA%20ansættelser.html>; 2026-09-05T12:01:17.455189+00:00; HTTP 200; final <https://www.dst.dk/extranet/ForskningVariabellister/IDAN%20-%20IDA%20ansættelser.html>; SHA256 13b7b969b84a8a4cd89f20900f263dbff3fe14a36fea35617f8221b322fa1499.

- `dst_DODSAASG:` <https://www.dst.dk/extranet/ForskningVariabellister/DODSAASG%20-%20Dødsårsagsregister.html>; 2026-09-05T12:01:18.029250+00:00; HTTP 200; final <https://www.dst.dk/extranet/ForskningVariabellister/DODSAASG%20-%20D%C3%B8ds%C3%A5rsagsregister.html>; SHA256 46dd9d36c0cbc131f4d7e5c2450a793a71d2f466b979ab23562ec7b794156453.

Publisher AEA page and the supplied journal PDF identify 116(5), 1811–1836, May 2026 and DOI 10.1257/aer.20240432. The article links supplement material 25093, retrieved in full as 31 pages (asset 24591.pdf); title/authors correspond. AEA links replication DOI 10.3886/E239029V1; live DataCite metadata confirms title/authors, version v1 and collection years 1980–2021. The archive landing page returned 403, so individual remote code hashes and the missing auxiliary files were not verified. Local supplied-code hashes are verified against provenance; sibling code correspondence is supported by titles/calls/outputs but not certified as byte-identical to inaccessible archive v1. Live journal PDF endpoint returned 403; the supplied original PDF remains the full scientific source. These access limits do not authorize selecting older working-paper specifications.

OpenAlex exact DOI lookup returned 429 (budget exhausted); no OpenAlex full-text or novelty inference was made. PubMed Central ESearch exact DOI query returned 0 hits (metadata access; no PMC full text). Publisher full supplement retrieval succeeded. No claim that a failed index search proves absence of other materials is made.

Web queries: "10.1257/aer.20240432" appendix replication data; Jensen Zhang Effects of Parental Death on Labor Market Outcomes appendix 2026; "aer.20240432" "app"; exact title plus supplemental; "10.3886/E239029V1" replication code Jensen Zhang; exact title plus code; site.openicpsr.org 239029 Jensen Zhang; site.mathiasfjensen.com parental death replication. Results included AEA and older working-paper records; only AEA journal-linked materials were used scientifically. No accessible missing author-input bundle was found. Older decks/manuals/earlier replica drafts were not read or used.

Stata documentation lookup: site.stata.com "set varabbrev" "on"; official pvarabbrev.pdf supports variable-abbreviation semantics, only an engineering-language check. Official FSV variable URLs for BEF, LMDB, IDAN, DODSAASG were retrieved live 200, inspected narrowly for key/vintage fields; supplementary local schema pages supply remaining field evidence. Documentation is not proof of rows or identifying variation.

Field and historical coverage evidence

Read 2026-09-05; metadata only. Catalog layer FSV is planning evidence, not runtime availability. Selected field rows below are paraphrased from the relevant register pages, with exact field names and documented windows. Current table coverage is not the source extract vintage.

AKM

Repository locator: `resources/schema/data-registry-bolero/fsv/labour-income-and-wealth/AKM.md`. [Official variable documentation](#). Status register, 1976–2024, update frequency: Year.

Field	Documented window	Meaning
BESKST	1976–2001	Employment status 1980 to 2001 (Income/AKM)
BESKST13	1991–2024	Code for the person's main source of income (INDKOMST/AKM)
DISCO08_LOEN_INDK	2010–2024	Trade code for the principal employee occupation during the year. (AKM)
DISCO08_SEL_INDK	2010–2024	Trade code for work in own business (AKM)
DISCOLOEN_INDK	1991–2009	Trade code for the principal employee occupation during the year. (AKM)
DISCOSEL_INDK	1991–2009	Trade code for work in own business (AKM)
PNR	1976–2024	Personal identification number

Runtime obligation: verify source-compatible vintage, key namespace and required year coverage; retain U01/U02 if unresolved.

BEF

Repository locator: `resources/schema/data-registry-bolero/fsv/population-and-elections/BEF.md`. [Official variable documentation](#). Status register, 1985–2026, update frequency: Qtr.

Field	Documented window	Meaning
ALDER	198512–202606	Age at the reference date.
CIVST	198512–202606	Marital status
E_FAELLE_ID	198512–202606	E_fælle
FAR_ID	198512–202606	Father's person ID
FOED_DAG	198512–202606	Date of birth
KOEN	198512–202606	Sex
KOM	198512–202606	Municipality code

Field	Documented window	Meaning
MOR_ID	198512–202606	The mother’s person ID
PNR	198512–202606	Personal identification number
REG	198512–202606	Region

Runtime obligation: verify source-compatible vintage, key namespace and required year coverage; retain U01/U02 if unresolved.

BOERNFB

Repository locator: `resources/schema/data-registry-bolero/fsv/living-conditions/BOERNFB.md`. [Official variable documentation](#). Status period register, 2015–2021, update frequency: Closed.

Field	Documented window	Meaning
PNR	2015–2021	Personal identification number

Runtime obligation: verify source-compatible vintage, key namespace and required year coverage; retain U01/U02 if unresolved.

BOERNSB

Repository locator: `resources/schema/data-registry-bolero/fsv/living-conditions/BOERNSB.md`. [Official variable documentation](#). Status period register, 2015–2024, update frequency: Year.

Field	Documented window	Meaning
KOM	2015–2024	Municipality code
PNR	2015–2024	Personal identification number

Runtime obligation: verify source-compatible vintage, key namespace and required year coverage; retain U01/U02 if unresolved.

DAGI

Repository locator: `resources/schema/data-registry-bolero/fsv/living-conditions/DAGI.md`. [Official variable documentation](#). Status register, 1995–2014, update frequency: Closed.

Field	Documented window	Meaning
PNR	1995–2014	Personal identification number
YDELSE	1995–2014	Benefit

Runtime obligation: verify source-compatible vintage, key namespace and required year coverage; retain U01/U02 if unresolved.

DODSAARS

Repository locator: `resources/schema/data-registry-bolero/fsv/health/DODSAARS.md`. [Official variable documentation](#). Event register, 1970–2001, update frequency: Closed.

Field	Documented window	Meaning
C_LISTE_49	2001	C_LISTE_49
D_DODSDTO	2001	Date of death
PNR	2001	Personal identification number

Runtime obligation: verify source-compatible vintage, key namespace and required year coverage; retain U01/U02 if unresolved.

DODSAASG

Repository locator: `resources/schema/data-registry-bolero/fsv/health/DODSAASG.md`. [Official variable documentation](#). Event register, 2002–2022, update frequency: Closed.

Field	Documented window	Meaning
C_LISTE49	2022	Diagnosis group, the 49-item list
D_STATDATO	2022	D_STATDATO
PNR	2022	Personal identification number

Runtime obligation: verify source-compatible vintage, key namespace and required year coverage; retain U01/U02 if unresolved.

FAIN

Repository locator: `resources/schema/data-registry-bolero/fsv/population-and-elections/FAIN.md`. [Official variable documentation](#). Status register, 1980–2007, update frequency: Closed.

Field	Documented window	Meaning
AEGTEFAELLE_ID	1980–2007	Spouse Person Id
ALDER	1980–2007	Age at the reference date.
CIVST	1980–2007	Marital status
FAR_ID	1980–2007	Father's person ID
KOEN	1980–2007	Sex
KOM	1980–2007	Municipality code
MOR_ID	1980–2007	The mother's person ID
PNR	1980–2007	Personal identification number

Runtime obligation: verify source-compatible vintage, key namespace and required year coverage; retain U01/U02 if unresolved.

IDAN

Repository locator: `resources/schema/data-registry-bolero/fsv/labour-income-and-wealth/IDAN.md`. [Official variable documentation](#). Status register, 1980–2024, update frequency: Year.

Field	Documented window	Meaning
ARB_SEKTORKODE	2008–2024	Sector code of the workplace
KOM	1980–2024	Municipality code
LBNR	1980–2024	Workplace serial number
PNR	1980–2024	Personal identification number
TYPE	1980–2007	Type of employment relationship
TYPE_2008	2008–2024	Type of job

Runtime obligation: verify source-compatible vintage, key namespace and required year coverage; retain U01/U02 if unresolved.

IDAP

Repository locator: `resources/schema/data-registry-bolero/fsv/labour-income-and-wealth/IDAP.md`. [Official variable documentation](#). Status register, 1980–2024, update frequency: Year.

Field	Documented window	Meaning
ATPXX	1980–2024	ATP converted to B rate
PNR	1980–2024	Personal identification number

Runtime obligation: verify source-compatible vintage, key namespace and required year coverage; retain U01/U02 if unresolved.

IDAS

Repository locator: `resources/schema/data-registry-bolero/fsv/labour-income-and-wealth/IDAS.md`. [Official variable documentation](#). Status register, 1980–2023, update frequency: Year.

Field	Documented window	Meaning
EJERKO	1980–2007	Owner code (recoded)
KOM	1980–2024	Workplace municipality code
LBNR	1980–2024	Workplace serial number

Runtime obligation: verify source-compatible vintage, key namespace and required year coverage; retain U01/U02 if unresolved.

IND

Repository locator: `resources/schema/data-registry-bolero/fsv/labour-income-and-wealth/IND.md`. [Official variable documentation](#). Status period register, 1980–2024, update frequency: Year.

Field	Documented window	Meaning
BESKST	1980–2001	Employment status 1980 to 2001 (Income/AKM)
BESKST13	1980–2024	Code for the person's most important source of income (INDKOMST/AKM)
ERHVERVSINDK_13	1980–2024	Business income, wages and net profit from self-employment incl. certain fees
ERHVERVSINDK_GL	1980–2013	Business income, wages and net profit from self-employment
FORM	1980–1997	Tax-assessed value of net wealth at the end of the year, excl. pension wealth
FORMREST_NY05	1997–2024	Net residual wealth at the end of the year, excl. pension wealth
PNR	1980–2024	Personal identification number

Runtime obligation: verify source-compatible vintage, key namespace and required year coverage; retain U01/U02 if unresolved.

LMDB

Repository locator: `resources/schema/data-registry-bolero/fsv/health/LMDB.md`. [Official variable documentation](#). Event register, 1995–2025, update frequency: Half-year.

Field	Documented window	Meaning
ATC	199512–202512	ATC code, detailed (s)
EKSD	199512–202512	Processing date
KOM	199512–202512	Municipality code
PNR12	199512–202512	CPR number

Runtime obligation: verify source-compatible vintage, key namespace and required year coverage; retain U01/U02 if unresolved.

LPR__ADM

Repository locator: `resources/schema/data-registry-bolero/fsv/health/LPR_ADM.md`. [Official variable documentation](#). Event register, 1977–2019, update frequency: Closed.

Field	Documented window	Meaning
C_ADIAG	1977–2019	Principal diagnosis
D_INDDTO	1977–2019	Date of admission
D_UDDTO	1977–2019	Date of discharge
PNR	1977–2019	Personal identification number

Runtime obligation: verify source-compatible vintage, key namespace and required year coverage; retain U01/U02 if unresolved.

PSYK__ADM

Repository locator: `resources/schema/data-registry-bolero/fsv/health/PSYK_ADM.md`. [Official variable documentation](#). Spell/event-history (longitudinal) register, 1995–2019, update frequency: Closed.

Field	Documented window	Meaning
C_ADIAG	2019	Principal diagnosis
D_INDDTO	2019	Date of admission
D_UDDTO	2019	Date of discharge
PNR	2019	Personal identification number

Runtime obligation: verify source-compatible vintage, key namespace and required year coverage; retain U01/U02 if unresolved.

SSSY

Repository locator: `resources/schema/data-registry-bolero/fsv/living-conditions/SSSY.md`. [Official variable documentation](#). Status period register, 2005–2025, update frequency: Year.

Field	Documented window	Meaning
PNR	2005–2025	Personal identification number
SPECIALE	2005–2025	6-digit speciality
YDLANT	2005–2025	Number of services within the specialty

Runtime obligation: verify source-compatible vintage, key namespace and required year coverage; retain U01/U02 if unresolved.

SYSI

Repository locator: `resources/schema/data-registry-bolero/fsv/living-conditions/SYSI.md`. [Official variable documentation](#). Status period register, 1990–2005, update frequency: Closed.

Field	Documented window	Meaning
PNR	1990–2005	Personal identification number
SPECIALE	1990–2005	6-digit speciality
YDLANT	1990–2005	Number of services within the specialty

Runtime obligation: verify source-compatible vintage, key namespace and required year coverage; retain U01/U02 if unresolved.

UDDA

Repository locator: `resources/schema/data-registry-bolero/fsv/education-and-knowledge/UDDA.md`. [Official variable documentation](#). Status register, 1980–2025, update frequency: Year.

Field	Documented window	Meaning
HFAUDD	198012–202509	Highest completed education
HF_VFRA	198012–202509	Time of completion of the highest completed education
PNR	198012–202509	Personal identification number

Runtime obligation: verify source-compatible vintage, key namespace and required year coverage; retain U01/U02 if unresolved.

Consequential historical differences

BEF history27 March2020 describes backdated municipality/region replacement; UDDA history19 April2021 describes rerun/relabelled September snapshots; IDAN history24 September2018 describes TYPE_2008 and researcher prioritization after non-November type3 disappears; AKM history7 February2017 describes corrected employment/occupation variables; LMDB currently lists PNR12, not source PNR. LPR_ADM closes March2019; source hospital analyses stop2018. These facts motivate exact source-vintage gates, not new harmonizations. DODSAARS and DODSAASG variable rows list cumulative-extract years2001/2022; that does not prove record coverage or source2019 parity. No historical pilot/grant table boundary constrains this run.

Source-to-Atom audit map

Scientific source: Jensen and Zhang2026, American Economic Review116(5),1811–1836, DOI10.1257/aer.20240432; journal-linked31-page supplement. Supplied original26-page PDF, entire supplement and all36 author .do files were inspected. Code index provides immutable hashes/line counts; the provenance copy records supplied source identities. Journal text is scientific authority; disagreements with supplement/code stay unresolved. There is no independent scientific acceptance.

E: source-explicit rules; T: meaning-preserving translation; A/C/U: unresolved ambiguity/conflict/unavailable target. Atom protocol prose distinguishes these; deviations.md gives the exact stop decision. Native card syntax, IDs, output keys, safe figure layout, key-cardinality assertions and CSV interfaces are T, never added estimators.

Native display identities

The main figures retain native IDs **figure1–figure6**; supplementary B.1–B.23 use **figure7–figure29** in their original order to satisfy the native figure-ID grammar. Their source target identities **figure_b1–figure_b23** remain unchanged in this audit, the inventory, Atom outputs, result slots and renderer input checks. The roster’s **code** and **inputs** fields preserve these bindings. The complete display-to-source crosswalk and PDF output convention are in [figure-interface.md](#). This serialization repair is T (meaning-preserving engineering), not a new scientific choice or a resolution of any source disagreement.

Analysis modules and split rationale

atom-000001 — Bereavement population

This is the source population/comparability question, not a standalone technical linkage experiment. Distributions and related baseline tables belong together.

Question: What population and pre-death characteristics underlie the source comparison of sudden and non-sudden first parental death?

Source targets: `figure_b1`, `figure_b2`, `figure_b3`, `figure_b4`, `table1`, `table_b1`, `table_b2`, `prose_01`, `prose_02`.

Tables: BEF, FAIN, DODSAARS, DODSAASG, IND, IDAP, UDDA. Field/vintage evidence: `schema-evidence.md`. Exact unresolved choices: U01, U02, C02, C03, A04, A11.

atom-000002 — Descriptive event paths

Sudden and non-sudden paths answer the same uncontrolled event-time question; their external-validity comparison stays in one module.

Question: How do labor supply, earnings and mental-prescription use evolve around sudden and non-sudden first parental deaths in the source descriptive design?

Source targets: `figure_b5`, `figure_b23`, `prose_13`.

Tables: BEF, FAIN, DODSAARS, DODSAASG, IND, IDAP, UDDA, LMDB. Field/vintage evidence: `schema-evidence.md`. Exact unresolved choices: U01, U02, C04, A11.

atom-000003 — Matched labor effects

Main outcomes, parent/child gender contrasts, labor robustness and balance evidence assess one labor-market question. Balance is embedded in this consuming protocol. Figures are not separate experiments.

Question: What are the source matched-DiD effects of sudden first parental death on labor outcomes, including its reported heterogeneity and robustness?

Source targets: figure1, figure2, figure_b6, figure_b7, figure_b8, figure_b19, figure_b20, figure_b21, figure_b22, table_b3, table_b6, prose_03, prose_04, prose_05, prose_06.

Tables: BEF, FAIN, DODSAARS, DODSAASG, IND, IDAP, IDAN, IDAS, UDDA, SYSI, SSSY, LPR_ADM, PSYK_ADM, LMDB. Field/vintage evidence: schema-evidence.md. Exact unresolved choices: U01, U02, C01, A01, A02, A03, C02, C05, A05, U03, C09, A07, C10, A08, A11.

atom-000004 — Health service effects

Health outcomes form the distinct health question, separate from earnings and from co-occurrence. Related services and prescription panels remain in one analysis.

Question: How does parental loss affect the source health-service and prescription outcomes across parent and adult-child gender?

Source targets: figure3, figure_b9, figure_b10, figure_b11, prose_07.

Tables: BEF, FAIN, DODSAARS, DODSAASG, IND, IDAP, IDAN, IDAS, UDDA, LPR_ADM, PSYK_ADM, SYSI, SSSY, LMDB. Field/vintage evidence: schema-evidence.md. Exact unresolved choices: U01, U02, C01, A01, A02, A03, A05, A11.

atom-000005 — Health earnings cooccurrence

Joint onset evidence asks a distinct timing/mechanism question; its related health panels and conditional-share claims stay together.

Question: What source joint timing links earnings declines to the start of health treatment after parental death?

Source targets: figure4, figure_b12, prose_08.

Tables: BEF, FAIN, DODSAARS, DODSAASG, IND, IDAP, IDAN, IDAS, UDDA, LPR_ADM, SYSI, SSSY, LMDB. Field/vintage evidence: schema-evidence.md. Exact unresolved choices: U01, U02, C01, A01, A02, A03, C05, A11.

atom-000006 — Childcare support

Earnings contrasts and formal-care uptake jointly address loss of informal childcare; separate measures/panels are not separate experimental nodes.

Question: Does the source earnings response vary with young children, and does formal childcare use respond to parental loss?

Source targets: figure5, figure_b13, figure_b14.

Tables: BEF, FAIN, DODSAARS, DODSAASG, IND, IDAP, IDAN, IDAS, UDDA, DAGI, BOERNFB, BOERNSB. Field/vintage evidence: schema-evidence.md. Exact unresolved choices: U01, U02, C01, A01, A02, A03, C06, A06, A11.

atom-000007 — Surviving parent care

Post/pre illness contrasts, residence response and source mental-health comparison address the surviving-parent support question and stay within one module.

Question: How do source earnings and proximity responses vary with the surviving parent's health?

Source targets: figure6, figure_b15, figure_b16, prose_09, prose_14.

Tables: BEF, FAIN, DODSAARS, DODSAASG, IND, IDAP, IDAN, IDAS, UDDA, LPR_ADM, LMDB. Field/vintage evidence: schema-evidence.md. Exact unresolved choices: U01, U02, C01, A01, A02, A03, C05, C07, U03, A11.

atom-000008 — Inheritance channel

All parental/own-wealth variants address the inheritance question; they are retained together even when unavailable.

