



# Status Summary 2025: Road Safety Risk Factors

Bloomberg Philanthropies Initiative for Global Road Safety



## MAHARASHTRA STATE, INDIA



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**Beginning in 2022**, the Johns Hopkins International Injury Research Unit, through the Bloomberg Philanthropies Initiative for Global Road Safety, has been conducting observations in Maharashtra State to reduce road injuries and fatalities.

The following report highlights results from an ongoing study that captured observations of speed, helmet use, and seat-belt and child restraint use. The results are based on data collected between December 2022 and February 2025.

The median speed among observed vehicles was high



Correct helmet use among all motorcyclists was very low



Correct helmet use among motorcycle passengers was almost non-existent



Seat-belt use among all vehicle occupants  $\geq 12$  years old was very low

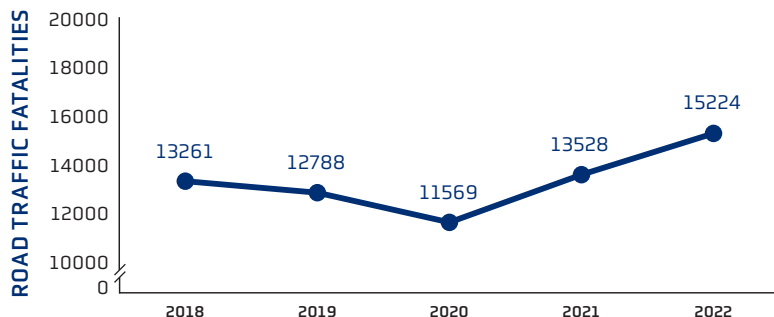


Child restraint use among children  $< 12$  years old was non-existent

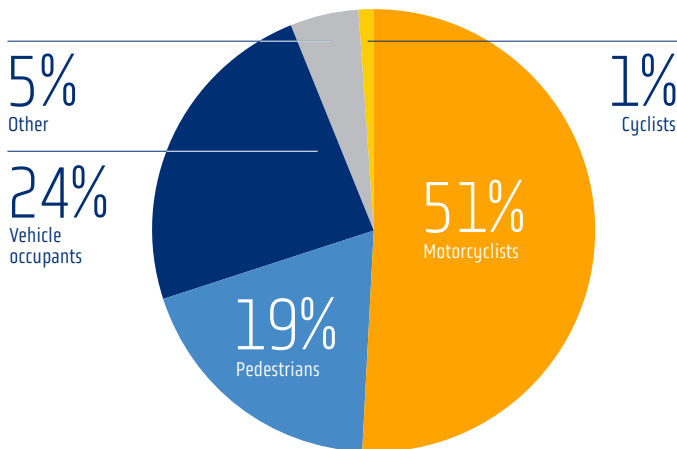


# Road Traffic Fatalities in Maharashtra State

After an initial decrease, road traffic fatalities have increased since 2020



Deaths by road user, 2022



**Vulnerable road users (motorcyclists, pedestrians, and cyclists) accounted for 71% of reported road traffic fatalities.**

Note: Data from existing sources was used for the outcome data indicators. Police crash data systems are prone to underreporting.

## Recommendations

### **Maharashtra State Highway Police and District Police**

- Enhance enforcement of the Motor Vehicles Amendment Act (MVAA) 2019 regulations, focusing on:
  - Speed limits across Maharashtra State, especially among motorcycles, SUVs, and buses.
  - Helmet clasp as mandated under section 129 (b) of the MVAA 2019.
  - Seat-belt use.
- Continue electronic enforcement as per the MVAA 2019 regulations, and commence manual enforcement in the high-speed and high-risk corridors.
- Make enforcement operations regular, visible, and widespread.

### **Maharashtra State Transport Department, Maharashtra State Road Development Corporation, and District Municipal Corporation**

- Implement speed-calming measures, such as speed bumps, rumble strips, safe speed signage, and designation of low-speed areas, to protect vulnerable road users.
- Implement mass-media campaigns in coordination with enhanced enforcement efforts, focusing on:
  - Speed reduction.
  - Correct helmet use.
  - Seat-belt use.

# Speed in Maharashtra State

Higher speeds lead to a greater risk of a crash and a higher probability of serious injury. An increase of 1 km/h in average vehicle speed results in an increase of 3% in the incidence of crashes resulting in injury and an increase of 4%–5% in the incidence of fatal crashes.\*

\*Save Lives: A road safety technical package. Geneva: World Health Organization; 2017.



