



Status Summary 2023: Road Safety Risk Factors

Bloomberg Philanthropies Initiative for Global Road Safety



GUADALAJARA, MEXICO



JOHNS HOPKINS
BLOOMBERG SCHOOL
of PUBLIC HEALTH

**International
Injury Research Unit**

Beginning in 2020, the Johns Hopkins International Injury Research Unit, through the Bloomberg Philanthropies Initiative for Global Road Safety, has been conducting observations in Guadalajara to reduce road injuries and fatalities.

The following report highlights results from an ongoing study that captured observations of three risk factors:* speed, helmet use, and seat-belt and child restraint use. The results are based on data collected between November 2020 and April 2023.

*This study did not observe drink driving due to COVID-19 risks.

Almost one-third of all vehicles were observed speeding



Less than half of all motorcycle drivers were observed correctly using helmets



Seat-belt use among occupants ≥ 12 years old was

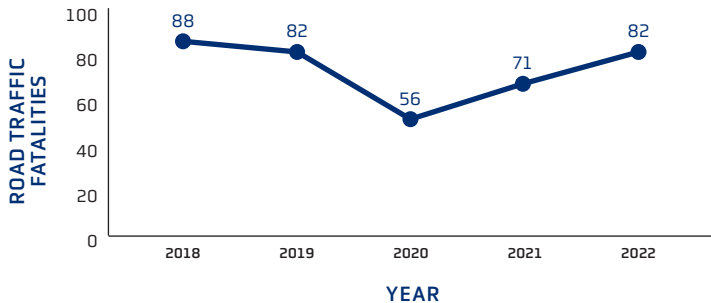


Age-appropriate child restraint use was almost nonexistent among children 5-11 years old

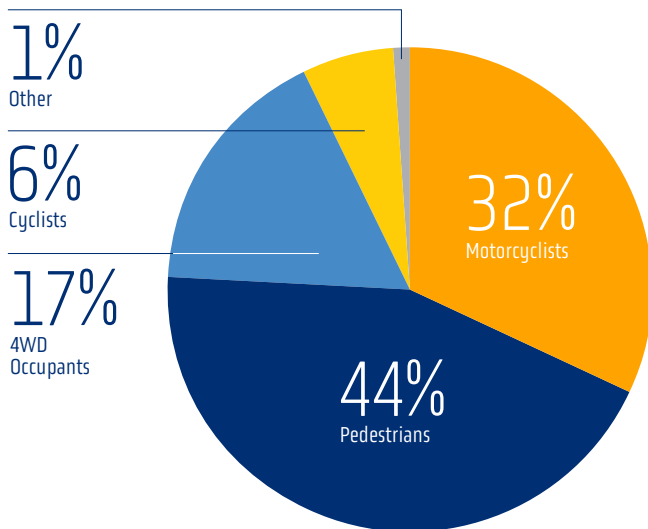


Road Traffic Fatalities in Guadalajara

After a decline, road traffic fatalities are increasing



Deaths by road user, 2022



Vulnerable road users (motorcyclists, pedestrians, and cyclists) **accounted for 82% of road traffic fatalities.**

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

Recommendations

Guadalajara Mobility Agents and Road Police of the State of Jalisco

- Increase enforcement of:
 - Speed limits, particularly among motorcycles and taxis.
 - Correct helmet use among all motorcyclists, especially passengers.
 - Seat-belt use, particularly among rear-seat passengers.
 - Age-appropriate child restraint use.

Directorate of Mobility and Transport

- Implement a maximum speed limit of 30 km/h on roadways where motorized traffic mixes with pedestrians and cyclists, and 50 km/h in urban areas.
- Work with local and state infrastructure and enforcement agencies to focus their efforts on roadways with the most fatalities and serious injuries.
- Implement mass-media campaigns in coordination with increased enforcement efforts, focussing on:
 - The dangers of speeding.
 - Correct helmet use.
 - Seat-belt and child restraint use.

Speed in Guadalajara

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.



Almost one-third of all vehicles were observed speeding in April 2023 (30%), with little change since November 2020 (35%).



Of all vehicles observed speeding, 29% were taxis.



More than half of all motorcycles (55%) were observed traveling above 50 km/h.



Speeding was more frequent on weekends (34%) compared with weekdays (28%).



Applying the global recommendation (30 km/h for local and collector roads and 50 km/h for arterial roads), 85% of the observed vehicles were speeding.

Functional classification of roads

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

Collector road: 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.