Question: Does the source relationship between pre-death family wealth and earnings responses support its inheritance explanation?

Source targets: table_b4, prose_10, prose_11, prose_12.

Tables: BEF, FAIN, DODSAARS, DODSAASG, IND, IDAP, IDAN, IDAS, UDDA. Field/vintage evidence: schema-evidence.md. Exact unresolved choices: U01, U02, C01, A01, A02, A03, C08, U04, A11.

atom-000009 — Family formation

Cohabitation and fertility are the source family-formation analysis, independently interpretable from labor/health effects.

Question: How does the source parental-death design affect cohabitation and number of children?

Source targets: figure_b17.

Tables: BEF, FAIN, DODSAARS, DODSAASG, IND, IDAP, IDAN, IDAS, UDDA. Field/vintage evidence: schema-evidence.md. Exact unresolved choices: U01, U02, C01, A01, A02, A03, A11.

atom-000010 — Spousal earnings

The spouse outcome and its separately matched population are an independent spillover question; sharing family links does not merge it with adult-child earnings.

Question: What are the source earnings spillovers to adult partners with young children after a first parent-in-law death?

Source targets: figure_b18.

Tables: BEF, FAIN, DODSAARS, DODSAASG, IND, IDAP, IDAN, IDAS, UDDA. Field/vintage evidence: schema-evidence.md. Exact unresolved choices: U01, U02, A01, A02, A03, A09, A11.

atom-000011 — Work choice responses

The three job-choice outcomes form the original preference-related module; routine occupational coding is part of this analysis, not another Atom.

Question: What does the source job-transition analysis show about occupational, firm and sector responses to parental death?

Source targets: table_b5.

Tables: BEF, FAIN, DODSAARS, DODSAASG, IND, IDAP, IDAN, IDAS, UDDA, AKM. Field/vintage evidence: schema-evidence.md. Exact unresolved choices: U01, U02, C01, A01, A02, A03, A10, A11.

Input versus evidence relationships

Population, family linkage, matching and outcome construction are reused inputs. They do not imply that one scientific result licenses another analysis. Every activation is TRUE, with data/source gates inside its own protocol; no outcome-selected execution. Population and descriptive Atoms are retained because they answer independent source questions, not because they validate a data join. Labor evidence is primary; health, joint timing and family-support evidence qualify its explanation. Inheritance, family formation, spouses and work choices retain their independently interpretable questions. Molecule rules require actual component coefficients, intervals and source-based limitations; a complete/partial label alone carries no scientific conclusion.

Fidelity limits

No analysis is repaired to make it executable. Global NN construction ambiguity can block the entire matched family of targets; local panel precision or input gaps remain visible separately. The author programs are not redistributed or executed. No observed sample sizes, estimates, confirmation threshold, power, new controls, significance tests or independent-review claims enter this World.

Source target inventory

Every main and available supplementary display is below in physical source order. Within displays preserve source panel/category/outcome order and every plotted coefficient, printed interval, baseline, N and comparison. Prose-only claims follow in a separate locator-ordered register. Module assignment is scientific; display order is presentational. All current results are unfilled. A target with unresolved decisions is retained with an explicit no-estimate disposition, not dropped.

Order / target	Source locator	Atom	Full target scope	Disposition
1. table1	Journal p1819, Table1	atom- 000001	Sudden/non-sudden baseline characteristics. 18 rows including N; sudden/non-sudden means and source t-test p; Atom1 lists exact row order.	Source-specified scaffold; execute only E/T portions after source/input gates. See module gaps; no current values.
2. figure1	Journal p1823, Figure1	atom- 000003	Labor outcomes by adult-child gender. A: Employment [Men, Women]; B: ATP conditional working [Men, Women]; C: Raw earnings [Men, Women]; D: Indexed earnings [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates.
3. figure2	Journal p1824, Figure2	atom- 000003	Earnings by parent and adult-child gender. A: Indexed earnings [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates.
4. figure3	Journal p1826, Figure3	atom- 000004	Health-service and prescription effects. A: Psychologist visits [Men, Women]; B: Any mental prescriptions [Men, Women]; C: Any opioid prescriptions [Men, Women]; D: Hospital visits [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates.
5. figure4	Journal p1828, Figure4	atom- 000005	Earnings decline and mental-treatment onset. A: Earnings decline of at least 5% [Men, Women]; B: Start of earnings decline [Men, Women]; C: Start of mental prescriptions [Men, Women]; D: Joint mental and earnings onsets [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates. Caption Eq4 versus dynamic code Eq2 remains C05.

Order / target	Source locator	Atom	Full target scope	Disposition
6. figure5	Journal p1829, Figure5	atom- 000006	Earnings by young-child status. Mother: Mother death [Men, Women]; Father: Father death [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates. Eligibility conflict C06 remains unresolved.
7. figure6	Journal p1831, Figure6	atom- 000007	Earnings by surviving-parent health. A: Surviving-parent health after death [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates. Illness definition, calendar coverage and model conflicts C05/C07.
8. figure_b1	Supplement p7, FigureB1	atom- 000001	Cumulative age distribution of first parental death. A: Age at first parental death [All first deaths]	Source-specified scaffold; execute only E/T portions after source/input gates. Source denominator is deaths1985– 2014, not an age-specific population risk; A04.
9. figure_b2	Supplement p8, FigureB2	atom- 000001	First-deceased parent gender. A: Parent gender by suddenness [Father, Mother]	Source-specified scaffold; execute only E/T portions after source/input gates.

Order / target	Source locator	Atom	Full target scope	Disposition
10. figure_b3	Supplement p9, FigureB3	atom- 000001	First-deceased parent age distribution. A: Parent age at first death [Non-sudden, Sudden]	Source-specified scaffold; execute only E/T portions after source/input gates. Source age variable mismatch C03; exact bins A04.
11. figure_b4	Supplement p9, FigureB4	atom- 000001	Adult-child age distribution at first parental death. A: Adult age at first death [Non-sudden, Sudden]	Source-specified scaffold; execute only E/T portions after source/input gates. Exact source histogram edges required; A04.
12. figure_b5	Supplement p10, FigureB5	atom- 000002	Descriptive sudden-death paths. A: Employment [Men, Women]; B: ATP conditional working [Men, Women]; C: Raw earnings [Men, Women]; D: Any mental prescriptions [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates. Prediction denominator C04.
13. table_b1	Supplement p11, TableB1	atom- 000001	Characteristics by parent gender and suddenness. Same18 rows; mother sudden/non-sudden, father sudden/non-sudden.	Source-specified scaffold; execute only E/T portions after source/input gates. See module gaps; no current values.
14. table_b2	Supplement p12, TableB2	atom- 000001	Sudden-death characteristics by both genders. Same18 rows; mother-daughters,father- daughters,mother-sons, father-sons.	Source-specified scaffold; execute only E/T portions after source/input gates. See module gaps; no current values.

Order / target	Source locator	Atom	Full target scope	Disposition
15. table_b3	Supplement p13, TableB3	atom- 000003	Matched baseline characteristics. A targeted16 rows, B non-targeted9 rows, N; treatment/control. Exact rows in Atom3.	Source-specified scaffold; execute only E/T portions after source/input gates. See module gaps; no current values.
16. figure_b6	Supplement p14, FigureB6	atom- 000003	Unconditional and conditional ATP margins. A: ATP including zeros [Men, Women]; B: ATP conditional working [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates.
17. figure_b7	Supplement p15, FigureB7	atom- 000003	Dynamic labor effects by parent gender. A_Mother: A. Employment: mother [Men, Women]; A_Father: A. Employment: father [Men, Women]; B_Mother: B. ATP conditional working: mother [Men, Women]; B_Father: B. ATP conditional working: father [Men, Women]; C_Mother: C. Raw earnings: mother [Men, Women]; C_Father: C. Raw earnings: father [Men, Women]; D_Mother: D. Indexed earnings: mother [Men, Women]; D_Father: D. Indexed earnings: father [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates. Caption Eq4 versus source Eq2 dynamic coefficients; C05.

Order / target	Source locator	Atom	Full target scope	Disposition
18. figure_b8	Supplement p16, FigureB8	atom- 000003	Annual earnings percentile ranks. A: Earnings rank [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates.
19. figure_b9	Supplement p16, FigureB9	atom- 000004	Alcohol-treatment prescriptions and GP visits. A: Alcohol prescriptions [Men, Women]; B: GP visits [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates.
20. figure_b10	Supplement p17, FigureB10	atom- 000004	Dynamic health effects by parent gender. A_Mother: A. Psychologist visits: mother [Men, Women]; A_Father: A. Psychologist visits: father [Men, Women]; B_Mother: B. Any mental prescriptions: mother [Men, Women]; B_Father: B. Any mental prescriptions: father [Men, Women]; C_Mother: C. Any opioid prescriptions: mother [Men, Women]; C_Father: C. Any opioid prescriptions: father [Men, Women]; D_Mother: D. Hospital visits: mother [Men, Women]; D_Father: D. Hospital visits: father [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates.
21. figure_b11	Supplement p18, FigureB11	atom- 000004	Screening and nonscreening hospital visits. A: Screening [Men, Women]; B: Nonscreening [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates.

Order / target	Source locator	Atom	Full target scope	Disposition
22. figure_b12	Supplement p19, FigureB12	atom- 000005	Additional health and earnings co-occurrence. A: Psychologist onset [Men, Women]; B: Joint psychologist/earnings onset [Men, Women]; C: Opioid onset [Men, Women]; D: Joint opioid/earnings onset [Men, Women]; E: Hospital visits [Men, Women]; F: Hospital visits $\times$ earnings onset [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates. PanelF is hospital count times earnings-decline onset; caption/model conflict C05 remains.
23. figure_b13	Supplement p20, FigureB13	atom- 000006	Earnings by youngest-child age. Mother: Mother death [Men, Women]; Father: Father death [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates.
24. figure_b14	Supplement p21, FigureB14	atom- 000006	Formal childcare uptake. A: Young-child enrollment [Men, Women]; B: Older-child enrollment [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates. Source labels under5/above5, code $\leq$ 5 and6–10; A06.
25. figure_b15	Supplement p22, FigureB15	atom- 000007	Earnings by surviving-parent prior health. A: Surviving-parent health before death [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates. C05/C07.

Order / target	Source locator	Atom	Full target scope	Disposition
26. figure_b16	Supplement p22, FigureB16	atom- 000007	Residence near surviving parent. A: Same 11-region as surviving parent [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates. Pre/post illness assignment unresolved C07.
27. figure_b17	Supplement p23, FigureB17	atom- 000009	Cohabitation and number of children. A: Cohabitation [Men, Women]; B: Number of children [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates.
28. figure_b18	Supplement p24, FigureB18	atom- 000010	Parent-in-law earnings effects. A: Spouse earnings with young children [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates. Spouse matching and contrast ambiguities A09.
29. figure_b19	Supplement p25, FigureB19	atom- 000003	Earnings by baseline parent proximity. A: Baseline parent/child region [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates. Source caption5 regions versus code11; C09.
30. figure_b20	Supplement p26, FigureB20	atom- 000003	Earnings by four proximity categories. Men: Men [Estimate]; Women: Women [Estimate]	Source-specified scaffold; execute only E/T portions after source/input gates.

Order / target	Source locator	Atom	Full target scope	Disposition
31. figure_b21	Supplement p27, FigureB21	atom- 000003	Matched and future- treated control designs. A: Employment: men [NN, Future-treated]; B: Employment: women [NN, Future-treated]; C: Earnings: men [NN, Future-treated]; D: Earnings: women [NN, Future-treated]	Source-specified scaffold; execute only E/T portions after source/input gates. C10 blocks future-treated window, cluster and earnings tail choices.
32. figure_b22	Supplement p28, FigureB22	atom- 000003	Future-treated earnings by parent gender. A: Indexed earnings [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates. C10.
33. figure_b23	Supplement p29, FigureB23	atom- 000002	Descriptive non-sudden-death paths. A: Employment [Men, Women]; B: ATP conditional working [Men, Women]; C: Raw earnings [Men, Women]; D: Any mental prescriptions [Men, Women]	Source-specified scaffold; execute only E/T portions after source/input gates. Prediction denominator C04.
34. table_b4	Supplement p30, TableB4	atom- 000008	Parental wealth interactions. 4 parent/child-gender columns; wealth interaction, treatment, SE, N, control means both sexes.	Source-specified scaffold; execute only E/T portions after source/input gates. See module gaps; no current values.
35. table_b5	Supplement p30, TableB5	atom- 000011	Occupation, firm and sector. 6 columns: occu- pation men/women,firm men/women,public conditional employment men/women; coefficient/SE,N,premean.	Source-specified scaffold; execute only E/T portions after source/input gates. See module gaps; no current values.

Order / target	Source locator	Atom	Full target scope	Disposition
36. table__b6	Supplement p31, TableB6	atom- 000003	Labor heterogeneity. 8 columns: cause, parent age, adult age, period, each by sex; all source categories, coefficient/SE,N.	Source-specified scaffold; execute only E/T portions after source/input gates. See module gaps; no current values.

Prose-only and contextual targets

These are retained separately rather than assigning numeric claims to an unrelated figure. Restatements in abstract/introduction/conclusion bind to the same display rows; they are not additional experiments.

Target	Locator	Atom	Claim scope	No- estimate/interpretation boundary
prose_01	Journal p1811, FigureB1 reference	atom-000001	Share first bereaved at19+	A04; exact source denominator and threshold extraction unresolved.
prose_02	Journal II.C pp1818–19	atom-000001	Sudden share and age25– 50/<25/>50 population shares	Source prose and matching population denominator; do not assume published shares in runtime.
prose_03	Journal fn14 p1820	atom-000003	Rematching with parental inpatient hospital history	U03; missing inpatient defini- tion/lookback/matching recipe/output set.

Target	Locator	Atom	Claim scope	No-estimate/interpretation boundary
prose_04	Journal fn14 p1820	atom-000003	Second parental death gap>5 and robustness	U03; published91% is reference only; reuse/rematching and full outcome set absent.
prose_05	Journal fn15 p1821	atom-000003	1995+ own/parent health rematching variants	U03; exact one-or-more variable combinations/output set absent.
prose_06	Journal fn16 p1821	atom-000003	Linear age/year robustness	U03/A02; precise source formulation absent.
prose_07	Journal fn22 p1825	atom-000004	Private psychiatrist consultations	A05/U02; combined/private target and crosswalk unresolved.
prose_08	Journal health co-occurrence pp1827–28	atom-000005	Four immediate-year conditional-share comparisons	A03; joint/earnings-onset and joint/mental-onset ratios by sex; year0/1 and denominator availability.
prose_09	Journal V.C p1831	atom-000007	Mental prescriptions by surviving-parent illness	U03/C07; no full source model/program; no-estimate.
prose_10	Supplement A.A p1	atom-000008	Own-asset interaction	U04; timing, scale, level/change and model unresolved.

Target	Locator	Atom	Claim scope	No-estimate/interpretation boundary
prose_11	Supplement A.A fn29 p1	atom-000008	Deceased-parent-only wealth	U04; exact specification absent.
prose_12	Supplement A.A fn29 p1	atom-000008	Surviving-parent-only wealth	U04; exact specification absent.
prose_13	Supplement A.G pp5–6	atom-000002	International generalization/bound argument	Not rebuilt: lower conceptual source discussion, no international analysis in the source; do not invent a test.
prose_14	Journal V.C pp1830–31	atom-000007	Surviving-parent illness share	C07;20%/80% are public reference values, not current subgroup sizes.

Source-code-only material not rebuilt

Source programs also calculate additional transformations (log/IHS earnings or ATP), six/ten income bins unused in final matching, part-time/full-time young-mother outcomes, extra hospital-onset/doubling and joint-any-decline series, nonsource psychiatric aggregates, FN parent-specific employment, and some unpublished joint significance tests. These are not main/supplement targets and do not authorize added analyses. They are retained here as explicit not-rebuilt code outputs, mapped to their consuming labor/health/co-occurrence/childcare modules for audit only. The source program also produces intermediate files and graphs that are not independent scientific targets. No historical deck is an authority for adding them.

Completeness rule

No target-count goal determines the11-Atom grouping. Table1 plus TablesB1–B6 =7 tables; Figures1–6 plusB1–B23 =29 figures. All display targets and14 prose/context target groups have registered membership/disposition. Display targets expand to all coefficients/rows through the Atom protocols and figure interfaces, not only one headline estimate. Printed numbers are never actual-result rows.

Execution supplement

Reference execution interface

This current implementation provides all eleven fixed Atom entry points, with shared bounded DuckDB preparation and the retained source-gated numerical models. All empirical result slots remain pending. Synthetic execution demonstrates engineering only: Atom 1 supports partial population/summary outputs, while unresolved original specifications prevent unique estimates for the other dispatched modules. Their independently supported preparation still runs and their result vectors carry explicit source boundaries.

Native registration identity, source conflicts, cohort/clock/inference definitions and output keys are unchanged. Original author programs remain under `docs/sources/author-code/`. The current material lock and execution manifest bind this implementation; they are not a host seal or scientific acceptance. See [protocol/SAP, computational specification](#) and [actual validation limits](#).

Entry point and environment

Use an explicitly selected Python from the actual runtime image:

```
PD_PY=/absolute/path/to/runtime/python
PD_WORLD=/absolute/path/to/world
PD_ACTION=/absolute/path/to/writable/copied/execution
PD_INPUTS=/absolute/path/to/manifests
PD_OUTPUT=/absolute/path/to/new/output/root
"$PD_PY" "$PD_ACTION/run.py" --help
"$PD_PY" "$PD_ACTION/run.py" --atom atom-000001 --world "$PD_WORLD" --inputs
↳ "$PD_INPUTS/atom-000001.json" --output "$PD_OUTPUT/atom-000001"
↳ --dispatch-policy activation_respecting
```

Copy the complete execution directory, including `frozen-identity.json`, to the action directory. The World may be read-only. Every output directory must be empty/new, outside and not containing the World. No module writes to a canonical Atom, manuscript slot, original source or register input. Python bytecode output is disabled by both entry points.

For governed execution use the independent launcher in the trusted, read-only World:

```
"$PD_PY" "$PD_WORLD/docs/engineering/launch.py" --action "$PD_ACTION" --world
↳ "$PD_WORLD" --atom atom-000001 --inputs "$PD_INPUTS/atom-000001.json"
↳ --output "$PD_OUTPUT/atom-000001"
```

Substitute the Atom ID and its manifest/output in this launcher for every per-Atom command below. `--entry run_tests.py` runs the synthetic suite through the same verification. The World-side `docs/engineering/execution-manifest.json` pins every execution file, including the adjacent scientific lock, CLI, tests and this README; it is separate from immutable scientific registration. The launcher checks the copied bytes **before importing any action code**, including `run.py`. Direct

`run.py` also checks before analysis imports, but an arbitrarily replaced `run.py` cannot authenticate itself. The trust root is the protected World launcher/manifest supplied by the operator/controller, not a copied adjacent lock or a receipt's own checksum. The manifest is an author candidate for review, not an assertion of independent acceptance. Do not regenerate it at runtime. Python/library environment and exclusive control of the action while importing remain operator obligations. Action bytecode caches and symlinked source files are rejected.

