The Actuary India

Magazine of the Institute of Actuaries of India

November 2025



War Insurance

From Niche Coverage to Systemic Necessity: Rethinking War Insurance for the 21st Century

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When Actuaries Go Global: Stories Beyond Spreadsheets

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Insuring the Invisible: Tip-Based Micro-insurance for Gig Workers

Numerical wordle

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Editorial



This October was full of festivities and long weekends. And we sincerely hope that you had a good time. Although, on the flip side, what this also meant was that there were lesser working days. And adding to the pressure, was QIS2 submission on top of all the quarter-end work.

Nevertheless, it was an eventful month with a few big news which you can read by heading to our Newsflash section.

And its not just Insurance industry that was eventful. In the fast-paced AI industry, Anthropic released Claude Sonnet 4.5, designed with regulatory compliance and autonomous coding in mind, particularly in high-stakes industries such as ours. The model supports secure, explainable AI outputs. This could pave the way for meaningful integration of AI in insurance industry, and perhaps we even see an AI developed by actuaries for actuaries. Until such day comes, Vansh has a lighter take on this topic.

But despite the naysayers, we have to agree that AI has enabled quick prototyping of your startup ideas. This, when coupled with the ease of business improving in India, perhaps explains the 10-12% growth in the number of startups in India. We now boast of the third-largest startup ecosystem in the world. And startups, as we all know, are popular employer of choice, especially for the ESOPs that they offer. This has not gone unnoticed within IAI which had recently released GN30 for ESOP valuations. In this edition, Vichitra highlights key features from the recently released GN30.

And talking of startups, we have 2 actuaries who have shared their journey as entrepreneurs. We hope you find it inspiring and look forward to capturing your journey in a future edition.

On that note, happy to present to you this month's edition and wishing you the very best in achieving your dreams.

Cheers!

Anirudh Bansal
Editor, The Actuary India
Magazine of the Institute of Actuaries of India

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Features

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War Insurance

From Niche Coverage to Systemic Necessity: Rethinking War Insurance for the 21st Century

As conflict evolves beyond the battlefield into domains of cyber, economic, and systemic disruption, the nature of insurance must also transform. **Om Prakash Prasad** examines how war insurance has shifted from a niche product to a systemic necessity, exploring its role in stabilising economies amid geopolitical volatility.



Introduction

War Risk Insurance has evolved from a product of marine and aviation insurance into broader systemic protection for global stability. The recent wars of India-Pakistan, Israel-Iran, Russia-Ukraine, Thailand-Cambodia, and the recent tensions in the Middle East have shown that insurance coverage is tied to cascading risks associated with trade routes, financial transactions, and supply chains. New challenges arise due to limited data and multiple risk types - war, cyber, climate, and solvency for the businesses being considered for war policies. Pools, parametric products, ILS (insurance-linked securities), improved stress testing, and public-private partnerships, may offer a pathway for war coverage to be part of a resilience strategy in an uncertain geopolitical future.

Insurers usually adopt NMA 464 War and Civil War Exclusion Clause, which excludes coverage for any loss resulting from war, invasion, acts of foreign enemies, civil war, or similar events. One significant example of the application of the war exclusion clause was post the 26/11 terrorist attack, where the insurers contended that the level of damage from organised groups, including terrorist groups, exceeded the standard policy wording.

In the Indian insurance business, policies exclude coverage for war risks across life, property, health, and personal accident products. The reason for this exclusion is grounded in the unpredictable and catastrophic nature of war, which insurers consider a systemic risk that cannot be priced using standard underwriting assumptions.

Evolution of War Insurance

War insurance emerged in the early twentieth century to protect maritime trade otherwise excluded from standard marine policies. After World War II, it added coverage for certain aviation risks. War insurance was a niche product until the 21st century.

Modern warfare occurs outside the battlefield too, with cyberattacks, economic sanctions, and commodity shocks disrupting economies and insurance markets. The complexities of interconnections across systemic dimensions cut through insurance lines, making the reality of war more extensive and increasingly challenging to underwrite than before. Today, war insurance covers risks in the era of hybrid warfare, cyber threats, and knock-on effects of sanctions such as confiscated assets, blocked payments, or stranded cargo. For example, when international sanctions after the Russia-Ukraine conflict left hundreds of leased aircraft stranded in Russia, airlines sought recovery under war and political risk policies for confiscation and loss of use.

When viewed through an actuarial lens, War and Allied Risks insurance helps stabilise the economy beyond just claims. Geopolitical risk can contribute to volatility in capital markets, altering the energy supply chain, which impacts energy and equity portfolios. This volatility will tighten the terms of reinsurers, leading to coverage gaps. In addition, War insurance provides trade and financing coverage for infrastructure with agencies such as the Multilateral Investment Guarantee Agency (MIGA) or the U.S. Development Finance Corporation (DFC). National pools such as India's Terrorism and Nuclear Pool can also reflect public and private approaches to catastrophic risk-sharing. Such pools and PPPS act as stabilisers of markets and stimulate investment during geopolitical uncertainty.

Implications for the Insurance Industry

Underwriting conventional war based on historical records is impossible. Modern tactics of wars have rapidly evolved in terms of weapons, strategy, sanctions and diplomacy, moral hazard (the involvement of shippers in conflict areas), and even the aggregation of risk across multiple lines.

The geopolitical environment also affects how insurers allocate their large investment portfolios from an insurance investment perspective. Analysts note that heightened conflict risk often strengthens the case for selective exposure to sectors such as defence and cybersecurity, while encouraging diversification of logistics and supply-chain-linked assets, and careful repositioning in the energy sector.

Insurance portfolios are vulnerable to war-related shocks such as sovereign defaults, fluctuating energy assets, asset freezes associated with currency, and ALM assets versus liabilities mismatches. Traditional solvency regimes such as Solvency II, RBC, and IRDAI guidance are ill-equipped to respond to these Stress testing for different geopolitical factors, for example, doubling oil prices and freezing sanctioned assets, is becoming a requisite within the ALM exercise. For insurers, these choices are not about speculation but about ensuring that their investment portfolios remain resilient and continue to back policyholder obligations even under volatile conditions.

Reinsurers, the industry's shock absorbers, are retreating from war exposures. Capacity contraction, premium hardening, and retrocession shortages increase systemic risk. For domestic insurers, reliance on Lloyd's, European reinsurers, and pools exacerbates concentration. Indian insurers may need domestic pooling and ILS solutions.

For India

India occupies a unique position in the war insurance discussion. It is located in South Asia and is heavily reliant on energy imports. It has major shipping lanes in the Indian Ocean, which expose it to regional conflict and disruption to global supply chains. The Indian insurance industry has experimented with speciality pools such as motor third-party liability, nuclear liability, and terrorism, under the watch of the IRDAI. Using these experiences as a base, India could look to establish a war risk pool that responds to its maritime and aviation risks during global geopolitical instability while simultaneously providing both capacity and stability in the market. The increasing number of multinational reinsurers and joint ventures between Indian firms and leading global companies provides a legitimate platform for domiciling war risk reinsurance arrangements, which will have the ability to attract international capital and expertise.

To address these challenges, actuaries will be central in reshaping solvency frameworks for conflict-related risks. Their work will increasingly rely on advanced techniques, including scenario analysis, parametric triggers, and cross-disciplinary data integration, to capture the complex realities of modern warfare. Emerging tools such as AI-driven analytics, satellite monitoring, and systemic correlation modelling (linking conflict with climate and cyber risks) will form the technical backbone of more resilient war risk models.

Strategic Path Forward

Establish National and Regional War Risk Pools

- India's approach to terrorism and nuclear risk demonstrates the capability of public-private models to absorb catastrophic risk. The aviation, shipping, and energy markets should also create similar war pools. At the national level, they could mandate the participation of all insurers with the method of proportional sharing.
- While at a regional level, it creates the ability for cross-market pooling in areas of high tension.
- These pools could then access global retrocession, link to reinsurers and capital markets to ensure resiliency.

Develop Parametric War Insurance Products

Parametric solutions can provide quick liquidity when pre-defined conflict-related triggers are met, such as the closure of a critical shipping route, airspace restrictions, or satellite-confirmed disruption to infrastructure. These products are not intended to replace government support or humanitarian aid. They are designed to assist businesses and other institutions in managing cash flow shocks when operations cease or are disrupted suddenly. For example, if naval hostilities force the closure of the Strait of Hormuz, a shipping company could receive a previously agreed-upon payout from a product to allow it to meet its obligations to creditors and crew while it arranges alternative routes.

By focusing on objective triggers, parametric war covers reduce attribution disputes (for instance, whether damage was caused by terrorism, rebellion, or conventional warfare) and ensure fast disbursement. However, such products must be carefully structured to avoid moral hazard: payouts should be tied to operational disruption events rather than personal exposure to danger, so they do not undermine safety measures or government-led wartime responses.

Strengthen Solvency and Capital Frameworks
Regulators ought to modify the solvency regulations regarding systemic conflict risks with the following measures:

- Imposing explicit capital charges for war exposures.
- Initiating geopolitical stress tests (oil shocks, cyber warfare).
- Allowing for dynamic reserving reduces procyclical stress.

Engage Capital Markets via ILS
Engage Capital markets can supplement reinsurance through War Cat Bonds, Conflict Resilience Notes, and blended finance structures combining government, multilateral, and private capital.

Invest in Actuarial Innovation and Data Integration
Actuaries ought to adopt scenario-based pricing mechanisms, jointly conduct research with economists and defence experts and use artificial intelligence (AI), satellite imagery and blockchain to improve prediction and claims handling processes. Together, these strategies transform war insurance into an active instrument for global resilience.

Conclusion

War insurance has transitioned from a narrowly defined coverage, in the context of marine and aviation perils, to a systemic necessity in our geopolitically unstable world. Contemporary warfare manifests concurrent, interdependent, and nested risks. It is challenging traditional underwriting, solvency, and reinsurance capabilities and frameworks. From an actuarial standpoint, the field must adapt through scenario-based modelling, parametric-based solutions, and innovative capital markets to help address coverage gaps.

National pools, multilateral organisations, and public-private partnerships will position the global environment for resilience and protection of critical trade and infrastructure. At the same time, insurers must operationalise ESG principles in their underwriting process while balancing the social responsibilities and ethical underwriting support. Fundamentally, we need to change the way we approach war insurance as focused not only on the protection of assets, but also on ensuring the global economic security and resilience in a time when geopolitical shocks are so common that they no longer seem an exceptional circumstance.

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Micro-Insurance

Insuring the Invisible: Tip-Based Micro-insurance for Gig Workers

In an era where deliveries happen in under 10 minutes, risk protection for those delivering them goes unnoticed. In this feature, Divyani Mehta presents an innovative insurance product for the gig workers. While originally envisioned as a tip-based microinsurance product, the product has become even more relevant since the recent notification of the new labour laws in India.



Introduction

The gig economy has become a defining feature of modern labor markets, reshaping how services are delivered and consumed. Examples include ride-hailing platforms, food delivery services, home service apps, and holiday rental marketplaces. In 2024, the global gig economy reached an estimated market size of $556.7 billion and is projected to more than triple to $1,847 billion by 2032 (World Economic Forum, 2024). In India, the sector employed 7.7 million workers in 2020–21, with NITI Aayog projecting growth to 23.5 million by 2029–30, nearly half of whom are in medium-skilled roles.

A substantial share of these workers depends on two-wheelers, placing them squarely within one of India's most critical public safety challenges—road traffic accidents. The World Health Organization reports that 1.19 million people die annually in road crashes, making it the leading cause of death for individuals aged 5–29 years, with 92% of fatalities occurring in low- and middle-income countries. India's burden is particularly severe: government data show over 460,000 road accidents in 2022 causing nearly 170,000 deaths, almost half among two-wheeler riders. Early 2024 estimates suggest fatalities have risen to about 180,000. The demographic profile of victims overlaps sharply with that of the gig workforce, amplifying socioeconomic vulnerability.

Despite this high exposure, insurance protection for gig workers remains minimal. This study proposes a **micro-duration insurance model** in which either voluntary customer gratuities or platform fund per-ride coverage. Using real-time platform data, actuarial frequency-severity modeling, and AI-enabled trip-risk scoring, the framework dynamically prices and instantly activates protection for each ride. By linking premiums directly to exposure, the approach offers an accessible, usage-based alternative capable of providing financial resilience, improving worker dignity, and enhancing platform accountability.

With the nationwide implementation of the Code on Social Security, 2020 on 21 November 2025, Chapter IX formally extends statutory protection to unorganized workers, gig workers, and platform workers. The Code mandates government-framed schemes providing life and disability cover, accident insurance, health and maternity benefits, old-age protection, crèche facilities, and other welfare entitlements, supported through a multi-source funding architecture. Notably, the Code does not prescribe minimum or maximum benefit levels. These schemes may be financed by Central or State Government contributions, mandatory aggregator contributions, or beneficiary co-contributions, creating a flexible ecosystem for expanding social protection. This evolving framework also opens space for complementary innovations—such as insurance funded through tips.

- Customer Places Order/books services.
- Gig worker accepts order/service.
- Premium is paid into the insurance pool
- Policy activates (from acceptance - completion).
- Gig worker is covered during service period.
- Service completed.
- If new service accepted → coverage continous
  If not → coverage ends.

