HEALTHCARE ANALYTICS • MBA DISSERTATION • IIHMR UNIVERSITY, JAIPUR

Analysis of Turnaround Time (TAT) in Medical Insurance Claims

A Data-Driven Approach

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India's Health Insurance Boom

15%+ CAGR

growth in health insurance premiums over recent years (IRDAI)

- From niche product to a pillar of social security, fuelled by rising healthcare costs, lifestyle diseases, and a growing middle class.
- A multi-stakeholder ecosystem of insurers, hospitals, and Third-Party Administrators (TPAs) who manage pre-authorization and claims on insurers' behalf.
- Government-backed scale-up through AB-PMJAY, targeting 500+ million low-income citizens, has sharply increased claim volumes.
- Rising volume across retail and corporate policies places mounting pressure on claims teams to process accurately and fast.

WHY TURNAROUND TIME (TAT) MATTERS

TAT is the single most important operational KPI across the health insurance value chain

Policyholder

Claims are a critical 'moment of truth' — delays cause financial strain and mental distress during an already difficult time.

Hospital

Long approval waits block bed turnover and admissions flow, and create friction with the TPA desk.

Insurer / TPA

Poor TAT raises operational cost, risks IRDAI penalties, and erodes customer loyalty in a competitive market.

Cashless TAT runs from report upload to discharge approval (hours). Reimbursement TAT runs from document receipt to EFT payout (days).

CASHLESS vs. REIMBURSEMENT: STRUCTURAL DIFFERENCES

Cashless Settlement

- Hospital TPA desk files pre-authorization with diagnosis & cost estimate
- Insurer's clinical team validates against policy terms; initial authorization issued
- Final authorization released at discharge once documents are confirmed
- Requires real-time EDI integration and standardized hospital billing

Reimbursement Settlement

- Policyholder pays out-of-pocket at discharge, then files a claim afterward
- Physical documents (bills, receipts, reports) must be transmitted & registered
- Manual scanning, indexing, and clinical scrutiny before adjudication
- Higher risk of missing or incomplete documentation, extending the delay

PROBLEM STATEMENT

Despite TAT's importance, insurers and TPAs struggle to control it — leading to high rejection rates, repeat queries, and administrative chaos, especially during seasonal epidemic surges.

While broad premium-growth statistics are available, granular research on the operational bottlenecks behind claim delays in the Indian context remains scarce.

KEY RESEARCH QUESTIONS

1. What is the overall average and median TAT for medical insurance claims?
2. How much does the claim channel (Cashless vs. Reimbursement) influence TAT?
3. How does hospital network status affect the speed of claim adjudication?
4. What are the most frequent reasons for delay, and their relative impact?
5. Are specific specialties or larger claims associated with longer processing?
6. Does seasonal volume variation measurably change TPA capacity and TAT?

RESEARCH OBJECTIVES

To analyze the operational drivers and bottlenecks of claims TAT, and recommend evidence-based strategies for optimization

- Document overall average & median TAT across 1,000 adjudicated claims
- Compare TAT for Cashless vs. Reimbursement claim channels
- Analyze impact of hospital network status (Tier 1 / Tier 2 / Non-Network)
- Identify primary bottlenecks and the frequency of specific delay reasons
- Evaluate TAT across clinical specialties to spot high-complexity areas
- Assess the relationship between claim size and processing speed
- Evaluate the impact of seasonality (monsoon surge) on TAT inflation
- Formulate practical, data-backed recommendations for TPAs & hospitals

