01 / EXECUTIVE SNAPSHOT

Finding the delay. Testing a better way.

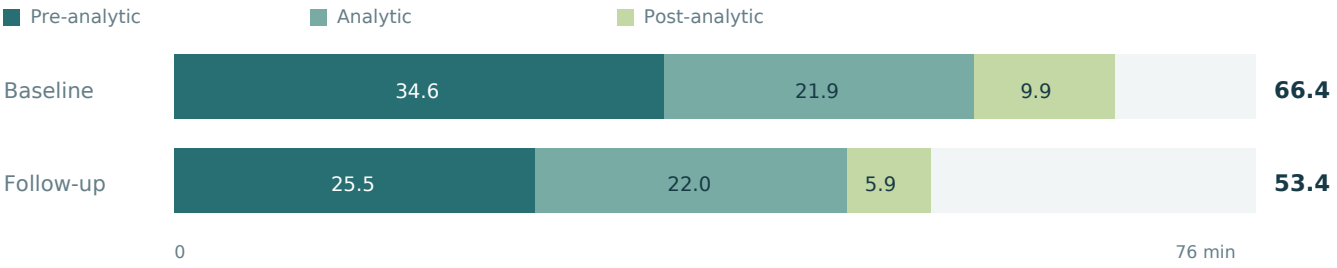
A detailed AssayIQ Pulse demonstration of how a regional laboratory network can turn operational data into a focused improvement agenda, an accountable action plan and a more informed investment discussion.

Mean TAT	Within target	P90 TAT	Rerun flags
53.4 min	75.1%	66.4 min	158
19.5% lower	**+32.0 pp**	**19.3 min lower**	**49.7% fewer**

The question

Where is turnaround time being lost, which assays still need attention, and what evidence should leadership review before changing staffing, workflows or equipment? This fictional network brings those questions into one reporting process.

Figure 1. Mean turnaround by process phase



Two 14-day synthetic populations, 5,040 events each. Phase totals are calculated from event records, not from rounded labels.

A better aggregate result is not the end of the review

Mean TAT is 19.5% lower in follow-up, but Lactate meets its illustrative 45-minute goal in only 25.6% of events. The report keeps that unresolved issue visible.

02 / CONTEXT & OPERATING PRIORITIES

One network. Several different operating questions.

The demonstration uses three fictional laboratories to show how a common metric framework can support local action without hiding variation behind a network average.

Demonstration network profile

Dimension	Included scope
Sites	Central Lab, North Lab and West Lab
Work areas	Chemistry/immunoassay and hematology event labels
Instrument labels	12 across the network; 4 per site
Shifts and assays	3 shifts; Potassium, Troponin, CBC, TSH and Lactate
Review window	October 1-28, 2026; two equal 14-day periods
Event population	10,080 original test events; 360 per day

The operating brief

01 Improve the predictability of turnaround while keeping reruns and local quality concerns visible.

02 Identify the assays and shifts that warrant a focused review rather than applying a network-wide fix.

03 Understand workload and test a capacity hypothesis before making a purchasing commitment.

04 Bring methods, assumptions, actions and decision owners into the same leadership discussion.

Site performance: baseline (B) versus follow-up (F); means in minutes

Lab	Mean B	Mean F	Target B	Target F	All events
Central Lab	63.5	50.7	48.8%	82.0%	3,360
North Lab	66.2	53.4	43.5%	76.0%	3,360
West Lab	69.4	56.1	37.0%	67.4%	3,360

03 / DATA FOUNDATION & IMPLEMENTATION

Build confidence in the baseline before interpreting change.

A credible improvement report begins with consistent definitions and a documented population. The public Pulse tool demonstrates the calculation path; a client deployment requires an agreed source mapping and local acceptance review.

Data review for the synthetic event population

Check	Finding	Meaning
Event count	10,080 rows	One original test event per row
Unique event tokens	10,080 unique IDs	No duplicate event tokens
Validity / exclusions	All rows valid / 0 excluded	No silently discarded records
Date coverage	28 dates / 360 events daily	Complete constructed calendar
Period mix	5,040 events in each period	Equal site, shift and assay counts
Source capture	Not independently verifiable	No LIS completeness claim

