

Solving India's Road Safety Crisis with Data-Backed, Scientific, and Evidence-Based Solutions

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1.0 Introduction

Every three minutes, someone in India loses their life on the road – a two-wheeler rider commuting to work, a pedestrian crossing a busy junction, or a family returning home. These are not isolated tragedies but symptoms of a system that continues to treat road crashes as unavoidable rather than preventable.

According to the Ministry of Road Transport and Highways (MoRTH) 2023 report, India recorded 4,80,583 road crashes and 1,72,890 fatalities, marking a modest increase over the previous year. The numbers are a stark reflection of deep-rooted structural and behavioural challenges.

Most victims are vulnerable road users such as pedestrians, cyclists, and two-wheeler riders, who together account for over two-thirds of fatalities. Yet, India's road infrastructure continues to prioritise vehicle movement over human safety, with limited pedestrian zones, unsafe intersections, and inadequate protective barriers.

Beyond the human tragedy lies a heavy economic cost. The World Bank estimates that road crashes drain between 3 and 5 percent of India's GDP every year, with low-income households bearing the greatest burden through loss of income, healthcare costs, and property damage.

Each crash not only results in fatalities but also weakens livelihoods, productivity, and community resilience.



Still, these figures are not a verdict; they are a roadmap.

Each data point represents a preventable lapse in design, enforcement, or post-crash response. The predictability of these patterns makes them solvable through scientific, data-driven interventions. While India has made progress through awareness campaigns, stronger legislation, and multi-stakeholder collaboration, the next leap forward must focus on systemic changes.

Lasting progress demands a shift from awareness to evidence-based actions—addressing well-understood causes such as speeding, vulnerable road user risks, unsafe infrastructure, low helmet, seatbelt and drink-drive compliance, and more.

Aligned with India's commitment under the Stockholm Declaration to halve fatalities in road crash by 2030, this whitepaper draws on Road Safety Network's (RSN) on-ground experience and cross-sector insights to outline data-led, context-driven solutions.

It seeks to move the response from reactive enforcement to proactive prevention through a coordinated, Safe System Approach-based framework, to protect lives and make India's road safer for all.

2.0 India's Road Safety Landscape: The Scale of the Challenge

The Ministry of Road Transport and Highways (MoRTH) Road Accidents in India 2022 and 2023 reports reaffirm the scale and persistence of India's road safety crisis. Road crashes remain among the nation's leading public health and developmental challenges.

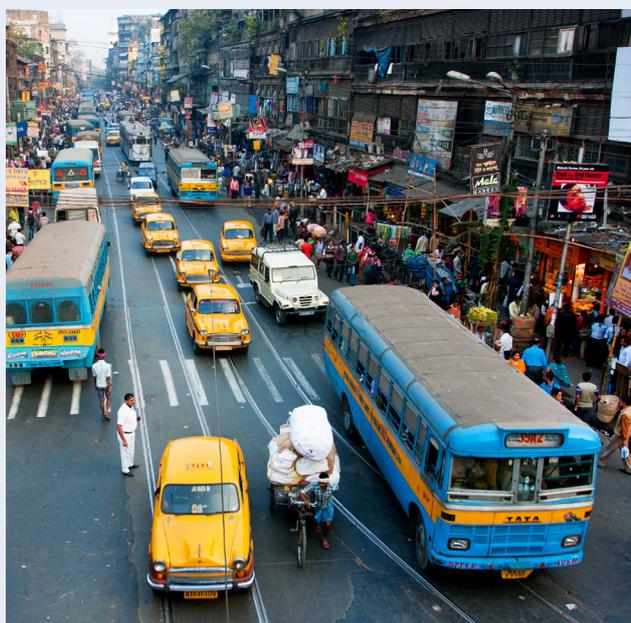
In 2022, India recorded 4,61,312 crashes, resulting in 1,68,491 fatalities and 4,43,366 injuries. The situation worsened in 2023, with 4,80,583 crashes, 1,72,890 fatalities, and 4,62,825 injuries—a year-on-year rise of 4.2% in crashes and 2.6% in fatalities.

On average, 474 lives were lost every day in 2023—nearly 20 fatalities per hour—underscoring the urgency for data-led, preventive interventions rather than reactive enforcement alone.