METHODOLOGY

1,000
Adjudicated claims analyzed

2 Years
Jan 2024 – Dec 2025 study period

Visit Health
TPA / insurer data source

Retrospective
Descriptive-analytical design

KEY RESEARCH VARIABLES

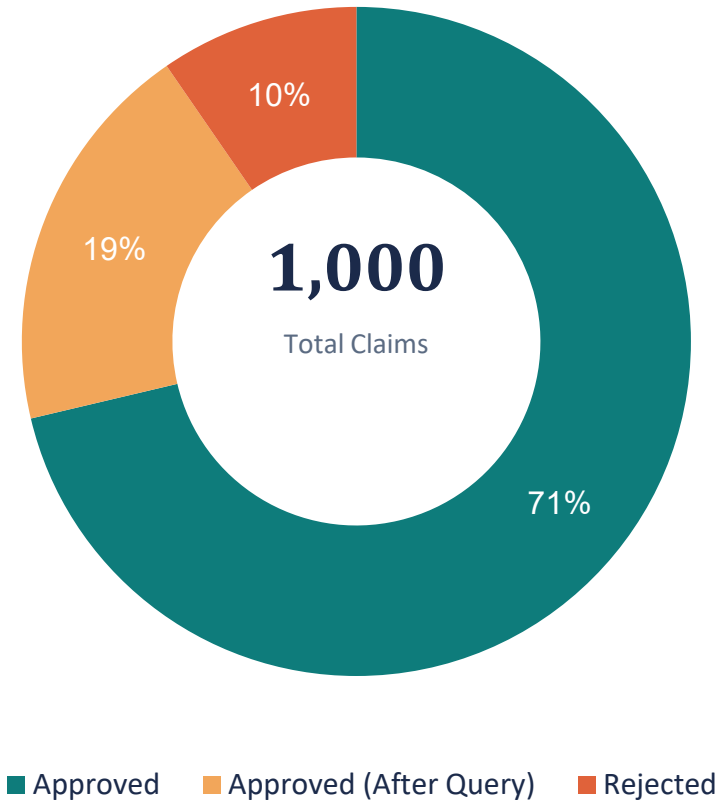
Variable	Type	Measurement
Claim Type	Independent	Cashless / Reimbursement
Hospital Type	Independent	Tier 1 / Tier 2 / Non-Network
Specialty	Independent	8 clinical categories
Claimed / Settled Amount	Dependent / Indep.	Continuous (INR)
Turnaround Time	Dependent	Continuous (days, 1 decimal)

Analytical Approach

- Descriptive statistics: mean, median, min, max, std on TAT & claim amount
- Frequency & % distribution across categorical variables
- Group-mean comparison of TAT (e.g. cashless vs. reimbursement)
- Claim settlement ratio = total settled ÷ total claimed
- Full anonymisation; hospitals grouped into network tiers; encrypted storage

RESULTS

Overall Claim Volume & Adjudication



713

71.3%

Approved — accepted directly, no further query

191

19.1%

Approved After Query — needed clarification or documents

96

9.6%

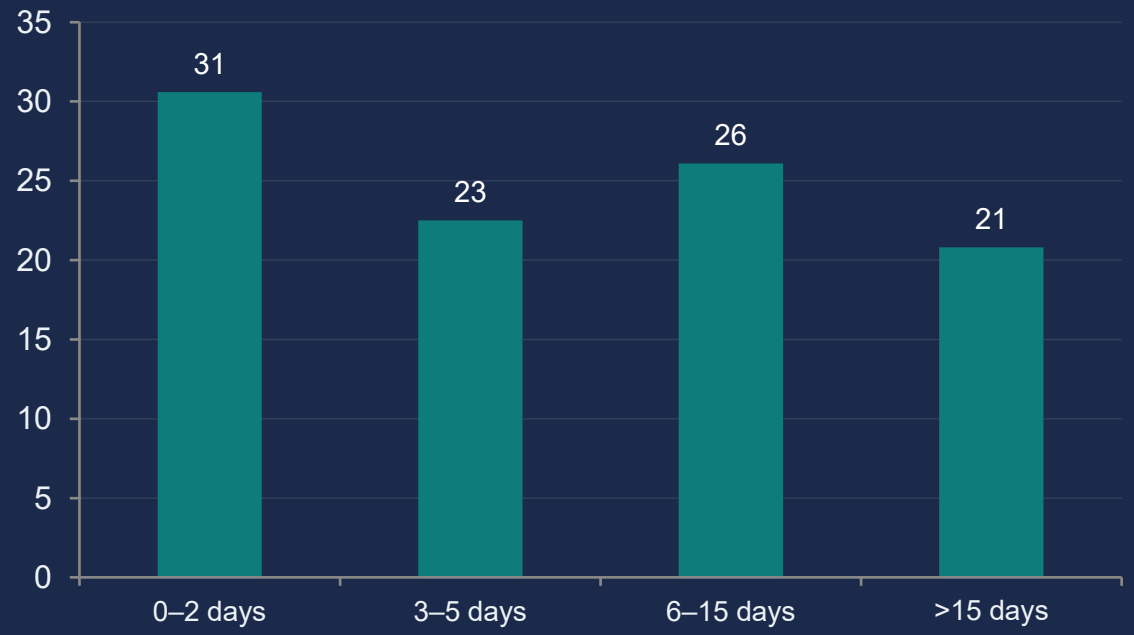
Rejected — claim could not be reimbursed