The tested preparation engine is DuckDB 1.5.5 in the internal run environment. Install dependencies from `requirements.txt` in the intended image; no dependency installation or register data is delivered. NumPy, pandas, SciPy and PyYAML support reduced model/output tables; tests also use statsmodels, Matplotlib and PyArrow. Stata/source-ado and production-image correspondence remain untested. Runtime versions and allocation must be recorded in that environment.

Assign a whole-lane budget before launching. During this refresh the planned shares were experiment 12 CPUs/24 GiB process RAM (16 GiB engine), visual 4 CPUs/6 GiB, paper 2 CPUs/4 GiB, integration 4 CPUs/8 GiB: 22 CPUs and 42 GiB total, below the 64-CPU lane ceiling and 48 detected host CPUs. Actual SQL tests used four threads and a 2 GB engine limit; BLAS used one thread. DuckDB's engine limit is not a cap on all Python/RSS allocations.

```
export PD_THREADS=4
export PD_MEMORY_LIMIT=2GB
export PD_SCRATCH=/absolute/governed/scratch
export PD_SCRATCH_LIMIT=8GB
export PD_MAX_MODEL_ROWS=2000000
export PD_DENSE_MAX_BYTES=536870912
export OPENBLAS_NUM_THREADS=1
export OMP_NUM_THREADS=1
```

These are explicit engineering limits, not scientific thresholds. Exceeding a collection/dense allocation limit is an operational failure; it never selects a smaller sample or produces a statistical null. Source CSV/Parquet projections occur inside DuckDB; source-valid BEF/FAIN year filters precede normalized materialization. DTA conversion uses projected 100,000-row chunks. Annual metadata checks and streamed content authentication remain separate necessary reads. The raw corpus is not concatenated in pandas. Only selected model tables and small aggregates cross that boundary; B1 collects thirteen age-bin summaries. Full population earnings ranks and ATP caps are computed before narrowing to consuming cohorts.

For several Atoms, use `batch.py` with `--jobs` pointing to a JSON object mapping Atom IDs to their separate scope-valid manifest paths. The trusted launcher accepts `--entry batch.py`. It shares one bounded engine and content/mapping-keyed preparation cache across sequential Atoms. Repeated source fragments and identical population/death/cohort/labor/encounter products are reused; scientific receipts and activation inputs are never inferred from that cache. The all-eleven synthetic batch scanned each of the 18 supplied fragments once and produced the same result/status vectors as separate dispatch. Inputs must remain immutable during a batch. Different mappings, coverage, source versions and namespaces obtain distinct identities.

`construction.*_oracle` and the older pandas population/death helpers are retained only as small semantic oracles. They are not used for national register preparation by the actual entry points. Dense numerical kernels have a pre-allocation memory guard; unresolved source matching and reghdfe inference remain explicit boundaries, not a reason to run national-size dummy matrices.

The retained launcher additionally rejects **all symlink entries**, including directories and dangling links, special files, `.pyc` files and `__pycache__` directories (even empty). A set `PYTHONPYCACHEPREFIX` or `sys.pycache_prefix` (including `-X pycache_prefix=...`) is rejected before action imports. Remove that setting in the governed launch environment; `-B` alone disables only cache writes and is insufficient. The World launcher is loaded directly from its protected source bytes. The code-identity walk enforces the same rules. Both CLI help paths avoid action imports and require no data. Missing/unreadable trusted launch material produces a sanitized `rc=2` operational failure, never a scientific result.

Run the complete synthetic suite with a new absolute scratch destination:

```
"$PD_PY" "$PD_ACTION/run_tests.py" --world "$PD_WORLD" --output
↪ /absolute/scratch/new-parental-death-test
```

The test fixture seed is 271828. Other fixed seeds in tests specify numerical oracle fixtures only. The original matching seed 123456 is recorded in the source audit; no Python tie-breaking algorithm replaces it.

Explicit runtime input manifest

`--inputs` is one JSON file, not a data directory. Required top-level keys are `kind` (synthetic or governed), `registration_id` and `tables`. Optional keys are `dictionaries` and `evidence`. Unknown options, including scientific override/resolution flags, are rejected. The frozen registration identity is:

```
4116339700f6aeac0c7cb1961b8e90dee01325fcdabfe63599a2d930a2fc436a
```

Each table value is an entry or a list of source-vintage fragments. For example, this is a **format illustration**, not an assertion of available data:

```
{
  "kind": "governed",
  "registration_id":
    ↪ "4116339700f6aeac0c7cb1961b8e90dee01325fcdabfe63599a2d930a2fc436a",
  "tables": {
    "BEF": {
      "path": "/explicit/runtime/extract.csv",
      "sha256": "<64 lowercase hexadecimal characters>",
      "vintage": "<actual extract version>",
      "source_locator": "<exact authoritative extract/schema locator>",
      "namespace": "<authenticated common person namespace>",
      "correspondence": "<documented source field/key and vintage
        ↪ correspondence>",
      "fields": {"PNR": "physical_person", "MOR_ID": "physical_mother",
        ↪ "FAR_ID": "physical_father", "FOED_DAG": "physical_birth", "KOEN":
        ↪ "physical_sex"},
    }
```

```

    "reference": {"year_field": "physical_year", "quarter_field":
        → "physical_reference_month"},
    "years": [1985],
    "complete_years": [1985],
    "date_formats": {"FOED_DAG": "%Y-%m-%d"}
  }
},
"ictionaries": {},
"evidence": []
}

```

Supply the actual required years; this one-year illustration cannot run the cohort. Annual references use `year_field` or a fixed `year`; population snapshots use `quarter_field` or fixed `quarter` with source month codes 3/6/9/12 (default 12 for annual source files). FAIN's reference year is shifted minus one in construction, never in a second adapter. Death, hospital and UDDA event years come from their explicit dates. `years` identifies extract/reference years; `complete_years` asserts covered event/observation years, which can differ for cumulative extracts. Missing complete coverage blocks the affected construction. Empty covered event cells can be zero; absent/unverified years cannot.

Physical field maps are injective, explicit and limited to the logical names below. CSV reads preserve identifier/code strings and leading zeros; empty strings become missing. Dates require explicit formats unless already typed by DTA/Parquet. Numeric fields are converted explicitly. Differently named person keys require an authenticated governed crosswalk before this adapter; renaming PNR12 to PNR does not establish correspondence. The code checks matching namespace declarations and content hashes, not the truth of an access authorization or metadata assertion.

Every mapped logical field outside `contracts.NUMERIC` and `contracts.DATES` must contain strings or missing values in all formats; the loader normalizes these to pandas string dtype. Numeric codes/IDs in DTA/Parquet are rejected, since leading zeros and original representations cannot be recovered safely. A source-backed lossless format adapter must supply strings explicitly and record that correspondence. No numeric-to-string or zero-padding guess is performed here. Dictionary code columns obey the same rule; documented numeric dictionary keys/values are explicitly converted. Blank strings normalize to missing across all three formats.

Dictionary entries need absolute `path`, `sha256`, `vintage` and exact `source_locator`. Their CSV column names are fixed:

Dictionary key	Required columns / source meaning
inflation	year, inflation_factor_2020; missing author factor series, clean_11/12
education_level	HFAUDD, AUDD_LEVEL_L1L4_K; source DISCED level crosswalk, clean_10

Dictionary key	Required columns / source meaning
education_months	HFAUDD, AUDD_PRIA_L1LX_K; source months crosswalk, clean_10; accepted for future source-established matching, not currently consumed
psychology	SPECIALE, psychology_dum, psychiatry_dum; exact author private-service mapping, clean_3
region11	KOM, KOMLAN_V4_K; source 11-region crosswalk; final geography models blocked
old_region	KOM, REG; checked source old-municipality mapping; final geography models blocked

The three dictionaries generated by `fixtures.make_inputs` contain **invented test-only values**, clearly labelled synthetic. They are never defaults for governed execution. No original scientific conflict is resolved by a manifest. Under frozen governance, establishing a new matching/prediction/model choice requires traceable source clarification before dependent analysis; this invocation does not authorize such an amendment.

Input field provenance

All names derive from [data contract D1–D5](#), [schema evidence](#), and the exact public cleaning programs indexed in [source map](#). These are the existing registered tables; the implementation imports no table whitelist from another study.

Tables	Source fields consumed or bound	Construction / source years
BEF, FAIN	PNR, MOR_ID, FAR_ID, KOEN, ALDER, E_FAELLE_ID, CIVST, KOM, REG; BEF FOED_DAG	clean_6/7/13/14; FAIN1981–85 becomes1980–84; BEF1985–2020, annual panel ends2019. Actual FAIN spouse alias AEGTEFAELLE_ID requires explicit correspondence.

Tables	Source fields consumed or bound	Construction / source years
DODSAARS, DODSAASG	PNR; C_LISTE_49,D_DODSDT and C_LISTE49,D_STATDAT	clean_8; source cumulative2001/2019, death coverage1970– 2001/2001–2019; final
IND	respectively; optional source C_SEX PNR, ERHVERVSINDK_GL, ERHVERVSINDK_13, FORM, FORMREST_NY05	sudden codes24,25,26,29,46,47,49 clean_11/12; income GL through1986 then13; wealth FORM1984–97 then FORMREST_NY05
IDAP	PNR, ATPXX, source ATP_AAR alias	clean_11;1980–2019; neg- ative/missing0,1980/81 correction1167/432, annualp99
IDAN, IDAS	PNR,TYPE,TYPE_ 2008,LBNR,ARB_ SEKTORKODE, SMALT_LOEN_ BELOEB; LBNR,EJERKO	clean_11; early job/owner1980–2007, late jobs2008–2019; source early type aliases explicitly mapped, no inferred late LBNR
AKM	PNR,BESKST, BESKST13, DISCOLOEN_INDK, DISCOSEL_INDK, DISCO08_LOEN_ INDK,DISCO08_SEL_ INDK	clean_11; self-employment status vintage changes1991, DISCO changes2010; occupations start1991
UDDA	PNR,HFAUDD,HF_VFRA	clean_10; latest completion in year, carry forward; level mapping required
LPR_ADM, PSYK_ADM	PNR,C_ADIAG,D_INDDT and D_INDDT	clean_11/2019; unions and admission- year counts;1980–2018 and1995–2018
SYSL, SSSY	PNR,SPECIALE,YDLANT	clean_3/4;1990–2005 and2006–2020; GP exact22 codes; private-service mapping required

Tables	Source fields consumed or bound	Construction / source years
LMDB	PNR,ATC plus explicit extract year	clean_5;1995–2021 source extraction, consuming windows narrower; current PNR12 correspondence unresolved until supplied
DAGI, BOERNFB, BOERNBSB	PNR,YDELSE for DAGI; child PNR and year for latter two	clean_9;1995–2014 /2015–2020; final childcare window2005– 2019 remains inside source gate

All tables supplied in a particular manifest must belong to that Atom’s exact **registration.tables**, even if another Atom permits them. Input tables can be omitted to obtain component-specific boundaries. Optional missing education, health or inflation never erases independent population/ATP results.

Common output and numerical interfaces

Every dispatched Atom writes **results.csv**, **target-status.csv**, **local-construction.csv**, **interpretation.md** and **receipt.json**. Each owned figure also writes **<source-target>-effects.csv** and **<source-target>-annotations.csv**, including header-only annotation tables where none are registered. No raw identifiers or register rows are exported.

The result key is **target_id,panel,series,x,statistic,term**; remaining columns are **outcome,estimand,sample_id,model_id,estimate,se,lower,upper,ci_method,df,unit,n,denominator,source_locator,status,reason,gap_ids,uncertainty,bin_left,bin_right**. Unavailable/pending rows have null numeric fields. Tables retain source mean/SE/p/N cells only; no source-absent intervals or tests are invented. Figure units, series, categories and event coordinates come from literal frozen renderer CONFIGs. Histogram geometry stays unresolved rather than guessing bins.

models.eq1 implements sex-specific categorical age×year and education×year OLS with HC1. **models.matched** constructs Eq2/3/4 with person×match, event, year and age effects and joint category interactions; Eq3/4 require explicit post times. Its default computable CR0 covariance is marked **CR0_not_source_inference** and cannot produce source intervals. Explicit source-established effective parameter count and residual df can be passed to the low-level kernel; test-supplied CR1 values validate algebra only. Frozen dispatch never bypasses C01/A01/A02/A03. **Fit.contrast** uses the same fitted joint covariance. **source_models.do** provides the actual reghdfe/lincom/test engine interface for later verified Stata execution; no

numerical validation of that engine is claimed here. Dense categorical Python kernels are reference/oracle implementations, not a demonstrated national-register-scale engine.

Matched kernels check person-match-year uniqueness, nonmissing structural fields, exact event-year sets and common pair clocks before sex selection or source outcome listwise deletion. Conditional positive ATP may then lose outcome-missing observations; those deletions cannot hide duplicate/missing structural records. Hospital visit counts precede the invalid-interval day filter, exactly as `clean_1:51/74`. Missing discharge dates stop under A11 instead of selecting a different admission sibling.

`validation.validate_bundle(world, atom, output)` checks the full keyed result/unit/uncertainty roster and exact target-status/effects/annotations projections. `validation.render_checked(world, source_target, tables, pdf, width_mm=130.7, style_dir=None)` is the supported rendering entry: it validates exact annotation tuples and statistic-specific units, then calls the unchanged frozen template. Empty/partial annotations remain valid missing input. Calling a raw frozen renderer directly bypasses this added annotation guard. Known B20 label collisions, unavailable-histogram default axes and oversized boundary figures remain disclosed presentation limits; this adapter changes no layout, labels or bins.

Validation also recomputes data-independent source dispositions using `analyses.source_boundaries`: every `module2-11` cell and `Atom1`'s B3/B4/prose_01/02 must retain its exact status, gap IDs, reason and source locator. This includes cell-specific summary/occupation/age/balance additions; re-signing a boundary as “no effect” cannot remove a ledger gate. Pending outer activation is checked separately. Data-dependent `Atom1` missingness and numeric truth still require the externally accepted receipt/input binding. A02 is an explicit matched-model target set: retained for linear-controls prose_06 and spouse B18, absent from B3 means, prose_08 ratios and prose_14 prevalence.

The complete suite includes `round2_tests.py` and `round3_tests.py`. Round-3 regressions inject real unchecked-hash bytecode into both `contracts` and `analyses`, exercise symlinked and relocated cache paths through both launch routes, compare both identity walks, check sanitized missing-launcher failure, assert structural numeric dtypes, verify the exact 526-observation partial-outcome sample (missing row0 and age-28 singleton row187), and check gap-set retention/removal over all50 targets. No such injected artifact is placed in the `World`.

Per-Atom entries

The exact commands below use the path variables above. All use the common outputs and column contracts. The full synthetic command above runs every entry under both dispatch policies and its supported construction/target path.

For `Atoms3-11`, “registered cohort/labor/education” means BEF,FAIN,DODSAARS,DODSAASG,IND,IDAP,IDAN,IDAS,UDDA; those are the shared registered matching inputs, even where unresolved matching prevents consumption of job fields. Additional outcome tables are named in each entry. The runtime checks the actual immutable per-Atom table list.

atom-000001 — Population and baseline descriptions

Command: "\$PD_PY" "\$PD_ACTION/run.py" --atom atom-000001 --world "\$PD_WORLD" --inputs "\$PD_INPUTS/atom-000001.json" --output "\$PD_OUTPUT/atom-000001".

Implementation: analyses.population_results, summaries; construction.population, deaths, source_panel, family_counts, education, labour, atp; models.pooled_ttest. Required cohort tables: BEF,FAIN,DODSAARS,DODSAASG; optional row-specific IND,IDAP,UDDA and inflation/education dictionaries, with fields in the provenance table. B1 alone needs BEF1985–2014 and the death extracts; it does not require the balanced cohort inputs.

Targets: figure_b1/b2/b3/b4, table1/table_b1/table_b2, prose_01/02. Outputs use cumulative percent, parent-gender percent, density, source proportions/years/children/ATP/1000 real2020DKK/person counts and p probabilities. B1 denominator precedes count<5 suppression; bin8's conflicting40–45 label remains unavailable. B2 and supported baseline rows are estimated. C02 blocks only under-six rows; C03/A04 block histograms/exact prose shares. Tests: hand cumulative20/52/100 oracle, age25/50 and1985/2014 limits, exact death dates, second death, table t oracle, missing education/inflation, all missing inputs and renderer interfaces.

atom-000002 — Descriptive event paths

Command: "\$PD_PY" "\$PD_ACTION/run.py" --atom atom-000002 --world "\$PD_WORLD" --inputs "\$PD_INPUTS/atom-000002.json" --output "\$PD_OUTPUT/atom-000002".

Implementation: analyses.atom_000002, shared cohort/labor construction, construction.prescriptions, models.eq1, scaled_eq1. Inputs: BEF,FAIN,DODSAARS,DODSAASG,IND,IDAP,UDDA,LMDB; inflation/education dictionaries. Targets: figure_b5/b23 (percent of counterfactual mean), prose_13 (contextual nonempirical argument). C04 blocks the plotted scaling; unscaled Eq1 coefficients are not substituted. Tests: dense QR/statsmodels HC1 oracle, no missing-input replacement and both eight-panel interfaces. The CLI constructs inputs but does not fit the conflicting display.

atom-000003 — Matched labor effects, balance and robustness

Command: "\$PD_PY" "\$PD_ACTION/run.py" --atom atom-000003 --world "\$PD_WORLD" --inputs "\$PD_INPUTS/atom-000003.json" --output "\$PD_OUTPUT/atom-000003".

Implementation: analyses.atom_000003, labour_dynamics, missing_nonfigure; construction.candidate_controls, index_earnings, propagate_treated, proximity, labour, jobs; Eq2/3/4 kernels. Inputs: BEF,FAIN,DODSAARS,DODSAASG,IND,IDAP,IDAN,IDAS,UDDA,SYSL,SSSY,LPR_ADM,PSYK_ADM,LMDB, plus consuming dictionaries.

Targets: figure1/2, figure_b6/b7/b8/b19/b20/b21/b22, table_b3/b6, prose_03/04/05/06. Units: probability, ATP contributions,1000 real2020DKK,index points at baseline100,percentile ranks,source baseline characteristic units. Shared C01/A01/A02 blocks NN sample-dependent outputs. A03 affects pooled summaries; C05 B7; C09 B19; A07 age strata; C10/A08 future-treated; U03 prose variants. Cause/calendar categories remain explicit. TableB3's literal named/source rows total15 targeted although inventory says16: see report; no invented sixteenth row.

Tests: tied rank0/50/50/100, singleton undefined rank, control death>D+5, full joint cluster oracle, both-sex labor paths, all source panels and absent inputs. Future-treated disputed choices are not implemented.

atom-000004 — Health services and prescriptions

Command: `"$PD_PY" "$PD_ACTION/run.py" --atom atom-000004 --world "$PD_WORLD" --inputs "$PD_INPUTS/atom-000004.json" --output "$PD_OUTPUT/atom-000004"`.