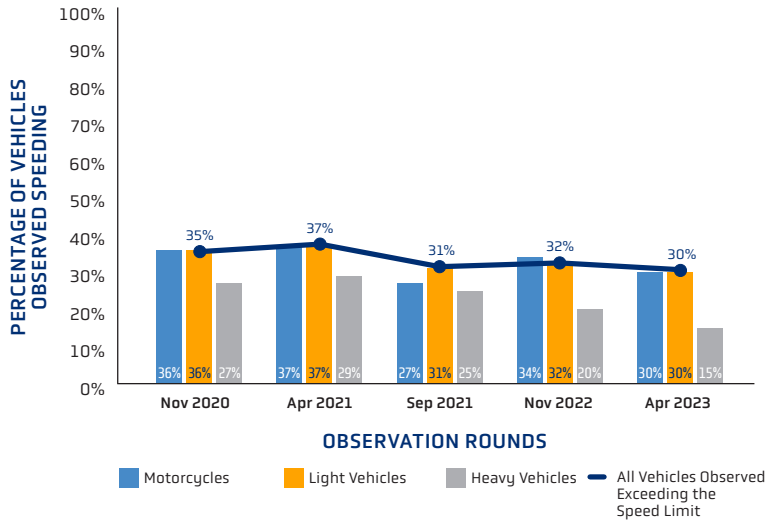
Vehicle types

Light vehicle: Sedans, saloons, SUVs, 4WDs, minibuses, minivans, pickup trucks, light trucks, and three-wheelers.

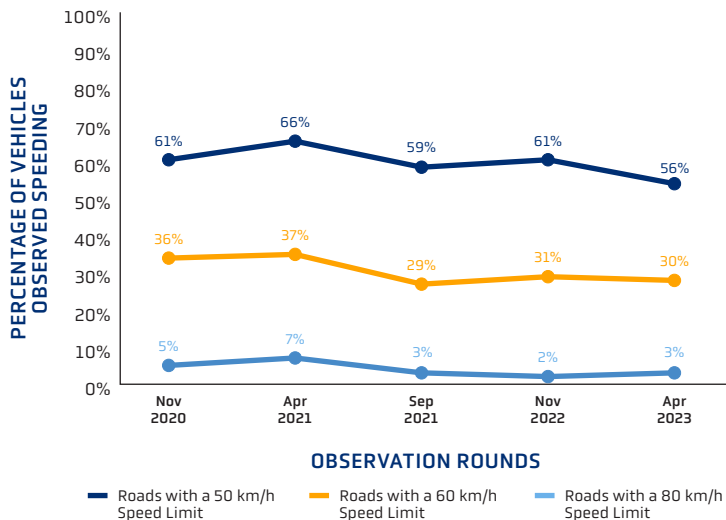
Heavy vehicle: Buses, trucks, and large trucks.

Key Findings on Speed in Guadalajara

Speeding remains highest among motorcycles and light vehicles compared with heavy vehicles



Speeding was most common on 50 km/h roads



Recommendations

Guadalajara Mobility Agents and Road Police of the State of Jalisco

- Increase manual enforcement of speed limits, and expand electronic speed enforcement, focusing on:
 - Motorcycles and light vehicles.
 - Roads with a posted speed limit of 50 km/h.
 - Weekends.
 - Areas with more vulnerable road users and the highest frequency of fatalities and serious injuries.

Directorate of Mobility and Transport

- Implement mass-media campaigns in coordination with enhanced enforcement efforts, emphasizing the dangers of driving at unsafe speeds [exceeding 30 km/h on roadways where motorized traffic mixes with pedestrians and cyclists, and 50 km/h in urban areas].
- Implement a maximum speed limit of 30 km/h on roadways where motorized traffic mixes with pedestrians and cyclists, and 50 km/h in urban areas.
- Work with bus and taxi companies to limit their vehicles' speeds below 50 km/h at all times.

Helmet Use* in Guadalajara

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.



Correct helmet use was very low among drivers (46%) and even lower among passengers (25%).



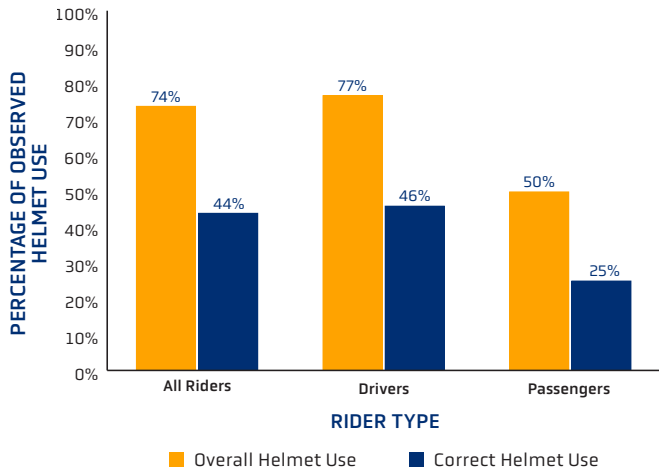
Correct helmet use was lower on collector roads (35%) and local roads (33%) compared with arterial roads (52%).