**Among all observed vehicles, 16% were exceeding the posted speed limit.**



**Speeding was more frequently observed among sedans/saloons (25%), SUVs (21%), and motorcycles (16%) compared with other vehicle types.**



**Speeding was higher on state highways (21%) and national highways (15%) compared with expressways (7%).**



**Speeding was more frequently observed among ride-share vehicles (23%) compared with government and private vehicles (20%), taxis (9%), and commercial vehicles (7%).**

## Functional classification of roads

**Expressways:** These are six- to eight-lane controlled-access highways with modern features, such as access ramps, grade separation, lane dividers, and elevated sections.

**National Highways:** These are multi-lane roads connecting major cities, state capitals, and sometimes neighboring countries. National highways in India are designated by "NH" followed by a numeral code.

**State Highways:** These are multi-lane roads within a state that connect major cities, district headquarters, and major towns. They link to national highways and neighboring states' highways, and are designated by "SH" followed by a state-specific code.

**Arterial roads:** These are roadways with high traffic volume; they provide a high degree of mobility and carry a high proportion of travel for long distance trips. These roadways carry the major portion of trips entering and leaving an activity center, as well as the majority of movements that either go directly through or bypass the area.

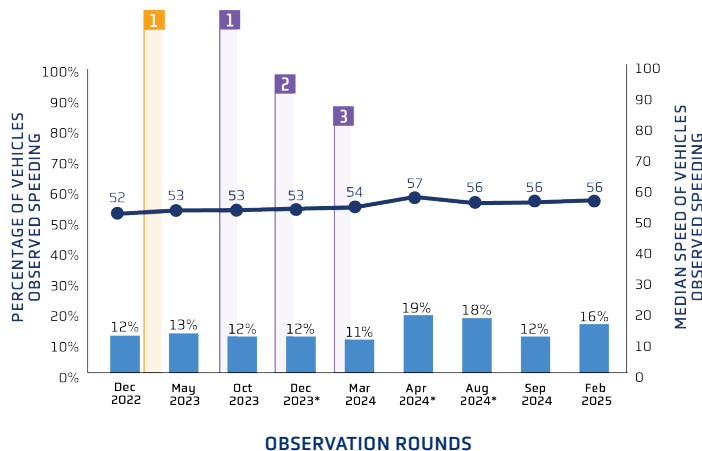
**Local roads:** These roads provide limited mobility and are the primary access to residential areas, businesses, farms, and other local areas.

**Collector roads:** These roads collect traffic from local roads and connect to arterial roadways. They penetrate neighborhoods and communities, collecting and distributing traffic between neighborhoods and arterial roads. Collector roads are shorter than arterial but longer than local roads.

These roads provide less mobility than arterials at lower speeds and for shorter distances.

# Key Findings on Speed in Maharashtra State

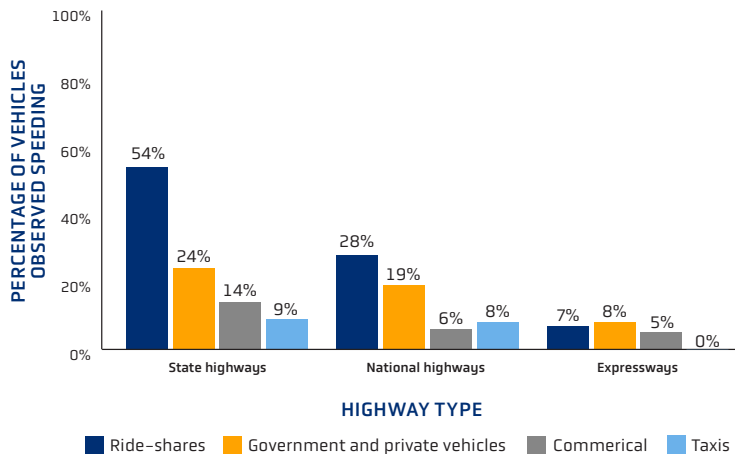
Speeding prevalence remains low, but median speeds on highways stay elevated across rounds in Maharashtra State



OBSERVATION ROUNDS

- Speeding prevalence (%)
  - Median speed of speeding vehicles (km/h)
  - Infrastructure intervention focused on pedestrian safety
  - Enhanced enforcement activities focused on speed reduction
- See page 11 for more information on interventions in Maharashtra State

Speeding was more common among ride-share vehicles, highlighting the need for focused enforcement efforts



HIGHWAY TYPE

## Recommendations

**Maharashtra State Highway Police and District Police**

- Enhance enforcement of speed limits with both electronic and manual enforcement, focusing on motorcycles, SUVs, and buses.
- Make enforcement operations regular, visible, and widespread.