Proposed implementation sequence

01 Define: agree the operational question, local targets, source fields, period boundaries and accountable sponsor.

02 Map and reconcile: compare accepted exports with source-system control totals; review missing and duplicate events.

03 Review: examine phase-level TAT, the long tail, site/shift variation and assay-specific target misses.

04 Act and sustain: select one test of change, assign an owner, review guardrails and document the next decision.

Decision boundaries

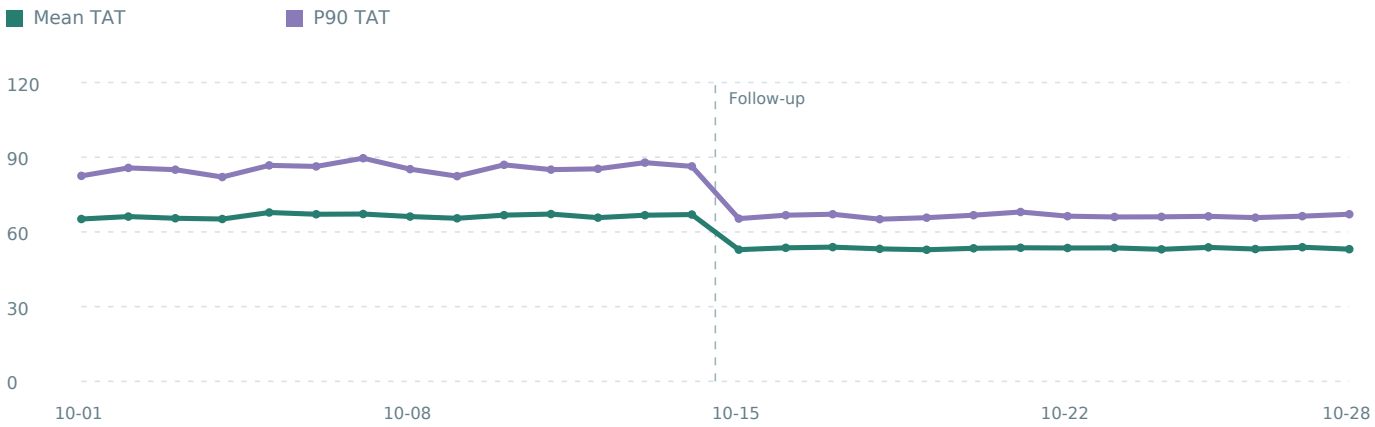
The public version uses CSV data and local browser calculations. Automatic feeds, secure hosted access, production security controls and local validation must be scoped before deployment. The synthetic period change was built into the generator; it is not attributed to the proposed workflow actions.

04 / TURNAROUND TIME & ASSAY EXCEPTIONS

The average improves. The assay detail changes the priority.

Across the synthetic network, mean turnaround moves from 66.4 to 53.4 minutes and the 90th percentile moves from 85.7 to 66.4 minutes. Target attainment rises by 32.0 percentage points.

Figure 2. Daily mean and 90th percentile turnaround



Minutes per original event; 360 events per date. The dashed boundary separates baseline from follow-up. This is a constructed change, not a measured intervention effect.

Assay review: baseline (B) versus follow-up (F); means in minutes

Assay	Mean B	Mean F	Target B	Target F	F events
Potassium	64.0	51.5	42.3%	83.7%	1008
Troponin	65.2	51.7	38.8%	82.5%	1008
CBC	64.2	51.3	40.3%	84.0%	1008
TSH	73.8	61.2	86.6%	99.8%	1008
Lactate	64.6	51.2	7.5%	25.6%	1008

Priority: investigate the Lactate pathway

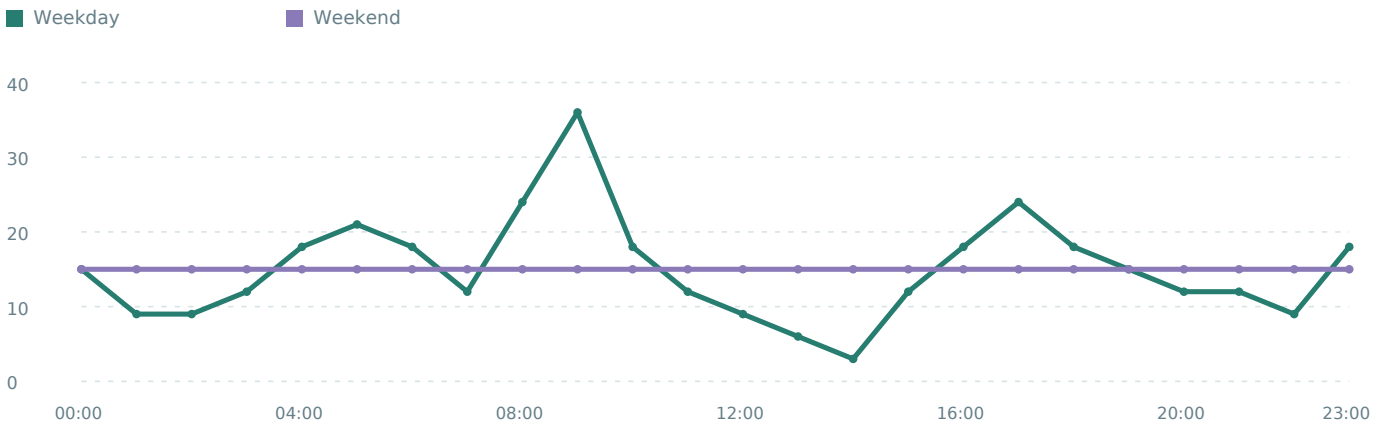
The aggregate result should not be interpreted as all assays meeting expectations. Examine transport, collection-to-receipt timing, preparation and test location for Lactate. Confirm local targets and source definitions before selecting a change. TSH's longer mean also needs its own target context.