RESULTS

Distribution of Turnaround Time (TAT)

7.67 days	7 days	0.2 – 25 days
Mean TAT	Median TAT	Min – Max Range

Claims by TAT Range



A Long-Tailed Distribution

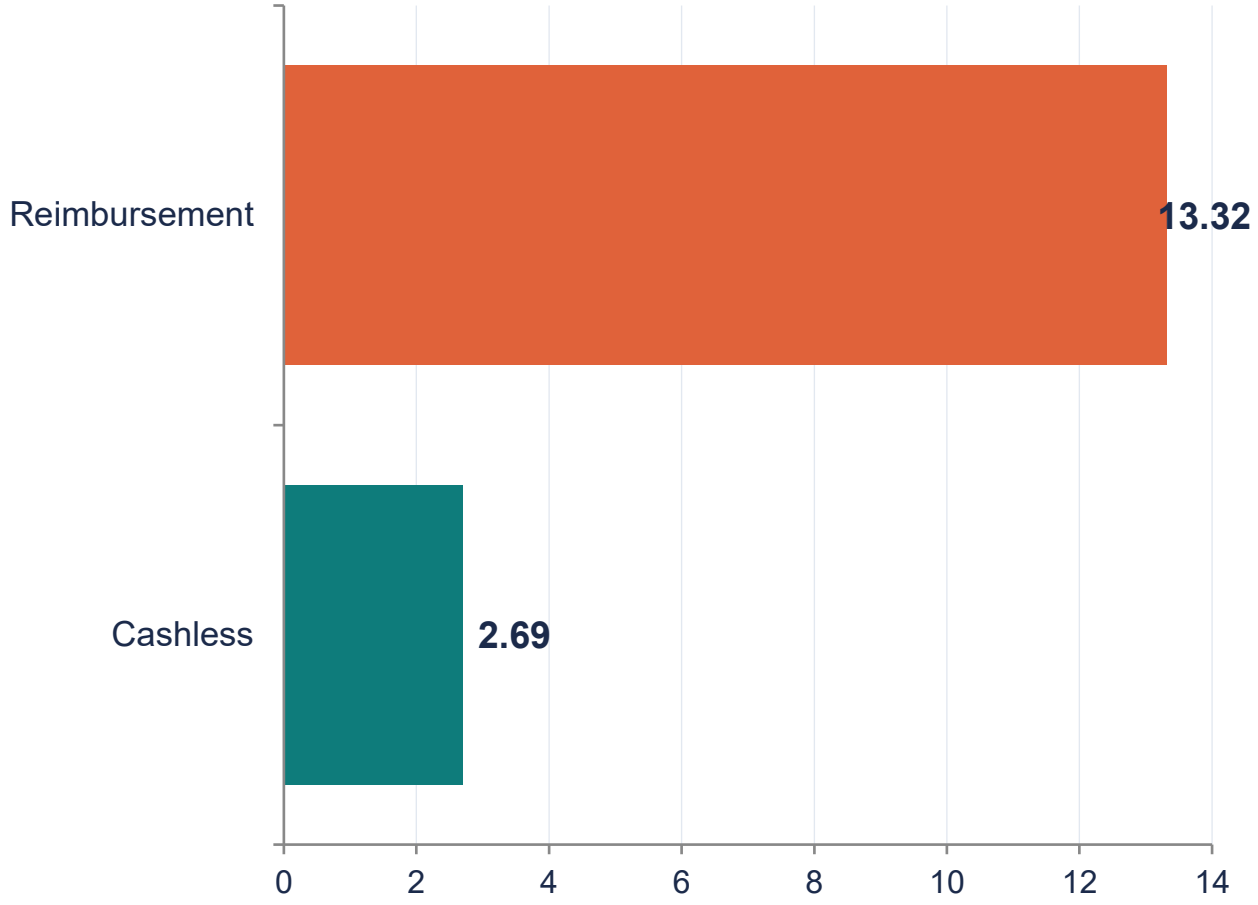
Claims resolved in 0–2 days make up **30.6%** of the sample — mostly cashless admissions.