Why It Matters

Gig-platform insurance and on demand/micro-duration products

It is observed in industry practice that several platforms are embedding insurance directly into their ecosystems, most commonly through on-demand, trip-based, or micro-duration products. These models leverage the unique data-rich environment of platforms to price and activate coverage in real time.

- Platform-linked accident covers - large platforms have implemented "on-trip" or per ride protection add-ons for drivers/riders and sometimes passengers. Ola's partner injury/ "On Trip" protection provides medical, death and disability benefits while the app status is On Trip.

- Passenger/top up models - Grab's "Ride Cover" in Singapore lets users pay premium per ride for delay vouchers plus an upsized accident cover (up to ~S$100k), and—separately—Grab and NTUC Income piloted micro covers for drivers where small per trip amounts accumulate to a defined sum assured. These demonstrate micro-pricing at the trip level and in app premium collection.

These case studies demonstrate two important precedents:

- Feasibility of per-trip activation — Insurance can be successfully tied to the digital timestamp of gig activity (acceptance to completion of trip).
- Consumer and worker willingness — When embedded into platform interfaces, both riders and passengers accept small premiums as part of the transaction.

Road Safety and Occupational Exposure of Gig Workers

While India mandates a Compulsory Personal Accident (CPA) cover under every motor insurance policy—providing ₹15 lakh coverage for an annual premium of ₹750—many gig workers remain effectively uninsured in practice.

- A large proportion of delivery, ride-hailing, and home-care workers operate on rented or leased two-wheelers registered under third-party owners, meaning the mandatory PA policy is held in the vehicle's owner's name rather than the actual rider.
- Similarly, in app-based cab services, drivers and customers who "book a cab ride" through fleet operators often fall outside the policy's name coverage.

Even when riders own their vehicles, awareness of PA entitlements is extremely low due to modest educational backgrounds, limited financial literacy, and the absence of structured benefit communication from platforms or insurers. In behavioral terms, when asked to choose between "a tip today" versus "insurance tomorrow," most workers prioritize immediate income over uncertain protection.

Although Chapter IX of the Social Security Code, 2020—now implemented—recognizes gig and platform workers as eligible for government-framed schemes covering accident, disability, health, maternity, and old-age benefits, these protections are still in early stages of rollout. Under Section 112, governments may set up toll-free helplines and facilitation centers to disseminate information on available schemes, assist with worker registration, process applications, and support enrolment into social-security benefits.

These measures are intended to increase awareness, improve access, and ensure that workers who were previously excluded—due to lack of information, administrative barriers, or fragmented coverage—can systematically enter the social-security net.

Market Context and Profitability

Gig workers face their greatest exposure from accidental injuries due to prolonged two-wheeler use, dense urban traffic, and task-driven mobility. This makes Personal Accident (PA) insurance the most relevant form of protection for this workforce. According to IRDAI (2024), the personal accident (PA) line of business generated a gross premium income of ₹7,788 crore during FY 2023–24, covering approximately 165 crore lives. This coverage includes large-scale government-backed schemes such as PMSBY, PMJDY, and IRCTC travel insurance. Notably, the industry reported an incurred claims ratio (ICR) of around 67% for PA insurance in 2023–24, highlighting its profitability relative to other retail health and motor lines.

For the proposed micro-duration insurance model, these figures suggest a significant scope for growth. Embedding the cover funded by tips / mandated handling fees within platform ecosystems can extend protection to millions of gig workers without relying on their own financial contributions.

Importantly, the relatively low ICR in the PA segment indicates that even with small contributions from tips / mandated handling fees, insurers can expect sustainable profitability, provided that product design incorporates adequate pricing, reinsurance, and fraud control measures.

Chapter IX of the Social Security Code, 2020 reinforces this need by mandating accident and welfare benefits, supported by a multi-source funding structure. Within this framework, this product offers a practical operational pathway: it utilizes an alternative funding channel that might avoid financial burden on low-income workers.

Product Concept Description

The micro-duration insurance for Gig Workers is an insurance model designed to close the protection gap for workers in the gig economy. It operates as a per-trip or per-service insurance product, activated automatically from the moment a worker accepts a job on the platform until its completion. Unlike traditional insurance, which often excludes low-income workers due to affordability barriers and awareness, this model is funded entirely through customer tips / handling fees, seamlessly collected at the point of transaction. The company could set minimum and maximum contribution limits, which can then be pooled to provide optimal coverage for all participants. Structurally, this approach mirrors the accident-benefit component of workmen's compensation, which represents the primary risk exposure for gig workers, but delivers it in a pay-as-you-go format, with coverage activated precisely during the period of occupational risk—when a task is accepted, performed, and completed. Hence, Personal Accident (PA) insurance is the most suitable base product. Future sections will build upon this, taking PA as the base product for pricing, reserving, data assumptions, and other relevant considerations.

The mechanism is simple and platform integrated. Once a gig worker accepts a service request, the platform prompts the customer with the option to allocate part of their tip / mandated handling fees towards insurance coverage. If the customer selects this option, a small portion of the tip/ mandated handling fees is transferred into the insurance pool, instantly triggering the worker's cover for the duration of that trip or service. The coverage remains active until the job is completed and will only continue if a new trip/service is accepted and similarly funded. In the absence of a subsequent task, the policy automatically terminates at the moment of service completion, ensuring that protection is tied directly to real-time exposure.

Coverage Details & Benefits Schedule

Benefit Type	Coverage Limit	Deductible / Conditions
Accidental Death	Up to ₹20,00,000 (varies depending on tip contribution)	₹100 deductible
Permanent Total Disablement (PTD) / Permanent Partial Disablement (PPD)	Up to ₹15,00,000	₹100 deductible
Emergency Medical Expenses for Injury – Inpatient	Up to ₹5,00,000	No deductible
OPD Treatment due to Injury	Part of above inpatient cover, max ₹30,000	No deductible
Emergency Evacuation	Up to ₹30,000	No deductible
Daily Allowance in Case of Hospitalization (≥24 hrs)	₹1,000/day (max 14 days)	No deductible
Missed Service (Platform Specific)	Up to ₹10,000 per incident	Minimum order value ₹500

Target Customers

- Food, grocery, and parcel delivery workers (two-wheeler).
- Ride-hailing drivers.
- Home service professionals who travel for appointments.
- Predominantly urban, aged 18–45.

Trigger Events

- Coverage applies only during the active trip window:
- Trip accepted → coverage starts.
- Trip completed → coverage ends.
- Accident during this period → claim eligible.

Premium Collection Method (with data)

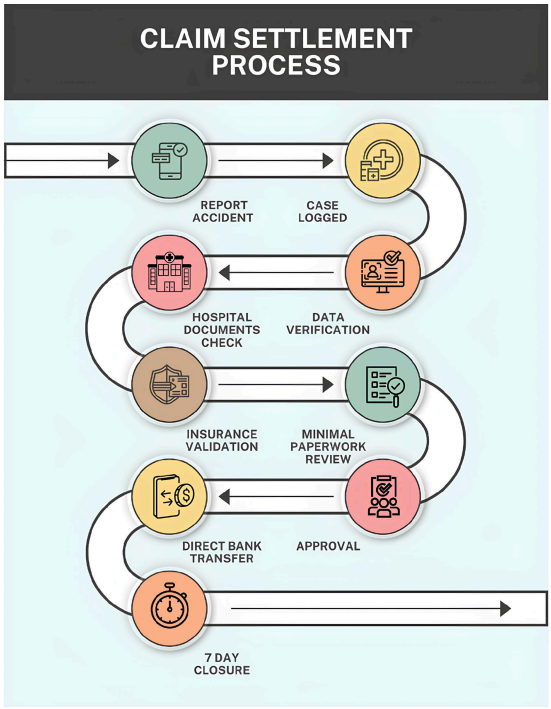
- Funded via fixed percentage of customer tips.
- Example (Zomato, 2025):
  - Orders/day: 1.3M.
  - Tip frequency: 5%.
  - Avg tip: ₹27.
- Premium allocation: 20% of tip.(Premium allocation percentage can vary between age groups)
- Daily premium pool: ~ ₹3.51 lakh. (5%*1,300,000*27*20%)
- Yearly premium pool: ~ ₹12.8 Cr

Premium Collection Method - funded through handling fees (with data)

- Funded via fixed surcharge on handling fees say ₹2 per order

Claim settlement process

- Integrated with Service Provider Apps: Since most gig platforms operate separate apps for customers and service providers, claims can be seamlessly initiated within the provider app. Once a tip-funded insurance cover is triggered and the service provider receives a tip, the app interface displays an option to report a claim.
- Accident Reporting: The worker (or nominee) can report an accident either directly via the service provider app or through the insurer's hotline.
- Validation:
  - Incident is cross-verified using platform trip/service logs (timestamp, location, completion status).
  - Supporting documents such as police FIR, hospital admission/discharge summaries, or death certificates are uploaded digitally.
- Simplified Process: Paperwork is kept minimal and digital-first. Claim documents can be uploaded within the app itself.
- Verification & Settlement:
  - The insurer reviews the claim in coordination with platform data.
  - Valid claims are approved, and benefits are paid directly into the worker's linked bank account or to nominee.
- Turnaround Time: Targeted claim settlement is within 7 working days, ensuring timely relief to workers or their families.



Innovation and Differentiation

The idea of Micro-duration insurance for Gig Workers introduces a fresh departure from conventional insurance in both structure and philosophy. Unlike standard products, this model does not require workers to pay premiums out of pocket. Instead, it channels customer tips/ mandated handling fees into a pooled fund, thereby converting small, transaction-linked payments into a structured protection for a segment of workers who are often excluded from insurance due to affordability or lack of awareness.

Another key differentiator is its event-triggered, per-trip coverage structure. Similar in spirit to usage-based motor insurance, the policy activates only for the duration of a ride or service engagement. This micro-duration model ensures that protection is aligned exactly with the period of highest occupational risk, such as while driving, delivering, or attending a customer's home.

Although the funding source is small —the pooled contributions can support meaningful levels of protection. In practice, this can translate to coverage of up to ₹20 lakhs for accidental death or disability, a significant safeguard for workers from low-income backgrounds. This "macro-to-micro" transformation highlights the social efficiency of the design.

The product also incorporates a service-linked benefit that goes beyond conventional accident insurance: compensation for missed deliveries due to accidents. This not only secures the worker's livelihood but also strengthens customer and platform trust by directly addressing service continuity risks.

Finally, the model leverages AI-enhanced actuarial techniques. Using granular platform data—such as trip distance, time of day, accident-prone routes, and worker demographics—pricing can be dynamically adjusted. This improves fairness, reduces inefficiencies, and ensures sustainability of the insurance pool while adapting to evolving risk conditions.

Comparative Analysis: Traditional PA Cover vs. Tip-Based Micro-insurance

Dimension	Traditional PA Cover in India	Tip-Based Micro-insurance (Proposed)
Premium payment	Paid upfront annually/quarterly (₹200–₹1,200 per year for ₹15–₹25 lakh cover, depending on insurer and add-ons).	No upfront cost to worker — premiums sourced from customer tips.
Accessibility for gig workers	Often unavailable — many gig workers use rented/borrowed vehicles, so mandatory motor PA rider is in vehicle owner's name, not theirs. Low awareness + affordability barriers mean few buy retail PA.	Universal access via platform integration — cover activates automatically per trip/service, linked to provider's app login and customer tip.
Awareness and uptake	Very low in low-income groups; insurance literacy is poor, and workers often prefer tangible income (tips) over intangible cover.	Behaviorally aligned — makes "tips = insurance", converting generosity into protection without extra decisions from workers.
Coverage amount	Typically ₹15–₹25 lakh for accidental death; medical/disablement covers vary, often lower.	Higher effective cover — up to ₹20 lakh accidental death, plus medical, hospital allowance, and missed-delivery payout.
Trigger window	Coverage is continuous (policy term-based), but lapses if premium not renewed.	Micro-duration, pay-as-you-go — valid only during trips/services, perfectly aligned with high-risk exposure periods.
Premium–risk alignment	Flat pricing, not linked to actual exposure.	Dynamic AI-pricing — uses platform data (time, route, location, weather, frequency) to align risk with premium.
Claim settlement	Paper-heavy, routed via insurance branches/TPAs, often slow for informal workers.	Digital-first — accident reporting via provider app; trip logs validate incident; 7-day target payout to worker/nominee.
Who benefits most?	Primarily vehicle owners, salaried employees, or financially literate policyholders.	Low-income gig workers, especially delivery agents and homecare providers without their own vehicle insurance.
Add-on benefits	Rare in standard PA.	Innovative add-ons — "missed delivery/service payout" aligns worker protection with platform service quality.

Data & Assumptions

Data directly made available by the service provider -

- Worker identifiers (anonymised), worker age, sex, location, vehicle type (own/rented), licence status.
- Trip / service telemetry: timestamp (accept/start/complete), origin/destination, distance, duration, route
- Tip data: tip frequency (proportion of trips tipped), tip amount distribution, seasonal spikes.
- Real-time platform API logs for linking trips to tips.
- Tip-earmarking indicator (whether customer selected "allocate to insurance").
- Worker app UI events (whether worker acknowledged cover).
- Behavioural datasets: propensity to tip by customer cohort, event calendar (festivals), marketing campaigns.
- Short-tail claim payment times (to validate 7-day TAT).

