



Road Safety for Socio-Economic Improvement– A Study from Telangana & Andhra Pradesh States, India

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To Cite this Article

Rajani Ganta, & A. Jagan Mohan Rao (2025). Road Safety for Socio-Economic Improvement—A Study from Telangana & Andhra Pradesh States, India. *Indian Journal of Social and Economic Development*, 1: 1-2, pp. 75-86.

Abstract: Road safety is integral of the socio-economic development of any state/Country. Safer roads ensure access to support economic participation and social inclusion, because it reduces the fatalities, injuries and it also ensures access to essential services, employment, and education. By developing a sustainable transport system & investment in road safety can significantly decrease the economic burdens from road crashes and it will be a crucial component of a nation's growth and well-being.

The “Decade of Action for Road Safety 2021-2030” has been developed with an ambitious objective to prevent at least 50% of road traffic deaths, injuries by 2030 at globally. As per recent UN-SGD¹ (United Nations Sustainable Development Group), people from lower socioeconomic backgrounds are more likely to be involved in road crashes. According to World Bank², India has just 1 % of the world's total number of vehicles, it accounts for almost 10% of all road accident deaths. Majority of Indian states are unlikely to meet the objective of 2021-30 plan due to key challenges like weak enforcement, inadequate infrastructure, insufficient focus on education and awareness programs, role of NGOs in Road Safety implementation, lack of road data to implement sustainable engineering safety measures and also not highlight the reason behind the crash – Who? Why? How? How could. This article focused on two states in India i.e., Telangana and Andhra Pradesh as a case study, discussed the major existing challenges, measures to support the state for improvement of socio-economic status and recommended measures.

Keywords: Road Safety, Socio-economic, Decade of Action plan, Challenges, Measures.

1. Introduction

Many road safety reports of India reveal that, the poorest households who have a family member injured in a road crash, at least one person must stop working to care for him/her and it shows immediate effects on their economic/ lost income & it also revealed road accidents mainly affect people in the productive age group between 15 to 45 years. This has a potential negative impact on national economic productivity, especially among the low-income groups, who are mainly relied on physical activity in their work. A case study from South Korea highlighted that, close to 71% of people who suffer a disability because of a road crash experience job losses, and a significant portion of those victims remain unemployed for a long time. A very detailed study in Cambodia concluded that the road traffic crashes lead to a 21 % income loss for affected families.

According to the latest Road Accidents Report released by the Ministry of Road Transport and Highways, India witnessed 1,263 accidents and 461 deaths every day, averaging 53 accidents and 19 deaths per hour. “India Status Report on Road Safety 2024³, prepared by the Transportation Research and Injury Prevention Centre- IIT Delhi, not only highlights India’s slow progress toward meeting international goals of reducing road accident fatalities, but also emphasized the organic connection between road construction, mobility, and the need for a differentiated approach to mitigate road accidents. As per the historical data, in 1990, an Indian was 40% more likely to die in a road accident. By 2021, this figure soared to 600%, indicating a sharp rise in road fatalities with majority fatalities in two-wheeler riders, cyclists, and motorcyclists.

According to National Strategy for prevention of unintentional injury⁴, issued by India’s Ministry of Health in September 2024, speeding is responsible for 75 per cent of all fatalities due to road accidents in India. The second biggest cause was driving on the wrong side of the road (5.8 per cent), followed by driving under the influence and alcohol or drugs (2.5 per cent) and the use of mobile phones while behind the wheel. Other factors exacerbating the problem include inadequate road design, faulty road engineering, poor design of junctions, poor lighting, lack of suitable pedestrian crossings, inadequate signage and road markings are found in the report.

2. Literature Review

Mr. Jagriti Chandra, New Delhi, published article on “Road fatalities drop globally, but India sees a rise with reference the WHO report on road safety report of 2023.

