

Performance Shift Diagnostics

A shared reporting anomaly can coexist with a real operating fault

An operating-project case on investigating abrupt delivery-claim changes across business lines. It tests competing physical and reporting explanations, reconciles daily and weekly measures, and designs a controlled response that protects service while evidence matures.

ANOMALY DIAGNOSIS & REPORTING INTEGRITY

BLUF / BOTTOM LINE UP FRONT

Keep the physical and reporting investigations open until independent evidence resolves each.

RECALCULATED FINDING

Analytical finding: synchronized changes and unaffected comparison metrics do not uniquely identify a reporting fault. A daily anomaly cannot be subtracted from a weekly rate without its exposure weight; a revised comparison column is not proof of a completed restatement.

CONTRIBUTION IN THE SOURCE RECORD

Provisional contribution: diagnostic framing and reporting decisions. Root-cause validation and upstream repair had separate owners.

EVIDENCE STATUS

Original artifacts were not recovered. The record supports an investigation and reporting-design case; closure, customer impact and savings remain unverified.

BLUF: analytical inference. Source contribution: historical record. Client and internal identities anonymized.

STRUCTURED ABSTRACT / DECISION BRIEF

Respond to the anomaly without prematurely closing a cause

[AI] The operating decision is where to send scarce investigation and field capacity while the reliability of the reporting signal is itself uncertain.

Context

[HR] Delivery-claim measures rose abruptly in separate business lines. A weekly operating review identified a common onset, differences among delivery dispositions and unusual telemetry patterns. The executive owner proposed shared validation, withheld selected subcategory comparisons and retained a field action while the cause remained open.

Objective

[HR] The mechanism sought to distinguish an operating defect from a measurement or intake change and to specify what would trigger a restatement. The register attributes the diagnostic framing, reporting decisions and a later driver pull to the executive; validation, field execution and upstream remediation had separate owners.

Approach

[AI] The Sequential Diagnosis-and-Release Contract (SDRC) preserves data vintage and original exposure, tests physical and reporting pathways independently, permits coexisting causes and ties publication to explicit evidence and authority. Exact constructions expose nonidentification; a prospective operating model tests a time-bounded response package.

Findings

[AI] Synchronized changes do not exclude a common physical shock. A weekly volume movement does not determine the denominator on the anomaly day. The proposed daily-to-weekly correction requires missing weights, and a later comparison-column change does not establish an authorized restatement. A documentary deadline is not evidence that the validation was completed.

Decision value

[PD] The operating owner should preserve customer protection while assigning separate physical and reporting checks. The data owner should publish a version-and-scope reconciliation. Commission a bounded response-policy test only after reference quality, capacity, costs and economic detectability are established.

Implications

[AI] The contribution is a disciplined investigation and reporting intervention, provisionally supported by the register. The case provides a stronger closure and response design; it does not establish that all observed deterioration was artificial, that field work was costlessly avoided or that historical customer outcomes improved.

[HR] Selected source register S1; original recovery and quantities are private. [RC] recalculated; [AI] analytical inference; [PD] proposed design. No historical causal effect is established.

EXECUTIVE EXHIBIT 1 / COMPETING EXPLANATIONS

A common onset narrows the search without identifying the cause

[HR] The source interpreted a same-day change across business lines and a contrasting attended-delivery pattern as evidence of a systemic reporting problem.

DIAGNOSIS CONTRACT / FOUR STATES REMAIN POSSIBLE

Separate the physical-service question from the reporting-integrity question

PHYSICAL ONLY Real service fault; reporting valid	REPORTING ONLY Observation fault; service unchanged
BOTH Service and observation need repair	NEITHER Other explanation or routine movement

A synchronized pattern does not distinguish these states without additional assumptions.

Observed pattern	What it can and cannot establish
Simultaneous business-line change	A shared process or upstream condition deserves investigation. Common weather, demand, routing or operating changes can also affect separately managed networks.
Unattended-versus-attended contrast	The mechanism may act differently across delivery types. Exposure mix, risk and treatment reach must be comparable before the contrast identifies a recording failure.
Comparison metric does not step	Useful only if the proposed common shock would affect that metric and its measurement remains valid. A negative control can miss outcome-specific physical harm.

[AI] The new exact construction holds the observed cross-business and disposition pattern fixed under a common physical-failure change and under a capture change. It also permits both processes to change together. Pattern recognition is a triage input; it is not a binary causal verdict.

DIAGNOSTIC ACTION

[PD] Test physical service and recording integrity independently. Name alternative common causes, specify what each check could falsify, and retain the both-causes state until the evidence rules it out.

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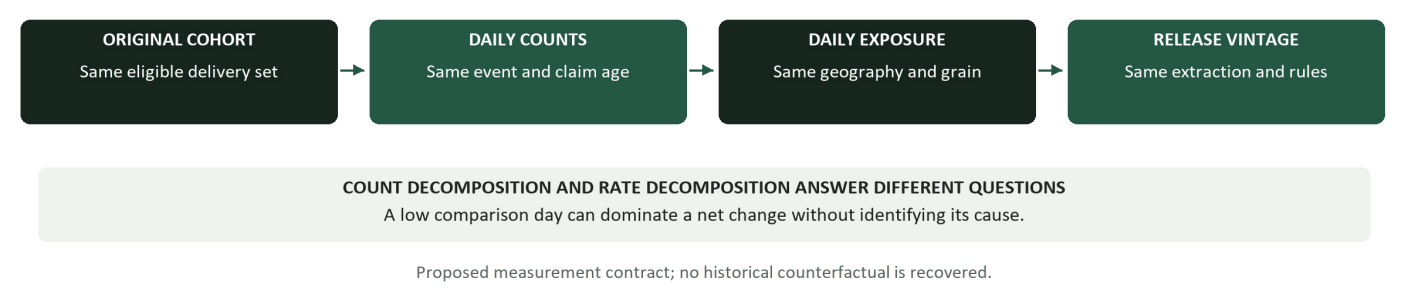
EXECUTIVE EXHIBIT 2 / EXPOSURE AND BASELINE

Match the numerator and denominator at the anomaly’s grain

[HR] The diagnosis used a weekly volume decline to dismiss a denominator explanation for a daily rate jump. A later weekly unit increase was concentrated on one matched weekday.

EXPOSURE CONTRACT / ALIGN EVERY COMPONENT

A daily rate cannot be diagnosed from a weekly volume change alone



Quantity	Required interpretation
Daily rate change	Needs daily numerator and daily eligible exposure from the same vintage. A weekly volume decline can coexist with many different daily exposure paths.
Weekly unit decomposition	A matched-day sum can locate where a net unit change occurs. It does not identify a change in physical risk or the correct counterfactual baseline.
Low comparison day	A rebound from a low recorded baseline can dominate a weekly difference. Whether that baseline is ordinary variation, missing data or real improvement needs separate evidence.

[AI] A smaller denominator can increase a rate even when the numerator is unchanged. Weekly volume and a daily rate cannot establish which component moved. Likewise, observing similar levels on adjacent comparison weekdays does not prove the intervening day was a statistical outlier or that the latest week has returned to normal.