Implementation: `analyses.atom_000004, local_health, health_dynamics; construction.hospital, prescriptions, services, covered_join; joint-parent Eq2 and Eq4 kernels`. Inputs: registered cohort/labor/education tables plus `LPR_ADM,PSYK_ADM,SYSI,SSSY,LMDB` and psychology mapping. Targets: `figure3,figure_b9/b10/b11,prose_07`. Units: visits/year and probability; B9 alcohol is prescription **count**. C01/A01/A02/A03 and private-versus-combined psychiatry A05 apply. Tests independently check inclusive overlap/cross-year union, latest-discharge diagnosis tie, invalid dates, exact ATC counts, negative services after summing, unavailable2019 versus covered absence, outcome-specific missingness and every display.

atom-000005 — Earnings/health co-occurrence

Command: `"$PD_PY" "$PD_ACTION/run.py" --atom atom-000005 --world "$PD_WORLD" --inputs "$PD_INPUTS/atom-000005.json" --output "$PD_OUTPUT/atom-000005"`.

Implementation: `analyses.atom_000005; construction.onset_panel`; Eq2 kernel with explicit event coordinates; `models.immediate_ratios`. Inputs: registered cohort/labor/education, `LMDB,LPR_ADM,SYSI,SSSY` and relevant dictionaries. Source matched history requires earnings `t=-6`, `balance1995-2018` and final `t=-4..5`. Targets: `figure4,figure_b12,prose_08`, probability/count and ratios. C01/A01/A02/C05 block disputed figures; A03 blocks year0/1 prose ratios. No mediation estimate is added. Tests: exact5% boundary, lag versus event clock, zero denominator, persistent versus new declines, partial opioid data and `hospital-count×earnings-onset`.

atom-000006 — Young children and formal childcare

Command: `"$PD_PY" "$PD_ACTION/run.py" --atom atom-000006 --world "$PD_WORLD" --inputs "$PD_INPUTS/atom-000006.json" --output "$PD_OUTPUT/atom-000006"`.

Implementation: `analyses.atom_000006; construction.birth_links, family_counts, enrollment, index_earnings`; Eq4 interactions. Inputs: registered cohort/labor/education and `DAGI,BOERNFB,BOERNSB`. Targets: `figure5,figure_b13/b14`; earnings index points/probability. C06 blocks childless eligibility in F5/B13; A06 blocks age5/youngest-tie enrollment; shared matching/post gates remain. Child enrollment indicators and counts are computed locally. Tests: exact twin counts with ambiguous child identity, no-child sentinel22 versus age>20 sentinel21, and each missing/partial/full interface.

atom-000007 — Surviving-parent illness and proximity

Command: "\$PD_PY" "\$PD_ACTION/run.py" --atom atom-000007 --world "\$PD_WORLD" --inputs "\$PD_INPUTS/atom-000007.json" --output "\$PD_OUTPUT/atom-000007".

Implementation: `analyses.atom_000007`; inclusive `construction.hospital`, `prescription/cohort construction` and `proximity` kernel. Inputs: registered cohort/labor/education,LPR_ADM,LMDB; geography dictionaries for any future source-established proximity output. Targets: `figure6`,`figure_b15/b16`,`prose_09/14`; index points, probability and illness proportion. C07 prevents selecting `annual>=90` versus `cumulative>three-month` illness, year0/2019 handling and B16 pre/post split; C05/U03 also apply. No illness stratum is guessed. Tests: union/calendar coverage, partial health inputs, geographic missingness, all three figure interfaces and both dispatch policies.

atom-000008 — Wealth interaction

Command: "\$PD_PY" "\$PD_ACTION/run.py" --atom atom-000008 --world "\$PD_WORLD" --inputs "\$PD_INPUTS/atom-000008.json" --output "\$PD_OUTPUT/atom-000008".

Implementation: `analyses.atom_000008`, `missing_nonfigure`; `construction.wealth` and shared cohort. Inputs: registered cohort/labor/education and IND FORM/FORMREST_NY05, source inflation. Targets: `table_b4` and `prose_10/11/12`. Annual wealth is real2020DKK locally; table interaction units remain explicitly unresolved (C08), not silently divided1000/10000. U04 blocks the three unspecified variants; matching/post gates remain. Tests: independent maximum $30 \times 2 = 60$ and next-vintage $40 \times 3 = 120$, mixed missing/nonmissing duplicate boundary, all table columns and absent-input dispatch.

atom-000009 — Family responses

Command: "\$PD_PY" "\$PD_ACTION/run.py" --atom atom-000009 --world "\$PD_WORLD" --inputs "\$PD_INPUTS/atom-000009.json" --output "\$PD_OUTPUT/atom-000009".

Implementation: `analyses.atom_000009`, `family_models`; family/cohabitation construction; joint-parent Eq4. Inputs: BEF,FAIN,DODSAARS,DODSAASG,IND, IDAP,IDAN,IDAS,UDDA and source income/education dictionaries as registered. Target `figure_b17`: probability and children. No descriptive cap5 is applied to the family-response child count. C01/A01/A02/A03 prevent a matched estimate. Tests: family arithmetic, Eq4 kernel with explicitly test-supplied post times, missing post-time gate, both panels and comparison cells.

atom-000010 — Parent-in-law earnings

Command: "\$PD_PY" "\$PD_ACTION/run.py" --atom atom-000010 --world "\$PD_WORLD" --inputs "\$PD_INPUTS/atom-000010.json" --output "\$PD_OUTPUT/atom-000010".

Implementation: `analyses.atom_000010`; `construction.spouse_histories` fixes event partner before spouse-year expansion; shared demographic/income functions and spouse-key-capable model kernel. Inputs: registered cohort/labor/education,IDAN,IDAS and dictionaries. Target `figure_b18`, index points. Separate spouse matching is not replaced by biological-child pairs. A09/A01/A02/A03 block presence-versus-survival, tenure/order, missing duplicate

selection and pooled contrast correspondence. Tests: actual local spouse-history construction under both dispatches, cardinality validation and figure interface. No spouse matched-edge or source-engine inference validation is claimed.

atom-000011 — Occupation, firm and sector

Command: `"$PD_PY" "$PD_ACTION/run.py" --atom atom-000011 --world "$PD_WORLD" --inputs "$PD_INPUTS/atom-000011.json" --output "$PD_OUTPUT/atom-000011"`.

Implementation: `analyses.atom_000011, job_models; construction.occupation_codes, jobs; Eq3`. Inputs: registered cohort/labor/education, AKM, IDAN, IDAS. Target table `b5` retains all 6 columns and coefficient/SE/N/premean cells, probability/person-year counts. A10 stops occupation transitions whose eight-prior-record order is unspecified; independently computable occupation codes and firm/public construction survive. C01/A01/A02/A03 block matched estimates. Tests: adjacent versus gapped employer years, public-code exclusions, main-job tie, supported firm/public kernels versus blocked occupation and complete table interface.

Activation, evidence and portability

The native selected semantics are canonical, tri-valued Kleene logic; `activation.py` is a meaning-preserving adaptation of `prereg-lane/native.py`. All eleven frozen activations are `TRUE`, so no predecessor is required. Tests exercise `unknown/false/pending/no_result` logic without editing the frozen activation. `direct` bypasses only outer activation; it cannot resolve any target gate or retry an explicitly terminal `no_result` Atom.

An optional evidence entry is `{"path":"/absolute/receipt.json", "accepted":true, "input_id":"<externally expected input identity>", "implementation_id":"<trusted World manifest implementation_id>", "receipt_sha256":"<externally accepted receipt digest>"}`. The accepting operator/controller supplies these expected values independently of the received receipt; do not recalculate them from untrusted predecessor files. The loader compares both expected hashes, frozen material and Atom protocol identity, kind, input binding and every required hashed output. It then validates the exact keyed vector, units, uncertainty and all derived CSV projections. Re-signing a changed receipt cannot satisfy the externally pinned digest; re-signing a truncated vector also fails structural validation. Pending/failure receipts cannot imply `done()`. Local construction never supplies accepted predecessor evidence. Earlier execution versions are not automatically accepted: they require an explicitly reviewed implementation binding; mutable realized Atom/Molecule text does not change the existing valid binding.

Frozen identity hashes preregistration and membership separately from mutable Atom result/front matter/body and Molecule interpretation. Frozen material content is pinned; changing a protocol or source interface fails verification. Runtime locations are excluded from scientific input identity, so copying a manifest's bound files and changing only paths preserves identity. Evidence files and mutable result bodies are not hashed as frozen registration. Each receipt records implementation hash, source/input hash, dispatch policy, software and aggregate-output hashes.

The test runner writes synthetic inputs, receipts, numerical logs and all plot PDFs only beneath its requested scratch output. It tests copied action code against a distinct read-only World and changed realized result bodies, as well as protocol tampering, corrupt evidence and wrong input bindings. Figures remain the existing templates; the report records any rendering limitations. No synthetic preview is bound to a manuscript slot.

Numbered template index

The commands above are the existing direct-dispatch interface, with default `activation_respecting`; the eventual controller may request `direct` explicitly. All native activations are `TRUE`. Default direct dispatch in the replica campaign bypasses only activation scheduling, never source/input or inference prerequisites. Campaign guidance remains `campaign.mode=replica, init_world=null`. No scientific override is accepted through manifests.

The eleven numbered sources below are implemented, each fixing one Atom ID and invoking the shared, verified `run.py` entry with the same arguments except `--atom`. They are engineering entry points, not additional Atoms. Visualization sources have their own independent sequence; their complete mapping is in `docs/paper/figure-interface.md`. Original author programs are immutable source evidence.

Experiment source	Native Atom / retained implementation	Exact source targets
01-population-template.py	atom-000001 / analyses.population_results	figure_b1, figure_b2, figure_b3, figure_b4, table1, table_b1, table_b2, prose_01, prose_02
02-descriptive-trajectories-template.py	atom-000002 / analyses.atom_000002	figure_b5, figure_b23, prose_13
03-matched-labor-template.py	atom-000003 / analyses.atom_000003	figure1, figure2, figure_b6, figure_b7, figure_b8, figure_b19, figure_b20, figure_b21, figure_b22, table_b3, table_b6, prose_03, prose_04, prose_05, prose_06
04-health-use-template.py	atom-000004 / analyses.atom_000004	figure3, figure_b9, figure_b10, figure_b11, prose_07
05-joint-onset-template.py	atom-000005 / analyses.atom_000005	figure4, figure_b12, prose_08

Experiment source	Native Atom / retained implementation	Exact source targets
06-childcare-template.py	atom-000006 / analyses.atom_000006	figure5, figure_b13, figure_b14
07-surviving-parent-template.py	atom-000007 / analyses.atom_000007	figure6, figure_b15, figure_b16, prose_09, prose_14
08-parental-wealth-template.py	atom-000008 / analyses.atom_000008	table_b4, prose_10, prose_11, prose_12
09-family-formation-template.py	atom-000009 / analyses.atom_000009	figure_b17
10-spouse-earnings-template.py	atom-000010 / analyses.atom_000010	figure_b18
11-work-choices-template.py	atom-000011 / analyses.atom_000011	table_b5

Every entry exports the same keyed result/status/interpretation files specified in D8 and the figure/result interfaces. Plot targets additionally export their effects and annotations projections. `prose_13` is a conceptual source interpretation, not a new international empirical analysis. Shared preparation caches only identically bound transformations. Reusable tests are `run_tests.py` (numerical, source-boundary, interface and copied-workspace cases), `scalable_tests.py` (SQL versus retained oracle and batch equivalence), and `scaling_template.py` (bounded synthetic growth). All require external scratch; generated inputs and logs are excluded from delivery. See the handoff for measured results and limits.

Historical native locators map `prereg/data-contract.md` to `docs/protocol/data-contract.md`, `replication/...` to `docs/replication/...`, and `prereg/execution/...` to `docs/execution/...`. No old review PDF or log is required to execute science. Resolve such paths in meaning-preserving adapters/current material indexes while keeping the immutable native payloads intact.

Complete registered Molecule

```
id: molecule-000001
molecule_mode: prereg
molecule_shape: mechanism
topic: Parental death outcomes
rating: C
draft: false
literature: []
membership:
- atom: atom-000001
  role: supplementary
  description: This is the source population/comparability question, not a
    standalone technical linkage experiment. Distributions and related
    ↪ baseline
    tables belong together.
```

- atom: atom-000002
role: supplementary
description: Sudden and non-sudden paths answer the same uncontrolled
↳ event-time
question; their external-validity comparison stays in one module.
- atom: atom-000003
role: primary
description: Main outcomes, parent/child gender contrasts, labor robustness
and balance evidence assess one labor-market question. Balance is embedded
in this consuming protocol. Figures are not separate experiments.
- atom: atom-000004
role: secondary
description: Health outcomes form the distinct health question, separate
from earnings and from co-occurrence. Related services and prescription
panels remain in one analysis.
- atom: atom-000005
role: secondary
description: Joint onset evidence asks a distinct timing/mechanism question;
its related health panels and conditional-share claims stay together.
- atom: atom-000006
role: secondary
description: Earnings contrasts and formal-care uptake jointly address loss
of informal childcare; separate measures/panels are not separate
↳ experimental
nodes.
- atom: atom-000007
role: secondary
description: Post/pre illness contrasts, residence response and source
↳ mental-health
comparison address the surviving-parent support question and stay within
one module.
- atom: atom-000008
role: supplementary
description: All parental/own-wealth variants address the inheritance
↳ question;
they are retained together even when unavailable.
- atom: atom-000009
role: supplementary
description: Cohabitation and fertility are the source family-formation
analysis, independently interpretable from labor/health effects.
- atom: atom-000010
role: supplementary
description: The spouse outcome and its separately matched population are
an independent spillover question; sharing family links does not merge
it with adult-child earnings.
- atom: atom-000011
role: supplementary
description: The three job-choice outcomes form the original
↳ preference-related
module; routine occupational coding is part of this analysis, not another
Atom.

frontier:
rule: Extract this journal study and preserve every target and source
↳ boundary;
interpretation uses actual component evidence.
avoid: No added science, outcome-selected activation, success threshold,
independent-review claim or conflation of completion with confirmation.
directions: []
preregistration:
mode: canonical

question: What does a source-faithful replication of Jensen and Zhang (2026) establish about parental death, adult labor outcomes, health and family support, within the source's actual identified scope?

scope: Fixed journal question, original cohort/treatment and reported

- ↪ main/supplement analyses. Canonical two-stage replica conversion then Transcriber.
 - ↪ Unresolved
- source choices are not implemented.

storyline: Population and descriptive evidence delimit context. Matched labor effects address the primary question; health, joint timing,

- ↪ childcare

and surviving-parent support qualify mechanisms. Inheritance, formation, spouses and work choice supply distinct supporting/alternative-channel evidence. All components are interpreted through their actual estimates and uncertainty, including mixed findings and missing targets.

interpretation:

- kind: restriction
 - condition: 'TRUE'
 - says: Apply source-definition/vintage limits to every component. Even fully available results require outcome-specific signed estimates,
 - ↪ source
 - uncertainty, and the stated identification assumptions. No coverage state or paper comparison implies replication success.
- kind: primary
 - condition: done(atom-000003)
 - says: 'Read labor results.csv and interpretation.md: report employment, conditional/unconditional ATP, raw/indexed earnings and
 - ↪ parent/child-gender
 - differences separately, together with source robustness, balance scope and missing targets. Base direction/magnitude claims on those actual estimates/intervals; mixed or imprecise findings stay mixed/imprecise.'
- kind: supplementary
 - condition: done(atom-000004) OR done(atom-000005)
 - says: Use actual health-service, prescription and co-occurrence vectors to assess consistency with the source health explanation. Distinguish service use, onset timing, ratios and unavailable estimates. No causal mediation share follows from joint onset or completion.
- kind: supplementary
 - condition: done(atom-000006) OR done(atom-000007)
 - says: Interpret childcare earnings contrasts, enrollment, surviving-parent illness/proximity and their source model boundaries jointly with actual labor evidence. Separate subgroup selection and post-event illness
 - ↪ conditioning
 - from causal claims about care.
- kind: supplementary
 - condition: done(atom-000008) OR done(atom-000009) OR done(atom-000010) OR done(atom-000011)
 - says: Report each actual inheritance, family-formation, spousal and
 - ↪ job-choice
 - result with its uncertainty and missing scope. Small/imprecise findings do not establish absence of a channel; no equivalence threshold or
 - ↪ combined
 - score is authorized.
- kind: supplementary
 - condition: done(atom-000001) OR done(atom-000002)
 - says: Use the actual population characteristics and descriptive
 - ↪ sudden/non-sudden
 - paths to delimit the source population and contextual dynamics. Do not turn conditional age distributions into population hazards or
 - ↪ descriptive

```

    paths into matched causal evidence.
- kind: residual
condition: 'TRUE'
says: Name every pending, partial, boundary, inconclusive or operationally
      failed component. No empirical replication has occurred at registration.
      If a component has no estimate, make no directional claim for its
      ↪ outcomes.
      Preserve unresolved source choices; compilation/conversion completion
      is not independent scientific acceptance.

```

Source-aligned storyline

Population and descriptive evidence delimit context. Matched labor effects address the primary question; health, joint timing, childcare and surviving-parent support qualify mechanisms. Inheritance, formation, spouses and work choice supply distinct supporting/alternative-channel evidence. All components are interpreted through their actual estimates and uncertainty, including mixed findings and missing targets.

Input reuse does not imply scientific-result dependence. All activations are TRUE, so no evidence sign, p-value or local state selects execution. Restriction, primary, supplementary and residual rules compose; none returns an automatic confirmation label. The membership above is the complete authority for all 11 Atoms. Atom registrations own protocols and local states.

All Atoms are pending preregistrations. No independent review or empirical replication has occurred.

atom-000001: Bereavement population

Bereavement population

Use shared definitions D1–D5 below. analysis_1 retains first deaths 1985–2014, forms five-year age-at-first-death bins with 60+ upper category, sums counts cumulatively over ordered bins, divides by all retained deaths, and suppresses source cells smaller than 5. B1 is conditional on this death-period sample; no age-specific hazard or population-risk denominator is created. Exact-age introductory shares are distinct prose targets; do not approximate 19+ from five-year bars. For Table1, Tables B1/B2 and B2–B4, construct the treated-only balanced 11-year panel of adults 25–50 at first death 1985–2014, two known parents present $t=-1$; retain both sudden and non-sudden groups. Use analysis_2 final cause set, not clean_8's intermediate broader set. Baseline is $t=-1$. Child count is capped 5 in the source summaries; youngest age follows source definitions. Earnings are p1/p99 winsorized pooled across both death groups before baseline tabulation. First-death-parent-age ≤ 100 is imposed where analysis_2 does so (B2/B3/tables); B4 precedes this restriction. Track this sample distinction, never harmonize it silently. Table1 rows in order: age; male; college+; high school/vocational; below high school; cohabitation; number of children; age youngest; under 6; mother age; father age; mother married; father married; first-death parent age; employment; intensive margin conditional working; annual earnings; observations. Give sudden mean, non-sudden mean, source two-sample t-test

p-value (pooled-variance Stata ttest as written) and counts. TableB1 repeats means by mother-sudden,mother-nonsudden,father-sudden,father-nonsudden; TableB2 by mother-daughter,father-daughter,mother-son,father-son for sudden deaths. Do not append t-tests absent from those tables. B2 displays father/mother percentages by suddenness. B3 displays parent age distributions; B4 adult age distributions. Histogram densities/bin edges must be source-determined; source suppression<5 is preserved and is not a new statistical threshold. PSEUDOCODE: authenticate definitions -> form source-specific sample -> resolve each target's gap list -> derive source fields -> tabulate named rows/categories in original order -> write estimate/denominator/units for every cell -> export figure interfaces. On C02 block only under-six rows; on C03 block B3; on A04 retain exact missing bin/denominator decisions. Do not execute blocked scientific alternatives.