He stated that, Road traffic deaths fell by 5% to 1.19million fatalities annually worldwide between 2010 and 2021, with 108 UN member nations reporting a drop, a report by the World Health Organisation (WHO) said, India, however registered a 15% increase in fatalities. The WHO's Global status report on Road safety 2023 shows that, in India, the total number of road traffic fatalities went up from 1.34 lakh in 2010 to 1.54 lakh in 2021. Ten countries succeeded in reducing road traffic deaths by over 50%.The report shows that 28% of global road traffic deaths occurred in the WHO's South-East Asia Region, 25% in the Western pacific Region, 19% in the African Region, 12% in the Region of the America, 11% in the Eastern Mediterranean Region, and 5% in the European Region.

The India Status Report on Road Safety 2024, prepared by the Transportation Research and Injury Prevention (TRIP) centre at IIT Delhi, highlights the significant challenges India faces in improving Road safety. The United Nations Decade of Action for Road Safety sets an ambitious goal to cut global traffic fatalities by 50% by 230. India, however, is currently lagging behind and risks missing this crucial target if significant improvement are not made.

Tikender Singh Panwar, Geetam Tiwari, published articles in Hindu Newspaper dated September 9, 2024 on the “challenges to road safety in India”. This articles about the data from First Information Reports (FIRs) from six States and audits of State compliance with Supreme Court directives on road safety governance. It exposes disparities in road traffic death rates across States, emphasizing the vulnerability of motorcyclists and the high rate of fatal crashes involving trucks. Road traffic injuries remain a major public health challenge in India, with little progress in reducing fatalities, despite advancements in other sectors. Most Indian States are unlikely to meet the United Nations Decade of Action for Road Safety goal to halve traffic deaths by 2030.

Road Safety in India: Challenges and Opportunities, January 2009 by Omer Tsimhoni, M. Sivak & M. J. Flannagan. The report was designed to analyze the traffic safety situation in India. The report focuses on two aspects of traffic safety in India: challenges and opportunities. The first part of the report provides a comprehensive analysis of the current traffic safety situation in India. It is pointed out in this analysis that fatality rates have increased both on highways and in urban areas during the past few years. Theoretical models suggest that the number of fatalities in India is not likely to start to decline for many years to come unless new policies are implemented. Based on the present analysis, the following six areas are identified

as having potential for substantially reducing fatalities in India: (1) pedestrians and other non-motorists in urban areas, (2) pedestrians, other non-motorists, and slow vehicles on highways, (3) motorcycles and small cars in urban areas, (4) over-involvement of trucks and buses, (5) nighttime driving, and (6) wrong-way drivers on divided highways. The second part of the report outlines several promising countermeasures for each of these six areas.

Various studies on relationship between indicators of social status and participation in traffic accidents led to different conclusions. A French research study concluded that majority people with high social status are more likely to participate in accidents compared to the people with low social status. All other studies have shown that low social status - regardless of how it is measured - is associated with a higher level of participation in traffic accidents.

3. Present Status of Road Safety in India

As per the data from MoRTH-2024 data, around 1,80,000 people died in road accidents in India during the year 2024, out of whom there were 30,000 people who died while riding two-wheelers without wearing a helmet, 66% of those who died in road accidents in the country were in the age group of 18-34 years. Among the dead were nearly 10,000 school students, and those took place for lack of proper traffic arrangements in front of schools and other educational institutions. As many as 26,770 people died in road accidents on Highways in the first six months of 2025 calendar year, Parliament was informed on Wednesday (July 23, 2025).

In 2024, Telangana ranked 8th nationally for road accidents and 10th for road fatalities, while Andhra Pradesh consistently ranks below 10th for both, showing improvement in 2023 with a 6% dip in accidents. Telangana's percentage of national road fatalities increased from 3.7% to 4.9% between 2022 and 2025, while Andhra Pradesh's fatality rate remained above the national average.

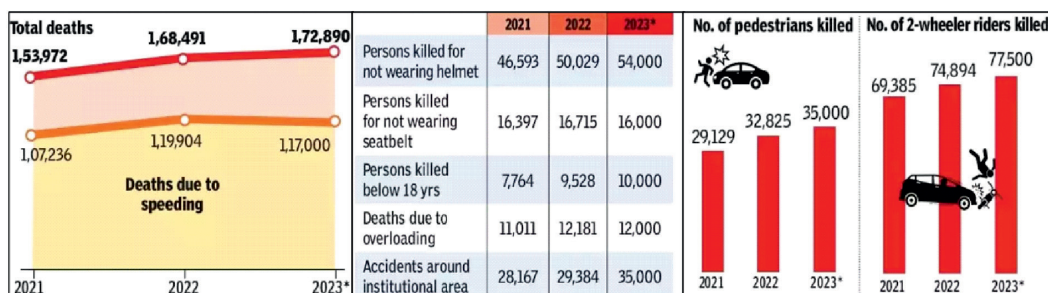


Figure 1: Rising Road deaths in India (Source: MoRTH, Govt. of India)