REQUIRED PULL

[PD] Freeze original delivery cohorts, date, geography, business line, source version and claims maturity. Retrieve daily counts and exposures together. Decompose counts and rates separately before assigning a physical or reporting explanation.

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EXECUTIVE EXHIBIT 3 / WEIGHTED ADJUSTMENT

Weight the suspect day before adjusting the week

[RC] The recorded daily gap, rest-of-week average and weekly adjustment cannot be accepted as one coherent correction without the missing exposure weights and averaging definition.

WEIGHTED CORRECTION / SAME DAILY RATES, DIFFERENT WEEKLY EFFECT

Independent hypothetical indices: suspect day 180; other days combined 100

SUSPECT DAY EXPOSURE: 10%

Weekly rate: 108

Replace suspect day with 100

Weekly reduction: 8 index points

SUSPECT DAY EXPOSURE: 25%

Weekly rate: 120

Replace suspect day with 100

Weekly reduction: 20 index points

Weekly rate = $w \times 180 + (1-w) \times 100$; w = suspect-day exposure share. Arithmetic, not a causal effect.

[PD] In the independent illustration, the suspect day has an indexed rate of 180 and the remaining days have a combined exposure-weighted rate of 100. If the suspect day carries 10% of weekly exposure, the weekly rate is 108 and replacement removes 8 points. At 25% exposure, the same daily rates produce 120 and replacement removes 20 points.

The source reconciliation changes the conclusion

[RC] Under the same-scope exposure-weighted interpretation, the reported weekly and daily figures imply a correction different from the stated one. Under an unweighted-average interpretation, the missing day exposures prevent identification of that correction. The previously stated residual therefore remains conditional; it is not an independently established operating deterioration.

[AI] Even a perfectly weighted arithmetic replacement is not a causal estimate. Replacing an anomalous day with a reference level assumes that reference is its relevant counterfactual. A real physical shock and a recording distortion can both contribute to the observed day.

PUBLICATION RULE

[PD] Publish the recorded rate and a clearly labelled sensitivity until daily exposure, common scope and reference validity are established. Preserve the original version; do not promote a convenient weekly subtraction into a corrected outcome.

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EXECUTIVE EXHIBIT 4 / VINTAGE AND POPULATION

A changed comparison column is an unresolved release event

[HR] Successive review documents reported different values for the same prior week. The register contains no explicit statement that those differences were an approved restatement.

RELEASE CONTRACT / RETAIN BOTH VINTAGES

A different prior-period comparison cell is evidence of a discrepancy, not its cause



MATURATION, CORRECTION AND SCOPE CHANGE REQUIRE DIFFERENT EXPLANATIONS
File metadata and a similar anomaly magnitude do not establish the same event.

Historical coordinates remain private. A documented change reason determines its treatment.

Reconciliation issue	Evidence needed to close it
Same period, different release	Recover query versions, maturity cutoffs, eligible populations and taxonomy. Later data can reflect maturation, correction or a different basis; recency alone does not select truth.
National versus combined scope	A station-concentration denominator has a competing geographic interpretation. Its equality to a combined-country net change is a diagnostic clue, not proof of contamination.
Gross-positive versus net delta	Improving locations offset deteriorating locations in a net sum. A top-location share must state its denominator and reconcile the signed station ledger.

[AI] Source metadata and similar anomaly magnitudes do not establish that a network flash discussed the same event as a later bridge. A creation date is not proof of publication time. A normalized export can reproduce counts if its denominators, filters and aggregation match; normalization alone does not explain a material count discrepancy.

RELEASE OWNER ACTION

[PD] Retain both vintages and publish an affected-scope reconciliation with reason, authorizer and decision consequence. Keep a cross-document discrepancy separate from a confirmed restatement and an explicit claim of recovery.

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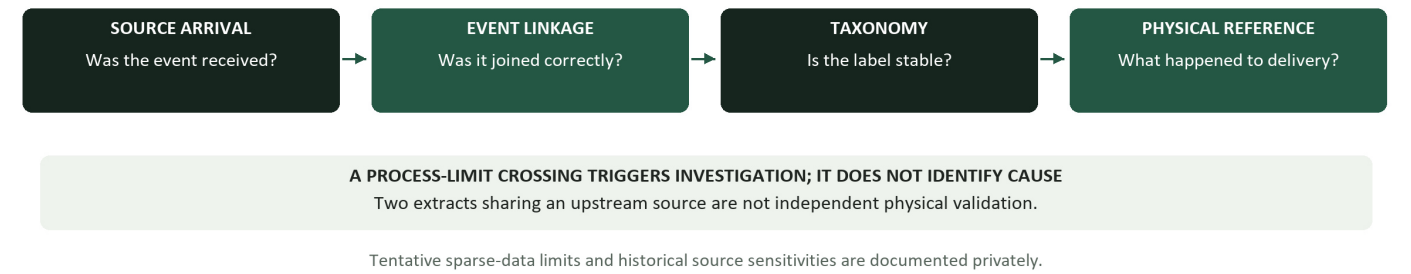
EXECUTIVE EXHIBIT 5 / TELEMETRY AND VARIATION

A missing signal can justify investigation without proving better behaviour

[HR] Some behaviour-code counts fell sharply while a missing-proof category rose. A second extracted view showed a similar shape but different totals.

TELEMETRY CONTRACT / CHECK ARRIVAL BEFORE INTERPRETING BEHAVIOUR

A low attributed count may reflect physical change, missing data or taxonomy migration



Diagnostic result	Bounded interpretation
Tentative telemetry crossings	Selected recorded series cross provisional natural-process limits. This supports investigation of those observations; it does not identify a physical cause or establish a stable historical phase.
Other movements within limits	Do not narrate them as demonstrated deterioration or improvement. Sparse data and variable exposure also prevent a claim that the process is reliably stable.
Parent and sibling categories	A combined view is valid only if event membership is complete, nonoverlapping and definitionally stable. Similar labels alone do not establish a conserved partition.

[AI] A data fault, a physical change and a taxonomy change can each alter a behaviour code. Agreement between two extracts from the same underlying source is not independent validation of physical truth. The public case preserves the diagnostic findings while retaining raw, indexed and conflicting source coordinates privately.

MEASUREMENT ACTION

[PD] Audit telemetry arrival, event lineage, taxonomy and unknowns against independently sampled delivery evidence. Record each observation’s process-limit status. Do not turn absent data into favourable behaviour or assume a parent metric is valid because its subcategories are not.

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EXECUTIVE EXHIBIT 6 / RESPONSE POLICY

Treat the field action as a costed option, not a guaranteed hedge

[HR] The source retained a proof-capture field action while validation remained open and described it as useful under either candidate explanation. Effectiveness and resource consequences were not measured.