Unresolved target gates: U01, U02, C02, C03, A04, A11.

Retained source targets: figure_b1, figure_b2, figure_b3, figure_b4, table1, table_b1, table_b2, prose_01, prose_02.

Incorporated specification and actual evidence

Read prereg/data-contract.md D1–D8, replication/matching-specification.md where applicable, schema-evidence.md, target-inventory.md and deviations.md as part of this protocol. Source target order, field definitions, sample restrictions, formulae, intervals, source-only tests and missing-data rules are fixed there. Conflicting decisions remain no-estimate; source-supported partial results do not fill another target's gap. No confidential input or result is present now.

```

INPUT = authenticated source-vintage tables named in registration.tables
TARGETS = this Atom's full source inventory, including unavailable prose
  ↳ claims
for target in TARGETS in source order:
  required = target's exact panel/outcome/sample/model/contrast
  ↳ specification
  blockers = unresolved source choices + missing required
  ↳ vintage/key/year/crosswalk
  if blockers: emit target-status(no-estimate, exact reasons); emit
  ↳ numeric-null rows; continue
  panel = derive required source panel, with prescribed source restrictions
  ↳ in prescribed order
  verify unique source units, explicit observed year set and
  ↳ source-authorized join keys
  if source estimator cannot identify required target: emit scientific
  ↳ boundary with reason; continue
  result = evaluate only required source formula using prescribed inference
  ↳ semantics
  if execution fails: log operational failure and leave pending; do not
  ↳ record a scientific null
  else: emit all keyed estimates/SE/CI/baselines/N/source-reported
  ↳ contrasts, not a favorable subset
write results.csv; target-status.csv; interpretation.md; named figure output
  ↳ interfaces
interpret each outcome and contrast in its own units and uncertainty;
  ↳ preserve mixed results

```

Each figure output `<figure_id>-effects.csv` contains `target_id,panel,series,x,estimate,lower,upper,unit,status,reason,bin_left,bin_right`. For histogram source bins, edges are supplied only after source identification. `<figure_id>-annotations.csv` contains `target_id,panel,series,statistic,term,value,unit,status,reason` for source-reported DID,SE,difference,F,p,baseline,N. Tables/prose use `results.csv` key `target_id,panel,series,x,statistic,term` and D8 additional metadata. Numeric fields null when unavailable. Do not create actual CSV files during conversion. See `figures.yaml` and `results-map.md` for exact input names and manuscript bindings.

Scientific interpretation is outcome/estimand-specific: signed magnitude and source95% intervals (or source SE-only table), relevant source-reported subgroup contrasts, and source-compatible limitations. Statistical imprecision is retained as evidence, not an unavailable observation. There is no replication-success cutoff, invented power, equivalence band or significance-based execution. The native numeric ratings are required compatibility metadata (neutral3 and 0.5), not an elicited novelty ranking, empirical feasibility claim or success score. This replica lane has no tournament or reviewer.

Source precision at the display boundary: B1 is built directly from BEF year-end1985–2014 with both parent IDs known, retaining only the person’s first-death year. It does not inherit the25–50 restriction or11-year outcome balance. Compute cumulative numerator and total denominator BEFORE suppressing count<5 groups; export100*share for the percentage-labelled interface. The code’s40–45 printed label corresponds to $\text{floor}(\text{age}/5)=8$ (40–44); preserve this source label/calculation discrepancy under A04. The affected category is no-estimate until its intended boundary is source-resolved; do not silently relabel or rebin. B3 uses source histogram width2 after dropping age-at-death×suddenness cells<5; B4 uses bin(26) after its source age×suddenness suppression. Origins/edges and B3’s age-variable conflict remain unresolved. Table1/B1/B2 exclude nonpositive ATP for the intensive-margin means; TableB3’s intensive margin remains unconditional.

Remaining registration fields

The `preregistration.protocol` field is reproduced in full immediately above; all remaining fields are reproduced below.

```
id: atom-000001
topic: Bereavement population
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: canonical
  question: What population and pre-death characteristics underlie the source
    comparison of sudden and non-sudden first parental death?
```

```

rationale: This is the source population/comparability question, not a
↳ standalone
technical linkage experiment. Distributions and related baseline tables
belong together.
assumption: Source correspondence and input coverage must be established
as specified. Interpretation stays within this source
↳ descriptive/associational
scope; shared treatment does not establish causal mediation.
target_strength: descriptive
target_shape: comparison
ratings:
importance: 3
novelty: 3
feasibility: 3
data_advantage: 3
informativeness: 0.5
tables:
- BEF
- FAIN
- DODSAARS
- DODSAASG
- IND
- IDAP
- UDDA
activation: 'TRUE'
verdicts:
- key: evidence
region: All retained source targets have actual estimates and their
↳ source-required
uncertainty/interpretation, with no unresolved target.
says: Report the complete actual outcome vector. Coverage alone gives
no direction, causal conclusion or replication confirmation.
- key: partial
region: At least one source target has actual evidence and at least one
has a conclusive source/input no-estimate disposition.
says: Report available signed estimates and uncertainty, including mixed
findings, beside every missing target and its exact limitation. Do not
generalize the available subset to the missing scope.
- key: boundary
region: No retained source target is estimable after a conclusive
↳ source-definition
or input boundary; this is not an operational failure.
says: There is no scientific estimate for this source scope. The paper
is neither confirmed nor refuted by inability to estimate.
- key: otherwise
region: otherwise
says: Retain unresolved or inconclusive scientific disposition with actual
evidence if any. Operational failures remain pending and are not done()
or a statistical null.

```

Registered source module

What population and pre-death characteristics underlie the source comparison of sudden and non-sudden first parental death?

No current result, realized strength, evidence path or empirical replication is recorded. The preregistration protocol owns scientific specification and local states; manuscript/graph views are derived. Source locators, blockers and result

interfaces are incorporated above. Scientific module purpose: This is the source population/comparability question, not a standalone technical linkage experiment. Distributions and related baseline tables belong together.

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: Descriptive event paths

Descriptive event paths

Rebuild the treated-only balanced source panel separately for sudden (B5; `analysis_3`) and non-sudden death (B23; `analysis_4`). Outcomes are employment $ATP > 0$, positive ATP intensive margin, real raw earnings, and any mental-health prescriptions (N05,N06A,N06B,N06C). No matched controls enter Eq1. Run each sex separately with event dummies $k = -5..5$ excluding -1, age-by-calendar-year and education-by-calendar-year categorical effects. Code uses heteroskedasticity-robust standard errors. Mental-prescription sample requires the complete 11-year panel to begin 1995 or later (therefore death 2000–2014 given the labor upper end 2019). Source earnings/ATP cleaning is D3; no new tail transformation is added. Source display conversion is 100 times each event coefficient divided by its counterfactual fitted mean with the event coefficient removed; confidence endpoints are scaled likewise ($code \pm 1.96$ robust SE before scaling). Prediction population is unresolved C04. Do not produce a percent path from a convenient denominator, nor present a different unscaled analysis as the replication figure. $k = -1$ is an omitted reference, not an estimated zero with a fabricated interval. B5/B23 each preserve A employment, B conditional intensive margin, C raw earnings, D any mental prescriptions; two sexes per panel and all 10 estimated event coefficients, source 95% intervals and baseline denominator. PSEUDOCODE: build panel and outcome-specific availability -> generate categorical interactions and event design -> if denominator conflict unresolved, emit no-estimate for plotted targets with exact C04 reason; otherwise execute the source-established specification -> export full vector. Compare sudden/non-sudden trajectories only descriptively, preserving pre-event behavior; no new pretrend test, pooled effect or causal claim.

Unresolved target gates: U01, U02, C04, A11.

Retained source targets: `figure_b5`, `figure_b23`, `prose_13`.

Incorporated specification and actual evidence

Read `prereg/data-contract.md` D1–D8, `replication/matching-specification.md` where applicable, `schema-evidence.md`, `target-inventory.md` and `deviations.md` as part of this protocol. Source target order, field definitions, sample restrictions, formulae, intervals, source-only tests and missing-data rules are fixed there. Conflicting decisions remain no-estimate; source-supported partial results do not fill another target's gap. No confidential input or result is present now.

```

INPUT = authenticated source-vintage tables named in registration.tables
TARGETS = this Atom's full source inventory, including unavailable prose
↪ claims
for target in TARGETS in source order:
    required = target's exact panel/outcome/sample/model/contrast
    ↪ specification
    blockers = unresolved source choices + missing required
    ↪ vintage/key/year/crosswalk
    if blockers: emit target-status(no-estimate, exact reasons); emit
    ↪ numeric-null rows; continue
    panel = derive required source panel, with prescribed source restrictions
    ↪ in prescribed order
    verify unique source units, explicit observed year set and
    ↪ source-authorized join keys
    if source estimator cannot identify required target: emit scientific
    ↪ boundary with reason; continue
    result = evaluate only required source formula using prescribed inference
    ↪ semantics
    if execution fails: log operational failure and leave pending; do not
    ↪ record a scientific null
    else: emit all keyed estimates/SE/CI/baselines/N/source-reported
    ↪ contrasts, not a favorable subset
write results.csv; target-status.csv; interpretation.md; named figure output
↪ interfaces
interpret each outcome and contrast in its own units and uncertainty;
↪ preserve mixed results

```

Each figure output `<figure_id>-effects.csv` contains `target_id,panel,series,x,estimate,lower,upper,unit,status,reason,bin_left,bin_right`. For histogram source bins, edges are supplied only after source identification. `<figure_id>-annotations.csv` contains `target_id,panel,series,statistic,term,value,unit,status,reason` for source-reported DID,SE,difference,F,p,baseline,N. Tables/prose use results.csv key `target_id,panel,series,x,statistic,term` and D8 additional metadata. Numeric fields null when unavailable. Do not create actual CSV files during conversion. See figures.yaml and results-map.md for exact input names and manuscript bindings.

Scientific interpretation is outcome/estimand-specific: signed magnitude and source95% intervals (or source SE-only table), relevant source-reported subgroup contrasts, and source-compatible limitations. Statistical imprecision is retained as evidence, not an unavailable observation. There is no replication-success cutoff, invented power, equivalence band or significance-based execution. The native numeric ratings are required compatibility metadata (neutral3 and 0.5), not an elicited novelty ranking, empirical feasibility claim or success score. This replica lane has no tournament or reviewer.

Remaining registration fields

The `preregistration.protocol` field is reproduced in full immediately above; all remaining fields are reproduced below.

```

id: atom-000002
topic: Descriptive event paths
atom_result: prereg

```

```

atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: canonical
  question: How do labor supply, earnings and mental-prescription use evolve
    around sudden and non-sudden first parental deaths in the source
    ↳ descriptive
    design?
  rationale: Sudden and non-sudden paths answer the same uncontrolled
    ↳ event-time
    question; their external-validity comparison stays in one module.
  assumption: Source correspondence and input coverage must be established
    as specified. Interpretation stays within this source
    ↳ descriptive/associational
    scope; shared treatment does not establish causal mediation.
  target_strength: descriptive
  target_shape: temporal
  ratings:
    importance: 3
    novelty: 3
    feasibility: 3
    data_advantage: 3
    informativeness: 0.5
  tables:
    - BEF
    - FAIN
    - DODSAARS
    - DODSAASG
    - IND
    - IDAP
    - UDDA
    - LMDB
  activation: 'TRUE'
  verdicts:
    - key: evidence
      region: All retained source targets have actual estimates and their
        ↳ source-required
        uncertainty/interpretation, with no unresolved target.
      says: Report the complete actual outcome vector. Coverage alone gives
        no direction, causal conclusion or replication confirmation.
    - key: partial
      region: At least one source target has actual evidence and at least one
        has a conclusive source/input no-estimate disposition.
      says: Report available signed estimates and uncertainty, including mixed
        findings, beside every missing target and its exact limitation. Do not
        generalize the available subset to the missing scope.
    - key: boundary
      region: No retained source target is estimable after a conclusive
        ↳ source-definition
        or input boundary; this is not an operational failure.
      says: There is no scientific estimate for this source scope. The paper
        is neither confirmed nor refuted by inability to estimate.
    - key: otherwise
      region: otherwise
      says: Retain unresolved or inconclusive scientific disposition with actual

```

evidence if any. Operational failures remain pending and are not done()
or a statistical null.

Registered source module

How do labor supply, earnings and mental-prescription use evolve around sudden and non-sudden first parental deaths in the source descriptive design?

No current result, realized strength, evidence path or empirical replication is recorded. The preregistration protocol owns scientific specification and local states; manuscript/graph views are derived. Source locators, blockers and result interfaces are incorporated above. Scientific module purpose: Sudden and non-sudden paths answer the same uncontrolled event-time question; their external-validity comparison stays in one module.

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-000003`: Matched labor effects

Matched labor effects

Use D1–D7 and exact matching transcription in `matching-specification.md`. Register source Eq2 dynamic effects for F1: A ATP>0; B ATP conditional positive; C earnings in1000 real2020DKK, pooled p1/p99 winsorized; D same earnings indexed to100 by sex-specific mean of all treated+control observations at t=-1. OLS absorbs person×match, event time, calendar year, age; cluster person×match. F1 includes source Eq3 summaries, standard errors, gender contrasts, F and p, sex baseline means. Eq3 aggregation window retains A03 rather than an invented choice. F2 uses Eq4 joint mother-death×post and father-death×post terms separately by sex; give four coefficients, source95% intervals, within-parent gender differences and within-sex mother-versus-father differences. Code tests differences with pooled interacted specifications; preserve the exact variance of the difference, not independent-SE arithmetic. B6 adds unconditional ATP including zeros beside conditional ATP; B7 shows F1's four outcomes dynamically for mother/father separately, with C05 equation-label conflict retained. B8 replaces earnings by annual cross-population rank among ages20–55 with known birth/sex: source egen rank, ties at average rank, percentile100*(rank-1)/(N-1); no within-cohort ranking despite a code comment. Keep source ranks and denominators; if N=1, report undefined rather than inventing a percentile. B19 compares baseline child/deceased-parent proximity; caption5-region versus code11-region C09 blocks the comparison. B20 is four mutually exclusive baseline categories: same municipality; same11-region different municipality; same5-region different11-region; different5-region. Use event>=1990 as in analysis_10 because detailed location input starts1985; subgroup-specific index/FE from the consuming block. Missing geography is not evidence of co-location. TableB6 consists of four separate source

specifications by sex (8 columns), retaining all categories together: cause heart24/25, stroke26, respiratory29, accident46/47/49; parent-age split; adult-age split; death-period1985–94/1995–2004/2005–14. The age code uses sample medians while printed labels70/38 are reference targets (A07). Effects are category×treatment×post with source fixed effects and cluster; retain SE and N, do not add cross-category tests. TableB3 is embedded evidence: at t=-1 report treatment/control means for targeted age,male,three education groups,cohabitation,child count,youngest age,under6,mother/father age,employment,unconditional intensive ATP,annual earnings,public sector; non-targeted mother/father any hospital,GP count,any hospital,any psychologist,any psychiatrist,any mental Rx,any alcohol Rx,any opioid; N. Follow source availability windows: GP/psych1990,hospital1994,Rx1995 with full-window eligibility. analysis_15 uses raw earnings despite calculating winsorized values and recalculates parent ages; do not use the erroneous late father-gap variable. Do not publish unreported balance tests or impose acceptance thresholds. Source FN robustness B21/B22 uses future sudden first deaths6 years later, five-year birth bins, same sex and parent gender, all eligible future-treated controls per stack, no1:1 NN. FN_clean loops index-death1985–2013, future controls up to2019, birth-bin index floor(birthyear/5)-385 in1..13, adult treated25–50 and future-control actual-event age>=30 within the source20–56 pool. It expands pseudo event-5..5, requires complete11 rows, recomputes age from birth. FN_analysis uses person×stack cluster, p5/p95 earnings winsorization and index100; A.F/B21–22 disagree (C10); do not implement these disputed choices. B21 panels A employment men,B women,C earnings men,D women overlay NN/FN; B22 earnings mother/father by sex. Author code-only parent-specific employment and extra transforms are excluded, not new robustness. Retain U03 footnote rematching, health matching, second-death and linear-controls claims with no-estimate. All explicit dynamic pre-periods are shown without adding a pretrend significance test. Source lower-bound/external-validity assertions remain contingent discussion, not new identification facts. PSEUDOCODE: resolve shared NN gates -> construct source-prescribed sample and output-specific transformations -> define source model columns -> fit only identified/authorized source specification -> export coefficients, covariance-based printed contrasts, intervals, baseline means, N and source notes -> label each target’s own availability. Any unresolved branch yields numeric-null rows; other authorized targets stay in inventory. Source targets are not selected by effect sign or p-value.

Unresolved target gates: U01, U02, C01, A01, A02, A03, C02, C05, A05, U03, C09, A07, C10, A08, A11.

Retained source targets: figure1, figure2, figure_b6, figure_b7, figure_b8, figure_b19, figure_b20, figure_b21, figure_b22, table_b3, table_b6, prose_03, prose_04, prose_05, prose_06.

Incorporated specification and actual evidence

Read prereg/data-contract.md D1–D8, replication/matching-specification.md where applicable, schema-evidence.md, target-inventory.md and deviations.md as part of this protocol. Source target order, field definitions, sample restrictions, formulae, intervals, source-only tests and missing-data rules are fixed there. Conflicting decisions

remain no-estimate; source-supported partial results do not fill another target's gap. No confidential input or result is present now.

```

INPUT = authenticated source-vintage tables named in registration.tables
TARGETS = this Atom's full source inventory, including unavailable prose
↳ claims
for target in TARGETS in source order:
    required = target's exact panel/outcome/sample/model/contrast
    ↳ specification
    blockers = unresolved source choices + missing required
    ↳ vintage/key/year/crosswalk
    if blockers: emit target-status(no-estimate, exact reasons); emit
    ↳ numeric-null rows; continue
    panel = derive required source panel, with prescribed source restrictions
    ↳ in prescribed order
    verify unique source units, explicit observed year set and
    ↳ source-authorized join keys
    if source estimator cannot identify required target: emit scientific
    ↳ boundary with reason; continue
    result = evaluate only required source formula using prescribed inference
    ↳ semantics
    if execution fails: log operational failure and leave pending; do not
    ↳ record a scientific null
    else: emit all keyed estimates/SE/CI/baselines/N/source-reported
    ↳ contrasts, not a favorable subset
write results.csv; target-status.csv; interpretation.md; named figure output
↳ interfaces
interpret each outcome and contrast in its own units and uncertainty;
↳ preserve mixed results

```

Each figure output `<figure_id>-effects.csv` contains `target_id,panel,series,x,estimate,lower,upper,unit,status,reason,bin_left,bin_right`. For histogram source bins, edges are supplied only after source identification. `<figure_id>-annotations.csv` contains `target_id,panel,series,statistic,term,value,unit,status,reason` for source-reported DID,SE,difference,F,p,baseline,N. Tables/prose use results.csv key `target_id,panel,series,x,statistic,term` and D8 additional metadata. Numeric fields null when unavailable. Do not create actual CSV files during conversion. See figures.yaml and results-map.md for exact input names and manuscript bindings.

Scientific interpretation is outcome/estimand-specific: signed magnitude and source95% intervals (or source SE-only table), relevant source-reported subgroup contrasts, and source-compatible limitations. Statistical imprecision is retained as evidence, not an unavailable observation. There is no replication-success cutoff, invented power, equivalence band or significance-based execution. The native numeric ratings are required compatibility metadata (neutral3 and 0.5), not an elicited novelty ranking, empirical feasibility claim or success score. This replica lane has no tournament or reviewer.