**Maharashtra State Transport Department, Maharashtra State Road Development Corporation, and District Municipal Corporation**

- Implement mass-media campaigns in coordination with enforcement efforts, emphasizing the dangers of driving at unsafe speeds.
- Establish clear speed management guidelines for all vehicle types, prioritizing ride-share and private vehicles on state highways.
- Implement speed management measures such as speed bumps, rumble strips, chicanes, roundabouts, signage and designated low-speed zones, as well introduce technology-assisted measures, in line with the Maharashtra State Road Safety Policy.
- Reform the e-challan system to ensure timely issuance and follow-up on penalties for traffic violations captured by automatic enforcement, in order to increase the deterrent effect and improve road safety behaviors.

# Helmet Use\* in Maharashtra State

Using a motorcycle helmet correctly\*\* can reduce the risk of fatality by 42% and the risk of serious head injury by 69% in the case of a crash.\*\*\*

\*Overall helmet use was defined as strapped or unstrapped use of a helmet of any type.

\*\*Correct helmet use was defined as the use of a standard helmet that was worn correctly and with the chin strap fastened.

\*\*\*Source: Peng, Y, Vaidya, N, Finnie, R, Reynolds, J, Dumitru, C, Njie, G, Elder, R, Ivers, R, Sakashita, C, Shults, R. A., Sleet, D. A., Compton, R. P, & Community Preventive Services Task Force. (2017). Universal motorcycle helmet laws to reduce injuries: A community guide systematic review. *American Journal of Preventive Medicine*, 52(6), 820–832. <https://doi.org/10.1016/j.amepre.2016.11.030>.



**Overall helmet use among motorcyclists was very low (22%), and correct helmet use was even lower (19%).**



**Correct helmet use was lowest among government and privately owned vehicles (19%), while higher among ride-shares (38%) and commercial vehicles (42%).**



**Correct helmet use was very low among both male (24%) and female (22%) drivers.**



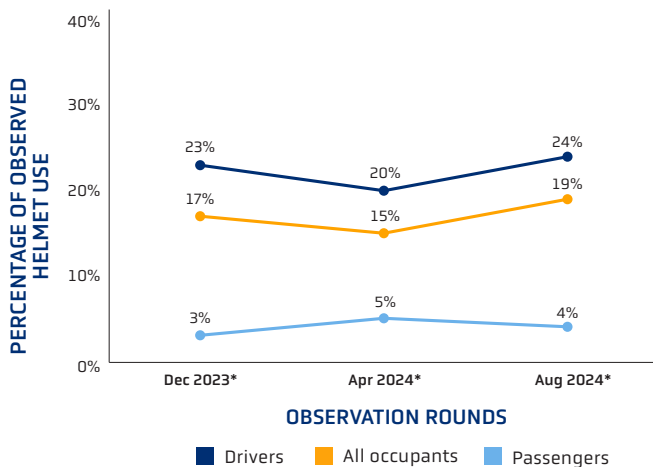
**Correct helmet use was lowest on arterial roads (12%), followed by highways (17%), and was highest on collector and local roads (30%).**



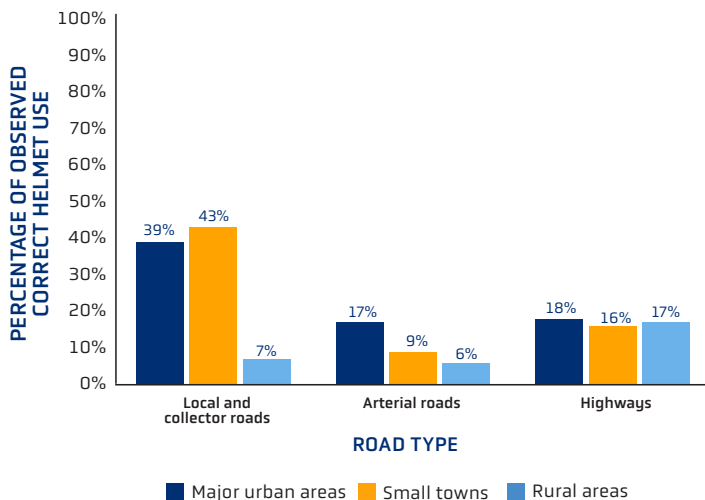
**Correct helmet use was highest in major urban areas (24%), followed by small towns (21%), and was lowest in rural areas (10%).**