RESPONSE CONTRACT / DUAL TRACKS WITH SHARED RESOURCE CONSEQUENCES

Do not close physical validation just because a reporting fault is detected



Policy component	Required protection
Physical track	Use independent evidence to decide whether a field response is warranted. Preserve original customer promises and claim rights while the reporting path is investigated.
Reporting track	Repair and validate capture or classification separately. A data repair changes the observation path; it is not automatically a physical-service improvement.
Shared capacity	Price field dispatch, diagnostic work, delay and effects on ordinary flow. A false positive can consume capacity; a premature data-only diagnosis can leave real harm untreated.

[PD] The prospective finite model compares a specified serial-triage policy with a time-bounded dual-track policy across physical-only, reporting-only, both and neither states. It estimates outcomes on all original eligible work and retains mistakes and unresolved cases. Invented probabilities are planning assumptions, not historical estimates.

TEST BEFORE SCALING

[PD] Randomize independent response domains only where ordinary service can be protected. Require economic break-even detectability and the prespecified customer and capacity safeguards. If those conditions fail, revise the response package rather than declare the diagnosis sufficient.

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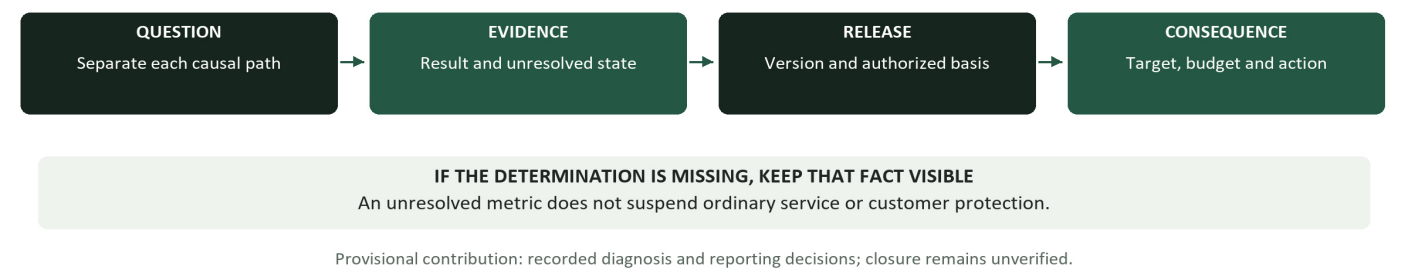
EXECUTIVE EXHIBIT 7 / CONTRIBUTION AND CLOSURE

Close the evidence obligation in the next reporting cycle

[HR] The recorded mechanism named a validation owner, due date and restatement condition. The next available review opened further validation; the selected corpus does not contain the expected original branch determination or closure artifact.

CLOSURE CONTRACT / CARRY THE OBLIGATION INTO THE NEXT CYCLE

Renewing a deadline does not establish that the prior evidence question was answered



Accountable role	Completion evidence
Operating executive	Provisional hoop support for diagnostic framing and reporting decisions from the named-owner line and reproduced content. Original authorship and the later query artifact remain to be authenticated.
Validation and platform owners	A signed determination for each causal pathway, test results, unresolved alternatives and recovery boundaries. A named owner or new deadline is not the determination itself.
Release owner	A version-linked notice stating correction, maturation, scope change or unresolved discrepancy, plus the effect on targets and field actions. Preserve the earlier release.

[AI] Missing local evidence does not prove no work occurred elsewhere. The executive’s supported contribution is the recorded investigation and reporting mechanism, not independently verified upstream repair, avoided field cost or customer benefit. A reporting hold also does not suspend ordinary customer protection.

COO DECISION

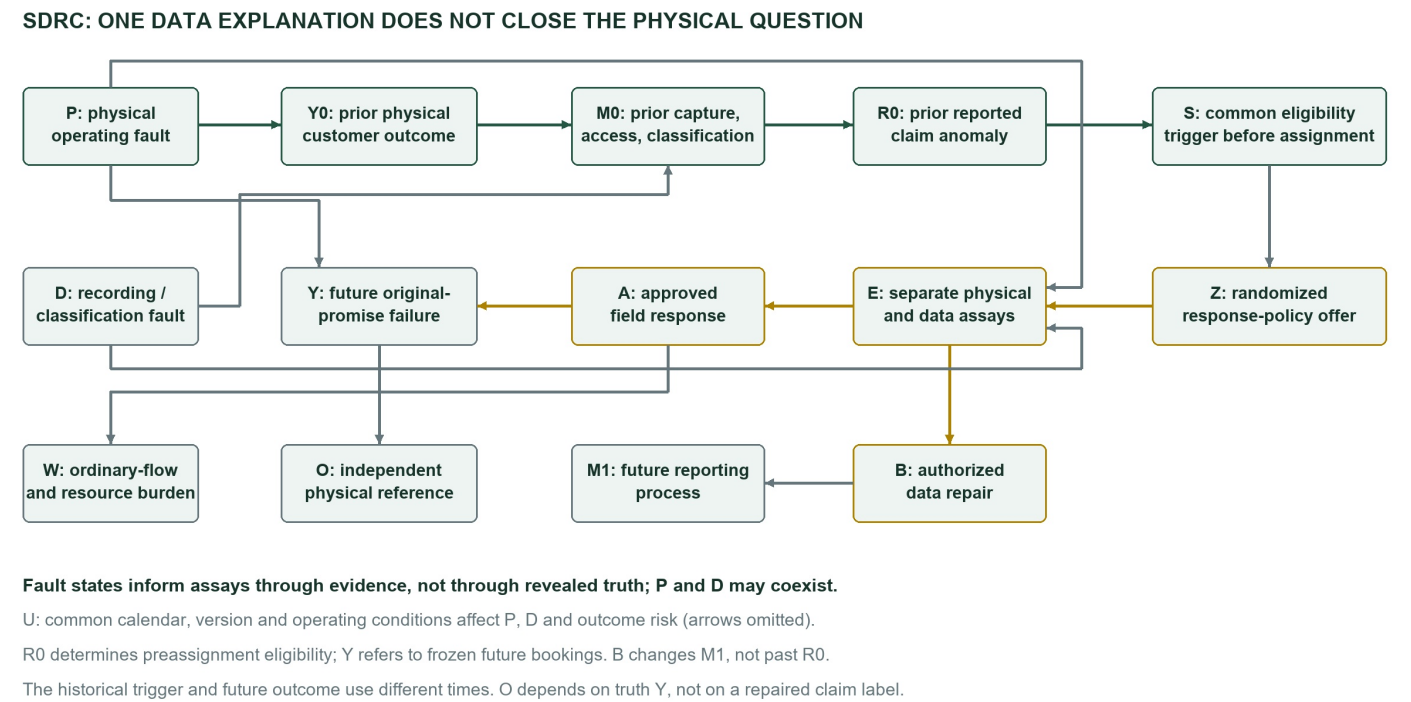
[PD] Require a closure row before renewing the action list. If evidence remains missing, state the unresolved decision and preserve its budget and service safeguards. Commission further work only when the likely decision benefit justifies its full cost.