20.8% of claims extend beyond 15 days — almost all reimbursement cases requiring manual verification.

This log-normal-like spread is typical of service-queuing systems: most claims resolve fast, but complex cases create a long delay tail.

RESULTS

TAT by Claim Type: The Cashless Advantage



531 claims (53.1%)

Cashless — 2.69 days

Digital pre-authorization and standardized EDI workflows let most cashless claims clear within days, not weeks.

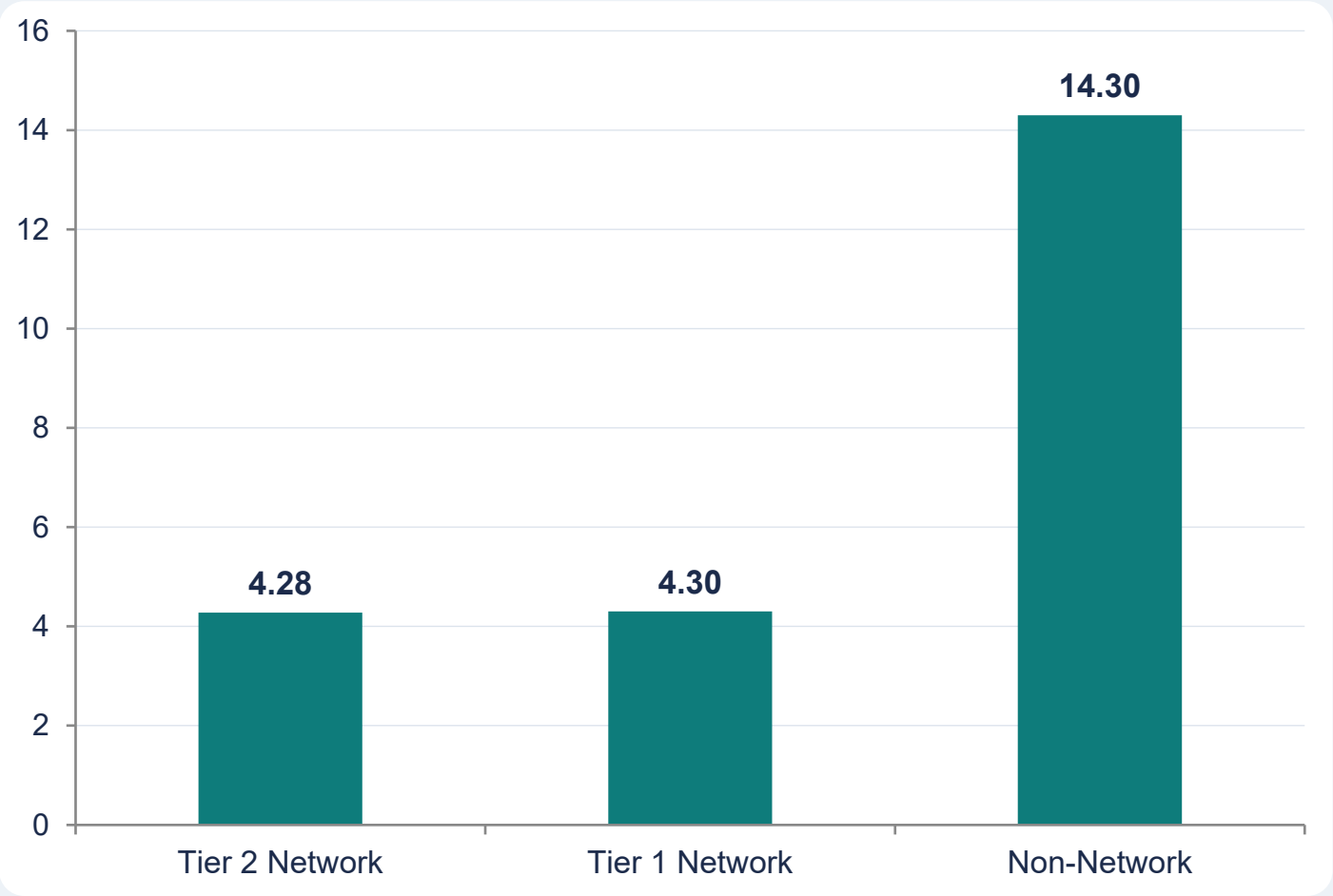
469 claims (46.9%)