Other data directly available with the insurer -

- Claims history: FNOL(First notification of Loss) timestamps, claim type (death/PTD/medical/evacuation), reported amount, payments, development (payment dates).
- External benchmarks: MoRTH and WHO accident rates by vehicle/age, hospital cost indices, local wage rates.
- Expense data: acquisition, platform commission / collection fees, servicing costs, fraud detection costs.
- Reinsurance terms (if in place): quota share %, stop-loss attachment/limit, reinsurer rates.
- Financials: investment yield curve (short/medium), inflation indices, tax/GST treatment.
- Regulatory constraints: IRDAI filing rules, required reserves, data privacy constraints.Policy term/renewal patterns, lapses, continuous exposure person-years.
- Employer group cover terms (if worker is in group policy).

Methodology

Dimension	Traditional PA Cover in India	Usage Based (Tip Funded) PA Cover
Policy Tenure	Annual (1/3/5 years) fixed	Per trip / per service (coverage lasts only during accepted task)
Exposure	Continuous, 24/7 for policy term	Dynamic, linked to service duration (minutes–hours)
Risk Factors	Broad: age, occupation, sum insured	Granular: trip length, time of day, traffic, location, vehicle type, weather, platform data
Rating Factors	Historical accident rates, demographic tables	Real-time trip & worker data; AI/ML-based risk scoring
Nature of Pricing	Flat, prepaid premium	Pay-as-you-go, proportional to actual trip risk
Pricing Approach	Aggregate: Expected Loss (Frequency × Severity) + loading	Customised & precise: Depends on distance covered, average speed, frequency of use, driving skills (measured through telematics/app data)
Collection of Rating Information	Proposal stage declarations, KYC, limited updates	Automated via GPS, telematics, mobile app, platform trip logs
Usage & Driving Skills	Not explicitly tracked; assumed average	Tracked in real time: Telematics/ mobile sensors record speed, adherence to limits, time of driving, braking/acceleration patterns
Portfolio Mix	Large heterogeneous pool; strong cross-subsidization	Dynamic, per-trip exposure; less cross-subsidization, more individualized

Risk premium considerations

Impact on Frequency

- Because coverage activates only when a worker is "on trip" or "on service," exposure during idle periods is excluded. This reduces effective claim frequency compared to traditional 24×7 personal accident covers.
- Integration of platform data such as GPS, time of day, and trip logs allows for more granular modeling of frequency. For example, accident risk is higher during night-time deliveries or in congested traffic zones.
- Claim frequency scales directly with the number of trips or services undertaken rather than an annual policy duration, making risk estimation more transparent and better aligned with actual exposure.
- A potential offsetting factor is the heavy reliance on rented or borrowed vehicles in the gig economy. These vehicles are often poorly maintained, and drivers may lack formal training, which can elevate accident frequency relative to private vehicle ownership.
- Over time, safety interventions introduced by platforms—such as speed alerts, fatigue detection, and optimized routing—could act as downward pressure on claim frequency.

Impact on Claim Severity

- The dominance of two-wheelers in the gig workforce has important severity implications. According to MoRTH (2022), 44.5% of road fatalities in India involve two-wheeler riders, making severe and catastrophic claims disproportionately likely.
- The demographic profile of gig workers (predominantly aged 18–45) skews claim severity toward high-impact outcomes such as fatalities and permanent disability rather than minor, short-term injuries.
- Medical cost inflation is a persistent upward driver of claim severity, particularly for inpatient and emergency care. Even OPD costs, though capped, add to aggregate claim severity.
- The inclusion of a "missed delivery" rider introduces a non-bodily component to severity. While the payouts are relatively modest, they represent an additional claim dimension linked directly to service disruption rather than medical outcomes.

Office premium considerations

Expenses

The implementation costs for micro-duration insurance are relatively modest compared to telematics-heavy usage-based insurance. The model leverages existing platform infrastructure—apps, GPS, and trip logs—rather than requiring expensive hardware installations. While there is an upfront cost for IT system integration (such as APIs linking tips, trip data, and insurance activation), this is largely a one-time investment and scalable across multiple platforms. Variable costs are minimal, as policy issuance is automated at the trip level, making the marginal administrative expense negligible. Claim handling costs are also reduced, with First Notification of Loss (FNOL) integrated directly into the platform and automated validations performed against trip logs.

Commissions

The distribution model bypasses traditional intermediaries. Insurance is embedded seamlessly within the gig-platform ecosystem, and policies are offered digitally through apps already familiar to workers and customers. Commissions are therefore minimal, with platforms possibly charging a small facilitation fee.

Reinsurance Costs

The portfolio is characterized by a very large number of short-duration, small-ticket policies. This shifts the focus from per-policy treaties to aggregate protection mechanisms. Reinsurance structures such as quota share treaties at the platform level or aggregate stop-loss arrangements are more appropriate, particularly to address clustering risks (for example, multiple riders being involved in the same accident). Negotiation with reinsurers, however, may be challenging, as limited historical data on trip-level personal accident claims could prompt cautious pricing.

Investment Income

Premiums flow into the system at a micro level, creating a smaller float compared to traditional annual PA policies. The investment horizon is short, as funds are deployed almost immediately for coverage activation. While scale effects from high transaction volumes across platforms could still generate meaningful float, the contribution of investment income to profitability is expected to be modest.

Lapse and Persistency

Traditional PA policies often suffer from persistency issues, particularly among low-income workers who may fail to renew annual covers due to affordability or lack of awareness. By contrast, this model eliminates lapse risk: coverage activates automatically with each trip or service. Persistency is therefore tied to platform usage patterns rather than policyholder behavior.

Inflation (Medical Cost Inflation)

Medical inflation in India, estimated at 8–12% annually, has a direct impact on claim severity, especially hospitalization and OPD costs. Per-trip, short-duration covers naturally reduce long-term exposure to inflation but also presents pricing challenges. If tips / handling fees do not rise in line with medical cost inflation, claim costs could quickly outpace contributions. Mitigation lies in dynamic AI-driven pricing which can adjust the benefit levels in near real time.

Reserving

Because this product is short-duration, high-frequency, and funded through small premiums, its reserving requirements differ substantially from those of traditional personal accident insurance. The main considerations are as follows:

Unearned Premium Reserve (UPR)

IIn conventional PA products, UPR covers the unexpired risk over an annual or multi-year term. In contrast, micro-duration insurance operates on a per-trip or per-service basis, with coverage lasting only minutes to hours. Premiums are therefore fully earned almost immediately upon completion of the service, making UPR negligible. There is no meaningful carry-forward of unearned risk.

Incurred But Not Enough Reported (IBNER)

IBNR is of higher importance than UPR in this model. While claims are generally reported quickly, delays can occur—particularly injury-related claims requiring hospital or police documentation. Platform-linked reporting reduces but does not eliminate this lag. The volume of claims is expected to be high, though mostly small in size, with occasional large fatality or permanent disability claims requiring conservative provisioning.

Methods: When early development data is sparse or volatile, the Bornhuetter-Ferguson (B-F) method is well suited, combining prior expected loss ratios with observed run-off. This stabilises reserves while still incorporating emerging experience. Chain Ladder methods may be used if development triangles become stable with sufficient volume, while stochastic approaches (e.g., bootstrap chain ladder, Mack model) are useful to quantify prediction intervals and capital requirements.

Incurred But Not Enough Reported (IBNER)

Claim severity may escalate after initial notification, for example when a minor injury later develops into permanent disablement. Medical cost inflation further amplifies IBNER risk, particularly for hospitalization and OPD claims. Reserve strengthening may be required in portfolios with significant injury claims.

Outstanding Claims Reserve (OCR)

OCR must reflect the short settlement cycle (the target being seven days) but also account for verification delays such as matching trip logs with hospital bills. While the absolute reserve amount will be small compared to traditional PA lines, the high volume of small claims introduces volatility that must be monitored.

Premium Deficiency Reserve (PDR)

A PDR may be necessary if tips/handling fees contributions are insufficient to cover expected claims and expenses. Tip frequency and size can fluctuate seasonally (e.g., increasing during Diwali but declining in lean periods), so stress testing of adverse scenarios is important.

Claim Development Pattern

The product is a very short-tail business, with most claims reported within days or weeks. Development triangles therefore run off quickly, unlike motor liability or health indemnity portfolios. This allows for simplified stochastic reserving approaches such as the Mack model over short horizons, with relatively low tail uncertainty.

Capital Considerations under Risk-Based Capital (RBC) Framework

The proposed tip-based microinsurance product carries distinct capital implications under an RBC regime due to its frequency, short-duration, and customer-funded structure. Capital must be held across multiple risk categories:

Underwriting Risk Capital

The primary source of risk is volatility in claims frequency and severity. Because coverage is triggered per trip or per service, the insurer faces very high transaction volumes with typically low-severity claims. A capital buffer must be maintained against adverse deviations in claim frequency, with the charge linked more closely to the variance of claims per 1,000 trips than to annual premium volume.

Although most claims will be minor and tail risk remains low: rare but severe cases (e.g., fatalities or permanent disability) can cause sharp spikes in severity loss. RBC models must therefore capture tail risk using metrics such as Tail Value-at-Risk (TailVaR) at the 99.5% confidence level.

Premium and Reserve Risk Capital

Premium Deficiency Reserves (PDR) may be required if the tips/handling fees allocated to insurance proves insufficient. Reserving risk, though moderated by the product's short-tail nature, remains material due to reporting delays and medical cost inflation. Capital should be held against potential adverse development, such as faster-than-expected escalation in hospitalization expenses.

Market Risk Capital

Market risk is relatively less material given the product's micro-duration and minimal float from Unearned Premium Reserves (UPR). However, insurers remain exposed to investment mismatch risk, particularly if medical inflation (typically 8–12% annually) outpaces bond yields. Stress testing under low-interest-rate environments is necessary to assess the resilience of technical provisions.

Credit Risk Capital

Credit exposures arise mainly from two sources: (i) reinsurers providing protection for large claims, and (ii) platform partners responsible for remitting the premium component. RBC may require a charge based on default probability multiplied by exposure at default, particularly for reinsurers with lower credit ratings or platform partners with cash-flow delays.

Operational Risk Capital

Operational risk is highly material for this product due to its dependence on seamless digital integration between insurer systems and gig-platform applications. Risks include system outages, fraudulent or exaggerated claims (e.g., false accident reports), and data privacy or cyber incidents from the exchange of sensitive worker information. RBC regimes typically require an explicit operational risk charge as a percentage of premiums or technical provisions.

Catastrophe Risk Capital

Although road accidents do not typically constitute catastrophic events in the insurance sense, cluster risk is present. A single mass-accident event, such as a bus crash involving multiple delivery workers, could create concentrated losses. RBC frameworks may require scenario-based catastrophe stress testing to quantify such correlated risks.

Challenges & Implementation Considerations

1. Regulatory Alignment
   - The proposed benefit limits exceed current IRDAI microinsurance caps, requiring either new regulatory sandbox approval or a reclassification under general insurance product norms.
   - Clear definitions are needed for micro-duration products and premium collection via third-party platforms.
2. Premium Volatility & Sustainability
   - Ensuring consistent premium inflows to cover expected claims and administration expenses is a core challenge.
3. Platform Integration
   - Requires dual app integration (customer app for premium collection, provider app for claims).
   - Significant investment in APIs, real-time data sharing, and fraud detection algorithms.

4. Fraud & Moral Hazard
   - Risk of false accident claims or collusion between workers and service providers.
   - Need for AI-based validation using GPS, trip logs, and hospital/police reports.
5. Operational & Cyber Risks
   - Sensitive worker data must be handled under data privacy regulations.
   - Cybersecurity and system downtime risks increase when multiple apps are linked.

Conclusion & Next Steps

This paper has explored the viability of Micro-duration insurance, a per-trip/per-service accident cover model. By leveraging platform data, actuarial science, and AI-driven risk models, the product demonstrates how insurance can be made inclusive, dynamic, and trip-based without imposing direct costs on low-income workers.

Key findings include:
- The model provides high coverage for traditionally uninsured groups by converting small premiums from tips into meaningful protection.
- It addresses pricing inefficiencies in current gig-platform covers by linking exposure directly to trip data.
- While promising, successful implementation will require regulatory adaptation, platform collaboration, and worker education.

Next Steps
- Pilot under IRDAI's sandbox to check feasibility and compliance.
- Use simulated/pilot trip data to validate pricing, frequency, and reserving.
- Collaborate with platforms, reinsurers, and tech providers for implementation.
- Apply opt-in defaults, gamified education, and safety badges to boost participation.
- Expand model to home services, ride-hailing, and other gig platforms.

Gloassary

B-F (Bornhuetter–Ferguson Method):

An actuarial technique used to estimate incurred but not reported (IBNR) claims. It combines prior expectations of ultimate loss ratios with actual reported losses to date.

IBNR (Incurred but Not Reported):

The portion of ultimate incurred losses that have occurred as of the valuation date but have not yet been reported to the insurer.

IBNER (Incurred but Not Enough Reported):

The amount by which reported claims are expected to increase due to development of already reported claims (i.e., case reserve strengthening). It reflects underestimation in case reserves for known claims.

OCR (Outstanding Claims Reserve):

The provision set aside covers future payments on claims that have been reported but not yet settled. It represents the current estimate of the insurer's liability for known claims.