Remaining registration fields

The `preregistration.protocol` field is reproduced in full immediately above; all remaining fields are reproduced below.

```

id: atom-000003
topic: Matched labor effects
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: canonical
  question: What are the source matched-DiD effects of sudden first parental
    death on labor outcomes, including its reported heterogeneity and
    ↳ robustness?
  rationale: Main outcomes, parent/child gender contrasts, labor robustness
    and balance evidence assess one labor-market question. Balance is embedded
    in this consuming protocol. Figures are not separate experiments.
  assumption: Source correspondence and input coverage must be established
    as specified. Causal interpretation additionally requires the source
    ↳ parallel
    counterfactual trends/no relevant anticipation assumptions; the
    ↳ health/family
    patterns do not identify mediation.
  target_strength: causal
  target_shape: temporal
  ratings:
    importance: 3
    novelty: 3
    feasibility: 3
    data_advantage: 3
    informativeness: 0.5
  tables:
    - BEF
    - FAIN
    - DODSAARS
    - DODSAASG
    - IND
    - IDAP
    - IDAN
    - IDAS
    - UDDA
    - SYSI
    - SSSY
    - LPR_ADM
    - PSYK_ADM
    - LMDB
  activation: 'TRUE'
  verdicts:
    - key: evidence
      region: All retained source targets have actual estimates and their
        ↳ source-required
        uncertainty/interpretation, with no unresolved target.
      says: Report the complete actual outcome vector. Coverage alone gives
        no direction, causal conclusion or replication confirmation.
    - key: partial
      region: At least one source target has actual evidence and at least one
        has a conclusive source/input no-estimate disposition.
      says: Report available signed estimates and uncertainty, including mixed
        findings, beside every missing target and its exact limitation. Do not

```

```

    generalize the available subset to the missing scope.
- key: boundary
  region: No retained source target is estimable after a conclusive
    ↪ source-definition
    or input boundary; this is not an operational failure.
  says: There is no scientific estimate for this source scope. The paper
    is neither confirmed nor refuted by inability to estimate.
- key: otherwise
  region: otherwise
  says: Retain unresolved or inconclusive scientific disposition with actual
    evidence if any. Operational failures remain pending and are not done()
    or a statistical null.

```

Registered source module

What are the source matched-DiD effects of sudden first parental death on labor outcomes, including its reported heterogeneity and robustness?

No current result, realized strength, evidence path or empirical replication is recorded. The preregistration protocol owns scientific specification and local states; manuscript/graph views are derived. Source locators, blockers and result interfaces are incorporated above. Scientific module purpose: Main outcomes, parent/child gender contrasts, labor robustness and balance evidence assess one labor-market question. Balance is embedded in this consuming protocol. Figures are not separate experiments.

Reference implementation

Entry point and supported/unresolved components for `atom-000003`: [execution index](#). See [engineering review](#). This pointer does not amend the registered protocol.

atom-000004: Health service effects

Health service effects

Take the NN sample only after shared gates. D4 gives source encounter aggregation. F3 A annual psychologist consultations; B any mental-health prescription N05/N06A/N06B/N06C; C any opioid N02A; D annual non-psychiatric hospital visits including inpatient/outpatient. Estimate Eq4 mother/father×post separately by sex and source pooled contrasts. GP/psych services use years≥1990, balanced11 rows (event≥1995 through2014). Mental/opioid/alcohol prescriptions start1995, balanced11 (event2000–2014). Hospital outcomes restrict1994–2018 and rebalance11 (event1999–2013). Source psychiatry hospital data1995–2018 have their own complete-window sample. Different sample sizes are retained by outcome, never harmonized without source support. B9: A NUMBER of alcohol-addiction prescription records N07BB (not any-use); B annual GP consultations using source service-code list. B10: four dynamic outcomes in F3 order with mother/father subpanels and both sexes; source Eq2 dynamic interactions and95% intervals. B11: A screening hospital visits whose diagnosis containsDZ00 orDZ01; B nonscreening visits. Although `clean_1` initially excludes allDZ in a provisional field, `analysis_6` lines387–388 explicitly replaces nonscreening by total-minus-screening; this final consuming definition

is source-explicit and is not an unresolved disagreement. Counts are annual encounters/services as code, never new diagnoses. TableB3's health means are supplied to the labor module with their exact sample windows, not a new health diagnostic. Private psychiatrist prose target remains A05/U02; no unreported combined psychiatric result replaces it. Preserve printed cross-sex and cross-parent contrasts and baseline means, including source significant and nonsignificant comparisons, without declaring a single health success label. PSEUDOCODE: authenticate complete source event register-year -> aggregate D4 -> join by authenticated PNR/year (absence0 only inside verified coverage) -> restrict each complete-window sample -> resolve target-specific gaps -> fit source Eq2/4 -> export outcome-specific coefficients/CI/contrast/N/baseline. If one service is unavailable, preserve the other eligible service targets; do not substitute a proxy. Health-utilization changes can be consistent with a health channel but cannot alone prove disease severity or causal mediation.

Unresolved target gates: U01, U02, C01, A01, A02, A03, A05, A11.

Retained source targets: figure3, figure_b9, figure_b10, figure_b11, prose_07.

Incorporated specification and actual evidence

Read prereg/data-contract.md D1–D8, replication/matching-specification.md where applicable, schema-evidence.md, target-inventory.md and deviations.md as part of this protocol. Source target order, field definitions, sample restrictions, formulae, intervals, source-only tests and missing-data rules are fixed there. Conflicting decisions remain no-estimate; source-supported partial results do not fill another target's gap. No confidential input or result is present now.

```
INPUT = authenticated source-vintage tables named in registration.tables
TARGETS = this Atom's full source inventory, including unavailable prose
  ↳ claims
for target in TARGETS in source order:
  required = target's exact panel/outcome/sample/model/contrast
  ↳ specification
  blockers = unresolved source choices + missing required
  ↳ vintage/key/year/crosswalk
  if blockers: emit target-status(no-estimate, exact reasons); emit
  ↳ numeric-null rows; continue
  panel = derive required source panel, with prescribed source restrictions
  ↳ in prescribed order
  verify unique source units, explicit observed year set and
  ↳ source-authorized join keys
  if source estimator cannot identify required target: emit scientific
  ↳ boundary with reason; continue
  result = evaluate only required source formula using prescribed inference
  ↳ semantics
  if execution fails: log operational failure and leave pending; do not
  ↳ record a scientific null
  else: emit all keyed estimates/SE/CI/baselines/N/source-reported
  ↳ contrasts, not a favorable subset
write results.csv; target-status.csv; interpretation.md; named figure output
  ↳ interfaces
interpret each outcome and contrast in its own units and uncertainty;
  ↳ preserve mixed results
```

Each figure output `<figure_id>-effects.csv` contains `target_id,panel,series,x,estimate,lower,upper,unit,status,reason,bin_left,bin_right`. For histogram source bins, edges are supplied only after source identification. `<figure_id>-annotations.csv` contains `target_id,panel,series,statistic,term,value,unit,status,reason` for source-reported DID,SE,difference,F,p,baseline,N. Tables/prose use `results.csv` key `target_id,panel,series,x,statistic,term` and D8 additional metadata. Numeric fields null when unavailable. Do not create actual CSV files during conversion. See `figures.yaml` and `results-map.md` for exact input names and manuscript bindings.

Scientific interpretation is outcome/estimand-specific: signed magnitude and source 95% intervals (or source SE-only table), relevant source-reported subgroup contrasts, and source-compatible limitations. Statistical imprecision is retained as evidence, not an unavailable observation. There is no replication-success cutoff, invented power, equivalence band or significance-based execution. The native numeric ratings are required compatibility metadata (neutral3 and 0.5), not an elicited novelty ranking, empirical feasibility claim or success score. This replica lane has no tournament or reviewer.

Remaining registration fields

The `preregistration.protocol` field is reproduced in full immediately above; all remaining fields are reproduced below.

```
id: atom-000004
topic: Health service effects
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: canonical
  question: How does parental loss affect the source health-service and
    ↳ prescription
    outcomes across parent and adult-child gender?
  rationale: Health outcomes form the distinct health question, separate from
    earnings and from co-occurrence. Related services and prescription panels
    remain in one analysis.
  assumption: Source correspondence and input coverage must be established
    as specified. Causal interpretation additionally requires the source
    ↳ parallel
    counterfactual trends/no relevant anticipation assumptions; the
    ↳ health/family
    patterns do not identify mediation.
  target_strength: causal
  target_shape: comparison
ratings:
  importance: 3
  novelty: 3
  feasibility: 3
  data_advantage: 3
```

```

    informativeness: 0.5
tables:
- BEF
- FAIN
- DODSAARS
- DODSAASG
- IND
- IDAP
- IDAN
- IDAS
- UDDA
- LPR_ADM
- PSYK_ADM
- SYSI
- SSSY
- LMDB
activation: 'TRUE'
verdicts:
- key: evidence
  region: All retained source targets have actual estimates and their
    ↪ source-required
    uncertainty/interpretation, with no unresolved target.
  says: Report the complete actual outcome vector. Coverage alone gives
    no direction, causal conclusion or replication confirmation.
- key: partial
  region: At least one source target has actual evidence and at least one
    has a conclusive source/input no-estimate disposition.
  says: Report available signed estimates and uncertainty, including mixed
    findings, beside every missing target and its exact limitation. Do not
    generalize the available subset to the missing scope.
- key: boundary
  region: No retained source target is estimable after a conclusive
    ↪ source-definition
    or input boundary; this is not an operational failure.
  says: There is no scientific estimate for this source scope. The paper
    is neither confirmed nor refuted by inability to estimate.
- key: otherwise
  region: otherwise
  says: Retain unresolved or inconclusive scientific disposition with actual
    evidence if any. Operational failures remain pending and are not done()
    or a statistical null.

```

Registered source module

How does parental loss affect the source health-service and prescription outcomes across parent and adult-child gender?

No current result, realized strength, evidence path or empirical replication is recorded. The preregistration protocol owns scientific specification and local states; manuscript/graph views are derived. Source locators, blockers and result interfaces are incorporated above. Scientific module purpose: Health outcomes form the distinct health question, separate from earnings and from co-occurrence. Related services and prescription panels remain in one analysis.

Reference implementation

Entry point and supported/unresolved components for `atom-000004`: [execution index](#). See [engineering review](#). This pointer does not amend the registered protocol.

atom-000005: Health earnings cooccurrence

Health earnings cooccurrence

Use `analysis_14`'s source extended panel to obtain earnings at $t=-6$ for lag construction, then retain matched eligible adults 25–50 and final sudden causes. Source winsorization `p1/p99` occurs before restricting calendar 1995–2018. Define year-on-year proportional change $= (\text{earnings}_t - \text{earnings}_{t-1}) / \text{earnings}_{t-1}$; decline is $\text{change} \leq -0.05$; undefined/missing ratio is coded 0 in this source program, not replaced with a log or denominator offset. Onset of decline $= \text{decline}_t$ and not decline_{t-1} . Mental/psychologist/opioid onset $= \text{any use}_t$ and not any use_{t-1} . Their joint outcome is product of both onsets. Missing lag handling follows the explicit code only inside complete covered years; unavailable registers cannot supply zero. After merging health, require full 11-year panel within 1995–2018 (death 2000–2013), then remove $t=-5$, yielding displayed-4..5 relative to omitted-1. F4 A indicator annual earnings fall $\geq 5\%$; B onset of that fall; C onset mental Rx; D joint mental/earnings onsets. B12 A psychologist onset, B joint psychologist/earnings onset, C opioid onset, D joint opioid/earnings onset, E hospital VISIT COUNT, F hospital count multiplied by earnings-decline ONSET. Despite loose caption language these last panels are counts in plot/program, not new binary hospital onsets. Do not include the other hospital-onset/doubling or any-decline variants produced only in author code. The displayed source program uses Eq2 event effects by sex, $\text{person} \times \text{match}$ cluster, $\text{event}/\text{year}/\text{age}/\text{person} \times \text{match}$ FE; preserve C05 because captions call this Eq4. Output complete dynamic vector and source Eq3 annotations where specified, with intervals and baselines. Prose ratios are joint-onset effect divided by earnings-onset effect and by mental-onset effect at the source immediate event year, separately by sex. Exact year0 versus 1 is A03. No confidence intervals or ratio test are supplied in source, so none is invented. If a denominator is zero or unresolved, report undefined/no-estimate, not a regularized ratio or fabricated 0. PSEUDOCODE: verified lags $\rightarrow$ source decline/onset arithmetic $\rightarrow$ exact sample restrictions $\rightarrow$ model/caption gate $\rightarrow$ authorized dynamics $\rightarrow$ ratio only if source event mapping determined $\rightarrow$ output all panels and prose targets. Co-occurrence does not identify an indirect causal effect, fraction causally mediated, or an individual-level causal pathway.

Unresolved target gates: U01, U02, C01, A01, A02, A03, C05, A11.

Retained source targets: figure4, figure_b12, prose_08.

Incorporated specification and actual evidence

Read `prereg/data-contract.md` D1–D8, `replication/matching-specification.md` where applicable, `schema-evidence.md`, `target-inventory.md` and `deviations.md` as part of this

protocol. Source target order, field definitions, sample restrictions, formulae, intervals, source-only tests and missing-data rules are fixed there. Conflicting decisions remain no-estimate; source-supported partial results do not fill another target's gap. No confidential input or result is present now.

```

INPUT = authenticated source-vintage tables named in registration.tables
TARGETS = this Atom's full source inventory, including unavailable prose
↳ claims
for target in TARGETS in source order:
  required = target's exact panel/outcome/sample/model/contrast
  ↳ specification
  blockers = unresolved source choices + missing required
  ↳ vintage/key/year/crosswalk
  if blockers: emit target-status(no-estimate, exact reasons); emit
  ↳ numeric-null rows; continue
  panel = derive required source panel, with prescribed source restrictions
  ↳ in prescribed order
  verify unique source units, explicit observed year set and
  ↳ source-authorized join keys
  if source estimator cannot identify required target: emit scientific
  ↳ boundary with reason; continue
  result = evaluate only required source formula using prescribed inference
  ↳ semantics
  if execution fails: log operational failure and leave pending; do not
  ↳ record a scientific null
  else: emit all keyed estimates/SE/CI/baselines/N/source-reported
  ↳ contrasts, not a favorable subset
write results.csv; target-status.csv; interpretation.md; named figure output
↳ interfaces
interpret each outcome and contrast in its own units and uncertainty;
↳ preserve mixed results

```

Each figure output `<figure_id>-effects.csv` contains `target_id,panel,series,x,estimate,lower,upper,unit,status,reason,bin_left,bin_right`. For histogram source bins, edges are supplied only after source identification. `<figure_id>-annotations.csv` contains `target_id,panel,series,statistic,term,value,unit,status,reason` for source-reported DID,SE,difference,F,p,baseline,N. Tables/prose use results.csv key `target_id,panel,series,x,statistic,term` and D8 additional metadata. Numeric fields null when unavailable. Do not create actual CSV files during conversion. See figures.yaml and results-map.md for exact input names and manuscript bindings.

Scientific interpretation is outcome/estimand-specific: signed magnitude and source95% intervals (or source SE-only table), relevant source-reported subgroup contrasts, and source-compatible limitations. Statistical imprecision is retained as evidence, not an unavailable observation. There is no replication-success cutoff, invented power, equivalence band or significance-based execution. The native numeric ratings are required compatibility metadata (neutral3 and 0.5), not an elicited novelty ranking, empirical feasibility claim or success score. This replica lane has no tournament or reviewer.

The source describes a causal bereavement effect on co-occurrence under its DiD assumptions. That target is preserved; the relationship between health and earnings within the joint event remains associational and does not identify mediation.

Remaining registration fields

The `preregistration.protocol` field is reproduced in full immediately above; all remaining fields are reproduced below.

```
id: atom-000005
topic: Health earnings cooccurrence
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: canonical
  question: What source joint timing links earnings declines to the start
    of health treatment after parental death?
  rationale: Joint onset evidence asks a distinct timing/mechanism question;
    its related health panels and conditional-share claims stay together.
  assumption: Source matched-DiD counterfactual-trend and anticipation
    ↪ assumptions
    apply to the effect of parental death on joint outcomes. No causal effect
    of health on earnings, indirect effect or mediation share is identified
    by this co-occurrence design.
  target_strength: causal
  target_shape: temporal
  ratings:
    importance: 3
    novelty: 3
    feasibility: 3
    data_advantage: 3
    informativeness: 0.5
  tables:
    - BEF
    - FAIN
    - DODSAARS
    - DODSAASG
    - IND
    - IDAP
    - IDAN
    - IDAS
    - UDDA
    - LPR_ADM
    - SYSI
    - SSSY
    - LMDB
  activation: 'TRUE'
  verdicts:
    - key: evidence
      region: All retained source targets have actual estimates and their
        ↪ source-required
        uncertainty/interpretation, with no unresolved target.
      says: Report the complete actual outcome vector. Coverage alone gives
        no direction, causal conclusion or replication confirmation.
    - key: partial
      region: At least one source target has actual evidence and at least one
        has a conclusive source/input no-estimate disposition.
      says: Report available signed estimates and uncertainty, including mixed
```

```

findings, beside every missing target and its exact limitation. Do not
generalize the available subset to the missing scope.
- key: boundary
  region: No retained source target is estimable after a conclusive
  ↪ source-definition
    or input boundary; this is not an operational failure.
  says: There is no scientific estimate for this source scope. The paper
    is neither confirmed nor refuted by inability to estimate.
- key: otherwise
  region: otherwise
  says: Retain unresolved or inconclusive scientific disposition with actual
    evidence if any. Operational failures remain pending and are not done()
    or a statistical null.

```

Registered source module

What source joint timing links earnings declines to the start of health treatment after parental death?

No current result, realized strength, evidence path or empirical replication is recorded. The preregistration protocol owns scientific specification and local states; manuscript/graph views are derived. Source locators, blockers and result interfaces are incorporated above. Scientific module purpose: Joint onset evidence asks a distinct timing/mechanism question; its related health panels and conditional-share claims stay together.

Reference implementation

Entry point and supported/unresolved components for `atom-000005`: [execution index](#). See [engineering review](#). This pointer does not amend the registered protocol.

`atom-000006`: Childcare support

Childcare support

Freeze treated adult's youngest-child group at event $t=0$ and propagate it to the matched pair; the source definition is age0–5 versus without-young, with unresolved code removal of childless adults C06. `analysis_8` restricts first, winsorizes pooled earnings `p1/p99` after childless exclusion, indexes earnings to `baseline100` separately by `sex×young` group. F5 panels mother/father each contain men/women with/without young children; estimate `Eq4` separately by child group, preserve cross-sex differences within parent/group and young-versus-no-young contrasts within sex. Do not invent additional childless estimates. B13 refines to youngest0–5 versus6–14; source keeps adults with `child≤14` at event, retaining the source winsorization stage then reindexes within these age groups. Same mother/father panels and contrasts. B14 formal childcare: D5 builds child-level enrollment; join youngest-child identifier to enrollment and then adult/pair. Restrict `calendar≥2005` and complete11 observations through2019, yielding event2010–2014. PanelA code group `youngest≤5`; panelB6–10; wording disagreement A06 remains. Source young-child values are blanked when

age>5 in follow-up then missing set0, and older code uses its corresponding enrolled-child series; record measurement implications without replacing definitions. Keep outcome as uptake probability, no invented hours/costs. PSEUDOCODE: resolve C06/A06 eligibility before creating analytic subgroup -> source exact timing, youngest identity and pair propagation -> outcome-specific restriction and denominator -> Eq4 and printed contrast models -> output all8 F5/B13 coefficients plus source comparisons, B14 mother/father×sex uptake with CI/baselines/N. Preserve uncertainty and partial availability. Earnings heterogeneity and uptake are suggestive about family support; neither directly measures grandparent care hours nor establishes a mediation share.