# Key Findings on Helmet Use in Maharashtra State

Correct helmet use remained consistently low, with especially poor compliance among motorcycle



Correct helmet use was highest on local roads in small towns and lowest in rural areas across all road types



## Recommendations

### *Maharashtra State Highway Police and District Police*

- Enhance enforcement of correct helmet use, among both motorcycle drivers and passengers, in line with the MVAA 2019.
- Make enforcement operations regular, visible, and widespread.

### *Maharashtra State Transport Department, Maharashtra State Road Development Corporation, and District Municipal Corporation*

- Implement mass-media campaigns in coordination with enforcement efforts, focusing on:
  - Rural areas and small towns in Maharashtra State.
  - The importance of wearing helmets at all times.
  - Correct helmet use.
- Advocate for appropriate enforcement of penalties and fines for driving without wearing a helmet correctly, in line with the MVAA 2019.

# Seat-Belt and Child Restraint Use in Maharashtra State

Seat-belts and child restraints play a significant role in reducing the severity of injuries in the event of a crash; they reduce mortality by 50% in crashes in which motorists, passengers (including rear-seat passengers), and children would otherwise die.\*

\*Source: Ogundele, O. J., Ifesanya, A. O., Adeyanju, S. A., & Ogunlade, S. O. (2013). The impact of seat-belts in limiting the severity of injuries in patients presenting to a university hospital in the developing world. *Nigerian Medical Journal*, 54(1), 17–21. <https://doi.org/10.4103/0300-1652.108888>



**Seat-belt use among all vehicle occupants ≥ 12 years old was very low (31%).**



**Seat-belt use was much lower among passengers (13%) compared with drivers (41%).**



**Male drivers (40%) and male passengers (11%) wore seat-belts less frequently compared with female drivers (71%) and female passengers (17%).**



**Seat-belt use was highest on local and collector roads (45%) and significantly lower on arterial roads (27%) and highways (24%).**



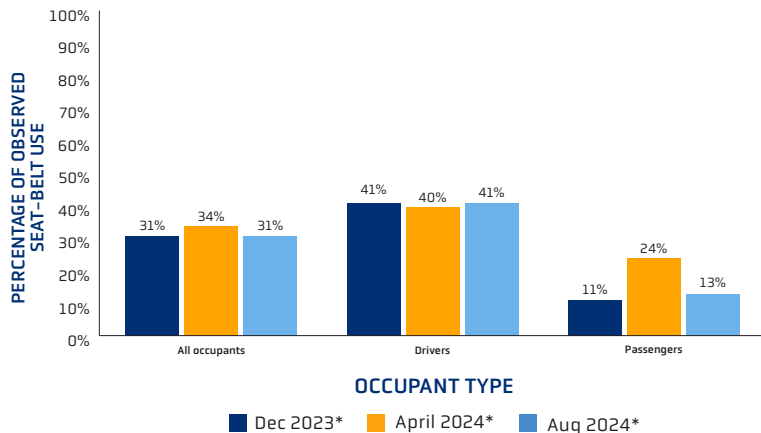
**Seat-belt use was lowest in rural areas (22%) compared with major urban areas (35%) and small towns (35%).**



**Seat-belt use was lowest among commercial vehicles (16%) and highest among taxis (51%), ride-share vehicles (44%), and government and private vehicles (37%).**

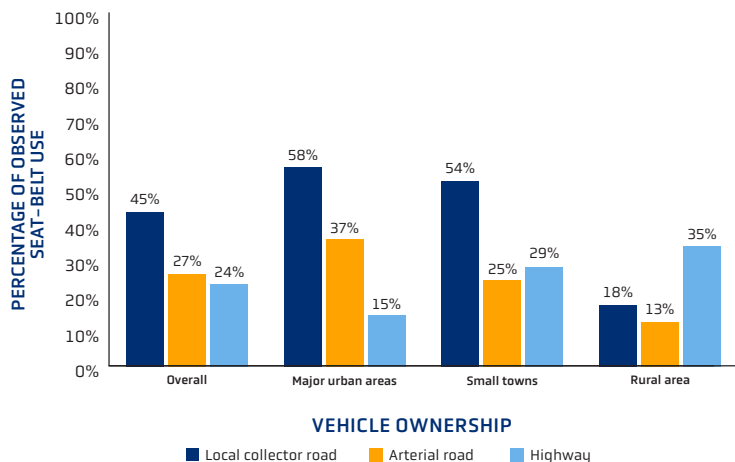
# Key Findings on Seat-Belt and Child Restraint Use in Maharashtra State

Seat-belt use remained consistently low, with significantly lower compliance among passengers



Note: "Children" includes those in the  $\geq 12$  and  $< 18$  years age group.