05 / WORKLOAD & WORKFLOW TIMING

Put the time of demand beside the time of disruption.

An hourly workload view can help a team decide when to investigate transport runs, receiving handoffs, staffing coverage or maintenance. This case adds an explicitly constructed hourly allocation to demonstrate that review.

Figure 3. Illustrative hourly event profile



Average events per calendar day by hour. Weekday = 20 days; weekend = 8 days. Hours are deterministically allocated within shifts and are not recorded timestamps from the base CSV.

Shift review: baseline (B) versus follow-up (F); means in minutes

Shift	Mean B	Mean F	Target F	Reruns F	All events
Day	64.4	51.5	79.3%	2.5%	3,360
Evening	66.5	53.5	74.6%	3.6%	3,360
Night	68.3	55.2	71.5%	3.3%	3,360

An operating experiment to consider

In the constructed weekday profile, demand peaks at 09:00. A team could compare that demand with actual maintenance and availability logs, then consider a different service window or receiving handoff. No maintenance change is modeled as having occurred. Manufacturer instructions, staffing and clinical coverage remain constraints.

Do not confuse the profile with source-system evidence

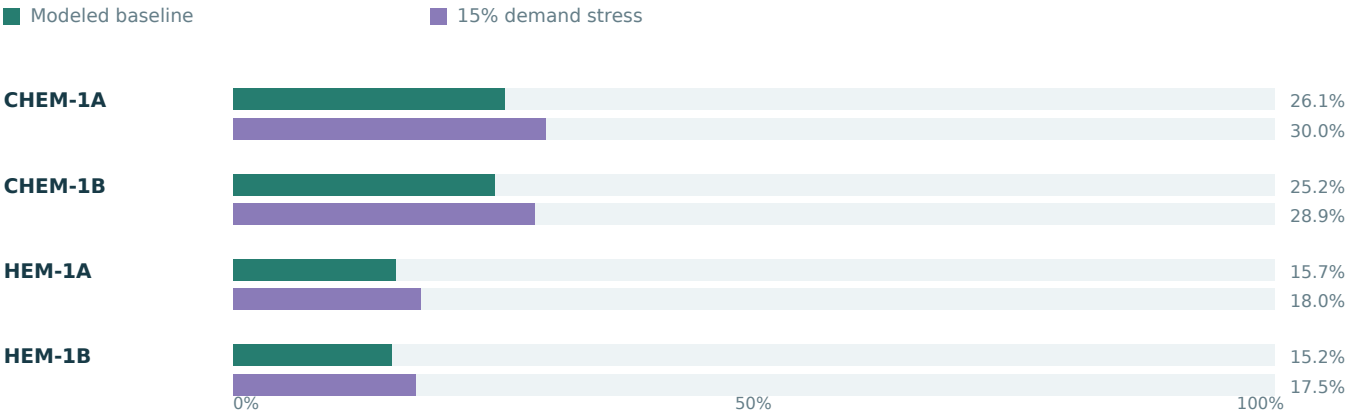
Daily event totals reconcile to the base dataset, but the event-hour allocation is an added scenario assumption. Real hourly bottleneck analysis requires locally verified collection, receipt, start and release timestamps.

06 / INSTRUMENT WORKLOAD & CAPACITY

Test a capacity hypothesis before buying a solution.

Test counts show workload distribution. They do not establish instrument utilization. This separate planning scenario adds scheduled, maintenance and busy minutes for four fictional Central Lab instruments.

Figure 4. Modeled busy-time utilization and 15% demand stress



Utilization = busy minutes / (scheduled minutes minus maintenance). The stress case assumes busy time scales linearly with demand. These are constructed instrument-log inputs, not measured device performance.