As stated by Union Minister Nitin Gadkari ⁵on Tuesday, March 25, 2025, India is losing 3% of its GDP because of ~5lakh road accidents annually in the country.

The details of socio-economic impacts are as follows:

- **Significant loss of GDP:** The world bank reports and figures, estimates that the India's annual economic loss from road accidents to be a substantial percentage of its GDP
- **Impact on healthcare resources:** High number of accidents and injuries puts an burden on both public and private healthcare systems, diverting funds and resources from other medical needs.
- **Insurance cost:** The severity and more frequency of road accidents leads to increased insurance premiums for everyone. Individual and Business face higher costs, which further impacts the economy.
- **Productivity & Infrastructure lose:** Damage to infrastructure requires significant financial resources for repairs. Accidents cause major disruptions to commercial transport, delaying goods, increasing cost will impact business.
- **Loss of income:** Majority of those killed in road accidents are in prime working age of 18–60 years, and are often the primary earners for their families. Their deaths result in a permanent loss of household income.
- **Poverty and debt:** As per world bank 2021 report, the road crash death depletes a poor family's income by more than seven months and can plunge them into a cycle of debt.
- **Unequal impact:** Road accidents disproportionately affect the poor and vulnerable, including pedestrians, cyclists, and two-wheeler users, who account for more than half of all fatalities.
- **Burden on women:** As per the World Bank report, women take on additional caregiving responsibilities and are forced to take up extra work, leading to financial hardship and mental stress. This financial strain and loss of a parent's income often lead to children dropping out of school to help support the family

3.1. Different types of Road Accidents in India

- **Head-On Collisions:** These occur when two vehicles traveling in opposite directions collide with each other frontally. They are often the result of over-speeding, wrong-side driving, or overtaking on narrow roads.

- **Rear-End Collisions:** These happen when one vehicle crashes into the back of another. Common causes include sudden braking, distracted driving, or tailgating.
- **Side-Impact Collisions:** Also known as T-bone or broadside accidents, these occur when the side of one vehicle is hit by the front or rear of another vehicle. They typically happen at intersections or when making turns.
- **Vehicle Rollovers:** These involve a vehicle tipping over onto its side or roof. Rollovers can be caused by sharp turns at high speeds, collision impact, or driving on uneven surfaces, and are particularly dangerous for high-center-of-gravity vehicles like SUVs and trucks.
- **Pedestrian Accidents:** These involve vehicles colliding with pedestrians. Such accidents are prevalent in urban areas with high foot traffic and can result from jaywalking, speeding, or failure to yield.
- **Two-Wheeler Accidents:** Common in India, these involve motorcycles and scooters. They often result from over-speeding, lack of protective gear, poor road conditions, or collisions with larger vehicles.
- **Hit-and-Run Accidents:** These occur when a driver involved in an accident flees the scene without providing assistance or identifying themselves. Hit-and-run incidents can involve any type of road user and often lead to severe consequences for the victims due to delayed medical aid.
- **Multi-Vehicle Pileups:** These accidents involve multiple vehicles and often occur on highways due to high speeds and chain-reaction collisions. Poor visibility, fog, and slippery roads can also contribute to such pile-ups.
- **Animal-Related Accidents:** In rural and some urban areas, collisions with stray or wild animals can lead to severe accidents. These incidents often happen when animals unexpectedly cross the road, causing drivers to swerve or brake suddenly.
- **Single-Vehicle Accidents:** These involve only one vehicle and can be due to losing control, hitting a stationary object, or running off the road. Common causes include driver fatigue, distraction, or adverse weather conditions.