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TECHNICAL ANALYSIS

A reporting explanation leaves a physical branch open

[AI/PD] The proposed Sequential Diagnosis-and-Release Contract (SDRC) separates an observed anomaly, its possible causes, the response decision and independently measured customer service.



[PD] P is a physical operating fault; D is a recording or classification fault. Both may exist. Prior outcome Y0 enters reported bucket R0 through capture, access and taxonomy M0. Trigger S selects incidents before randomized response policy Z. Future Y is physical failure at the original customer deadline; future reporting uses M1. The policy receives assays E, not hidden fault states.

[PD] Approved field action A may change future Y and ordinary-flow burden W. Data repair B changes M1; it earns no physical savings merely by relabeling a record. O is an independently obtained receipt reference that depends on actual Y. U includes common calendar, network, application and operating conditions; it can affect both P and D.

[AI] Conditioning on anomalous R0 can associate physical and data faults even if they were otherwise independent. Randomization within the common selected frame identifies the offered policy effect for eligible incidents; it does not identify historical fault prevalence or transport automatically to all operations. The arrows describe proposed mechanisms, not a recovered causal history.

Basis: proposed SDRC [PD]; causal and measurement distinctions [AI]. All incident-source quantities remain private.

TECHNICAL ANALYSIS

The same signature can come from different mechanisms

[AI] In this independent finite construction, two businesses step together, every unattended category rises proportionally, and attended and damage counts remain flat. Every reported quantity is identical across the two worlds.

Synthetic business A: 1,000 original deliveries	Capture-only world	Physical-change world
True unattended counts before	40 / 40 / 20	40 / 40 / 20
True unattended counts after	40 / 40 / 20	50 / 50 / 25
Capture before / after	0.8 / 1.0	0.8 / 0.8
Recorded counts before	32 / 32 / 16	32 / 32 / 16
Recorded counts after	40 / 40 / 20	40 / 40 / 20
Attended / damage counts, unchanged	20 / 10	20 / 10

[AI] Business B has twice the deliveries and every count shown. Capture has no false positives in this example. Both worlds show a simultaneous 25% rise in each recorded unattended category. One has no underlying physical change; the other has 25 additional true unattended failures in A. Exact construction checks establish observational equivalence.

[HR/AI] The source pattern therefore supports investigation of common mechanisms without excluding a shared physical shock. Separately managed networks are not necessarily causally independent. A damage series is informative only against hypotheses under which it shares the relevant causes or measurement bias; an unattended-specific failure need not move damage or attended delivery.

[PD] Permit physical-only, data-only, both and neither findings, with unresolved states retained. Confirming a data fault should trigger a reporting correction and a separate decision on whether physical evidence is sufficient to close that branch. Graber and colleagues motivate the premature-closure analogy; Penning de Vries and Groenwold bound the negative-control inference.

Basis: exact independent counterexample.py/json [AI]; source pattern interpreted conditionally [HR/AI]. Synthetic quantities have no historical mapping.

TECHNICAL ANALYSIS

Weight the suspect day before replacing it

[AI] A daily rate gap is not a weekly rate contribution. Its weight is the suspect day's share of the common exposure denominator, not automatically one seventh.

Independent hypothetical quantity	World A	World B
Other days: combined exposure-weighted rate	100	100
Suspect-day rate	180	180
Suspect-day exposure share w	0.10	0.25
Observed weekly rate	108	120
Weekly reduction if suspect day is replaced by 100	8	20

$R_{\text{week}} = (1-w) R_{\text{other}} + w R_{\text{day}}$; replacement reduction = $w (R_{\text{day}} - R_{\text{replacement}})$.

[AI] Here R denotes events per fixed rate unit, and $w = N_{\text{day}} / N_{\text{week}}$. R_{other} is the exposure-weighted rate of all other days. If it is only an unweighted average, the identity cannot be applied without the underlying daily counts and exposures. The algebra validates weighting, not the assumed replacement rate or a claim that the whole daily excess was artificial.

[HR/AI] The source's weekly attribution depends on unreconciled weighting and comparison scopes. Its geography/Pareto denominator also admits a different source cut. Preserve both issues until the original query and daily denominator are recovered. A weekly volume decrease cannot rule out a daily denominator mechanism: a selected day can lose half its exposure while the weekly total falls only slightly.

[PD] Reconcile numerator event date, original shipment cohort, daily exposure, geography, age and extract vintage. Report the observed weighted contrast separately from each replacement scenario. Simpson's conditioning lesson applies to pooled evidence; this rate identity is an independent derivation. A few previous Saturdays do not establish a stable baseline or exclude a new incident.

Basis: exact synthetic exposure identities [AI]; unresolved source-version arithmetic [HR/AI]. No historical rate, count or ratio is published.

TECHNICAL ANALYSIS

Close a revision with records, not a changed comparison column

[HR/AI] The registry describes a later reporting explanation and changing comparison values. It does not supply an authenticated event-level reconciliation that establishes which incident, population and vintage were corrected.

Required reconciliation object	Decision it supports
Original cohort and eligible exposure	Whether two rates measure the same population and time at risk.
Immutable first and later extracts	Which records arrived, disappeared, changed class or changed value.
Event, claim, posting and extraction clocks	Whether an apparent recurrence or resolution is a timing comparison.
Old/new class and reference rule per entity	Whether a category transfer is real, merely suspected or unresolved.
Signed additive ledger at the correct grain	Whether the parent total is conserved and financial line items remain valid.
Authorized approval and published revision note	What readers may use, who accepted it, and what remains open.

[AI] Opposite category movements do not identify individual transitions. A combined decline can coexist with reclassification, physical improvement or both. Code similarity is not proof of identical definitions; an additive parent is reliable only with common scope and disjoint, exhaustive children. Money may require multiple legitimate line items per entity.

[HR/AI] A separately authored explanation is evidence of a reported organizational position. Shared lineage may prevent it from being independent validation. File creation metadata, quoted reporting week and event date must be reconciled before claiming corroboration of a later incident. Missing closure in the searched estate is a scoped absence, not proof no response existed elsewhere.

[PD] Retain the as-posted series and a separately labeled validated revision, with unresolved intervals visible. Release rules should specify hold, correction and escalation actions without waiting for a preferred narrative. NIST's incident-analysis and provenance guidance is a process analogy; it does not establish historical compliance or impose a client obligation.

Basis: current registry and pointer audit [HR]; independently proposed revision contract [PD]; official NIST incident-analysis guidance.

TECHNICAL ANALYSIS

Measure physical outcomes and diagnostic errors separately

[PD] Every field has a defined numerator, original denominator, eligibility rule, clock, refresh version and accountable owner. Neither a delivery scan nor a populated attribution field is sufficient physical truth.

Construct	Prospective measurement contract
Physical promise failure Y	Original booked units not received by the original deadline; independently reconstructed after the fixed follow-up horizon.
Recorded claim outcome R	Unique eligible claims at a frozen maturity age, with all-channel intake and classification versions retained.
Physical/data assay results	Issue time, completion time, evidence basis, result, uncertainty and failed mandatory checks; one branch cannot substitute for the other.
Response and spillover	Approved field/data actions, start times, completed work and burden on all original ordinary-flow units.
Resource cost	Incremental assay, response, coordination and displaced-capacity use at a common horizon; no relabeling savings.