Reimbursement — 13.32 days

Paper-based document movement, indexing, and manual review make reimbursement nearly 5× slower than cashless.

RESULTS

TAT by Hospital Network Category



Network Effect

35.9% of claims from Tier 1 Network hospitals (359 claims)

30.3% of claims from Tier 2 Network hospitals (303 claims)

33.8% of claims from Non-Network hospitals (338 claims)

Network hospitals settle claims almost 3× faster than non-network facilities (~4.3 vs. 14.3 days) — the result of SLA-bound, standardized billing and dedicated TPA desks.

RESULTS

Adjudication Status & Financial Settlement

₹ 16.93 Cr

Total Amount Claimed

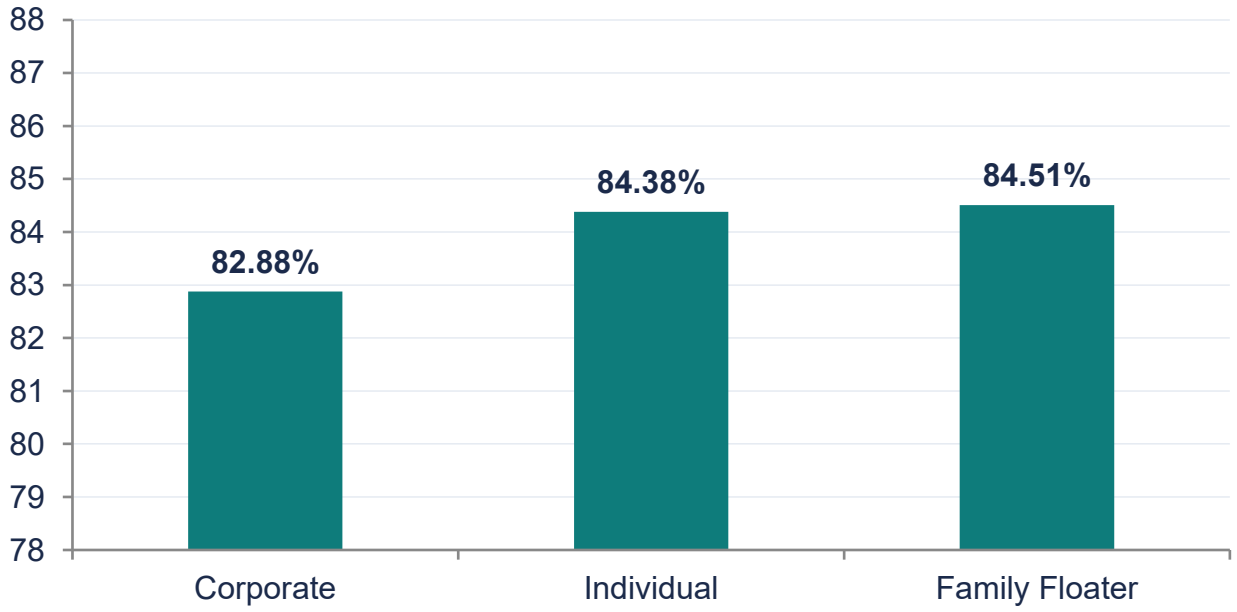
₹ 14.20 Cr

Total Amount Settled

83.87%

Overall Settlement Ratio

Settlement Ratio by Policy Type



16.13% of claimed value

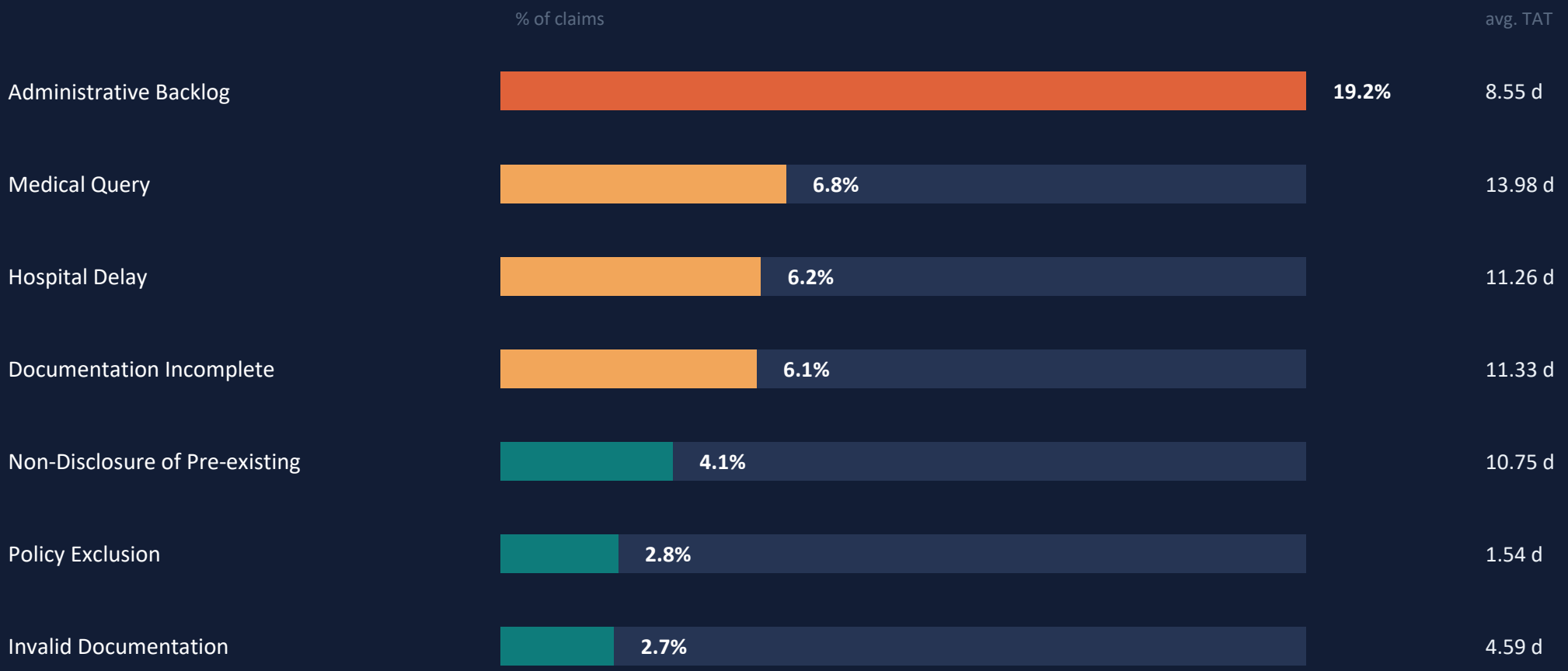
was refused, withheld via co-payment clauses, or excluded as non-medical benefits.