4. Road safety strategies and plans

- **National Road Safety Strategy :**The National Road Safety Strategy (2018 to 2030)⁶ developed by World Bank Group(WBG) aligned with the decade of action

for global road safety, focused on socio-economic development by recognizing road safety as a critical public health and development issue. The strategy envisages coordination across all sectors like transport, enforcement, health, education, urban development, public works departments of government, and the private sector to develop and implement road safety interventions.

- **National Road Safety Policy :** This Policy acknowledges and aims to address the socio-economic impacts of road accidents by promoting awareness about their social and economic implications, strengthening infrastructure, improving driver behavior, integrating safety into education, and providing support for accident victims to mitigate these effects. The policy's commitment includes raising community awareness, implementing better road design, enhancing vehicle safety, protecting vulnerable road users, and strengthening emergency medical services to reduce road accident-related deaths and injuries, which have significant socio-economic consequences.

4.1. Accident data from studies states (2014 to 2024)

Table 1: Road Accident Statistics

Year	January to December					
	No. of Accidents		No. of Fatalities		No. of Injuries	
	Telangana	Andhra Pradesh	Telangana	Andhra Pradesh	Telangana	Andhra Pradesh
2014	20,078	23,513	6,906	7,862	21,636	29,791
2015	21,252	23,178	7,110	8,114	22,948	23,893
2016	22,811	23,725	7,219	8,542	24,217	30,245
2017	22,475	22,461	6,595	8,041	24,017	27,519
2018	22,230	19,928	6,603	7,416	23,613	23,477
2019	21,588	18,871	6,800	7,179	22,265	22,559
2020	19,164	17,910	6,668	7,059	18,745	19,612
2021	21,315	19,729	7,557	8,053	20,107	21,169
2022	21,619	20,003	7,559	8,214	20,209	21,669
2023	22,903	18,418	7,660	7,977	21,022	20,332
2024	25,934	15,279	7,281	6,796	15,401	16,707

Source: Transport department of Government of Telangana and Andhra Pradesh

- The Ministry of Road, Transport and Highways (MoRTH), government of India categorised road features under eight (8) groups such as Straight Road, Curved Road, Bridge, Culvert, Pothole, Steep grade, Ongoing Road works/Under Construction and others. As per the above table 1, statistics from both states,

majorly noted that the 70% of road crashes and over 75% of deaths in road accidents have been reported on straight roads.

- Overall, road accidents and fatalities of the age 18-40 are increased in Telangana from 2021 to 2024, with a rise in both the number of accidents. Primarily attributed to a significant lack of proper road safety measures, including inadequate signboards at blackspots /accident prone areas, poor enforcement traffic rules, lack of awareness regarding safe driving practices, leading to a higher number of fatalities on roads.
- The road accidents and fatalities of the age 18-40 are decreased in Andhra Pradesh from 2021 to 2024 attributed to improved road engineering, and stricter enforcement of traffic rules, which have helped curb issues like over speeding and reckless driving that were major contributors to accidents in the state.

4.2. Findings

After reviewing the state wise road safety data and reports collected from police departments, the authors identified that significant dramatic disparities in performance of road safety across India. large variations in all types such as injuries, impacting vehicles, crash details etc., at state and national level and observed that there is a need for a dedicated platform for safety interventions and to maintain data on local risk factors to collect reliable data for fatal crashes by combining data from police reports, hospitals and road-owning agencies. Authors had meetings with state government officials, organized meetings with state & district heads, conducted awareness workshops on importance of Global decadal plan, socio-economic impacts, global strategy, identification black spots, new innovations in road safety signage and marking by various global companies, implementation of IRC:SP:32⁷ school zone safety guidelines, etc.,

4.2.1. Identified major Challenges in Telangana:

- **Poor Road Quality:** Potholes, poorly marked lanes, inadequate road signs, insufficient lighting, and lack of pedestrian facilities
- **Unsafe Road Design:** Design flaws and lack of safety features on roads and highways are major contributors to accidents.
- **Traffic Law Violations:** Speeding, drunk driving, distracted driving, and non-use of seatbelts and helmets are rampant.