PDR (Premium Deficiency Reserve):

A reserve established when the unearned premium reserve (UPR) is insufficient to meet expected future claims and expenses related to unexpired risks. It ensures that liabilities are not understated when future losses are expected to exceed unearned premiums.

TAT (Turnaround Time):

The average time taken to process a claim or transaction, from initiation to completion.

RBC (Risk-Based Capital):

A regulatory framework for determining the minimum capital an insurer must hold, based on the risk profile of its assets and liabilities. RBC ensures that insurers maintain sufficient capital to absorb losses arising from underwriting, credit, market, and operational risks.

Incurred Claims Ratio:

A measure of the proportion of premiums earned that has been used to pay incurred claims.

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About the author(s)

About the author(s)



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Divyani Mehta is an Associate Member of the IAI with over three years of experience in general insurance. She specializes in reserving across UK and Middle East and had supported Solvency II regulatory work across the Irish and UK markets. Divyani has also contributed to pricing and reserving functions for insurance entities. She holds a Bachelor's degree in Commerce from MLSU, Udaipur, and is a Fellow of the Insurance Institute of India. Outside work, she enjoys cooking, yoga, and meditation. She also runs "Bima_iQ," a platform dedicated to making insurance simple and accessible to the general public.

Culture

Actuary Life

When Actuaries Go Global: Stories Beyond Spreadsheets



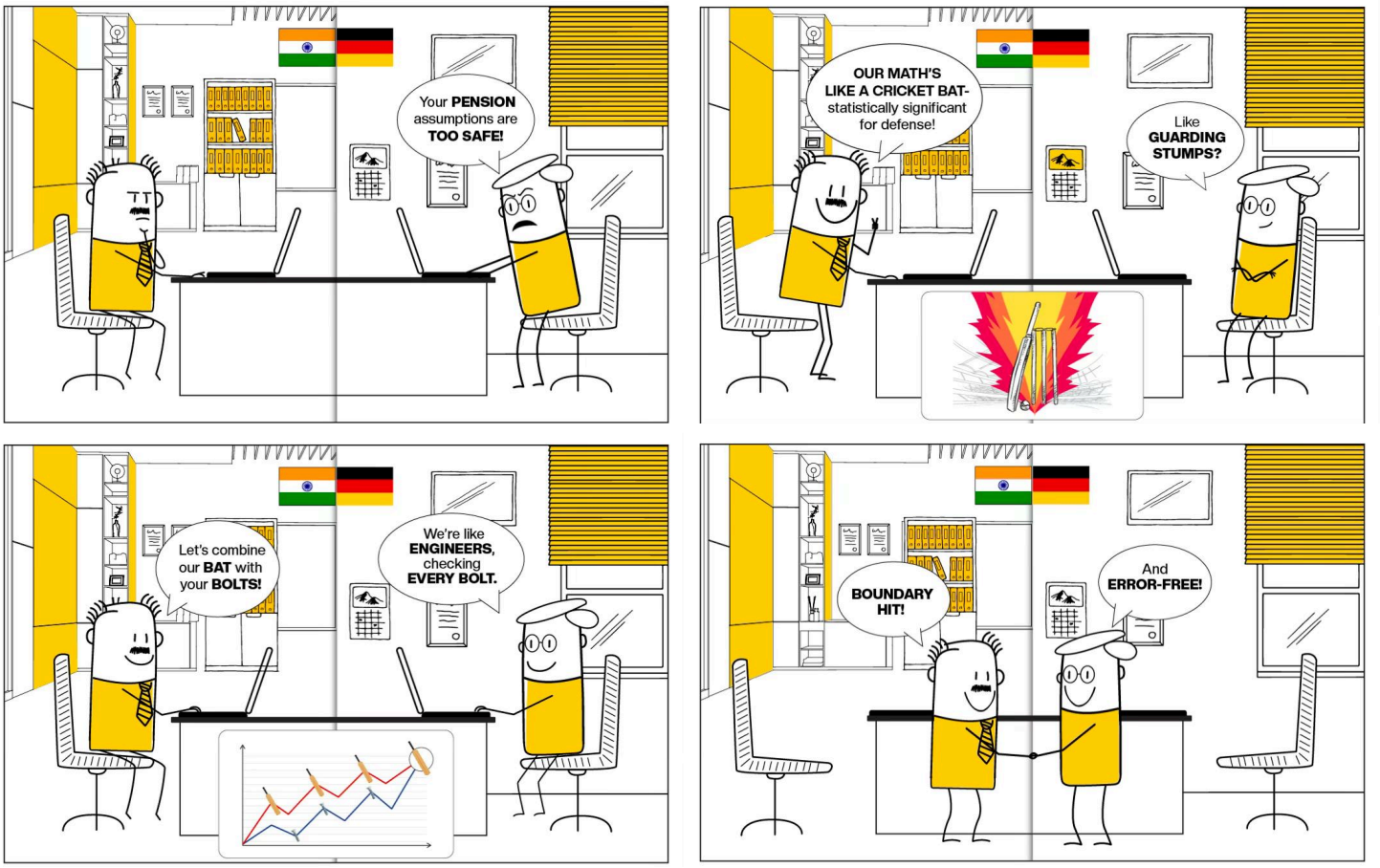
When you mix actuarial precision with cultural quirks, something fascinating happens. From New York skyscrapers to Mumbai monsoons, actuaries around the world find creative ways to balance risk, reason, and relatability. These comic stories, inspired by real conversations between international teams, show how humour and insight can bridge every actuarial gap - one graph, one metaphor, and one cup of tea at a time.

Every stamp tells a story. Click on any country stamp to explore its comic strip — each one inspired by cultural quirks, workplace humour, and how actuaries navigate global collaboration.



Precision engineering meets protective instincts.

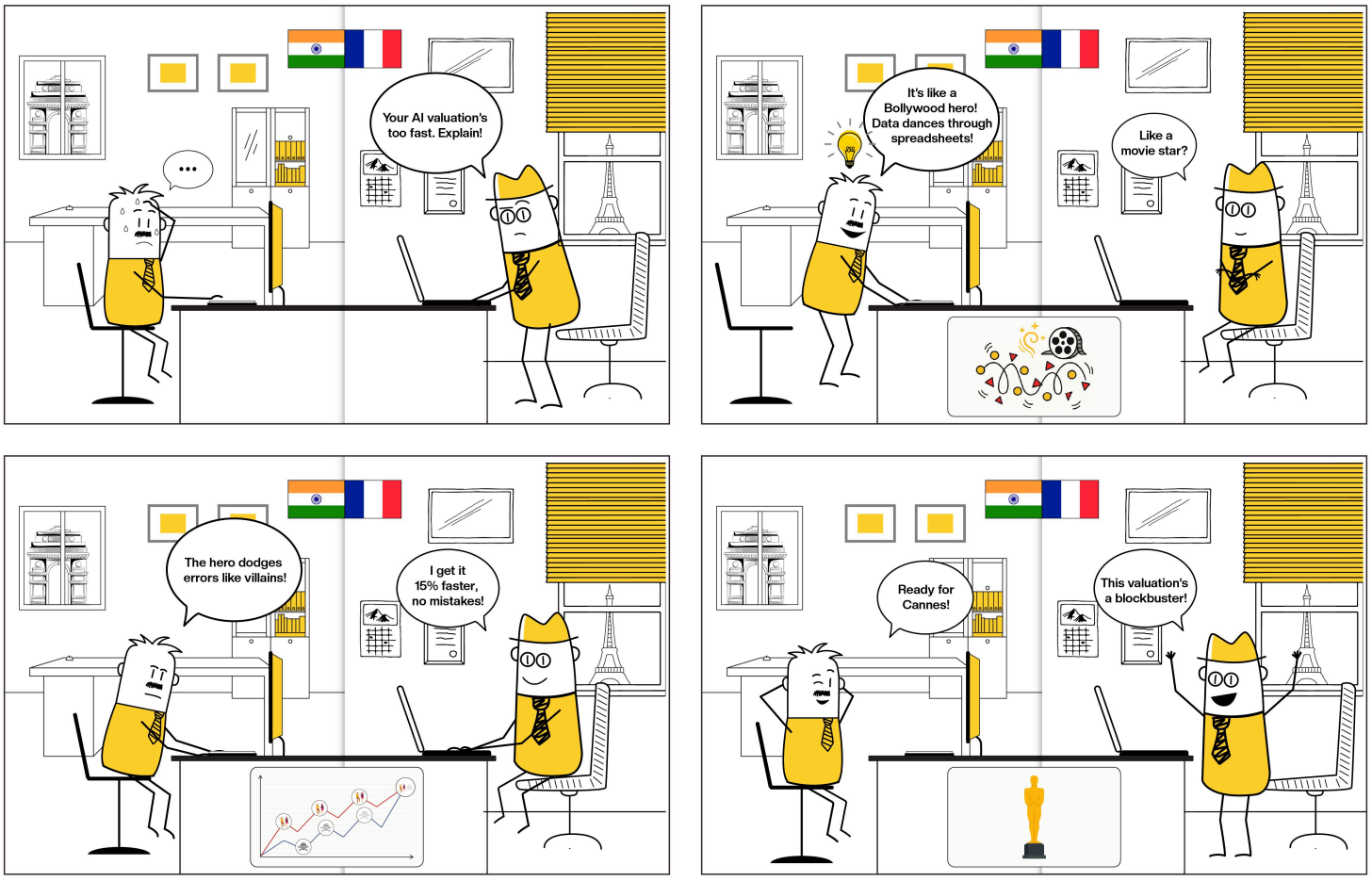
The German actuary calls the Indian model "too safe." What happens next? A cricket bat, a glowing aura, and one very nerdy analogy.



Moral: When you mix Indian defence with German engineering, even risk has boundaries.

Where spreadsheets meets silver screen.

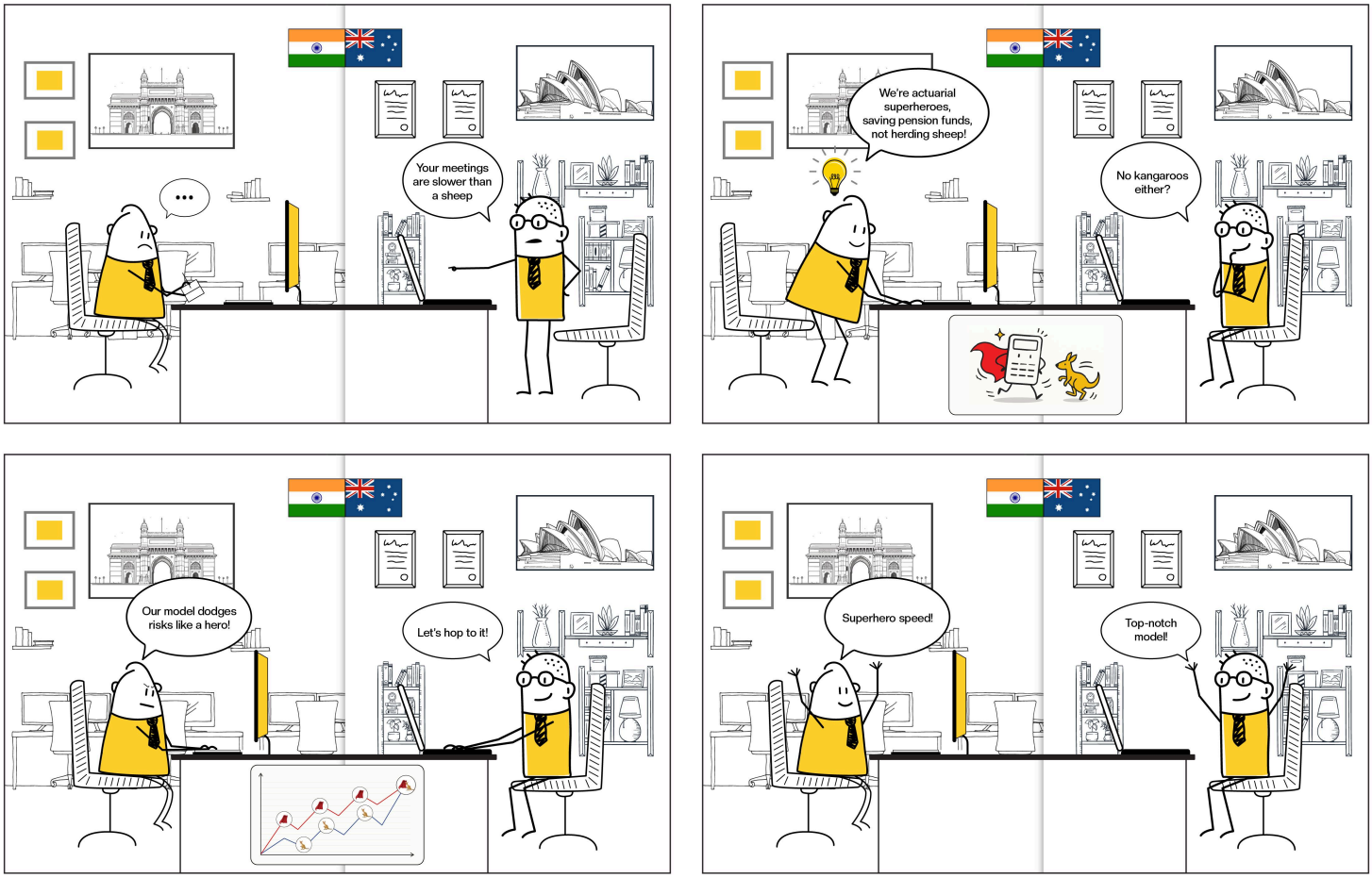
When a French actuary questions the speed of AI valuations, the Indian team turns to Bollywood for answers. Because sometimes, it takes a dance number to explain a data model.