Central Lab capacity inputs: 28-day planning scenario

Instrument	Events	Available min	Busy min	Modeled use	+15% load
CHEM-1A	1,344	38,640	10,080	26.1%	30.0%
CHEM-1B	1,344	38,640	9,720	25.2%	28.9%
HEM-1A	336	38,640	6,048	15.7%	18.0%
HEM-1B	336	38,640	5,880	15.2%	17.5%

The decision the scenario supports

The model suggests a question worth checking: can existing equipment accommodate a defined increase in demand? It does not establish peak-hour headroom, assay-menu capacity, uptime, staffing availability or resilience after a device failure. Parallel processing and assay-specific constraints require local review.

No avoided capital is booked

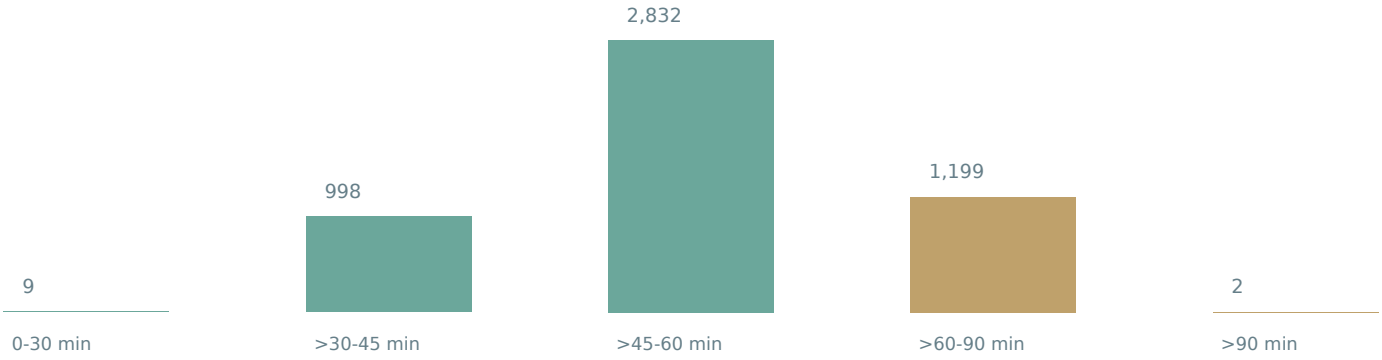
Collect actual device logs, service requirements, peak queues, QC/calibration demand and contingency needs before approving or deferring a purchase. This case records no confirmed avoided equipment cost.

07 / RERUNS, RELEASE & QUALITY GUARDRAILS

Read the improvement signal alongside the unresolved work.

Rerun flags fall from 314 to 158 events, a 49.7% relative difference across equal populations. Automatic release moves from 68.1% to 85.6%. Neither change alone establishes clinical quality.

Figure 5. Follow-up TAT distribution



5,040 original events. Bin boundaries are explicit and mutually exclusive; counts reconcile to the follow-up population.

Balanced quality and release review

Measure	Baseline	Follow-up	Interpretation
Rerun rate	6.2%	3.1%	Reason and necessity still require review
Rerun events	314	158	At least one rerun; not a run count
Automatic release	68.1%	85.6%	Not proof that release rules are safe
Within local target	43.1%	75.1%	Assay exceptions remain visible

Guardrails for a real pilot

01 Classify repeat work by reason before deciding it is avoidable; clinically necessary repeats remain necessary.

02 Review QC, calibration, specimen quality, critical-result escalation and amended reports using approved local systems.

03 Change autoverification or release rules only through the laboratory's approved validation and authorization process.

04 Keep assay-specific target misses and source-data gaps open until the responsible leader reviews them.

08 / FINANCIAL INTERPRETATION

Separate reagent expense, staff capacity and cash savings.

A useful business case makes its assumptions visible. This scenario models only incremental reagent expense and a stated staff-time assumption. It does not report realized cash savings or a return on investment.

Cost and capacity bridge: two 14-day periods

Item	Baseline	Follow-up	Difference / basis
Repeat reagent proxy	$709.95	$389.45	$320.50 lower
Rerun-flagged events	314	158	156 fewer flags
Assumed work per flag	4 minutes	4 minutes	Planning input, not a time study
Modeled staff capacity	20.9 h	10.5 h	10.4 hours
Capacity value at $45/h	$942.00	$474.00	$468.00; not cash saved
Confirmed avoided capital	Not established	Not established	No amount recognized

Sensitivity to staff minutes per flagged event

Minutes / flag	Capacity hours	Capacity value at $45/h
2	5.2	$234.00
4	10.4	$468.00
6	15.6	$702.00

What finance would need before a buying decision

Verify unit costs, rerun multiplicity, actual hands-on time, implementation expense, ongoing support and any costs required to realize a cash reduction. Released staff time can support other work without reducing payroll. A 14-day synthetic comparison should not be annualized into a promised savings figure.