[PD] Before recruitment, draw a stratified probability sample of original incident opportunities, including positive, negative, missing and late assays across business types and versions. Two coders independently apply a frozen codebook while blinded to assignment and outcomes. A simple random sample of 400 gives a worst-case approximate 95% agreement-proportion half-width of 4.9 percentage points; it is not a kappa-power calculation, and clustering or weighting changes precision.

[PD] Report weighted confusion tables, prevalence, raw agreement and kappa with domain-bootstrap intervals. Independent adjudication resolves disagreements without rewriting the original coding. Test measurement invariance across prespecified strata and clocks. Hui-Walter shows why treating a fallible reference as truth is consequential; unrelated team names do not establish independent assay errors.

[AI/PD] If outcome truth is missing, retain the original denominator and give worst-case endpoint bounds. If stratum membership is uncertain, add reassignment bounds. Administrative agreement, even perfect agreement, cannot certify valid custody, receipt or a causal root cause.

Basis: proposed audit [PD]; Cohen agreement framework; Hui-Walter fallible-reference identification. No historical validation accuracy is estimated.

TECHNICAL ANALYSIS

Separate a signal from selection and a changing data process

[RC/AI] The private inventory contains 44 source/sensitivity screens, 29 version audits, 8 plan shapes and 16 profiles. These 97 vectors do not establish a stable operating phase.

[RC/AI] Four fitted source vectors have individual-limit crossings: a second-network damage point, two normalized-export telemetry endpoints and a matched-day delta endpoint. Two also cross moving-range limits. Five retrospective prefix checks produce four individual and two moving-range crossings. These are prompts to inspect scope, age, coding and incident timing; they are not proof of operational improvement, a data-only cause or treatment effect.

$MR_t = |x_t - x_{(t-1)}|$; individual limits = $\text{mean}(x) \pm 2.66 \text{ mean}(MR)$; $MR_{upper} = 3.267 \text{ mean}(MR)$.

[AI] The phase is not validated, and sparse or mixed scopes constrain interpretation. No missing daily observations were filled from a range. Exact daily exposures and validated unique binary counts are unavailable, so there is no eligible or computed Laney p-prime panel. Large reported volumes cannot repair this absence.

[PD] For a future eligible panel, calculate pooled p, standardized residuals z_t , $\sigma_z = \text{mean moving range}(z)/1.128$ and p-prime limits using actual denominators; inspect mix and serial dependence before interpreting overdispersion. Predeclare the phase and rules. A retrospectively chosen onset requires separate confirmation, as the ITS literature cautions.

[AI/PD] A selected worst-site excess can regress without action. Under an assumed linear persistence model, expected untreated follow-up is $m + \rho(x-m)$, where m is the population mean. Assumed rho values 0.4/0.7/0.9 imply 60%/30%/10% reversion of the selected excess; none is estimated here. Freeze selection before follow-up. Prespecify baseline network, exposure, claim access, staffing and version as modifiers; realized assay completion and action are mediators, not baseline adjustment variables.

Basis: private evidence_spc.json [RC]; non-diagnostic limitations [AI]; future SPC and selection protocol [PD]. All historical coordinates remain private.

TECHNICAL ANALYSIS

Attribute the diagnostic contribution at its evidenced stage

[HR/AI] The defensible contribution is a provisional registry-level hoop for diagnostic framing, reporting caveats and assigning follow-up. The original query, documents and closure artifacts were not recovered in the current search.

Claim and process-tracing grade	Support and unresolved alternative
Framed the anomaly and assigned validation: provisional hoop	Named-owner descriptions and transcribed bridge actions support a recorded role; assistant-mediated authorship and source lineage remain unresolved.
Conducted or commissioned a driver pull: provisional hoop	A working record attributes the query session to the operating lead; original query/result preservation is absent.
Established the final root cause: unestablished	A different reporting team supplies the recorded explanation, without an independently reproduced basis.
Deployed effective field countermeasures: unestablished	The register records assignments and targets; completed implementation and mature outcome evidence are absent.
Avoided unnecessary hunts or realized savings: unestablished	An alternative response was discussed, but actual counterfactual resource use and released value were not measured.

[HR/AI] An external reviewer or metric owner can validate an administrative interpretation without proving the absence of a physical problem. The working record itself shows unresolved version and closure questions. Missing deliverables in the reachable corpus constrain the completion claim; they do not justify blaming a named partner or inferring that work never occurred.

[PD] Separate the decision owner, physical-response authority, data-repair owner and independent outcome reviewer. Record accepted handoffs and escalation triggers. A capture-enforcement hedge is a proposed action with possible effort and spillover, not automatically a no-regret control. Preserve customer remedies and approved safety rules.

[AI] The new contribution of this case is the exact diagnostic-equivalence proof and exposure-weighting contract. It corrects the inference boundary while preserving the historical value of questioning an unstable metric. Present analysis is not retroactively credited to the historical operating lead.

Basis: source-linked contribution ledger [HR]; explicitly provisional process tracing [AI]. No sole authorship, delivered effect or cash benefit is inferred.

TECHNICAL ANALYSIS

Test a response policy on the original future cohort

[PD] Randomize independent response-capacity domains after a common anomaly trigger and before diagnostic results. Freeze the future bookings and original promises before assignment; the prospective policy, not the historical incident, is randomized.

[PD] Compare approved serial triage with SDRC, which preserves separately evidenced physical and data branches and permits field, data, both or neither responses. Known missing authority blocks only the affected action; current service and remedies continue. Independent ascertainment at original promise plus 21 days reconstructs receipt by the original deadline. Record assay latency, permissions, actual response versions and ordinary-flow use.

$ITT_Y = E[Y(1)-Y(0) \mid \text{eligible trigger}]$; $\text{gain} = E[L(0)-L(1)]$; $\text{net gain} = \text{gain} - K$.

[PD] Y is original-promise physical failure per original booking. L prices all physical harm and incremental variable work at the fixed horizon; K is separately assigned setup cost. A beneficial ITT_Y is negative. The ordinary-flow safety contrast has its own original subgroup denominator and approved margin. No data correction alone earns customer savings or entitlement withholding.

[PD] The following planning pages use a newly specified finite incident/assay/response law with exact domain moments, a few directly tested allocations and explicitly approximate inference. Validate the actual zero-effect, economic and safety boundary laws using independently generated finite trials and simulation intervals. Compare MDE with break-even in the same resource units; add resources or change the response version if the design cannot settle the decision.

[PD] Estimate assignment effects with domain-level uncertainty, retaining failed assays, late responses and missing outcomes. Interference must be contained by the randomized capacity boundary. Prespecified baseline strata can assess heterogeneity; never adjust total ITT for realized action. A later observational rollout could estimate group-time ATT with credible not-yet-treated controls, plotted pretrends, equivalence checks and sensitivity to deviations; non-significance is not validation.