From sheep races to superhero saves.

Time zones and meeting speeds collide until the Indian actuary reframes the narrative.

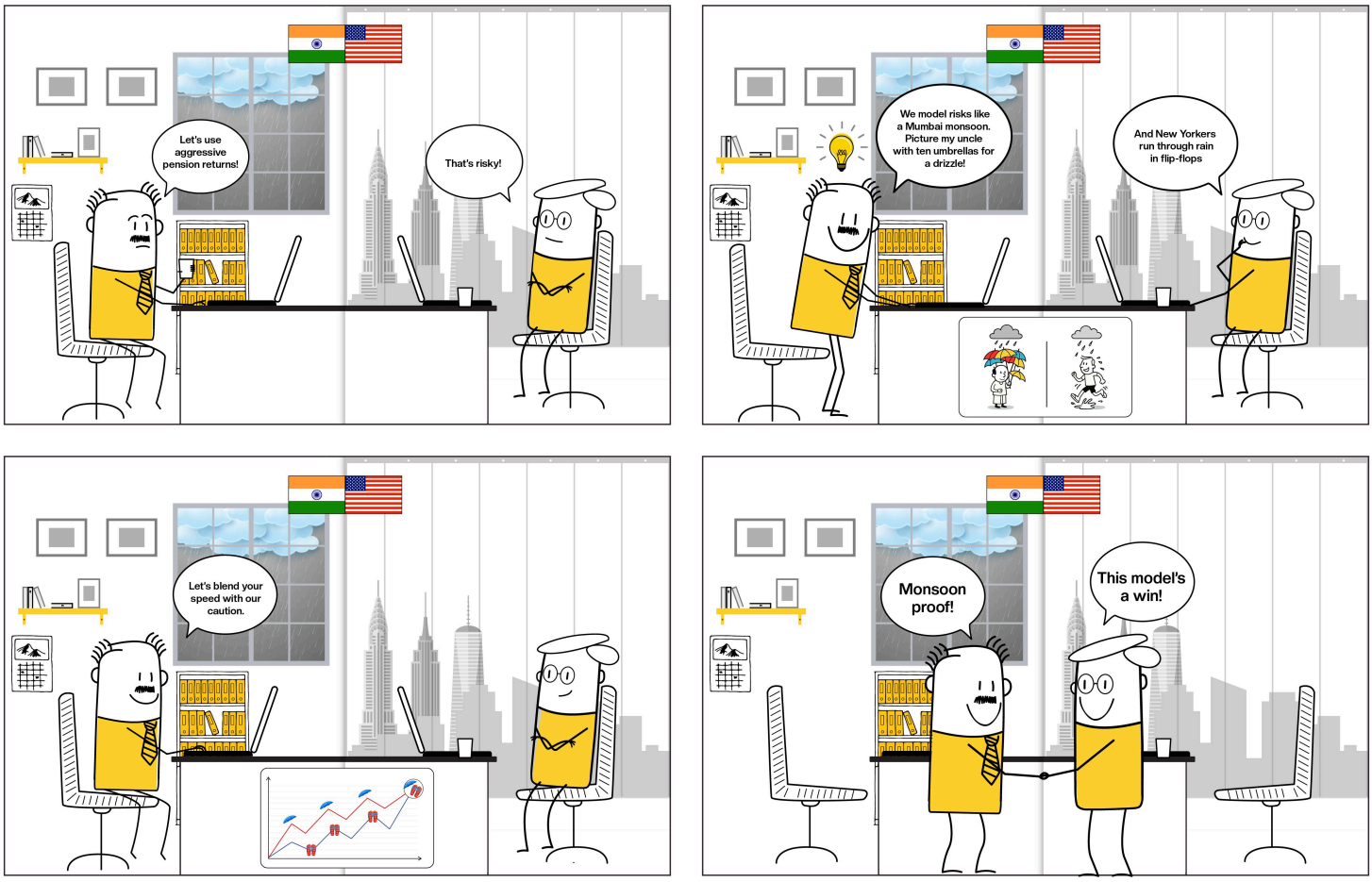
No sheep, no herding, just actuarial heroes saving pension funds.



Moral: Whether it's risk margins or hero missions, teamwork keeps the numbers flying.

Where New York's hustle meets Mumbai's drizzle.

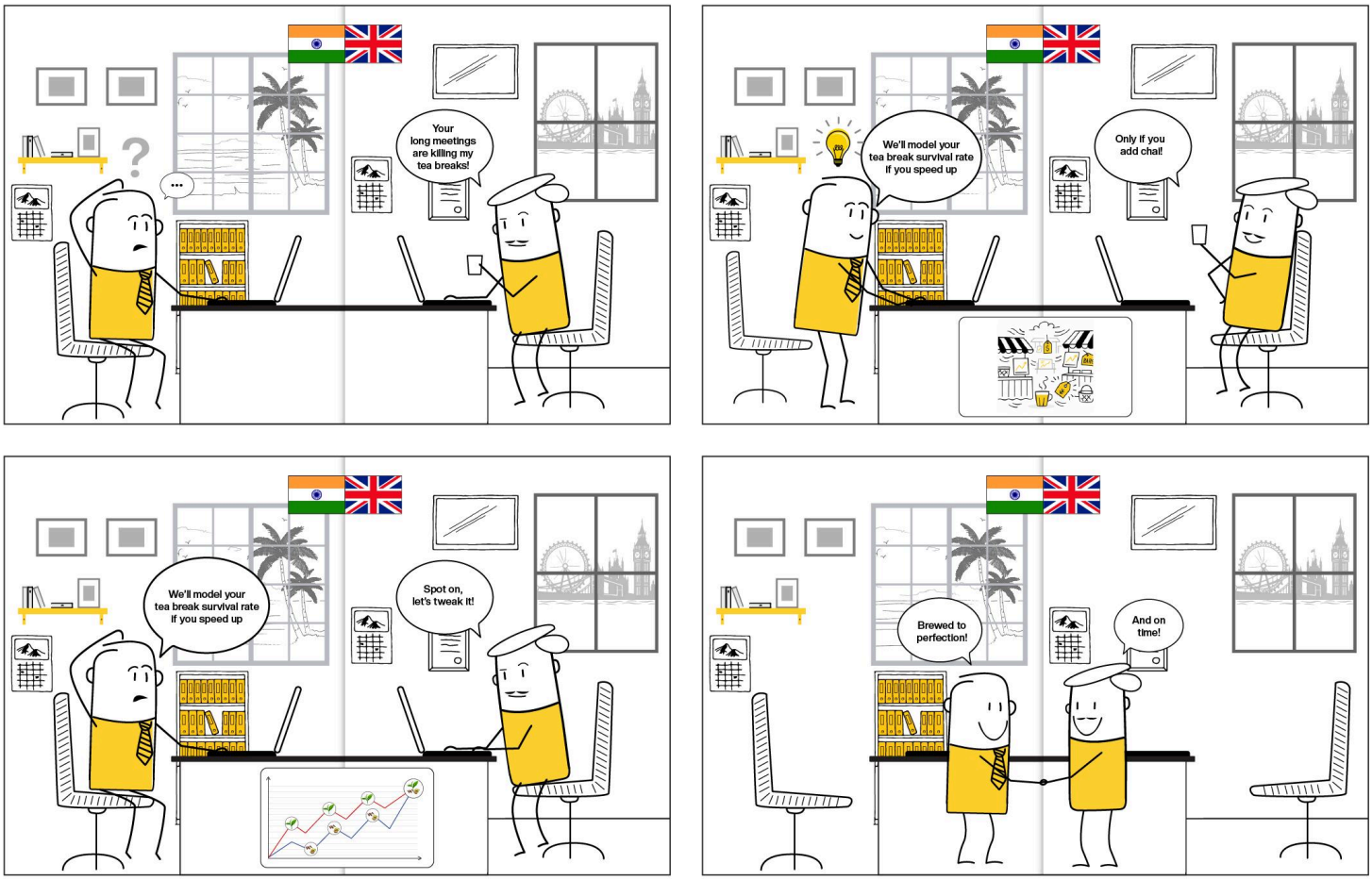
When the US team proposes "aggressive pension returns," their Indian counterparts hesitate as monsoon instincts kick in. What follows is a rainy-day metaphor that turns risk management into an umbrella duel.



Moral: Sometimes, global collaboration is about finding the right umbrella for every storm.

Because even risk models deserve a proper brew.

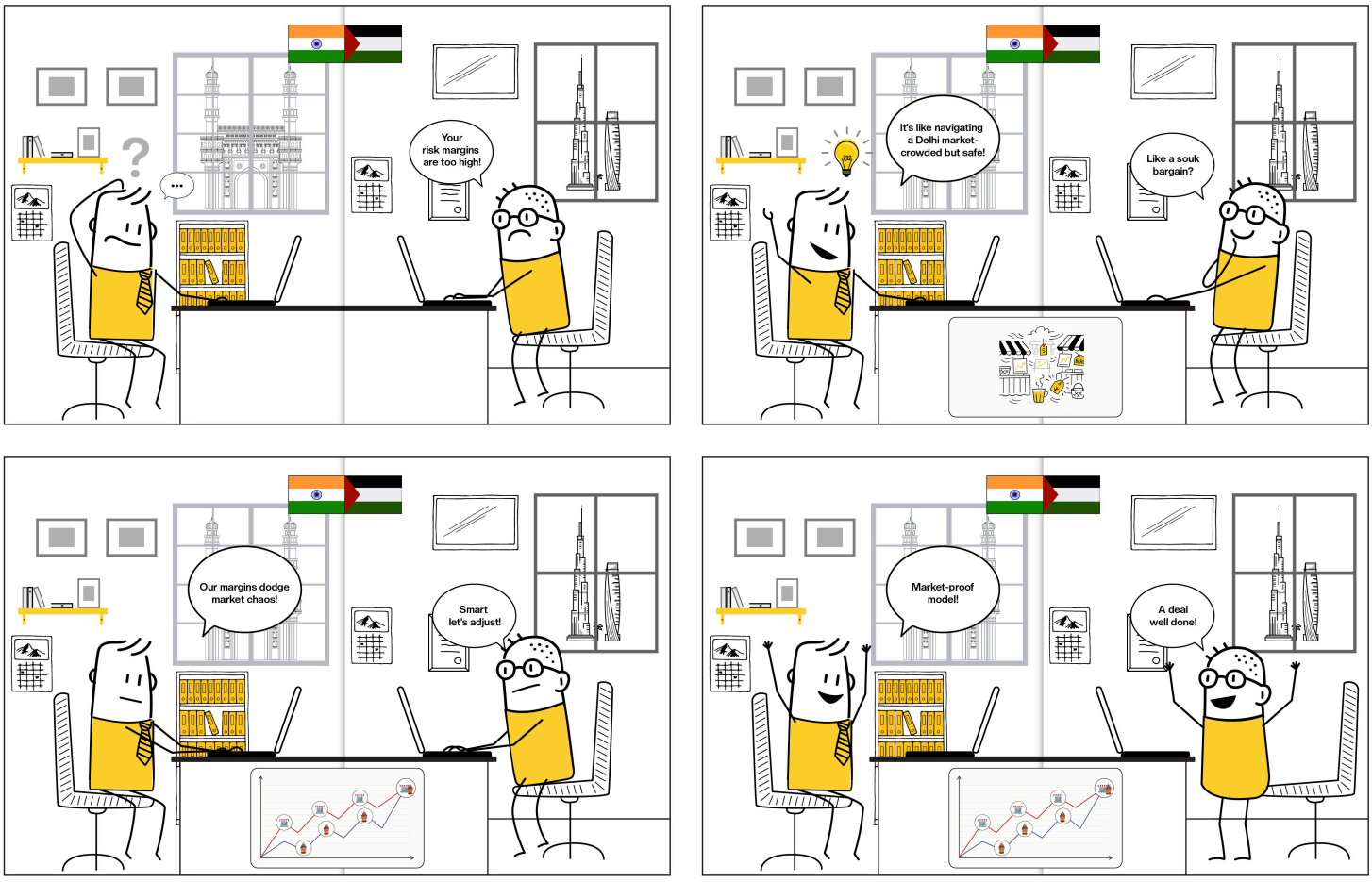
A classic cultural standoff - the British love of tea vs. Indian chai rituals. When deadlines clash with tea breaks, the actuaries find equilibrium in... beverage-based modeling.



Moral: The best actuarial models, like the best tea are brewed with balance and patience.

From souks to spreadsheets, it's all about balance.

In Dubai's fast-moving markets, risk margins are a hot topic. When the Indian team likens their strategy to navigating Delhi's crowded bazaars, understanding blooms.



Moral: Whether in a souk or a spreadsheet, it's all about a good deal.

About the author(s)



Bani Dhir
Director
Mercer

Bani Dhir is a Director at Mercer with 23 years of actuarial experience, specializing in pensions. When not decoding jargon, she's mentoring freshers or perfecting her pickle recipe.