Do not combine unlike benefits into a headline ROI

The reagent proxy, staff-capacity value and potential capital decisions represent different economic effects. They are not added together as verified savings. Compare a locally validated annual benefit with the complete implementation and recurring fees.

09 / IMPLEMENTATION & EFFECTIVENESS PLAN

Turn the report into an owned 30/60/90-day review.

The actions below are proposed demonstration work, not completed client actions. Each has an accountable role, a review horizon and evidence needed for a decision.

Proposed action register

Horizon	Owner role	Action	Evidence for review
Day 30	Lab operations lead	Confirm source completeness and the Lactate sample pathway	Reconciled counts; timestamp map; local target approval
Day 30	Quality lead	Classify rerun causes and review release-rule governance	Reason-coded sample; QC and escalation review
Day 60	Shift lead	Test one approved receiving or handoff change	Comparable pre/post populations; workload and quality guardrails
Day 60	Technical lead	Reconcile actual maintenance and capacity logs	Peak-hour queues; device availability; contingency assessment
Day 90	Lab director + finance	Review effectiveness and approve next scope	Sustained measures; full-cost model; unresolved-risk register

Decision gates

01 Data gate: agreed definitions, reconciled control totals and documented exclusions before interpretation.

02 Pilot gate: a limited change, an accountable owner and local approval before operational rollout.

03 Effectiveness gate: compare like periods and assay mix; review more than one summary average.

04 Scale gate: expand only after leaders review sustained performance, quality effects, staff workload and the full commercial scope.

An honest closeout can include an unresolved issue

The sample's Lactate target-attainment gap stays open. A report should not describe the program as fully successful while a material assay exception remains unexplained. Record the decision, the evidence and the next review rather than turning an aggregate trend into a blanket success claim.

10 / METHODS, SOURCES & REPRODUCTION

Make the evidence easy to inspect.

The event population, calculations and supplemental assumptions are available separately so that a reviewer can reproduce the report and distinguish data-derived findings from constructed planning inputs.

Metric definitions

Metric	Definition
Total TAT	pre_min + analytic_min + post_min; minutes per original event
Mean / P90	Event-weighted mean; P90 linearly interpolated at (n-1) x 0.9
Within target	Count(TAT <= target_min) / original events x 100
Rerun / automatic release	Sum of the corresponding 0/1 flag / original events x 100
Percentage-point change	Follow-up percentage minus baseline percentage
Relative mean TAT change	(Baseline mean - follow-up mean) / baseline mean x 100
Repeat reagent proxy	Sum(rerun flag x reagent_cost); one extra run assumed
Modeled utilization	Busy / (scheduled - maintenance) minutes x 100

Scope and limitations

Source: deterministic AssayIQ synthetic event generator v1, 10,080 events, no patient data. Baseline: October 1-14; follow-up: October 15-28, 2026. Local example targets: Lactate 45 minutes; Potassium, Troponin and CBC 60 minutes; TSH 90 minutes. These are illustrative goals, not clinical or accreditation standards. Source-system completeness, actual intervention effects and clinical outcomes are not established.

Supplemental assumptions

Hourly event allocation uses fixed shift weights and reconciles to the original daily totals. Capacity uses invented instrument-log inputs: 40,320 scheduled minutes and 1,680 maintenance minutes per device over 28 days, plus stated busy minutes. Finance assumes four staff minutes per rerun flag and $45 per loaded staff hour. The 15% demand stress assumes a linear busy-time response.

Reference and independence

Roche's M Health Fairview case study was consulted as a benchmark for report depth and structure. Its customer results, quotations and endorsements are not used as AssayIQ results. NAVIFY is a Roche trademark. AssayIQ Global is independent and is not affiliated with Roche or M Health Fairview.

Event CSV - https://assayiqglobal.com/resources/AssayIQ_Pulse_Case_Events.csv

Assumptions JSON - https://assayiqglobal.com/resources/AssayIQ_Pulse_Case_Assumptions.json

Depth reference: Roche / M Health Fairview case study, February 2025. Consulted October 31, 2026.