Unresolved target gates: U01, U02, C01, A01, A02, A03, C06, A06, A11.

Retained source targets: figure5, figure_b13, figure_b14.

Incorporated specification and actual evidence

Read prereg/data-contract.md D1–D8, replication/matching-specification.md where applicable, schema-evidence.md, target-inventory.md and deviations.md as part of this protocol. Source target order, field definitions, sample restrictions, formulae, intervals, source-only tests and missing-data rules are fixed there. Conflicting decisions remain no-estimate; source-supported partial results do not fill another target’s gap. No confidential input or result is present now.

```
INPUT = authenticated source-vintage tables named in registration.tables
TARGETS = this Atom's full source inventory, including unavailable prose
↪ claims
for target in TARGETS in source order:
  required = target's exact panel/outcome/sample/model/contrast
  ↪ specification
  blockers = unresolved source choices + missing required
  ↪ vintage/key/year/crosswalk
  if blockers: emit target-status(no-estimate, exact reasons); emit
  ↪ numeric-null rows; continue
  panel = derive required source panel, with prescribed source restrictions
  ↪ in prescribed order
  verify unique source units, explicit observed year set and
  ↪ source-authorized join keys
  if source estimator cannot identify required target: emit scientific
  ↪ boundary with reason; continue
  result = evaluate only required source formula using prescribed inference
  ↪ semantics
  if execution fails: log operational failure and leave pending; do not
  ↪ record a scientific null
  else: emit all keyed estimates/SE/CI/baselines/N/source-reported
  ↪ contrasts, not a favorable subset
write results.csv; target-status.csv; interpretation.md; named figure output
↪ interfaces
interpret each outcome and contrast in its own units and uncertainty;
↪ preserve mixed results
```

Each figure output <figure_id>-effects.csv contains target_id,panel,series,x,estimate,lower,upper,unit,status,reason,bin_left,bin_right. For histogram source bins, edges are supplied only after source identification. <figure_id>-annotations.csv contains target_id,panel,series,statistic,term,value,unit,status,

reason for source-reported DID,SE,difference,F,p,baseline,N. Tables/prose use results.csv key target_id,panel,series,x,statistic,term and D8 additional metadata. Numeric fields null when unavailable. Do not create actual CSV files during conversion. See figures.yaml and results-map.md for exact input names and manuscript bindings.

Scientific interpretation is outcome/estimand-specific: signed magnitude and source95% intervals (or source SE-only table), relevant source-reported subgroup contrasts, and source-compatible limitations. Statistical imprecision is retained as evidence, not an unavailable observation. There is no replication-success cutoff, invented power, equivalence band or significance-based execution. The native numeric ratings are required compatibility metadata (neutral3 and0.5), not an elicited novelty ranking, empirical feasibility claim or success score. This replica lane has no tournament or reviewer.

Remaining registration fields

The preregistration.protocol field is reproduced in full immediately above; all remaining fields are reproduced below.

```
id: atom-000006
topic: Childcare support
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: canonical
  question: Does the source earnings response vary with young children, and
    does formal childcare use respond to parental loss?
  rationale: Earnings contrasts and formal-care uptake jointly address loss
    of informal childcare; separate measures/panels are not separate
    ↪ experimental
  nodes.
  assumption: Source correspondence and input coverage must be established
    as specified. Causal interpretation additionally requires the source
    ↪ parallel
    counterfactual trends/no relevant anticipation assumptions; the
    ↪ health/family
    patterns do not identify mediation.
  target_strength: causal
  target_shape: comparison
  ratings:
    importance: 3
    novelty: 3
    feasibility: 3
    data_advantage: 3
    informativeness: 0.5
  tables:
    - BEF
    - FAIN
    - DODSAARS
```

- DODSAASG
- IND
- IDAP
- IDAN
- IDAS
- UDDA
- DAGI
- BOERNFB
- BOERNBSB

activation: 'TRUE'

verdicts:

- key: evidence
 - region: All retained source targets have actual estimates and their
 - ↪ source-required
 - uncertainty/interpretation, with no unresolved target.
 - says: Report the complete actual outcome vector. Coverage alone gives no direction, causal conclusion or replication confirmation.
- key: partial
 - region: At least one source target has actual evidence and at least one has a conclusive source/input no-estimate disposition.
 - says: Report available signed estimates and uncertainty, including mixed findings, beside every missing target and its exact limitation. Do not generalize the available subset to the missing scope.
- key: boundary
 - region: No retained source target is estimable after a conclusive
 - ↪ source-definition
 - or input boundary; this is not an operational failure.
 - says: There is no scientific estimate for this source scope. The paper is neither confirmed nor refuted by inability to estimate.
- key: otherwise
 - region: otherwise
 - says: Retain unresolved or inconclusive scientific disposition with actual evidence if any. Operational failures remain pending and are not done() or a statistical null.

Registered source module

Does the source earnings response vary with young children, and does formal childcare use respond to parental loss?

No current result, realized strength, evidence path or empirical replication is recorded. The preregistration protocol owns scientific specification and local states; manuscript/graph views are derived. Source locators, blockers and result interfaces are incorporated above. Scientific module purpose: Earnings contrasts and formal-care uptake jointly address loss of informal childcare; separate measures/panels are not separate experimental nodes.

Reference implementation

Entry point and supported/unresolved components for atom-000006: [execution index](#). See [engineering review](#). This pointer does not amend the registered protocol.

atom-000007: Surviving parent care

Surviving parent care

Restrict the source NN panel to adults without young children (youngest<6 excluded at event; childless adults are retained in analysis_12). Surviving parent is the other parent relative to treated first death; propagate treated illness classification to the matched pair. D4 produces union hospital-days per calendar year including inpatient and outpatient encounters. Source text asks >three months over five years; code uses any annual total>=90 in t0..5 for F6 and t-5..-1 for B15. Do not select one; C07 blocks affected classification and C05 the model label. Source earnings winsorization p1/p99 follows the restriction; index100 uses sex-specific t=-1 means, not sex×illness means. The consuming model has illness-specific treatment×post terms with event/year/age/person×match FE, clusterperson×match. F6 and B15 show men/women by surviving-parent ill/not ill and source contrasts. Source calendar filter starts1994 and rebalances11 but lacks2018 end, causing2019 zero-fill against unavailable hospital-days; preserve this conflict. B16 outcome is same11-NUTS3 region as surviving parent in each year, detailed region>=1985 and hospital>=1994; code drops pair records if surviving region unavailable; pre/post illness display assignment is unresolved. Retain prose claim comparing mental-prescription effects by illness as U03: missing exact sample, outcome time aggregation, model and output. Published20% illness prevalence is reference only; do not use it as an assumed subgroup share or power input. No new pre/post illness alternative besides the source F6/B15 targets. PSEUDOCODE: verify years and parent identity -> unresolved accumulation/calendar/model/figure assignment gates -> only after source resolution derive illness variable -> source no-young restriction -> appropriate earnings or residence outcome -> source model/contrasts -> complete target vector or numeric-null reasons. Post-event illness is not randomized; conditioning on it does not identify a causal effect of eldercare. Interpret earnings, proximity and mental-health components separately, allowing mixed/partial results.

Unresolved target gates: U01, U02, C01, A01, A02, A03, C05, C07, U03, A11.

Retained source targets: figure6, figure_b15, figure_b16, prose_09, prose_14.

Incorporated specification and actual evidence

Read prereg/data-contract.md D1–D8, replication/matching-specification.md where applicable, schema-evidence.md, target-inventory.md and deviations.md as part of this protocol. Source target order, field definitions, sample restrictions, formulae, intervals, source-only tests and missing-data rules are fixed there. Conflicting decisions remain no-estimate; source-supported partial results do not fill another target’s gap. No confidential input or result is present now.

```
INPUT = authenticated source-vintage tables named in registration.tables
TARGETS = this Atom's full source inventory, including unavailable prose
↪ claims
for target in TARGETS in source order:
    required = target's exact panel/outcome/sample/model/contrast
    ↪ specification
```

```

blockers = unresolved source choices + missing required
↳ vintage/key/year/crosswalk
if blockers: emit target-status(no-estimate, exact reasons); emit
↳ numeric-null rows; continue
panel = derive required source panel, with prescribed source restrictions
↳ in prescribed order
verify unique source units, explicit observed year set and
↳ source-authorized join keys
if source estimator cannot identify required target: emit scientific
↳ boundary with reason; continue
result = evaluate only required source formula using prescribed inference
↳ semantics
if execution fails: log operational failure and leave pending; do not
↳ record a scientific null
else: emit all keyed estimates/SE/CI/baselines/N/source-reported
↳ contrasts, not a favorable subset
write results.csv; target-status.csv; interpretation.md; named figure output
↳ interfaces
interpret each outcome and contrast in its own units and uncertainty;
↳ preserve mixed results

```

Each figure output `<figure_id>-effects.csv` contains `target_id,panel,series,x,estimate,lower,upper,unit,status,reason,bin_left,bin_right`. For histogram source bins, edges are supplied only after source identification. `<figure_id>-annotations.csv` contains `target_id,panel,series,statistic,term,value,unit,status,reason` for source-reported DID,SE,difference,F,p,baseline,N. Tables/prose use `results.csv` key `target_id,panel,series,x,statistic,term` and D8 additional metadata. Numeric fields null when unavailable. Do not create actual CSV files during conversion. See `figures.yaml` and `results-map.md` for exact input names and manuscript bindings.

Scientific interpretation is outcome/estimand-specific: signed magnitude and source95% intervals (or source SE-only table), relevant source-reported subgroup contrasts, and source-compatible limitations. Statistical imprecision is retained as evidence, not an unavailable observation. There is no replication-success cutoff, invented power, equivalence band or significance-based execution. The native numeric ratings are required compatibility metadata (neutral3 and 0.5), not an elicited novelty ranking, empirical feasibility claim or success score. This replica lane has no tournament or reviewer.

Remaining registration fields

The `preregistration.protocol` field is reproduced in full immediately above; all remaining fields are reproduced below.

```

id: atom-000007
topic: Surviving parent care
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []

```

```

preregistration:
  version: 1
  mode: canonical
  question: How do source earnings and proximity responses vary with the
    ↳ surviving
    parent's health?
  rationale: Post/pre illness contrasts, residence response and source
    ↳ mental-health
    comparison address the surviving-parent support question and stay within
    one module.
  assumption: Source correspondence and input coverage must be established
    as specified. Interpretation stays within this source
    ↳ descriptive/associational
    scope; shared treatment does not establish causal mediation.
  target_strength: associational
  target_shape: comparison
  ratings:
    importance: 3
    novelty: 3
    feasibility: 3
    data_advantage: 3
    informativeness: 0.5
  tables:
    - BEF
    - FAIN
    - DODSAARS
    - DODSAASG
    - IND
    - IDAP
    - IDAN
    - IDAS
    - UDDA
    - LPR_ADM
    - LMDB
  activation: 'TRUE'
  verdicts:
    - key: evidence
      region: All retained source targets have actual estimates and their
        ↳ source-required
        uncertainty/interpretation, with no unresolved target.
      says: Report the complete actual outcome vector. Coverage alone gives
        no direction, causal conclusion or replication confirmation.
    - key: partial
      region: At least one source target has actual evidence and at least one
        has a conclusive source/input no-estimate disposition.
      says: Report available signed estimates and uncertainty, including mixed
        findings, beside every missing target and its exact limitation. Do not
        generalize the available subset to the missing scope.
    - key: boundary
      region: No retained source target is estimable after a conclusive
        ↳ source-definition
        or input boundary; this is not an operational failure.
      says: There is no scientific estimate for this source scope. The paper
        is neither confirmed nor refuted by inability to estimate.
    - key: otherwise
      region: otherwise
      says: Retain unresolved or inconclusive scientific disposition with actual
        evidence if any. Operational failures remain pending and are not done()
        or a statistical null.

```

Registered source module

How do source earnings and proximity responses vary with the surviving parent's health?

No current result, realized strength, evidence path or empirical replication is recorded. The preregistration protocol owns scientific specification and local states; manuscript/graph views are derived. Source locators, blockers and result interfaces are incorporated above. Scientific module purpose: Post/pre illness contrasts, residence response and source mental-health comparison address the surviving-parent support question and stay within one module.

Reference implementation

Entry point and supported/unresolved components for `atom-000007`: [execution index](#). See [engineering review](#). This pointer does not amend the registered protocol.

atom-000008: Inheritance channel

Inheritance channel

Read D3 wealth: FORM1984-97, FORMREST_NY05 from1998, source2020 inflation factors, source maximum record if duplicate. analysis_9 links mother and father assets at $t=-1$, assigns first-deceased and surviving role, propagates each by pair maximum, sums them. Source missing values set0 only if coverage permits source non-event interpretation. TableB4 caption says1000DKK whereas program divides DKK sum by10000; C08 prevents choosing unit/owner. The target is interaction of treatment $\times$ post with parental baseline wealth plus treatment $\times$ post, no added main time-invariant wealth term required beyond individual FE. Earnings are source p1/p99 winsorized, sex-indexed100, with source event/year/age/person $\times$ match effects and person $\times$ match clustering. Four columns mother-men,mother-women,father-men,father-women; report interaction coefficient/SE, treatment coefficient/SE, observations, source control mean men and women. The own-asset interaction in A.A, deceased-only and surviving-only wealth in fn29 are separate target rows within this Atom but lack full specifications U04. Do not assert bequests are directly measured; parental net assets are a proxy. Do not construct an own-wealth change regression from the source prose. PSEUDOCODE: authenticate wealth vintages -> gate C08 units/ownership -> only resolved source unit and owner can form interaction -> fit stated model -> table rows and narrative -> explicit no-estimate for U04. A small or imprecise interaction is not proof of no inheritance effect; no economically-negligible band or equivalence test is registered.

Unresolved target gates: U01, U02, C01, A01, A02, A03, C08, U04, A11.

Retained source targets: table_b4, prose_10, prose_11, prose_12.

Incorporated specification and actual evidence

Read prereg/data-contract.md D1-D8, replication/matching-specification.md where applicable, schema-evidence.md, target-inventory.md and deviations.md as part of this

protocol. Source target order, field definitions, sample restrictions, formulae, intervals, source-only tests and missing-data rules are fixed there. Conflicting decisions remain no-estimate; source-supported partial results do not fill another target's gap. No confidential input or result is present now.

```

INPUT = authenticated source-vintage tables named in registration.tables
TARGETS = this Atom's full source inventory, including unavailable prose
↪ claims
for target in TARGETS in source order:
    required = target's exact panel/outcome/sample/model/contrast
    ↪ specification
    blockers = unresolved source choices + missing required
    ↪ vintage/key/year/crosswalk
    if blockers: emit target-status(no-estimate, exact reasons); emit
    ↪ numeric-null rows; continue
    panel = derive required source panel, with prescribed source restrictions
    ↪ in prescribed order
    verify unique source units, explicit observed year set and
    ↪ source-authorized join keys
    if source estimator cannot identify required target: emit scientific
    ↪ boundary with reason; continue
    result = evaluate only required source formula using prescribed inference
    ↪ semantics
    if execution fails: log operational failure and leave pending; do not
    ↪ record a scientific null
    else: emit all keyed estimates/SE/CI/baselines/N/source-reported
    ↪ contrasts, not a favorable subset
write results.csv; target-status.csv; interpretation.md; named figure output
↪ interfaces
interpret each outcome and contrast in its own units and uncertainty;
↪ preserve mixed results

```

Each figure output `<figure_id>-effects.csv` contains `target_id,panel,series,x,estimate,lower,upper,unit,status,reason,bin_left,bin_right`. For histogram source bins, edges are supplied only after source identification. `<figure_id>-annotations.csv` contains `target_id,panel,series,statistic,term,value,unit,status,reason` for source-reported DID,SE,difference,F,p,baseline,N. Tables/prose use results.csv key `target_id,panel,series,x,statistic,term` and D8 additional metadata. Numeric fields null when unavailable. Do not create actual CSV files during conversion. See figures.yaml and results-map.md for exact input names and manuscript bindings.

Scientific interpretation is outcome/estimand-specific: signed magnitude and source95% intervals (or source SE-only table), relevant source-reported subgroup contrasts, and source-compatible limitations. Statistical imprecision is retained as evidence, not an unavailable observation. There is no replication-success cutoff, invented power, equivalence band or significance-based execution. The native numeric ratings are required compatibility metadata (neutral3 and 0.5), not an elicited novelty ranking, empirical feasibility claim or success score. This replica lane has no tournament or reviewer.

Remaining registration fields

The `preregistration.protocol` field is reproduced in full immediately above; all remaining fields are reproduced below.

```
id: atom-000008
topic: Inheritance channel
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: canonical
  question: Does the source relationship between pre-death family wealth and
    earnings responses support its inheritance explanation?
  rationale: All parental/own-wealth variants address the inheritance
    ↪ question;
    they are retained together even when unavailable.
  assumption: Source correspondence and input coverage must be established
    as specified. Interpretation stays within this source
    ↪ descriptive/associational
    scope; shared treatment does not establish causal mediation.
  target_strength: associational
  target_shape: comparison
  ratings:
    importance: 3
    novelty: 3
    feasibility: 3
    data_advantage: 3
    informativeness: 0.5
  tables:
    - BEF
    - FAIN
    - DODSAARS
    - DODSAASG
    - IND
    - IDAP
    - IDAN
    - IDAS
    - UDDA
  activation: 'TRUE'
  verdicts:
    - key: evidence
      region: All retained source targets have actual estimates and their
        ↪ source-required
        uncertainty/interpretation, with no unresolved target.
      says: Report the complete actual outcome vector. Coverage alone gives
        no direction, causal conclusion or replication confirmation.
    - key: partial
      region: At least one source target has actual evidence and at least one
        has a conclusive source/input no-estimate disposition.
      says: Report available signed estimates and uncertainty, including mixed
        findings, beside every missing target and its exact limitation. Do not
        generalize the available subset to the missing scope.
    - key: boundary
```

```

region: No retained source target is estimable after a conclusive
↔ source-definition
or input boundary; this is not an operational failure.
says: There is no scientific estimate for this source scope. The paper
is neither confirmed nor refuted by inability to estimate.
- key: otherwise
region: otherwise
says: Retain unresolved or inconclusive scientific disposition with actual
evidence if any. Operational failures remain pending and are not done()
or a statistical null.

```

Registered source module

Does the source relationship between pre-death family wealth and earnings responses support its inheritance explanation?

No current result, realized strength, evidence path or empirical replication is recorded. The preregistration protocol owns scientific specification and local states; manuscript/graph views are derived. Source locators, blockers and result interfaces are incorporated above. Scientific module purpose: All parental/own-wealth variants address the inheritance question; they are retained together even when unavailable.