Events

Events

Events: General Insurance
Trends In Motor TP Based On Open-Source Data

Reportage by **Rajiv Borar**



Speaker:

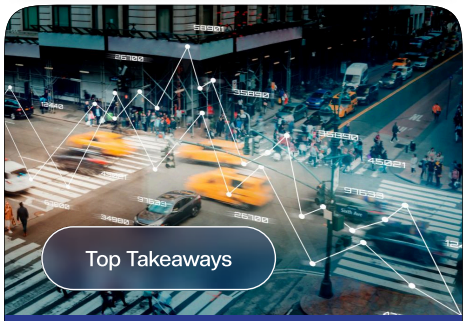
- Ms. Suruchi Bhargava
- Mr. Santosh Kumar Yadav



The session explored India's Motor Third-Party (TP) insurance landscape through publicly available data, highlighting low penetration, rising claim severity, higher commissions, and the implications for reserve adequacy and sustainability.



Actuaries must broaden their view beyond regulatory disclosures to capture early warning signs of changing trends.



Vehicle registrations continue to rise, dominated by two-wheelers (~73%) followed by four-wheeler (~12-13%), but TP penetration remains weak.



Despite compulsory TP cover, underinsurance remains high: two-wheelers remain uninsured beyond the first year, while four-wheelers are better.



GI industry premiums grew strongly over the past decade, but Motor TP growth has lagged slightly. Motor accounts for over one-third of industry premiums, with TP alone contributing about one-fifth.



Motor TP premiums are growing, yet claim costs and commissions are increasing faster, eroding profitability.



Accident frequency declined till 2019 but has stabilised since. Claim severity, however, is rising steadily due to inflation, wage growth, and higher court awards.



Reserving analysis (NL 38 disclosures) indicates consistent downward revisions of ultimate loss ratios, with prudence built in earlier years being released in later periods.



Paid claim proportions are increasing, reducing reserve buffers.



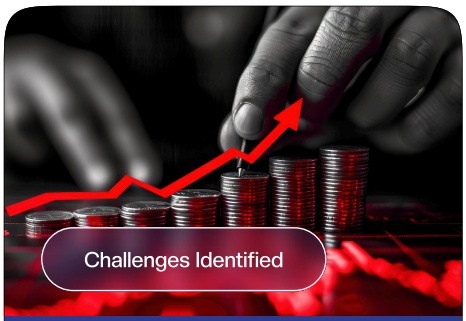
Commission levels for TP have risen significantly, now close to 20%, impacting margins in an already tariff-driven line.



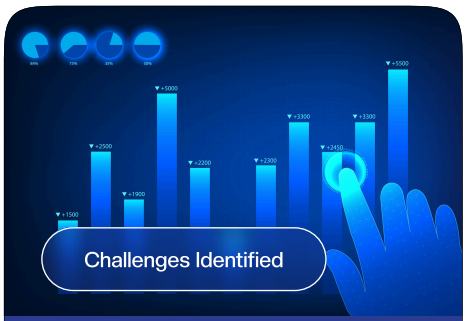
Actuaries need to use a wider dataset (e.g., MoRTH, road safety, inflation, court judgments) to anticipate future trends.



Low TP penetration: 50–66% of two-wheelers remain uninsured after the first year.



Premium growth not keeping pace with claims cost inflation.



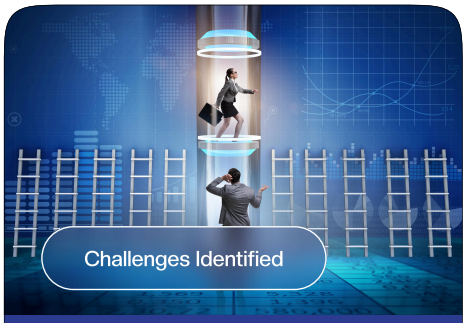
Commission escalation: From ~2% in FY21 to ~20% in FY25, unusual for a mandatory line of business.



Severity inflation: Driven by wage growth, inflation, and rising court awards with no cap.



Reserving complexity: Inconsistent NL 38 reporting, early-year releases, and subjectivity in severity estimates challenge consistency.



Sustainability risk: Reserve margins are thinner, while long-tail nature of TP means ultimate claims can shift over time.

Session notes

Topic : Trends in Motor TP Open-Source Data Analysis

Date: 18-Sep-2025

The session began with an overview of India's vehicle landscape, where registrations have steadily increased over the last decade. Two-wheelers dominate the fleet (~73%), followed by cars (~12–13%). While new vehicles are generally insured at purchase, many owners fail to renew their policies, leading to a large uninsured pool, particularly among two-wheelers.

From an industry perspective, General Insurance premiums have grown strongly, but Motor TP growth has lagged slightly. TP premiums remain a large contributor, yet they are constrained by regulatory tariffs. In recent years, commissions have risen significantly, and claims costs are increasing faster than premium growth.

Accident data shows a decline in frequency up to 2019, with stability thereafter. Claim severity is on an upward path due to inflationary factors and judicial awards, putting further pressure on profitability. Analysis of NL 38 disclosures shows consistent downward revisions of ultimate loss ratios, reflecting the release of earlier prudence but raising concerns over thinner margins in recent years.

Q&A Highlights

- Downward revisions are not confined to Covid years but also observed in pre- and post-Covid accident years.
- Accident frequency improvements are partially linked to better road conditions; severity continues to rise sharply.
- Ultimate loss ratios near 75–76% do not necessarily justify keeping tariffs unchanged, as claim costs and commissions remain high.
- The sharp rise in commissions may reflect both reclassification and genuine increases.
- The paradox of falling ULRs despite rising severity is likely due to prudence margins in earlier reserving.
- Some insurers apply granular quarterly accident-year reserving, leading to earlier releases in reserves.
- Inflation in court awards, wage growth, and higher death claim proportions are driving severity upward.
- Releases in ultimates reflect historical conservatism; for recent accident years, margins may be thinner.

Conclusion & Final Remarks

Motor TP insurance is vital for social protection but remains plagued by low penetration, rising claims severity, and higher commissions. Reserve releases have masked profitability pressures, but with structural shifts—higher inflation, evolving legal practices, and flattening accident frequency—future reserving adequacy is uncertain.

Actuaries must broaden their analysis beyond regulatory disclosures to incorporate macroeconomic, legal, and road safety data to provide early insights and maintain financial soundness.

About the author(s)



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Rajiv is a Motor & PA Treaty Underwriter at Munich Re, specializing in reinsurance underwriting, portfolio and market analysis, pricing, and reserving strategies. Outside of work, he enjoys hiking, playing sports, photography, and exploring local places.

Events

Events: Webinar
14th Webinar On Health Care Insurance

Reportage by **Vijay Balaji**

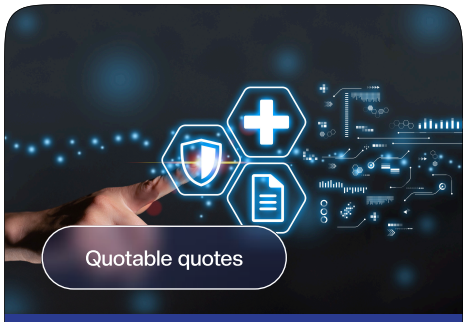


Speaker:

- Prashant Rai
- Dr. Radhakrishna B
- Dr. Vinoy Singh



The session explained how data integration, Bayesian probability, and AI-driven document vision tools can be combined to detect and prevent health-insurance fraud efficiently across the policy-to-claim lifecycle.



Fraud is hardly an event; it is a process and a setup.



Data is as continuous as the lifetime of fraud discovery.



Model management is not optional — once data shifts, retraining must follow.



You can now extract even handwritten documents with intelligent document processing — completely touchless.



Fraud in insurance is systemic—over 80% of cases involve multiple colluding entities.



Dirty data is a given—India lacks FHIR/SNOMED infrastructure. Models must be designed to handle unstructured and inconsistent inputs.



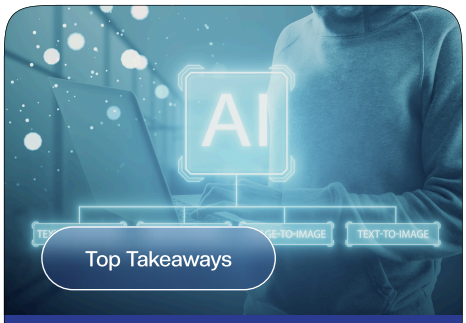
Independent-event modelling underestimates risk; Bayesian conditional updates provide more accurate fraud likelihoods.



Fraud detection requires integration of 4–8 data sources (policy, claims, communications, external data, etc.)



Fraud detection ROI becomes visible within 120 days of data ingestion; full maturity in ~6 months.



Explainability in fraud models comes through the Bayesian M1–M5 cascade—each layer generates tangible, interpretable questions ("Why is this claim inconsistent with 70 similar claims?").

Session notes

Topic : Health Care Insurance

Date: 10-Oct-2025

- **Fraud as a Process, Not an Event** - The speaker emphasized that fraud develops through opportunistic and collusive behaviors across stakeholders (doctor, hospital, agent, insured). Median "sink ratio" for collusion is 12× that of single-entity frauds.
- **Statistical & Empirical Learnings** - Hard fraud discovery probability: only 3–5% as a first event; likelihood increases seven-fold when soft-fraud indicators exist. Bayesian models, which update conditional probabilities with every new piece of evidence, significantly outperform static trigger-based systems.
- **Non-linearity in Fraud Discovery** - The relationship between "number of evidence-based questions" and "settlement-to-demand ratio" is inverse; more rigorous questioning yields better fraud control. Multi-entity involvement sharply raises fraud probability (3% → 15%).
- **Solving Non-linearity with Data Architecture** - Effective fraud analytics depend on data integration, augmentation, and continuity. A robust pipeline spans multiple layers: entity recognition, risk monitoring, trigger generation, outlier discovery, and compliance validation (reports + images).
- **Technology Building Blocks** - "Agentic AI Workflow" architecture combining enterprise and third-party data, LLM prompt repositories, vector stores, and governance guardrails. Human-in-the-loop mechanisms ensure explainability, versioning, and traceability of AI decisions.
- **Intelligent Document Processing (Document Vision)** — Standard OCR/RPA fails under scale or low-quality data. Need to apply computer vision + text analytics to extract contextual data (diagnosis, invoices, medical reports) for downstream analytics.
- **Global Implementations** - Case studies across sectors showed dramatic efficiency gains:
- **Medical Record Review**: 4 million pages/day; 99% QA; equivalent to +80 FTEs saved,
- **Invoicing Fraud:** Turnaround time reduced from weeks to hours.
- **Investigative Documents**: 9 months' work completed in 3 weeks, 375 k entities searchable.

Usecase of Full stack nested model architecture –M1+M2+M3+M4+M5 Models:

- Speaker explained a five-layer design for fraud detection, each representing a deeper analytic context, all integrated through Bayesian probability updating.
- **M1 – Risk Models:** Each geography (e.g., districts) received a risk score derived from multivariate logistic models based on historical claims behaviour. Even if data coverage was partial (e.g., 80 key districts contributing 90% of claims), localized models still captured risk concentration effectively.
- **M2 – Triggers and Anomalies:** Business and clinical rules were codified to detect manipulation around diagnosis, procedures, and billing (e.g., comparing expected vs. actual treatments). Triggers ensured that every deviation from typical medical or cost patterns raised a probability signal.
- **M3 – NLP & Report Analysis:** Natural-language models parsed diagnostic reports, ensuring consistency between pre-auth records and final claims. The AI checked medical documents for completeness and pattern anomalies.
- **M4 – Document/Image Intelligence:** Deep-learning models scanned for duplicate or tampered images (e.g., same X-ray submitted for multiple claims). The system detected pre- vs post-operative mismatch, verified implant presence, and even used pixel intensity (like "cotton structure" in pneumonia X-rays) to quantify disease severity and cross-validate length of stay (LOS). Metadata checks identified downloaded or Google-sourced images, fully automating compliance validation.
- **M5 – Social Network Analytics:** The final Bayesian layer correlated hospitals, doctors, and agents. One cited case showed a Tier-2 hospital referring gastroenteritis patients to three nearby hospitals—all performing cardiac procedures. The referring and treating doctors shared 80% identical identifiers, and all claims were sourced via three common agents—clearly a collusive nexus.
- **Bayesian Probability in Action** — As claims pass through M1–M5, each layer updates the posterior probability of fraud. Example: a claim may initially appear low-risk (M1 geography), but if M3 detects duplicate images and M5 detects shared doctor/agent networks, the final fraud likelihood spikes exponentially.

Solving Non Linearity

- **Data Integration**: Bring together policy, claim, communication, and external data (e.g., hospital accreditation, investigation results) into a unified pipeline.
- **Data Continuity**: Treat fraud analytics as a continuous, living process; refresh data as each new claim or investigation closes.
- **Data Augmentation**: Feed back confirmed investigation outcomes (true or false positives) so that future model retraining incorporates ground truth automatically.
- **Model Management**: Monitor drift — whenever data patterns shift materially, trigger automated retraining.
- **Visualization and Governance**: Dashboards must show trigger hit-rates, false-positive ratios, and retraining cycles for auditability.