Despite multi-agency initiatives ranging from awareness drives to stricter penalties, overall fatality figures have remained stagnant, suggesting that traditional approaches are no longer sufficient to reverse this trend.



2.1 High-Burden States and Region-wise Breakdowns: What the Data Reveals



The state-wise distribution shows deep regional disparities. In 2023, Tamil Nadu (67,213), Madhya Pradesh (55,327), Kerala (48,091), Uttar Pradesh (44,534), Karnataka (43,440), and Maharashtra (35,243) reported the highest crash counts. In terms of fatalities, Uttar Pradesh (23,652), Tamil Nadu (18,347), and Maharashtra (15,366) topped the list.

Together, just five states—Uttar Pradesh, Maharashtra, Tamil Nadu, Madhya Pradesh, and Rajasthan—accounted for 43% of all fatalities nationwide. While these states are also among the most populous and have extensive road networks, the figures highlight the concentration of fatalities in major regions and the importance of state-specific interventions.

Table 1: Comparative Analysis of Road Crash Fatalities and Incidents in Top Ten High-Burden States (2022–2023)

State	Fatalities 2022	Fatalities 2023	Road Crashes 2022	Road Crashes 2023
Uttar Pradesh	22,595	23,652	41,746	44,534
Tamil Nadu	17,884	18,347	64,105	67,213
Maharashtra	15,224	15,366	33,383	35,243
Madhya Pradesh	13,427	13,798	54,432	55,327
Karnataka	11,702	12,321	39,762	43,440
Rajasthan	11,104	11,762	23,614	24,694
Bihar	8,898	8,873	10,801	11,014
Andhra Pradesh	8,293	8,137	21,249	19,949
Gujarat	7,618	7,854	15,751	16,349
Telangana	7,559	7,660	21,619	22,903

Source: Ministry of Road Transport and Highways, "Road Accidents in India 2023."

Note: Table includes the top ten fatality-burden states.

National and State Highways – together comprising only around 5% of India’s total road length (2% National Highways and 3% State Highways) – account for over one-third of all crashes and fatalities, reflecting both higher traffic volumes and the inherent risks of high-speed travel. Meanwhile, rising crash trends in North-Eastern states, particularly Assam, signal emerging vulnerabilities linked to weak enforcement, hilly terrain, and limited emergency response systems.

2.2 Key Insights Shaping India’s Road Safety Landscape

1. Speeding as the Primary Risk Factor:

Speeding remained the leading cause of road crash fatalities in 2023, accounting for nearly 70% of total fatalities— or about 1.18 lakh out of 1.73 lakh fatalities (MoRTH 2023). This underscores weak speed management across corridors where context-specific limits and automated enforcement remain limited, resulting in frequent high-severity crashes.

2. Vulnerable Road Users at Highest Risk:

Vulnerable road users – including pedestrians, cyclists, and two-wheeler riders – accounted for nearly 68% of all fatalities in 2023. Two-wheeler riders were the most affected, with 77,539 fatalities (44.8%), followed by pedestrians with 35,203 (20.4%), and cyclists with 4,560 (2.6%). Compared to 2022, pedestrian fatalities rose by 7% (32,825 → 35,203). Helmet non-compliance, inadequate pedestrian and cycling infrastructure, and lack of segregated paths remain major risk factors (MoRTH 2023).

3. Low Safety Gear Compliance:

In 2023, 54,568 lives were lost for not wearing helmets, and 16,025 fatalities were reported for not wearing seat belts (MoRTH 2023). Together, these figures represent nearly 41% of all fatalities –

underscoring how compliance gaps in basic safety gear remain a major contributor to preventable fatalities. States with stronger enforcement and awareness measures consistently report better outcomes.

4. **Rural Fatality Burden:**

In 2023, 2,92,253 road crashes (61%) were reported in rural areas and 1,88,330 (39%) in urban areas, leading to injuries to 2,91,791 persons (63%) in rural areas and 1,71,034 persons (37%) in urban areas (MoRTH 2023). Rural areas also accounted for 69% of total fatalities, compared with 31% in urban areas. The higher rural toll reflects persistent gaps in trauma-care access, enforcement, and road-safety awareness.

5. **Neglect of Non-Motorised Users:**

Pedestrian fatalities rose by about 7.3% in 2023 to roughly 35,203 fatalities. These trends highlight limited policy attention to walkability and safe cycling infrastructure.