Basis: new prospective SDRC policy evaluation [PD], not an achieved historical trial. Final numeric law, horizon and calibration limits are supplied on the next planning pages.

TECHNICAL ANALYSIS

Make closure and response value falsifiable

[PD] SDRC is a proposed framework. Its four propositions concern measurable diagnostic and customer outcomes; document completion alone cannot confirm them.

Proposition	Test, boundary and disconfirmation
P1: Separate branches reduce premature physical closure	Among common eligible incidents, blinded physical-reference error should decline without closing solely on a positive data assay. Failure to meet the prespecified error improvement rejects the claim.
P2: Matched exposure and vintage improve attribution	Against a frozen record audit, the weighted/reconciled calculation should reduce wrong weekly attribution. Correct algebra without valid replacement evidence does not confirm a causal artifact share.
P3: Assay timing governs usable recovery	Within baseline readiness strata, the approved policy should improve original-promise outcomes when results arrive in time. More completed tests without prespecified service gain rejects the response claim.
P4: The complete policy earns its cost safely	All-original net resource gain must clear cost and the ordinary-flow safety gate. Better reporting alone, or benefit purchased through excess spillover, fails the investment case.

[AI] Deming separates operating variation from recording breaks; Campbell/Goodhart warns that closure targets can reward relabeling. Ittner-Larcker requires a verified chain from response to customer value. Tucker-Edmondson highlights repeated manual correction as a workaround whose cost remains. Composite-measure principles require explicit weights and full adverse components. SDRC adds the obligation to preserve a physical question after finding a data answer.

Limitations and identifying assumptions

[AI/PD] Unrecovered originals, incompatible vintages, selected negative evidence and absent linked customer panels leave historical causality unresolved. The exact examples show nonidentification, not the actual incident mechanism. Proposed response laws require calibrated assays, timing, costs, recruitment, independent domains and reference quality. Capacity spillovers, changing versions and latent joint faults can defeat transport. A validated reporting correction does not by itself establish customer recovery, causal attribution or realized savings.

Basis: proposed falsifiable framework [PD]; independent synthesis and bounded literature applications [AI]. Internal agent-assisted review is not external peer review.

Keep the two diagnostic branches open

[PD] A reporting fault and a physical fault can coexist. Compare current approved serial diagnosis with SDRC, which starts both assays and independently releases authorized field and data responses.

[PD] Randomize independent response-capacity domains. Each contains 16 distinct, pre-enrolled incidents with 320 original future bookings: 80 target and 240 ordinary across four daily promise waves. Assay times are end-of-day boundaries. Preserve original promises, remedies and every booking. Incidents are independent conditional on shared latency grade; shared teams belong in one domain.

Invented primitive	Locked operating law
Neither / physical / data / both	15% / 30% / 30% / 25%; hidden from acting teams
Data / physical assay	Sensitivity 88% / 86%; false-positive rate 6% / 5%
Serial timing	Data returns at 1 or 3; negative data starts physical assay, adding 1 or 2
Parallel timing	Both start at intake; each returns at 1 or 3; both/neither response permitted
Target risk: physical fault / none	18% / 3%; after timely field action: 8% / 4%
Ordinary risk	2.5%; active response adds 0.6 percentage points

[PD] Only waves after the physical result change risk. Data repair earns no physical benefit. Late and mistaken actions still cost effort. Known urgent evidence receives the same approved escalation in both arms; failed mandatory checks never authorize an action. This is a proposed policy test, not deliberate fault creation.

[PD] FIX THE CLOCK AND THE REFERENCE

Blinded physical reference by original promise + 21 days reconstructs timely receipt independently of the repaired feed. Later rescue remains an original miss. Cancelled, unfulfilled and unresolved bookings stay in the denominator.

[PD] All probabilities and causal responses are synthetic. Target membership and original bookings are frozen before assignment; latent fault state is unavailable to policy.

Require value and two service gates

[PD] Primary burden is eight hypothetical resource units per original-promise miss plus actual work. Test economic clearance, fewer total misses and ordinary-flow noninferiority separately.

[PD] Exact finite moments retain persistent domain latency. Normal planning uses a conservative variance envelope over a per-incident serial/parallel response mixture; it is not observed compliance. Lower 97.5% directional bounds must clear fixed cost and zero physical benefit. The ordinary-harm upper bound must be below 0.2 percentage points on the original ordinary denominator; this candidate margin requires approval.

Direct design	Domains / arm	MDE (index)	BE detection	Joint floor
Small check	32	> full	9.9%	0.0%
Base candidate	512	1.86	85.0%	93.8%
Slow-response stress	512	1.95	81.1%	4.5%
Protected-response version	256	2.77	>99.9%	94.7%

[PD] Base break-even is 1.98 index points. Fast-return probabilities are 0.90 / 0.65 with 25% fragile domains. Stress changes them to 0.45 / 0.15 with 60% fragile. The protected version buys physical-assay probabilities 0.90 / 0.80 and lowers active ordinary harm to 0.2 points; its fixed cost is 6.18 index points. It is a new treatment, not a sample-size cure.

[PD] MDE is the beneficial tail of a two-sided 5% zero test at 80% power. Detection at break-even does not mean the lower bound clears break-even. The joint normal-planning floor is max(0, sum of three marginal powers - 2); zero is uninformative. No exact finite coverage is claimed.

[PD] CALIBRATE BEFORE RECRUITMENT

The base candidate needs 1,024 independent domains and 5,242,880 bookings. No historical catalogue establishes feasibility. Start with bounded assay, timing, resource and reference calibration; re-power the approved version.

[PD] Usual base modeled resource burden = 100. MDE and costs use index points. Four direct allocations; no globally smallest sample claim.

Charge the work, delay and mistaken diversion

[PD] Physical action is not automatically low risk. At the base assumptions it adds 0.134 percentage points of ordinary-flow harm, even while reducing total original-promise misses.

[PD] Per-original-booking costs: data assay 0.015; physical assay 0.015 when issued; field action 0.040 when triggered; data repair 0.025 when triggered. All late or mistaken work is paid. Base fixed K = 0.008 covers coordination 0.003, standby 0.003 and production reference control 0.002. Protected staffing adds 0.017. Research-only blind adjudication needs a separate study budget.

[PD] Let F be favorable target-risk reduction in physical-fault states, H added target harm in other states, and O signed ordinary harm. $Net_raw = p * (a * h * F - H - O) - added\ work - K$. Here p is miss price, a avoidability and h non-overlap. This declared state-conditional mean decomposition is hypothetical; all adverse changes remain fully priced.