Why Document Processing is Important

- In the final segment, Speaker showcased a live use case of extracting handwritten, low-contrast hospital documents (e.g., pencil-written notes). Traditional OCR fails with such inputs, so the team developed a pipeline using Intelligent Character Recognition (ICR) combined with Deep Learning.
- Process flow: any input format (PDF, JPG, BMP, TXT) → OCR + ICR → Deep-learning based structuring → Clean, machine-readable data.
- Outputs include fully structured admission-to-discharge summaries where critical keywords, doctor remarks, or diagnosis codes are auto-extracted for model consumption.He emphasize that this bridges the "last gap" in automation: even handwritten or scanned documents can now support touchless claim validation and fraud analytics.

Learnings:

- The speakers highlighted that standard trigger-based models produce static, linear detection, while Bayesian systems evolve dynamically. This framework ensures high discovery accuracy, traceability, and automation across investigation layers.
- With layered Bayesian intelligence and document vision, insurers can transform the fraud-discovery process into a self-learning, end-to-end autonomous ecosystem — scaling accuracy, explainability, and trust across the claim lifecycle.
- Lessons for Indian Health Insurance Ecosystem - Integration of hospital, policy, and communication data (e.g., NHA/Ayushman Bharat, Star Health) with AI-driven fraud models can materially reduce leakages > 35% and improve trust and speed in claim adjudication.

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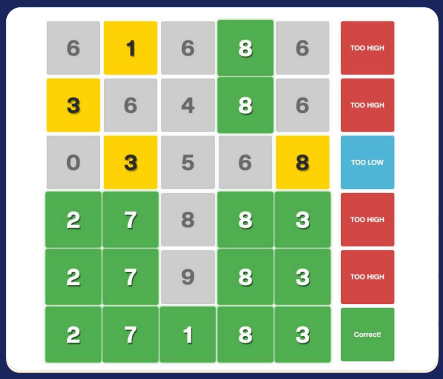
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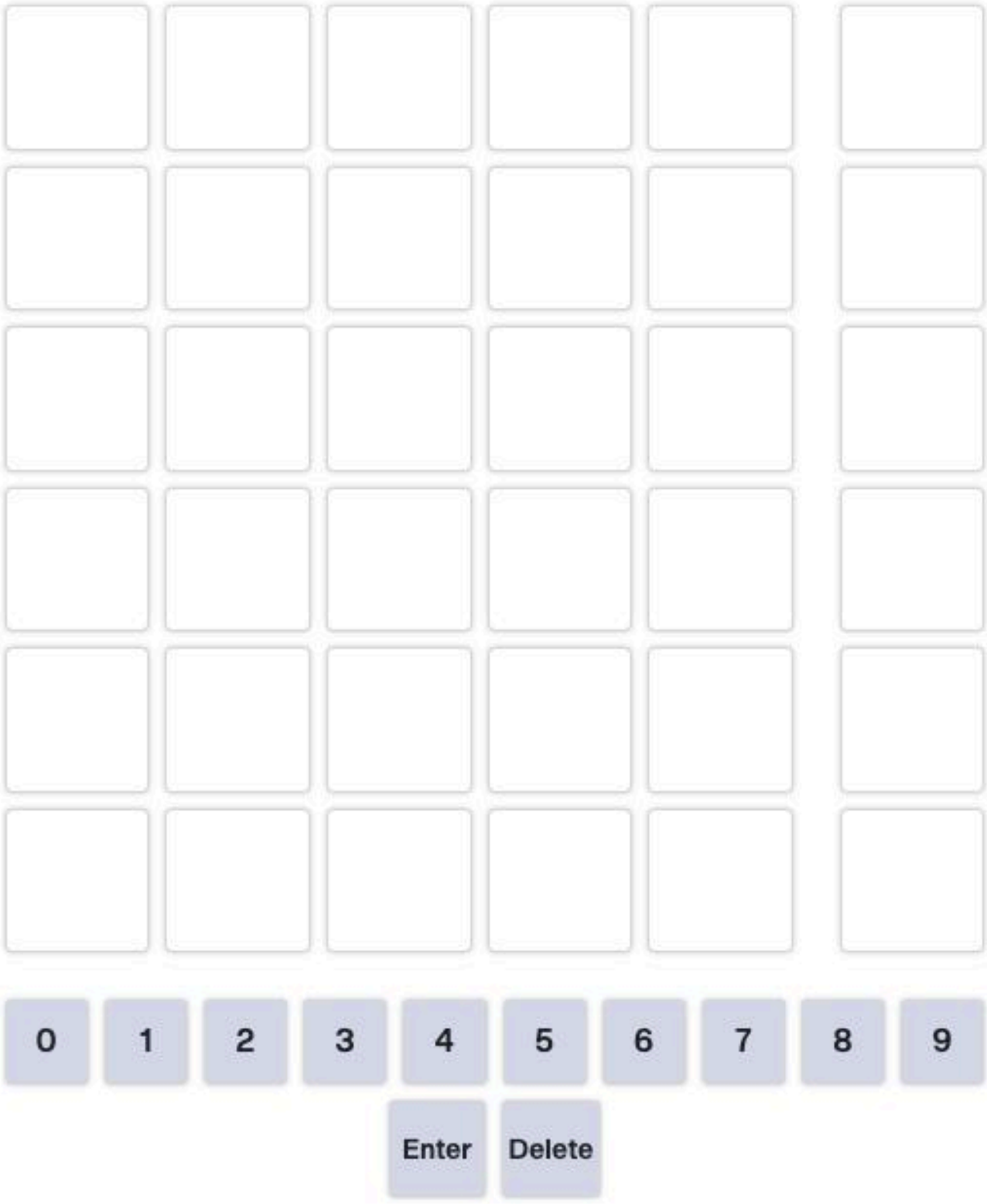
Puzzle

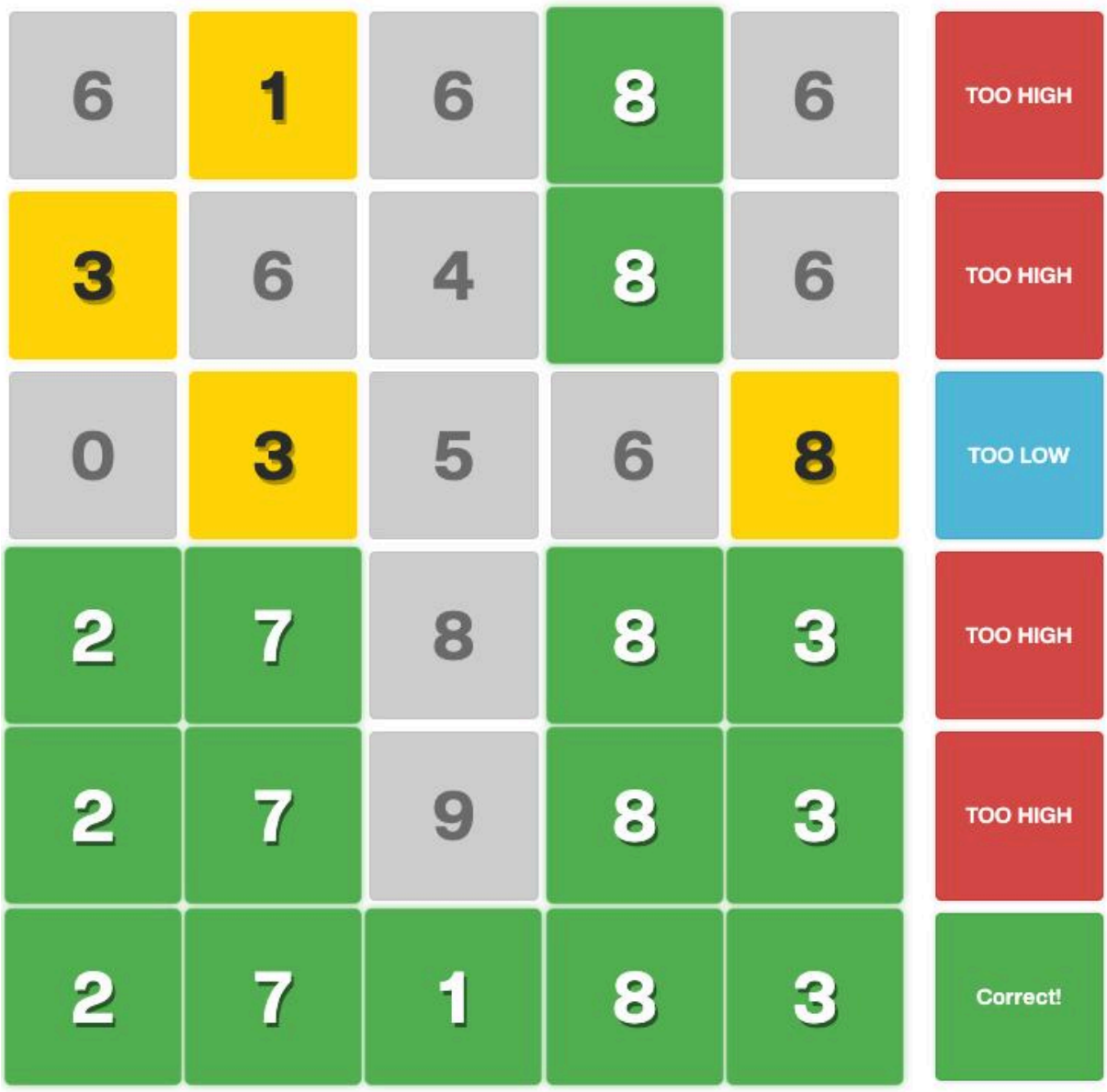
Numerical Wordle

Numerical Wordle

Solve this puzzle by filling the correct number in each cell. Green indicates the number input is in the correct place in the mystery number. Yellow indicate the number input exists in the mystery number but is currently in the wrong place. Grey indicates the number input in the cell does not exist anywhere in the mystery number. Take your time and as many attempts as you want (most importantly, don't give up). These are no more trickier than developing replicating portfolios! Enjoy this brain teaser by the Puzzle master: Kathan Jain.







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Newsflash

The Actuary India
Magazine Of The Institute Of Actuaries Of India

Newsflash

Industry Updates - A roundup of October 2025 news on Indian insurance sector

What's been happening in the insurance sector? **Vartika Srivastava** and **Naitik Jain** are here to bring you the full update of October 2025.



News Report

03 October 2025 | General Insurance

1.17 Crore farmers enrolled under PM crop insurance scheme: Haryana Agriculture Minister



Nearly 1.17 crore farmers across the state have enrolled under the Pradhan Mantri Fasal Bima Yojana (PMFBY) and compensation worth Rs 9,099 crore has been distributed to the growers so far. This was stated by Agriculture Minister Shyam Singh Rana on Wednesday. He was addressing farmers at a state-level event of the "Meri Policy, Mere Haath" campaign under PMFBY, organised by the Department of Agriculture and Farmers' Welfare in Kurukshetra.

Read more

10 October 2025 | General Insurance

Bengal expedites crop insurance scheme for flood-hit farmers; over 18,000 hectares of agri land flooded

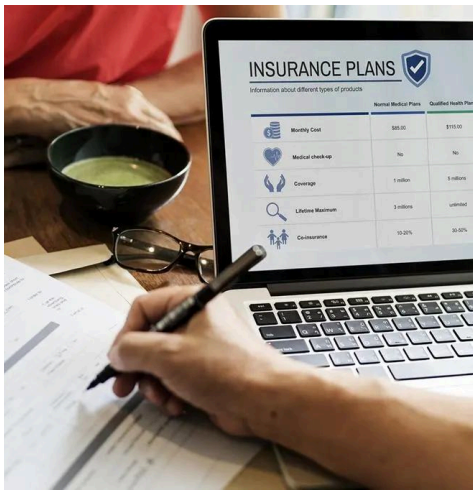


West Bengal has launched special camps to quickly enrol flood-hit farmers in its crop insurance scheme. Over 18,000 hectares of farmland were submerged across north Bengal, with Jalpaiguri worst affected. Officials are assessing damage, and Sufal Bangla stalls and food supplies have been set up to support affected communities.