6. **Systemic and Economic Implications:**

Crashes cost India an estimated 3–5% of GDP, disproportionately impacting low-income families and informal workers – making road safety a developmental and equity issue.

The data points to a clear reality: India’s road safety challenge is systemic, predictable, and preventable. Addressing these interconnected gaps through evidence-based planning, stronger institutional coordination, and people-centred design is essential to achieving lasting impact and preparing the ground for the next phase of government-led interventions.

3.0 Policy Evolution and Institutional Response

The Government of India has acknowledged the magnitude of the road safety challenge and has taken commendable steps through policy innovation, legislative reform, and institutional strengthening. Recognising that road crashes are not merely transport issues but a public health and governance concern, the Ministry of Road Transport and Highways (MoRTH) has introduced forward-looking interventions aimed at reducing fatalities, improving accountability, and ensuring safer mobility for all.



3.1 Motor Vehicles (Amendment) Act, 2019

The Motor Vehicles (Amendment) Act, 2019 marked a transformative shift in India’s road safety framework. Beyond tightening penalties, the Act institutionalised systemic measures such as the National Road Safety Board (NRSB), cashless treatment for crash victims during the Golden Hour, and electronic enforcement (e-DAR) for data-driven interventions. Vehicle recall provisions, automated fitness certification, and hit-and-run compensation funds improved accountability and victim support. By empowering states with model rules on pedestrian infrastructure and Good Samaritan protection, the Act laid the foundation for safer, more inclusive road ecosystems.

3.2 National Road Safety Board (NRSB)

Formally notified on October 27, 2025, the NRSB serves as a technical advisory body comprising experts, MoRTH officials, and representatives from NHAI and NHIDCL. It guides national efforts across engineering, enforcement, and emergency response, aligning India with UN Decade of Action targets to halve road fatalities by 2030.

3.3 Judicial Oversight and Supreme Court Directives

Judicial interventions have reinforced policy efforts. In *S. Rajaseekaran vs. Union of India* (2012), the Supreme Court emphasized stronger implementation and monitoring. In October 2025, the Court directed states and UTs to frame rules within six months for pedestrian access, helmet compliance, and encroachment removal, in line with IRC 103-2022. Footpath audits in 50 cities, electronic monitoring, and online grievance mechanisms for citizens were mandated. Supreme Court Committee on Road Safety (SCCoRS) had earlier institutionalized district-level committees and promoted the “4Es” framework—Engineering, Enforcement, Emergency Care, and Education—creating a foundation for coordinated action.

4.0 Data-Backed, Scientific, and Evidence-Based Solutions for Safer Roads

India’s road safety challenge, while immense, is not insurmountable. Landmark legislation, judicial oversight, and institutional initiatives have laid the groundwork. To achieve the national goal of halving road crash fatalities by 2030, India now needs a mission-driven approach combining policy reform, institutional strengthening, and behavioural change. RSN proposes the following key solutions:

4.1 Declare a National Road Safety Mission (NRSM)

The government should accord road safety the highest priority through a dedicated National Road Safety Mission (NRSM), ensuring inter-ministerial coordination, adequate resources, and measurable targets. While anchored in the expanded “4Es” framework—Engineering, Enforcement, Emergency Care, and Education—the NRSM should be guided by a Safe System Approach. This combined framework can align government, civil society, academia, and industry toward transforming fragmented interventions into a coordinated national movement.

4.2 Manage Speed Scientifically and Safely

Speeding accounts for nearly 70% of all fatalities. States must adopt Scientific Speed Management Guidelines prioritizing safety over speed, determining limits based on road category, human-injury

tolerance levels, function, and design rather than vehicle type alone. High-speed corridors must implement safer caps, enforceable through legal amendments.

4.3 Strengthen Enforcement and Accountability

Enforcement remains the backbone of road safety. MV Act provisions and State laws should include measurable targets, statutory reporting obligations, and dedicated budgets. State Road Safety Action Plans should be legally binding, ensuring performance-based accountability.

4.4 Protect Vulnerable Road Users

Pedestrians and two-wheeler riders – together accounting for 68% of fatalities – require urgent protection. Urban and peri-urban streets must adopt pedestrian-first principles, lower speed limits, improved lighting, Safe School Zones, and barrier-free pedestrian infrastructure as per IRC standards and Supreme Court directives.