Scenario	a / h	Miss price	Net index
Base	1 / 1	8	2.42
Base, partial realization	.8 / .9	8	-0.52
Base, lower valuation	1 / 1	4	-1.81
Slow response	1 / 1	8	0.25
Protected version	1 / 1	8	3.40
Protected, 50% higher fixed cost	1 / 1	8	0.31

[PD] Price 8 is an uncalibrated judgment, not cash or historical cost. At price 4 both versions lose value; changed prices require re-powering. With epsilon unresolved or misclassified outcomes per arm, physical contrast can shift by 2 * epsilon and resource contrast by 16 * epsilon; ordinary harm uses its own original-stratum error bound. Costs remain recorded.

[PD] MEASURE MATURE PHYSICAL OUTCOMES

The randomized all-original-booking ITT supports this operating valuation only after independent maturity and reference validation. Improved classification or reduced claim intake earns no benefit. Customer remedies remain unchanged.

[PD] $Net_index = 100 * Net_raw / base\ usual\ burden$. All prices, response likelihoods and realization shares are invented; no estimated historical saving.

PROPOSED TIMED-RESPONSE EVALUATION / 4 OF 4

Value diagnostic evidence separately

[PD] A separate one-shot decision model chooses the next investigation. Information value is not added to the operating trial benefit.

Action / state	Neither	Physical	Data	Both
Retain usual investigation	0	0	0	0
Field-led investigation	-3	12	-4	6
Data-led investigation	-2	-5	9	3
Dual investigation	-6	7	4	15

[PD] Separate priors: 25% / 25% / 30% / 20%. Current utility 4.45; EVPI 4.25. Signal accuracy q ; each wrong label has probability $(1 - q) / 3$. Compare all 256 policies and subtract evidence cost.

Evidence	q	EVSI	Cost	Net EVSI
low	0.40	0.0000	0.40	-0.4000
base	0.65	1.1525	1.20	-0.0475
high	0.90	3.3650	3.20	0.1650

[PD] Eight independent-seed finite-process checks use 10,000 trials each. These selected-law results have Wilson 95% intervals; they quantify Monte Carlo uncertainty, not uncertainty about field inputs.

Finite scenario	Full joint success	False economic clearance
Base	94.62% [94.16, 95.05]	2.06% [1.80, 2.36]
Protected	94.66% [94.20, 95.08]	1.70% [1.46, 1.97]

[PD] At the actual ordinary-harm boundary, false clearance is 2.42% [2.14, 2.74] for base and 2.39% [2.11, 2.71] for protected. Physical-null checks are 2.40% and 2.32%. These conditional checks do not establish a universal error guarantee.

[PD] RELEASE RULE

Fix rules and prices before testing; preserve customer service during escalation.

[PD] Separate hypothetical investigation-utility units. EVSI never exceeds EVPI. No observed action, benefit or evidence purchase is asserted.

REPRODUCIBILITY / READER PROTOCOL

Reproduce the diagnosis before releasing the action

[AI] SDRC preserves the data basis, keeps physical and reporting explanations separable, and makes the effect of a response package independently testable.

Reproduction layer	Required reconstruction
Source and contribution	Match selected cells to the immutable register. Preserve attempted original recovery, named-owner evidence, delegated responsibilities, missing local closure and source-date uncertainty.
Rates and populations	Rebuild daily and weekly bridges, exposure weights, signed station deltas, country filters and source vintages. Preserve alternative interpretations instead of silently selecting a convenient denominator.
Signal and mechanism	Recompute tentative process limits and source-rounding sensitivity. Reproduce the physical-versus-capture construction; a diagnostic signature must not become proof that physical risk is absent.
Response and economics	Reconstruct the finite dual-track policy, fallible checks, action timing, shared capacity and all original cohorts. Fully charge false dispatch, delayed action and ordinary-service consequences.
Decision and release	Recompute direct allocations, selected-boundary simulations, sensitivity and separate information value. Trace every release decision to an owner, a version and a supported consequence.

Protected history and independent illustrations

[AI] Historical values, ratios, indexed coordinates and version conflicts remain private. Public numerical constructions are independently hypothetical. Common positive rescaling preserves the stated algebra and decision signs when all related prices and thresholds use that same scale.

What a future result would establish

[AI] The response trial would estimate the effect of the specified policy in eligible independent domains. It would not establish which cause produced every historical spike, validate a missing restatement or prove that the original field action was harmless. Reference errors and capacity spillovers require separate validation.

PRACTICAL HANDOFF

[PD] Align original exposure and release vintage, validate both pathways and price the response. Carry missing determinations into the next review as explicit unresolved decisions. Preserve ordinary customer protection throughout.

Private source maps, complete arithmetic, finite model and hash-bound reviews support reproduction. A reproducible illustration is not authenticated historical impact.

RESEARCH REFERENCES / DIAGNOSIS AND RELEASE

Test the cause and preserve the release history

Primary research informs interpretation and prospective design. It does not authenticate the source artifacts, prove historical adoption or supply the project's missing causal effect.

Lopez Bernal J, Cummins S, Gasparrini A. Interrupted time series regression for the evaluation of public health interventions: a tutorial. *International Journal of Epidemiology*. 2017;46(1):348–355. doi:10.1093/ije/dyw098. Full text: prespecify the impact model; a discovered step does not identify its cause.

Penning de Vries BBL, Groenwold RHH. Negative controls: Concepts and caveats. *Statistical Methods in Medical Research*. 2023;32(8):1576–1587. doi:10.1177/09622802231181230. Publisher full text: null comparison outcomes require explicit shared-bias and mechanism assumptions.

Graber ML, Franklin N, Gordon R. Diagnostic Error in Internal Medicine. *Archives of Internal Medicine*. 2005;165(13):1493–1499. doi:10.1001/archinte.165.13.1493. Publisher full article: premature closure is a process analogy, not an operating error-rate estimate.

Hui SL, Walter SD. Estimating the Error Rates of Diagnostic Tests. *Biometrics*. 1980;36(1):167–171. doi:10.2307/2530508. Original PDF, selected identification sections: fallible references and conditionally dependent assays require calibration.

Simpson EH. The Interpretation of Interaction in Contingency Tables. *Journal of the Royal Statistical Society, Series B (Methodological)*. 1951;13(2):238–241. doi:10.1111/j.2517-6161.1951.tb00088.x. Original paper: pooled margins do not replace conditioning and exposure structure.

Nelson A, Rekhi S, Souppaya M, Scarfone K. Incident Response Recommendations and Considerations for Cybersecurity Risk Management: A CSF2.0 Community Profile. NIST SP800-61r3. April 2025. doi:10.6028/NIST.SP.800-61r3. Selected pp28–30: preserve evidence and balance investigation with safe recovery; methodological analogy only.

Office for National Statistics (2024). The Office for National Statistics' Revisions Policy and Correction of Errors Policy. Updated 9 August 2024. Official full page, sections 3–4 read. Distinguish later-data or method revisions from correction of mistakes. SDRC uses this as a transparency analogy; it is not a policy binding the historical client.

Verified primary scholarly or official sources. Access scope is disclosed privately; cross-domain methods do not transfer empirical effects.

RESEARCH REFERENCES / EVALUATION AND MEASUREMENT

Match inference to the response domain

Primary research informs interpretation and prospective design. It does not authenticate the source artifacts, prove historical adoption or supply the project's missing causal effect.