Read more

10 October 2025 | Life Insurance | General Insurance

IRDAI directs insurers to adopt a board-approved anti-fraud policy



The Insurance Regulatory and Development Authority of India (IRDAI) has released the Insurance Fraud Monitoring Framework Guidelines 2025, directing all insurers to adopt a board-approved Anti-Fraud Policy. The policy must cover all business operations, be reviewed annually, and include procedures to deter, detect, and report fraud across categories. Insurers are also required to implement robust cybersecurity measures to counter evolving digital threats. Additionally, a Risk Management Committee must be constituted to oversee the fraud risk management framework tailored to each insurer's business profile.
Read more

13 October 2025 | General Insurance

MIT invests ₹198 crore in Medi Assist Healthcare



Medi Assist Healthcare Services Ltd has raised ₹198 crore through a preferential allotment to the Massachusetts Institute of Technology and its affiliate 238 Plan Associates LLC. The company issued 37.01 lakh shares at ₹535 each, following board and shareholder approval. This investment comes after Medi Assist acquired Paramount Health Services & Insurance TPA in July 2025 and entered a tech partnership with Star Health Insurance in June, marking a phase of strategic expansion.
Read more

13 October 2025 | Life Insurance | General Insurance

GST changes, ITC removal may have weighed on insurers' profitability in Q2



In Q2 FY26, both life and general insurers experienced margin pressure following changes in the Goods and Services Tax (GST) framework. While the GST rate on insurance premiums was reduced to 0%, the simultaneous removal of input tax credit (ITC) on key expenses—such as commissions, rent, and administrative costs—led to increased operational costs across the industry. This shift affected insurers differently based on their business models and cost structures, with those relying heavily on distribution networks and third-party services facing greater financial strain. The overall impact has prompted insurers to reassess pricing strategies and operational efficiencies.
Read more

15 October 2025 | Life Insurance

Piramal, KKR seek exit from Shriram General Life Insurance



Piramal Finance and KKR have begun the process to exit their stakes in Shriram General Insurance, holding 13.33% and 9.99% respectively. Rothschild and Ambit Capital have been appointed to explore options, including a potential IPO or secondary sale. While discussions are in early stages, the move signals strategic shifts in both investors' portfolios. Valuation details remain undisclosed as talks progress.
Read more

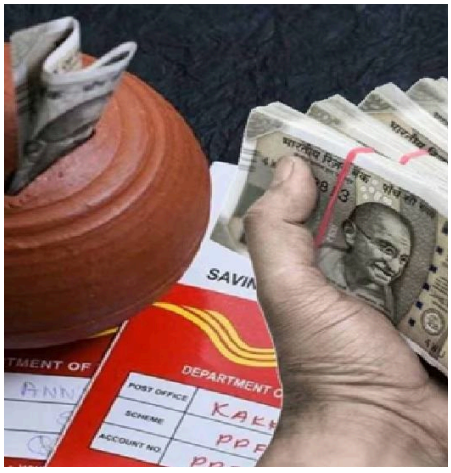
17 October 2025 | Life Insurance

Canara Bank divests stake in Canara HSBC Life to 36.5 percent as subsidiary debuts on exchanges

Canara Bank has lowered its stake in Canara HSBC Life Insurance Company Limited from 51% to 36.5% through an initial public offering. The IPO was executed via an offer for sale, with Punjab National Bank and HSBC Insurance also divesting shares. This move supports regulatory compliance and aims to improve public shareholding and market visibility. The listing is expected to enhance transparency, attract institutional investors, and strengthen governance. It also marks a strategic shift as public sector banks streamline their non-core holdings.
Read more

17 October 2025 | Life Insurance | General Insurance

Central Government implemented Post Office Insurance Scheme



In this scheme introduced by the Indian Postal Department, an annual premium of Rs. 755 is paid and insurance cover up to Rs. 15 lakh is provided. In case of accidental death of the insured person, a total of Rs. 15 lakh is paid to the nominee. The same amount is paid even if the accident results in permanent disability or complete paralysis. You can claim up to Rs. 1 lakh for expenses incurred during hospital treatment. For those who want to pay a lower premium, another option is the annual premium of Rs 399. Coverage of Rs 10 lakh is available.
Read more

24 October 2025 General Insurance

HC grants protection to Generali Central Life Insurance after ransomware attack



The Bombay High Court has granted urgent ad-interim relief to Generali Central Life Insurance after a cyberattack by the Medusa ransomware group compromised its confidential business and customer data. The court directed the central government to prevent any potential dissemination of the stolen information. Medusa has issued threats on social media, demanding a ransom of USD 500,000, with options for data deletion, download, or deadline extension. Generali fears the data may be publicly leaked or sold if demands aren't met.
Read more

29 October 2025 Life Insurance

Government may pare LIC stake by year-end to boost public float



The Government is expected to reduce its stake in Life Insurance Corporation (LIC) by the end of 2025 to comply with SEBI's public float requirements. The plan involves offloading shares worth $1–1.5 billion in phases to raise public shareholding to 10%. Investor roadshows are likely to be held soon, and the move aims to improve market liquidity while ensuring minimal disruption.
Read more

29 October 2025 Life Insurance

LIC refutes claims of political influence in Adani investments

The Life Insurance Corporation of India (LIC) has strongly denied allegations made by The Washington Post suggesting government interference in its investment decisions related to Adani group companies. LIC clarified that all investments are made independently, following board-approved policies and thorough due diligence. The insurer dismissed claims of a $3.9 billion proposal as entirely unfounded, asserting no such document exists. LIC emphasized its commitment to regulatory compliance and stakeholder interests, noting its exposure to Adani accounts for less than 2% of the group's total debt. With over ₹41 lakh crore in assets, LIC remains India's largest institutional investor.
Read more

31 October 2025 | General Insurance

IRDAI slaps Rs 1 crore penalty on Liberty General Insurance

The Insurance Regulatory and Development Authority of India (IRDAI) has fined Liberty General Insurance ₹1 crore for violating norms related to outsourcing, intermediary commissions, and policyholder protection. The insurer has also been instructed to review and amend its existing agreements with vendors and intermediaries to ensure compliance with current regulations.
Read more



Industry trends

03 October 2025 | General Insurance

Aggressive pricing pulls down crop insurance premiums by over 30% in FY26

Crop insurance premiums dropped over 30% by August 2025 due to structural changes and aggressive pricing. Premiums fell 34.29% year-on-year to ₹6,781 crore, with Agriculture Insurance Company of India down 4%. Competitive pressures, early re-tendering by states, and unsustainable pricing models contributed to the decline, notably in Maharashtra where premiums fell from ₹9,000 crore to ₹3,000 crore.
Read more



09 October 2025 | Life Insurance

Life insurers' new business premium rises 14.8% in September 2025

Life insurers' new business premiums rose 14.8% year-on-year in September 2025, reaching ₹40,206.7 crore, fuelled by a nearly 35% surge in group premiums. LIC led with ₹22,957 crore, while private insurers like SBI Life, HDFC Life, and Axis Max Life posted strong double-digit growth. However, individual premiums declined 7.75% YoY, and total policy sales dropped 14.3% during April–September FY26. The shift reflects a growing reliance on group single premiums to offset weakness in individual segments.
Read more



17 October 2025 General Insurance

India non-life sector sees strong rebound in September



India's non-life insurance sector saw a strong rebound in September 2025, with premiums rising 13.2% year-on-year to ₹31,117.6 crore. This recovery was driven by renewals in motor, crop, fire, and engineering segments, and increased demand for personal accident insurance. Private insurers held a 60% market share, down from 66% last year, while public sector insurers improved to 31.7%, showing growing competitiveness.
Read more

28 October 2025 Life Insurance General Insurance

Festive Season Sees Rise in Insurance Policy Bookings: Policybazaar Analysis



Insurance policy bookings surged during the festive season (Sept 22–Oct 14, 2025), driven by 0% GST reform and Navratri-Diwali spending. Payments rose 14% week-on-week and 35% year-on-year, with strong growth in motor and two-wheeler segments. UPI led as the top payment mode, followed by a festive rebound in credit card usage. Term insurance payments via net banking grew 49%, and debit card transactions rose 14%, boosted by cashback offers and digital wallet linkages.
Read more

30 October 2025 Life Insurance General Insurance

India's Insurtech Sector's Cumulative Valuations Cross $15.8 Billion



India's Insurtech ecosystem has grown significantly, with over 150 active players contributing to a combined valuation of $15.8 billion. The sector is being reshaped by artificial intelligence, which is driving innovation in underwriting, claims processing, and customer engagement. New Delhi remains a key hub, with startups and incumbents leveraging AI to enhance efficiency and expand insurance access. The momentum reflects rising investor interest and the broader digital transformation of India's financial services landscape.
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31 October 2025 | Life Insurance

Insurance sector is currently at unstable equilibrium: Irdai chief

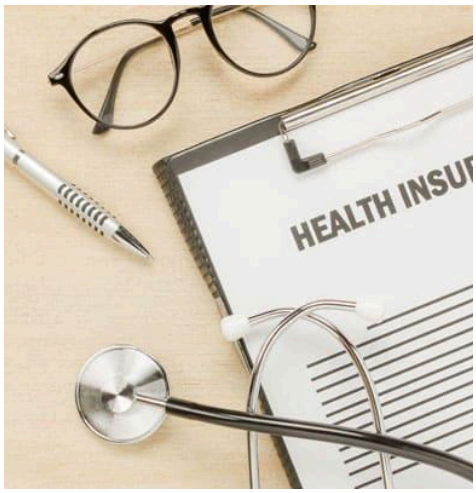


India's top financial regulators shared bold visions at the BFSI Insight Summit 2025. IRDAI chief Ajay Seth emphasized open-minded, consultative regulation amid challenges in the insurance sector, while PFRDA's S Ramann proposed smaller pension funds to boost coverage. RBI's T Rabi Sankar discussed rupee internationalisation and cautious CBDC rollout. Industry leaders across wealth, microfinance, payments, and crypto called for innovation, regulatory clarity, and stronger frameworks to tackle emerging risks and unlock growth.
Read more

New Product Launches

08 October 2025 | General Insurance

SBI General Insurance launches Health Alpha



SBI General Insurance has launched Health Alpha, a customizable health plan offering unlimited sum insured, long-term coverage up to five years, and unique add-ons like gym injury cover and lifetime hospitalization benefit. It also includes bonuses for claim-free years, continuity benefits for family, and a 5% welcome discount.
Read more

10 October 2025 | Life Insurance | General Insurance

AIC, APGB ink MoU for shrimp farmer insurance



Agriculture Insurance Company of India (AIC) and Andhra Pradesh Grameena Bank (APGB) have signed an MoU to offer insurance and financial protection to shrimp farmers in Andhra Pradesh. The partnership aims to boost rural financial inclusion, manage aquaculture risks, and support sustainable livelihoods by combining AIC's insurance expertise with APGB's rural reach. Officials highlighted plans to expand the initiative to include livestock insurance, enhancing farmer security and strengthening agricultural loan portfolios.
Read more

15 October 2025 Life Insurance

Ageas Federal Life announces SME Bancassurance partnership with CSB Bank

Ageas Federal Life Insurance has announced a strategic bancassurance partnership with CSB Bank to expand insurance access for small and medium enterprises (SMEs). The collaboration aims to deliver tailored life insurance solutions to SME customers through CSB Bank's branch network. This initiative supports financial inclusion and strengthens Ageas Federal's distribution footprint in underserved segments.
Read more



16 October 2025 General Insurance

Universal Sompo General Insurance ties up with APGB

Universal Sompo General Insurance has partnered with Andhra Pradesh Grameena Bank to offer general insurance products across all 26 districts of Andhra Pradesh. Leveraging APGB's 1,351-branch network, the alliance aims to provide affordable, customized coverage for rural communities, including farmers, SHGs, and MSMEs, addressing risks like crop loss, property damage, and health emergencies.
Read more



17 October 2025 General Insurance

Loop launches HealthFlex

Zepto, Ola, and Livspace among early adopters; 30 percent of employees upgrade health coverage as wallet-based set-up lets them spend on diagnostics, gyms, and specialist care Bengaluru, Karnataka, India (NewsVoir) Loop Health, an insurance and healthcare partner serving over 1 million lives across 1,250+ companies, has announced the launch of HealthFlex, a first-of-its-kind benefits set-up that converts employee insurance budgets into health wallets. These wallets can be used to access specialist care, preventive health programs, family eldercare, mental wellness, and more.
Read more

23 October 2025 Life Insurance

Bajaj Life launches upgraded customer app to redefine digital life insurance experience

Bajaj Life Insurance has rolled out an upgraded version of its mobile app, aimed at simplifying and personalizing life insurance management. Available on Android and iOS, the app integrates policy management, ULIP fund tracking, health monitoring, and tailored insurance recommendations into a single interface. Key features include unified policy view, instant document access, smart calculators, and live status tracking. The update reflects Bajaj Life's focus on digital empowerment and customer-centric innovation.
Read more



23 October 2025 Life Insurance

Tata AIA introduces term plan with lump-sum and monthly income benefits

Tata AIA Life Insurance has introduced Shubh Family Protect, a term insurance product offering a lump-sum payout and monthly income to beneficiaries for 10 to 30 years. The plan supports multiple nominees and includes fixed or inflation-linked income options. It also covers terminal illness, providing 50% of the sum assured upfront and waiving future premiums. The launch aligns with Tata AIA's focus on financial security and accessibility, supported by zero GST on individual life insurance premiums. For FY25, the insurer reported ₹31,484 crore in total premium income, up 23% year-on-year.
Read more



29 October 2025 Life Insurance

Tata AIA Life Insurance launches Gen AI-powered underwriting rule engine

Tata AIA Life Insurance has launched its Underwriting Rule Engine (URE), a tech-driven platform powered by machine learning, Gen AI, and big data to automate and accelerate policy underwriting. URE delivers instant risk assessments by analyzing medical and lifestyle data, reducing manual steps and physical tests. This innovation streamlines the application process, offering faster approvals and a more transparent, user-friendly experience.
Read more



30 October 2025 | Life Insurance

PNB MetLife's 360 BIZ delivers insurance innovation

PNB MetLife has introduced 360 BIZ, a digital platform aimed at simplifying group insurance and employee benefits management for companies of all sizes. The platform integrates offerings like Group Term Life, Voluntary Group Life, and Critical Illness cover into a unified experience. Key features include real-time dashboards, engagement tools, wellness programs for employers, and digital access, personalized recommendations, and flexible payment options for employees. The initiative reflects PNB MetLife's focus on tech-driven, inclusive insurance solutions.
Read more

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