Seat-belt use is highest on local roads in urban areas but lags behind on highways in cities and arterial roads in rural areas



## Recommendations

*Maharashtra State Highway Police and District Police*

- Enhance enforcement of:
  - Seat-belt use among all vehicle occupants.
  - Age-appropriate child restraint use.
- Strengthen enforcement of penalties for not using seat-belts or age-appropriate child restraints, in line with the MVAA 2019.
- Make enforcement operations regular, visible, and widespread.

*Maharashtra State Transport Department, Maharashtra State Road Development Corporation, and District Municipal Corporation*

- Implement mass-media campaigns in coordination with enforcement efforts, targeting all road types across all regions, with a particular focus on highways, and emphasizing the dangers of not using seat-belts and age-appropriate child restraints.
- Monitor and evaluate all enforcement and mass-media campaigns to assess their sustained effectiveness.

## SPEED INTERVENTIONS

**1** Jan 2023 **Infrastructure intervention**  
Andheri Ghatkopar Link Road by the  
World Resources Institute (WRI)

**1** Sep 2023 **Speed reduction enforcement**  
Speed enforcement by the Global Road Safety  
Partnership (GRSP)

**3** Dec 2023 **Speed enforcement training**  
Speed enforcement by the Global Road Safety  
Partnership (GRSP)

**2** Nov 2023 **Speed enforcement training**  
Speed enforcement by the Global Road Safety  
Partnership (GRSP)

Speed observations on state highways in Maharashtra State, India. Photo credits: The Indian Institute of Technology Bombay (IIT-B).



## METHODS

Since 2015, the Johns Hopkins International Injury Research Unit (JH-IIRU) has partnered with the Indian Institute of Technology Bombay (IIT-B) to conduct roadside observations. The methodologies for these observations were developed by JH-IIRU and implemented in collaboration with IIT-B. This report presents results from these observational surveys, which represent the population-level [statewide] prevalence of critical road safety risk factors: speed, helmet use, and seat-belt, and child restraint use. A total of 775,736 speed observations were made during the baseline and across five additional regular observation rounds, as well as three special surveys conducted in December 2023, March 2024, and August 2024. During the baseline and the regular speeding rounds in Maharashtra State, 30 observation sites—including state highways, national highways, and expressways—were randomly selected based on the safety of observers. For the three special surveys, 10 observation sites were randomly selected from the same road categories, also based on observer safety considerations. A standardized protocol with a systematic quasi-random fixed sequence was used to select vehicles for observation, with speed observations conducted between 7:30 a.m. and 7:00 p.m. on weekdays and weekends.

Observations for helmet use, and seat-belt and child restraint use were also conducted during the three statewide special surveys. For helmet use, there were 217,364 observations, and for seat-belt and child restraint use, there were 175,155 observations performed during this round. The

helmet use and seat-belt and child restraint use surveys included major cities, small towns and rural areas, with observations conducted at 30 selected sites using a standardized protocol with a systematic quasi-random fixed sequence. Observations for these risk factors were performed between 7:30 a.m. and 6:30 p.m. on weekdays and weekends.

The methods were designed to estimate statewide prevalence and do not provide insights into interventions conducted at specific locations in Maharashtra State. The data management team at JH-IIRU reviewed and cleaned the data to produce the analyses available in this report. This comprehensive overview of road safety risk factors serves as a valuable resource for understanding statewide trends in speed, helmet use, and seat-belt, and child restraint use.

## ACKNOWLEDGMENTS

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**CONTACT:** [jhsph.iiru@jhu.edu](mailto:jhsph.iiru@jhu.edu)

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Johns Hopkins International Injury Research Unit. (2025). *Status Summary Report 2025: Road Safety Risk Factors in Maharashtra State, India*. Baltimore.