NIST/SEMATECH. e-Handbook of Statistical Methods, section 6.3.2.2: Individuals Control Charts. Official method. Calculate tentative limits for the sparse ordered observations, but separate planned milestones, cross-sectional groups and conflicting source definitions. Within-limit movement does not establish either improvement or a stable operating phase.

Laney, D. B. (2002). Improved Control Charts for Attributes. *Quality Engineering*, 14(4), 531–537. Primary publisher abstract. Extra-binomial adjustment requires actual counts, denominators and rational subgroups. The available baseline snapshots lack an eligible repeated count panel; rounded rates are not converted into invented exposure counts.

Cohen, J. (1960). A Coefficient of Agreement for Nominal Scales. *Educational and Psychological Measurement*, 20, 37–46. Primary publisher record. Assess agreement and kappa in a blinded, stratified taxonomy audit. Report prevalence, confusion and uncertainty; high agreement between coders cannot authenticate a shared defective reference.

Barnett, A. G., van der Pols, J. C., & Dobson, A. J. (2005). Regression to the Mean: What It Is and How to Deal with It. *International Journal of Epidemiology*, 34, 215–220. Primary abstract. A selected worst-site cohort can recover without an intervention. The case uses explicitly assumed reliability sensitivity and requires independent recurrence and comparison data.

Hudgens, M. G., & Halloran, M. E. (2008). Toward Causal Inference with Interference. *Journal of the American Statistical Association*, 103, 832–842. Original manuscript. Investigation and field dispatch share capacity and can affect ordinary work. Randomize independent response domains, retain affected flow and examine spillovers across domain boundaries.

Callaway, B., & Sant'Anna, P. H. C. (2021). Difference-in-Differences with Multiple Time Periods. *Journal of Econometrics*, 225, 200–230. Author manuscript. A later nonrandom staged response rollout needs group-time comparisons, eligible controls and defensible parallel trends. It requires its own power analysis and cannot resolve the historical source-vintage conflict.

Strong, M., Oakley, J. E., Brennan, A., & Breeze, P. (2015). Estimating the Expected Value of Sample Information Using the Probabilistic Sensitivity Analysis Sample. *Medical Decision Making*, 35, 570–583. Author repository. Information has value when it changes a feasible decision under a specified prior, payoff and likelihood model. Evidence cost is subtracted; EVSI is not added to the trial's operating benefit.

Verified primary scholarly or official sources. Access scope is disclosed privately; cross-domain methods do not transfer empirical effects.

RESEARCH REFERENCES / OPERATING GOVERNANCE

Convert an open question into a closure obligation

Primary research informs interpretation and prospective design. It does not authenticate the source artifacts, prove historical adoption or supply the project's missing causal effect.

Collier, D. (2011). Understanding Process Tracing. *PS: Political Science & Politics*, 44, 823–830. Primary publication. Grade each specific role and action against competing explanations. A derivative register supports a provisional contribution claim; a named request, working draft or colleague's delivery row does not establish convening, delivery or sole authorship.

Tucker, A. L., & Edmondson, A. C. (2003). Why Hospitals Don't Learn from Failures. *California Management Review*, 45(2), 55-72. Author manuscript. Local workarounds can resolve immediate tasks while leaving system conditions unresolved. SDRC carries the unanswered evidence obligation into the next reporting cycle; no healthcare effect is transferred.

The W. Edwards Deming Institute. The Funnel Experiment. Official exposition. Repeated adjustment to routine variation can worsen performance. The control-assurance mechanism therefore requires stable measurement, recurrence evidence and a prospective comparison; sparse dashboard fluctuations do not justify repeated changes to frontline instructions.

Campbell, D. T. (1976). Assessing the Impact of Planned Social Change. Original institutional record. Accountability measures can change both behavior and reporting. Track eligibility, capture, unknowns and independent service outcomes so that changing an exemption or reason code cannot substitute for improving physical receipt.

Goodhart, C. A. E. (1992). The Objectives for, and Conduct of, Monetary Policy in the 1990s. Reserve Bank of Australia Annual Conference. Original author paper, section1(b)(i). An intermediate measure can change its relationship to the ultimate objective. Audit reporting, classification and capture separately from physical customer outcomes; no monetary-policy effect is transferred.

Ittner, C. D., Larcker, D. F., & Randall, T. (2003). Performance Implications of Strategic Performance Measurement in Financial Services Firms. *Accounting, Organizations and Society*, 28, 715-741. Author manuscript. Connect a strategic measure to its mechanism and decision consequence. A synchronized dashboard movement does not establish a common physical cause or a reporting-only explanation.

OECD / European Commission JRC (2008). Handbook on Constructing Composite Indicators. Official handbook. Definitions, denominators, weights and compensation assumptions determine aggregation. Preserve exposure weights, category partitions and source versions; a parent total is not automatically valid when its components change definition.

Verified primary scholarly or official sources. Access scope is disclosed privately; cross-domain methods do not transfer empirical effects.

FINAL REFEREE REPORT / INTERNAL AGENT-ASSISTED REVIEW

Accept the diagnostic correction and a conditional response test

[AI] This author-led, agent-assisted review is not external peer review or client approval. Acceptance concerns the reconciled investigation and proposed evaluation, not verified historic effectiveness.

Major issue	Disposition in the revised case
Signature treated as a verdict	Exact constructions preserve a common onset and flat comparison outcomes under distinct physical and capture mechanisms. Both causes may coexist.
Weekly data used for a daily cause	Separate counts, rates and exposures at the required grain. Weight a suspect day before changing a weekly rate; retain the unweighted branch as unidentified.
Changed cells called a restatement	Preserve source versions and geography forks. Require an authenticated release reason and approval; a later value or file timestamp is insufficient.
Telemetry read as behaviour	Classify tentative limits honestly, keep shared-source dependence visible and require independent physical references and taxonomy validation.
Hedge and closure overstated	Price both correct and false field responses, delay and ordinary-service effects. Keep contribution provisional; missing local closure does not prove no work elsewhere.

Partner critique: can a COO act on page one?

[AI] Yes: keep physical and reporting validation open, assign the evidence obligations and reconcile the release basis before changing targets or field commitments. The proposed response test adds an economic and customer-protection decision rule without declaring a reporting diagnosis sufficient.

Remaining conditions and minor issues

[AI] Original authentication, daily exposures, taxonomy partitions, reference accuracy, staffing, independent-domain recruitment and prospective response parameters remain open. Historical closure, avoided field work and customer impact are unverified. No external endorsement or consulting-firm ranking is claimed.

REVIEW DISPOSITION / PASS WITHIN STATED SCOPE

[AI] Accept the evidence reconciliation and falsifiable response design. Under the proposed rule, insufficient identification, invalid measurement, undetectable break-even or failed customer protection requires revision before expansion.

Internal evidence, methods, numerical, executive and actual-page reviews; no external referee endorsement or client effectiveness is established.