4.5 Adopt the Safe System Approach

A Safe System Approach designs out human error and reduces crash impact severity. Mandatory road safety audits, graded licensing, strict helmet, seatbelt and drink-drive enforcement, and Child Restraint Systems (CRS) provisions protect passengers. Strengthening laws for CRS use in children, backed by awareness campaigns, reduces preventable injuries.

4.6 Build Strong Institutions and Reliable Data Systems



A fully functional NRSB, empowered State Lead Agencies and Road Safety Authorities, and active District Committees form the governance backbone. Reliable, granular, real-time data through e-DAR must guide decision-making, evaluation, and course correction. Public access to e-DAR enables civil society, academia, and policymakers to analyse trends, identify gaps, and design targeted interventions.

4.7 Key Amendments to the Motor Vehicles Act, 1988 (2025)

4.7.1. Speed Management Guidelines

- Amend Section 112 to consider road function and design, not just vehicle type.
- Empower governments to frame Scientific Speed Management Guidelines reflecting human injury tolerance and road environment.

4.7.2. Child Safety

- Mandate CRS usage for all child passengers in vehicles other than motorcycles (removing optional wording under Section 194D).
- Rule for safe seating positions for children in four-wheelers
- Update e-DAR crash portal to capture CRS usage for better monitoring and enforcement.
- Specify CRS requirements by age and height, aligned with international best practices.

4.7.3. Enhanced Penalties and School Zone Safety

- Introduce higher penalties and liability for offences involving child passengers or victims.
- Establish statutory requirements for school zone safety, including:
 - Mandated implementation of Safe School Zones as per IRC with priority to high-speed corridors
 - Infrastructure standards (speed humps, signage, crossings, guard rails)
 - Traffic calming and reduced vehicular speeds
 - Periodic audits and compliance verification

4.7.4. Mechanism for Faulty Road Design and Maintenance

- Define a clear mechanism under Section 198A to operationalize accountability for agencies responsible for design, construction, and maintenance.
- Ensure timely corrective actions, follow-up audits, and penalties for non-compliance.

4.7.5. Inclusion of Key Road Safety Terms

- Amend Section 66A to formalize key institutional elements:
 - Road Safety Fund
 - Road Safety Action Plan
 - Lead Agency
 - Road Safety Authority
 - Compliance Rate
- Ensure uniform implementation and accountability across states.

4.8 Communication and Awareness Measures

Behavioural change and informed communication complement legislation and engineering. RSN recommends:

- Standardize terminology to “road crash” to emphasize preventability.
- Encourage evidence-based media coverage focused on systemic causes and interventions.
- Conduct journalist workshops and provide toolkits for technical, solution-oriented reporting.
- Design targeted, data-driven public campaigns addressing helmet and seatbelt use, CRS compliance, pedestrian safety, and speeding.

4.9 Implementation and Oversight

While legislative amendments and policy frameworks set the foundation, practical implementation and monitoring are critical to achieving tangible outcomes. RSN recommends the following operational measures:



- **Pilot Implementation:** Conduct pilot projects in 2–3 districts in major states to test the effectiveness of automated enforcement tools such as speed cameras and automatic detection systems.
- **Expert Oversight:** Establish Technical Committees of Experts to provide ongoing guidance, refinement, and oversight of enforcement and safety initiatives.

These measures ensure that reforms are not only codified in law but also effectively translated into safer roads, informed decision-making, enforcement agencies, and behaviour change across the country.

5.0 Conclusion

India's road safety challenge is not one of awareness but of alignment between data and design, policy and practice, accountability and action. The solutions exist, institutions are evolving, and the evidence is undeniable. What remains is the collective will to translate insight into implementation.

Safety must become intrinsic to how India plans, builds, and moves. The goal is not only to reduce fatalities but to embed the right to safe mobility within the nation's development framework. Through cross-sector collaboration, India can create roads and transport systems that protect lives as much as they enable growth.

In the decade leading to 2030, progress will be measured not in kilometres built and cars sold, but in lives saved. A data-led, accountable, and people-centred safety ecosystem ensures that every journey on highways, rural roads, or city streets, be it inside a vehicle or on foot, and for every road user young and old or ability, upholds the principle that no life should be lost on the road.





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