Reference implementation

Entry point and supported/unresolved components for `atom-000008`: [execution index](#). See [engineering review](#). This pointer does not amend the registered protocol.

atom-000009: Family formation

Family formation

Use the main NN sample and source D1/D5 demographics. B17 panelA cohabitation indicator `E_FAELLE_ID` nonempty, panelB number of linked children in the year. The fertility outcome is a stock count, not a new birth rate or conception measure. Use `analysis_5`'s outcome loop for cohabitation and child, `Eq4` mother/father×post separately by adult sex, event/year/age/person×match FE, clusterperson×match. Keep source child-count treatment from this consuming program (do not import the `cap5` used only in descriptive tables). Mother/father×men/women effects, source95% intervals, sex differences per parent, parent differences per sex, baselines and N are the whole module. PSEUDOCODE: main-sample gate -> source yearly cohabitation/count fields -> source `Eq4` and printed pooled contrasts -> emit B17 rows -> interpret signs/uncertainty alongside labor evidence. The source argues these responses inform family-behavior explanations, but a count response cannot establish a causal mediation effect or prove family choices irrelevant. No marriage-only outcome or new fertility horizon is added.

Unresolved target gates: U01, U02, C01, A01, A02, A03, A11.

Retained source targets: `figure_b17`.

Incorporated specification and actual evidence

Read prereg/data-contract.md D1–D8, replication/matching-specification.md where applicable, schema-evidence.md, target-inventory.md and deviations.md as part of this protocol. Source target order, field definitions, sample restrictions, formulae, intervals, source-only tests and missing-data rules are fixed there. Conflicting decisions remain no-estimate; source-supported partial results do not fill another target’s gap. No confidential input or result is present now.

```
INPUT = authenticated source-vintage tables named in registration.tables
TARGETS = this Atom's full source inventory, including unavailable prose
→ claims
for target in TARGETS in source order:
  required = target's exact panel/outcome/sample/model/contrast
  → specification
  blockers = unresolved source choices + missing required
  → vintage/key/year/crosswalk
  if blockers: emit target-status(no-estimate, exact reasons); emit
  → numeric-null rows; continue
  panel = derive required source panel, with prescribed source restrictions
  → in prescribed order
  verify unique source units, explicit observed year set and
  → source-authorized join keys
  if source estimator cannot identify required target: emit scientific
  → boundary with reason; continue
  result = evaluate only required source formula using prescribed inference
  → semantics
  if execution fails: log operational failure and leave pending; do not
  → record a scientific null
  else: emit all keyed estimates/SE/CI/baselines/N/source-reported
  → contrasts, not a favorable subset
write results.csv; target-status.csv; interpretation.md; named figure output
→ interfaces
interpret each outcome and contrast in its own units and uncertainty;
→ preserve mixed results
```

Each figure output `<figure_id>-effects.csv` contains `target_id,panel,series,x,estimate,lower,upper,unit,status,reason,bin_left,bin_right`. For histogram source bins, edges are supplied only after source identification. `<figure_id>-annotations.csv` contains `target_id,panel,series,statistic,term,value,unit,status,reason` for source-reported DID,SE,difference,F,p,baseline,N. Tables/prose use results.csv key `target_id,panel,series,x,statistic,term` and D8 additional metadata. Numeric fields null when unavailable. Do not create actual CSV files during conversion. See figures.yaml and results-map.md for exact input names and manuscript bindings.

Scientific interpretation is outcome/estimand-specific: signed magnitude and source95% intervals (or source SE-only table), relevant source-reported subgroup contrasts, and source-compatible limitations. Statistical imprecision is retained as evidence, not an unavailable observation. There is no replication-success cutoff, invented power, equivalence band or significance-based execution. The native numeric ratings are required compatibility metadata (neutral3 and 0.5), not an elicited novelty ranking, empirical feasibility claim or success score. This replica lane has no tournament or reviewer.

Remaining registration fields

The `preregistration.protocol` field is reproduced in full immediately above; all remaining fields are reproduced below.

```
id: atom-000009
topic: Family formation
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: canonical
  question: How does the source parental-death design affect cohabitation
    and number of children?
  rationale: Cohabitation and fertility are the source family-formation
    ↪ analysis,
    independently interpretable from labor/health effects.
  assumption: Source correspondence and input coverage must be established
    as specified. Causal interpretation additionally requires the source
    ↪ parallel
    counterfactual trends/no relevant anticipation assumptions; the
    ↪ health/family
    patterns do not identify mediation.
  target_strength: causal
  target_shape: comparison
  ratings:
    importance: 3
    novelty: 3
    feasibility: 3
    data_advantage: 3
    informativeness: 0.5
  tables:
    - BEF
    - FAIN
    - DODSAARS
    - DODSAASG
    - IND
    - IDAP
    - IDAN
    - IDAS
    - UDDA
  activation: 'TRUE'
  verdicts:
    - key: evidence
      region: All retained source targets have actual estimates and their
        ↪ source-required
        uncertainty/interpretation, with no unresolved target.
      says: Report the complete actual outcome vector. Coverage alone gives
        no direction, causal conclusion or replication confirmation.
    - key: partial
      region: At least one source target has actual evidence and at least one
        has a conclusive source/input no-estimate disposition.
      says: Report available signed estimates and uncertainty, including mixed
        findings, beside every missing target and its exact limitation. Do not
        generalize the available subset to the missing scope.
```

- key: boundary
 - region: No retained source target is estimable after a conclusive
 - ↪ source-definition
 - or input boundary; this is not an operational failure.
 - says: There is no scientific estimate for this source scope. The paper is neither confirmed nor refuted by inability to estimate.
- key: otherwise
 - region: otherwise
 - says: Retain unresolved or inconclusive scientific disposition with actual evidence if any. Operational failures remain pending and are not done() or a statistical null.

Registered source module

How does the source parental-death design affect cohabitation and number of children?

No current result, realized strength, evidence path or empirical replication is recorded. The preregistration protocol owns scientific specification and local states; manuscript/graph views are derived. Source locators, blockers and result interfaces are incorporated above. Scientific module purpose: Cohabitation and fertility are the source family-formation analysis, independently interpretable from labor/health effects.

Reference implementation

Entry point and supported/unresolved components for atom-000009: [execution index](#). See [engineering review](#). This pointer does not amend the registered protocol.

atom-000010: Spousal earnings

Spousal earnings

Appendix A.C/B18 and clean_16/analysis_16 define a separate matching procedure; do not reuse the main NN pair list as if it were the spouse design. Fix event-time cohabiting/married partner, build both biological adult and spouse histories, restrict biological bereaved adult25–50 and sudden first death; spouse youngest child<6 at event. Spouse panel requires11 observed calendar years1985–2019 (event>=1990), own parental links, matched counterpart without parent-in-law death within window. Parent-in-law mother/father role follows bereaved partner. Source matches biological adult sex; spouse sex becomes plotted sex. Do not assume same-sex couples absent. Detailed spouse matching source in matching-specification.md preserves age bins3 years, two positive-earnings quantiles, main/spouse histories, year-specific21-versus17 coarsened strata and the exact missing recipe boundary. The 17-group years1986–89/2010 and group table are source code, not invented new cohorts. A09 blocks population-presence versus survival, order/duplicate and contrast discrepancies. Source matching additionally uses cohabitation duration2, but the ordering to define duration is unresolved. After young-child restriction, source earnings p1/p99 winsorization and index100 by spouse sex and t=-1 mean across T/C. Eq4 in

separate models uses spouse×match FE, spouse age, calendar year, event time; cluster spouse×match. Pooled gender contrast uses biological age and extra parental variables, so cannot silently supply differences from a different model. Four plotted coefficients mother-in-law/father-in-law×men/women with source95% intervals and printed comparisons/baselines/N are retained. PSEUDOCODE: spouse-specific source matching gates -> event partner and young-child eligibility -> original complete-window restriction -> source normalization -> resolved Eq4 specification -> B18 estimates or numeric-null reasons. No new earnings response for older/childless partners, no inference that completion proves informal-care spillovers.

Unresolved target gates: U01, U02, A01, A02, A03, A09, A11.

Retained source targets: figure_b18.

Incorporated specification and actual evidence

Read prereg/data-contract.md D1–D8, replication/matching-specification.md where applicable, schema-evidence.md, target-inventory.md and deviations.md as part of this protocol. Source target order, field definitions, sample restrictions, formulae, intervals, source-only tests and missing-data rules are fixed there. Conflicting decisions remain no-estimate; source-supported partial results do not fill another target’s gap. No confidential input or result is present now.

```
INPUT = authenticated source-vintage tables named in registration.tables
TARGETS = this Atom's full source inventory, including unavailable prose
↳ claims
for target in TARGETS in source order:
  required = target's exact panel/outcome/sample/model/contrast
  ↳ specification
  blockers = unresolved source choices + missing required
  ↳ vintage/key/year/crosswalk
  if blockers: emit target-status(no-estimate, exact reasons); emit
  ↳ numeric-null rows; continue
  panel = derive required source panel, with prescribed source restrictions
  ↳ in prescribed order
  verify unique source units, explicit observed year set and
  ↳ source-authorized join keys
  if source estimator cannot identify required target: emit scientific
  ↳ boundary with reason; continue
  result = evaluate only required source formula using prescribed inference
  ↳ semantics
  if execution fails: log operational failure and leave pending; do not
  ↳ record a scientific null
  else: emit all keyed estimates/SE/CI/baselines/N/source-reported
  ↳ contrasts, not a favorable subset
write results.csv; target-status.csv; interpretation.md; named figure output
↳ interfaces
interpret each outcome and contrast in its own units and uncertainty;
↳ preserve mixed results
```

Each figure output <figure_id>-effects.csv contains target_id,panel,series,x,estimate,lower,upper,unit,status,reason,bin_left,bin_right. For histogram source bins, edges are supplied only after source identification. <figure_id>-annotations.csv contains target_id,panel,series,statistic,term,value,unit,status,reason for source-reported DID,SE,difference,F,p,baseline,N. Tables/prose use

results.csv key target_id,panel,series,x,statistic,term and D8 additional metadata. Numeric fields null when unavailable. Do not create actual CSV files during conversion. See figures.yaml and results-map.md for exact input names and manuscript bindings.

Scientific interpretation is outcome/estimand-specific: signed magnitude and source95% intervals (or source SE-only table), relevant source-reported subgroup contrasts, and source-compatible limitations. Statistical imprecision is retained as evidence, not an unavailable observation. There is no replication-success cutoff, invented power, equivalence band or significance-based execution. The native numeric ratings are required compatibility metadata (neutral3 and0.5), not an elicited novelty ranking, empirical feasibility claim or success score. This replica lane has no tournament or reviewer.

Remaining registration fields

The preregistration.protocol field is reproduced in full immediately above; all remaining fields are reproduced below.

```
id: atom-000010
topic: Spousal earnings
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: canonical
  question: What are the source earnings spillovers to adult partners with
    young children after a first parent-in-law death?
  rationale: The spouse outcome and its separately matched population are
    an independent spillover question; sharing family links does not merge
    it with adult-child earnings.
  assumption: Source correspondence and input coverage must be established
    as specified. Causal interpretation additionally requires the source
    ↪ parallel
    counterfactual trends/no relevant anticipation assumptions; the
    ↪ health/family
    patterns do not identify mediation.
  target_strength: causal
  target_shape: comparison
  ratings:
    importance: 3
    novelty: 3
    feasibility: 3
    data_advantage: 3
    informativeness: 0.5
  tables:
    - BEF
    - FAIN
    - DODSAARS
    - DODSAASG
    - IND
```

- IDAP
- IDAN
- IDAS
- UDDA

activation: 'TRUE'

verdicts:

- key: evidence
 - region: All retained source targets have actual estimates and their
 - ↪ source-required
 uncertainty/interpretation, with no unresolved target.
 - says: Report the complete actual outcome vector. Coverage alone gives no direction, causal conclusion or replication confirmation.
- key: partial
 - region: At least one source target has actual evidence and at least one has a conclusive source/input no-estimate disposition.
 - says: Report available signed estimates and uncertainty, including mixed findings, beside every missing target and its exact limitation. Do not generalize the available subset to the missing scope.
- key: boundary
 - region: No retained source target is estimable after a conclusive
 - ↪ source-definition
 or input boundary; this is not an operational failure.
 - says: There is no scientific estimate for this source scope. The paper is neither confirmed nor refuted by inability to estimate.
- key: otherwise
 - region: otherwise
 - says: Retain unresolved or inconclusive scientific disposition with actual evidence if any. Operational failures remain pending and are not done() or a statistical null.

Registered source module

What are the source earnings spillovers to adult partners with young children after a first parent-in-law death?

No current result, realized strength, evidence path or empirical replication is recorded. The preregistration protocol owns scientific specification and local states; manuscript/graph views are derived. Source locators, blockers and result interfaces are incorporated above. Scientific module purpose: The spouse outcome and its separately matched population are an independent spillover question; sharing family links does not merge it with adult-child earnings.

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: Work choice responses

Work choice responses

TableB5 in A.D uses source main NN sample. Occupation is the first4 digits of the source main labor occupation (AKM employee code or valid self-employed code when self-employed); invalid999999/999900/000000 codes are missing. Source comparison

searches up to 8 earlier nonmissing records in person×match, with unspecified sort A10. Its source complete-panel minimum year≥1992 implies event≥1997. Do not introduce a DISCO harmonization or adjacent-year switch definition. Firm-to-firm change is 1 when source consecutive annual main-job LBNRs are both nonmissing and differ, 0 otherwise after source cleanup. Public sector is source public indicator conditional on employment ATP>0. The public classification uses early IDAS ownership 07/08/09 and later IDAN sector codes; see D3. Estimate source Eq3 separately by sex for each outcome: columns occupation men,women; firm men,women; public-if-employed men,women. Preserve coefficients, clustered SE, observation N and mean over pre-event t<0. Table contains no extra group contrasts; do not create them or add job-quality/leisure outcomes. PSEUDOCODE: source main sample and field-vintage gate -> independently resolve occupation order versus firm/sector fields -> derive each authorized indicator without substituted missing definitions -> fit source Eq3 -> output six columns and premeans, or cell-specific reasons. Lack of a precise job-transition response is not an equivalence finding, nor direct evidence that preferences were unchanged.

Unresolved target gates: U01, U02, C01, A01, A02, A03, A10, A11.

Retained source targets: table_b5.

Incorporated specification and actual evidence

Read prereg/data-contract.md D1–D8, replication/matching-specification.md where applicable, schema-evidence.md, target-inventory.md and deviations.md as part of this protocol. Source target order, field definitions, sample restrictions, formulae, intervals, source-only tests and missing-data rules are fixed there. Conflicting decisions remain no-estimate; source-supported partial results do not fill another target’s gap. No confidential input or result is present now.

```
INPUT = authenticated source-vintage tables named in registration.tables
TARGETS = this Atom's full source inventory, including unavailable prose
  ↳ claims
for target in TARGETS in source order:
  required = target's exact panel/outcome/sample/model/contrast
    ↳ specification
  blockers = unresolved source choices + missing required
    ↳ vintage/key/year/crosswalk
  if blockers: emit target-status(no-estimate, exact reasons); emit
    ↳ numeric-null rows; continue
  panel = derive required source panel, with prescribed source restrictions
    ↳ in prescribed order
  verify unique source units, explicit observed year set and
    ↳ source-authorized join keys
  if source estimator cannot identify required target: emit scientific
    ↳ boundary with reason; continue
  result = evaluate only required source formula using prescribed inference
    ↳ semantics
  if execution fails: log operational failure and leave pending; do not
    ↳ record a scientific null
  else: emit all keyed estimates/SE/CI/baselines/N/source-reported
    ↳ contrasts, not a favorable subset
```

```

write results.csv; target-status.csv; interpretation.md; named figure output
↪ interfaces
interpret each outcome and contrast in its own units and uncertainty;
↪ preserve mixed results

```

Each figure output `<figure_id>-effects.csv` contains `target_id,panel,series,x,estimate,lower,upper,unit,status,reason,bin_left,bin_right`. For histogram source bins, edges are supplied only after source identification. `<figure_id>-annotations.csv` contains `target_id,panel,series,statistic,term,value,unit,status,reason` for source-reported DID,SE,difference,F,p,baseline,N. Tables/prose use results.csv key `target_id,panel,series,x,statistic,term` and D8 additional metadata. Numeric fields null when unavailable. Do not create actual CSV files during conversion. See figures.yaml and results-map.md for exact input names and manuscript bindings.

Scientific interpretation is outcome/estimand-specific: signed magnitude and source95% intervals (or source SE-only table), relevant source-reported subgroup contrasts, and source-compatible limitations. Statistical imprecision is retained as evidence, not an unavailable observation. There is no replication-success cutoff, invented power, equivalence band or significance-based execution. The native numeric ratings are required compatibility metadata (neutral3 and 0.5), not an elicited novelty ranking, empirical feasibility claim or success score. This replica lane has no tournament or reviewer.

Remaining registration fields

The `preregistration.protocol` field is reproduced in full immediately above; all remaining fields are reproduced below.

```

id: atom-000011
topic: Work choice responses
atom_result: prereg
atom_strength: null
atom_shape: null
evidence_paths: []
concepts: []
literature: []
bonds: []
preregistration:
  version: 1
  mode: canonical
  question: What does the source job-transition analysis show about
    ↪ occupational,
      firm and sector responses to parental death?
  rationale: The three job-choice outcomes form the original
    ↪ preference-related
      module; routine occupational coding is part of this analysis, not another
      Atom.
  assumption: Source correspondence and input coverage must be established
    as specified. Causal interpretation additionally requires the source
    ↪ parallel
      counterfactual trends/no relevant anticipation assumptions; the
    ↪ health/family
      patterns do not identify mediation.

```

```

target_strength: causal
target_shape: comparison
ratings:
  importance: 3
  novelty: 3
  feasibility: 3
  data_advantage: 3
  informativeness: 0.5
tables:
- BEF
- FAIN
- DODSAARS
- DODSAASG
- IND
- IDAP
- IDAN
- IDAS
- UDDA
- AKM
activation: 'TRUE'
verdicts:
- key: evidence
  region: All retained source targets have actual estimates and their
    ↪ source-required
    uncertainty/interpretation, with no unresolved target.
  says: Report the complete actual outcome vector. Coverage alone gives
    no direction, causal conclusion or replication confirmation.
- key: partial
  region: At least one source target has actual evidence and at least one
    has a conclusive source/input no-estimate disposition.
  says: Report available signed estimates and uncertainty, including mixed
    findings, beside every missing target and its exact limitation. Do not
    generalize the available subset to the missing scope.
- key: boundary
  region: No retained source target is estimable after a conclusive
    ↪ source-definition
    or input boundary; this is not an operational failure.
  says: There is no scientific estimate for this source scope. The paper
    is neither confirmed nor refuted by inability to estimate.
- key: otherwise
  region: otherwise
  says: Retain unresolved or inconclusive scientific disposition with actual
    evidence if any. Operational failures remain pending and are not done()
    or a statistical null.

```

Registered source module

What does the source job-transition analysis show about occupational, firm and sector responses to parental death?

No current result, realized strength, evidence path or empirical replication is recorded. The preregistration protocol owns scientific specification and local states; manuscript/graph views are derived. Source locators, blockers and result interfaces are incorporated above. Scientific module purpose: The three job-choice outcomes form the original preference-related module; routine occupational coding is part of this analysis, not another Atom.

Reference implementation

Entry point and supported/unresolved components for `atom-000011`: [execution index](#).
See [engineering review](#). This pointer does not amend the registered protocol.