- **Inadequate Enforcement:** Weak enforcement of traffic laws and lack of penalties for violations lead to a disregard for rules.
- **Lack of Coordination:** Lack of coordination between different agencies (e.g., road transport, police, and local authorities) hinders effective implementation of road safety measures.
- **Lack of Road Safety Education:** Insufficient road safety education programs, particularly for young people, contribute to risky driving behaviours. Lack of awareness about road safety measures and consequences of accidents hinders behavioural changes.
- **Lack of Emergency Services:** Insufficient emergency medical services and delayed response times to accidents lead to increased fatalities and injuries.
- **Lack of Safety Features:** Many vehicles, especially older ones, lack essential safety features like airbags, anti-lock brakes, and electronic stability control. Lack of proper maintenance of vehicles contributes to mechanical failures and accidents.

4.2.2. Organised Trainings and Workshops

The authors have organized various workshops at state & district level during 2024 about the importance of Global Decadal Plan (2021-30), importance and to implement Road Safety Standards of IRC, School Zone Safety measures. The focus of the training covered under Road safety are Education, Engineering, Enforcement, Emergency Environment, advancement in Road safety signages, measures, advancements in school zone safety measures focus on reducing speeds, enhancing visibility, and improving infrastructure around schools, Smart Vehicles Tracking system – Real time monitoring; Intelligent Transport Management Systems - to monitor traffic, predict high-risk incidents; Advanced Driver Assistance Systems - Blind Spot Detection and Pedestrian Detection using sensors; Vehicle-to-Everything (V2X) Communication- real-time information sharing between vehicles; Connected Roads: Roads equipped with sensors providing real-time data on traffic; Dynamic Lane Management - Intelligent highways that adjust lane usage based on real-time traffic flow to minimize congestion; Smart Lighting Solutions- Road lighting that can adapt to visibility conditions; Digital Signage for Emergency Alerts- to broadcast timely information about safety alerts, evacuation routes, or other emergencies.



Figure 2: Meeting with state heads, conducting training and workshops on Global plan



Figure 3: Approved Road safety recommended measures at identified blackspot areas, School zone safety workshops

5. Recommendations

- There is a need to look for better road governance by convergence of Road designers, Road builders, automobile sector, public health sector, urban governance structure and need of audit for roads at all levels from National Highways to Rural

Roads with an aim to identify the significant safety issues and opportunities for improvement, ultimately to enhance the safety for all road users.

- There is also needed to implement the uniform road safety standards / enforce the law across all roads for speed limits, traffic signals, seatbelts, helmets
- Involvement of media in road safety is crucial for public awareness and accountability. Investigative journalists, News agencies, social media platforms, to inform the public, hold responsible parties accountable, and prevent future incidents, through in-depth investigations, interviews with experts, and analysis of data by focusing on the root causes, not just the immediate events, and by promoting safety measures.
- Provide awareness about IRC Standards, New innovations in Road Safety such as reflective materials, connected roads, and guide sign upgrade, “Global Decadal road safety plan 2021-30” to reach the objective of it.
- Maintenance of accurate data of each type of road about traffic pattern & volume, high risk areas/accident locations/blackspots, road geometry, weather conditions, pedestrian activity (day & night), type of vehicle involved in crashes.
- Constitute a secretariat to the state lead agency with Vision Zero 2030 coordinating functions and establish a dedicated road safety fund in remainder of states.
- Sharing the data/ convergence between transportation, health, police, urban planning and work together to implement comprehensive road safety measures and address the issue of road crashes from multiple angles.
- Focus more on school zone safety to implement measures to protect children by enforcing reduced speed limits, visible signage, attentive driving, crossing guards, prioritising pedestrian safety within a designated area around the school during peak hours as per the IRC:SP:32.

Notes

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4. <https://dghs.mohfw.gov.in/uploads/assets/TAaOO7nsx9I0v978vY8cWde6cO0NJBWCWEE9s5DcD.pdf>
5. Nitin Gadkari says, this one reason is costing India 3% of its GDP annually - The Economic Times
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7. IRC:SP:32 refers to “Guidelines for Safer Commute to Schools”, a publication by the Indian Roads Congress (IRC). It provides recommendations and best practices for ensuring safe travel for school children, focusing on school zone safety and commuting modes.

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