Corporate policies show the lowest settlement ratio (82.88%) — often due to employer-negotiated co-pay clauses and room-rent caps that manage premium costs.

RESULTS

Deconstructing the Bottlenecks

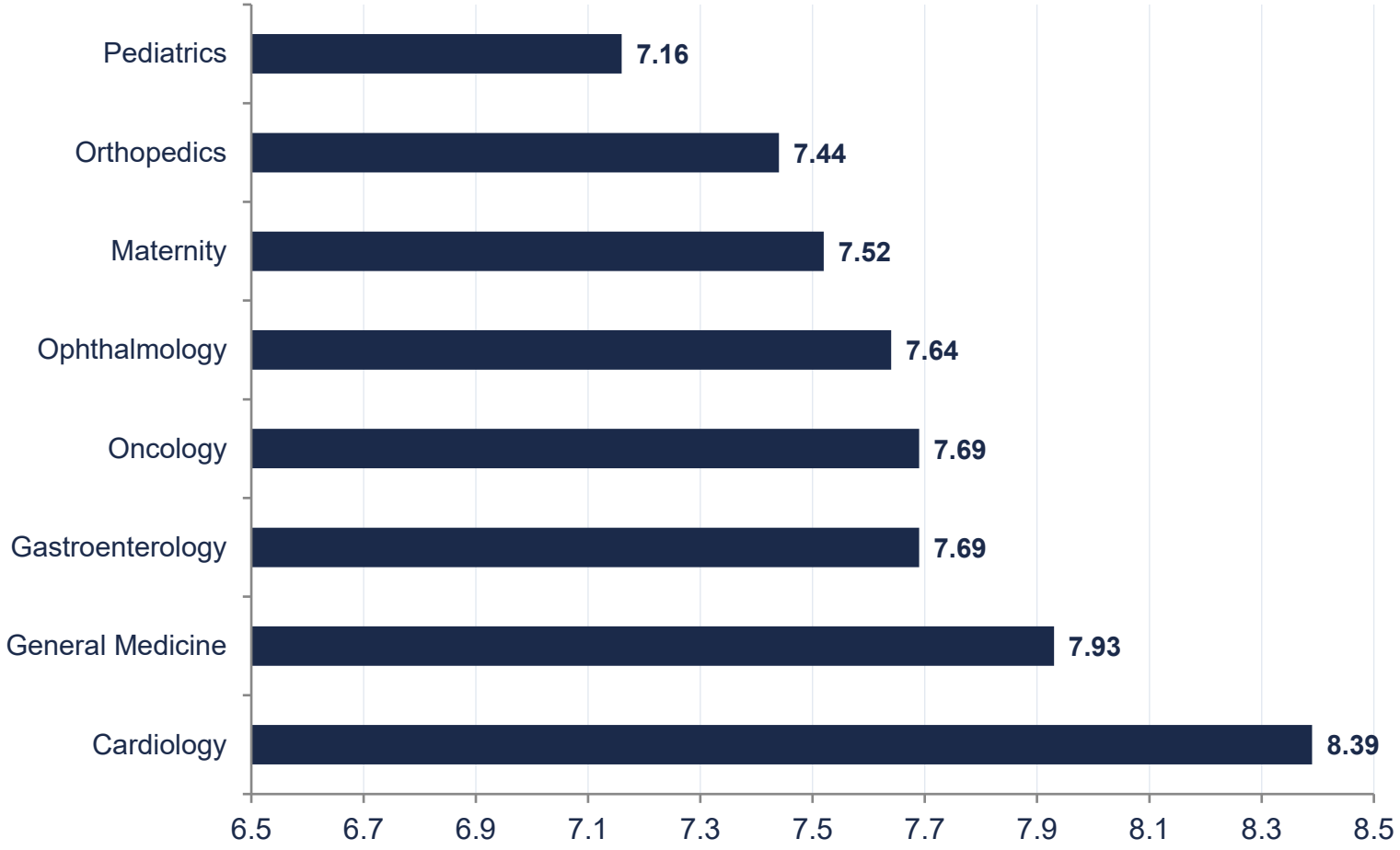
52.1% of claims face no query and clear in 5.92 days on average. The rest stall on these documented reasons:



Administrative Backlog is the single largest bottleneck — driven primarily by monsoon-season claim surges overwhelming TPA processing capacity.

RESULTS

TAT by Clinical Specialty



Complexity Drives TAT

Cardiology has the highest TAT (8.39 days) — high-value claims involve implants, multi-level clinical audits, and fraud checks.

Pediatrics is fastest (7.16 days) — standardized diagnostic protocols and lower review complexity.

Ophthalmology (cataracts) similarly benefits from defined packages and minimal documentation needs.

DISCUSSION

What the Data Tells Us

Channel is destiny

Cashless pre-authorization resolves coverage questions before discharge; reimbursement inherits every downstream paper delay.

Networks compound the advantage

SLA-bound network hospitals process claims ~3× faster than non-network facilities, reinforcing the industry shift toward cashless ecosystems.

Queries are the real cost driver

Once a medical query or documentation gap appears, TAT can spike by 1–2 weeks due to iterative hospital-TPA-patient correspondence.

Capacity, not complexity, breaks first

Seasonal monsoon surges overwhelm TPA staffing before claim complexity does — 'Administrative Backlog' outranks every clinical reason for delay.

RECOMMENDATIONS

For TPAs, Insurers & Network Hospitals

TPAs & Insurers

- Deploy automated OCR + NLP to extract fields from scanned bills and records
- Build rules-based auto-adjudication engines for simple, high-volume claims
- Establish real-time EDI links with network hospitals for instant pre-auth
- Use dynamic staffing (contract underwriters) during monsoon disease surges

Network Hospitals

- Standardized pre-submission checklists at the hospital TPA desk
- Regular staff training on insurer-specific exclusions & portal formats
- Dedicated coordination officers, with query response under 2 hours
- Standardized digital formats for discharge summaries — no handwriting

RECOMMENDATIONS

For Regulators (IRDAI) & Analytics Teams

Policy Makers & IRDAI

- Mandate standardized billing formats and code sets (ICD-11, CPT)
- Set SLAs for cashless approvals — e.g. max 2 hours for final discharge
- Support integration with the Ayushman Bharat Digital Mission (ABDM)

Healthcare Analytics Teams

- Build ML models to flag claims at high risk of query or rejection early
- Develop real-time dashboards tracking volume, queues & underwriter TAT
- Mine historical claims for billing anomalies and fraud patterns

Future research should examine how AI-driven adjudication and ABDM integration shift these TAT and query benchmarks over time, alongside direct patient-experience surveys.

CONCLUSION

Across 1,000 adjudicated claims, the speed of claims adjudication is shaped overwhelmingly by three operational levers:

Submission Channel

Cashless: 2.69 days

Reimbursement: 13.32 days

Hospital Network

Network: ~4.3 days

Non-Network: 14.30 days

Seasonal Capacity

Admin. Backlog leads delays

8.55 days avg. TAT impact

TPAs and insurers must invest in automation and dynamic staffing; **hospitals** must strengthen documentation discipline; and **regulators** must standardize coding and enforce SLAs — together improving both efficiency and the policyholder experience.

Thank You

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