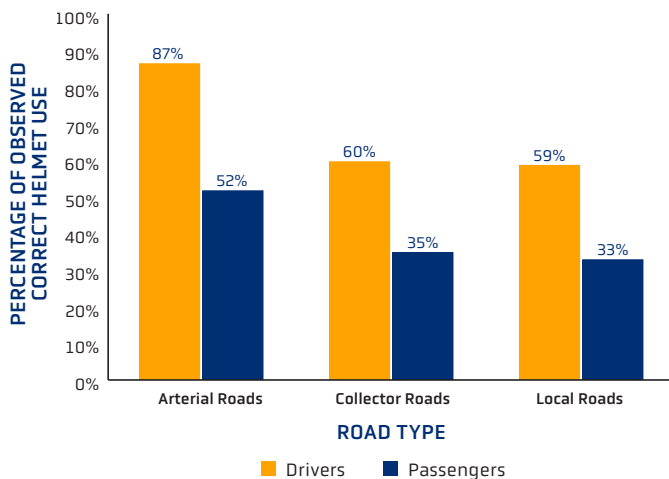
Less than half (40%) of motorcyclists on private motorcycles were observed correctly using helmets compared with motorcyclists on commercial motorcycles (52%).

Key Findings on Helmet Use in Guadalajara

Only a quarter of passengers were observed correctly using helmets



Correct helmet use was lower on local and collector roads compared with arterial roads



Recommendations

Guadalajara Mobility Agents and Road Police of the State of Jalisco

- Increase enforcement of:
 - Correct helmet use.
 - Helmet use on all types of roads, with a focus on collector and local roads.

Directorate of Mobility and Transport

- Implement mass-media campaigns in coordination with enforcement efforts, focusing on correct helmet use.
- Promote enforcement of penalties and fines for driving without using a helmet correctly.

Seat-Belt and Child Restraint Use in Guadalajara

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. Children in front seats have a 40% higher road traffic injury risk than children in rear seats.



Seat-belt use among occupants \geq 12 years old was low (62%).



Seat-belt use was very low among adult rear-seat passengers (20%).



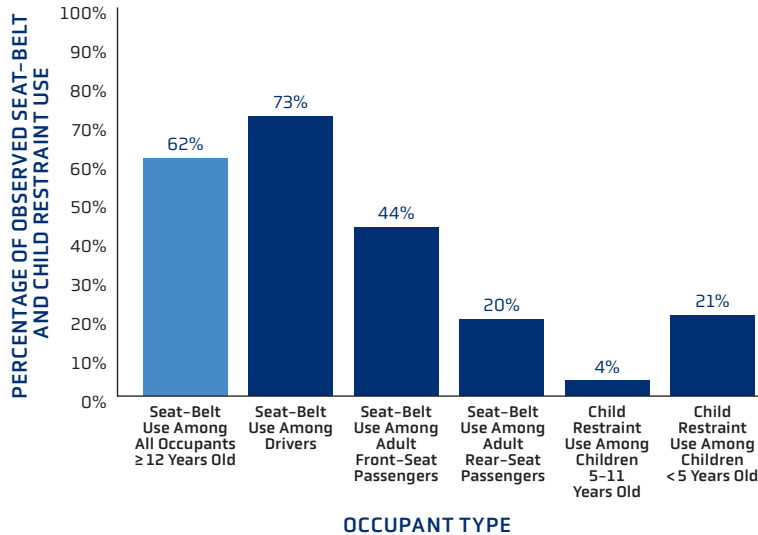
Seat-belt use was very low among adult front-seat passengers (44%) and low among drivers (73%).



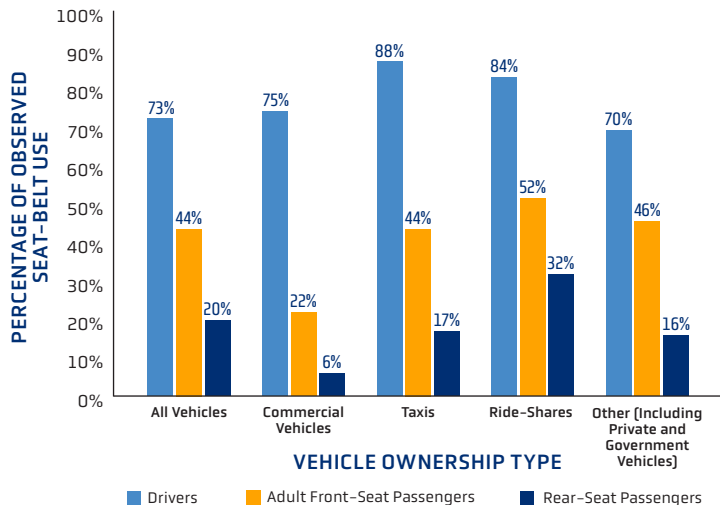
Age-appropriate child restraint use was almost nonexistent among children 5-11 years old (4%), and very low among children < 5 years old (21%).

Key Findings on Seat-Belt and Child Restraint Use in Guadalajara

Only 20% of adult rear-seat passengers used seat-belts; child restraint use among children 5-11 years old was almost nonexistent



Seat-belt use was low among passengers in commercial vehicles



Recommendations

Guadalajara Mobility Agents and Road Police of the State of Jalisco

- Increase enforcement of:
 - Seat-belt use among all vehicle passengers, focusing on taxis and commercial vehicles.
 - Age-appropriate child restraint use.

Directorate of Mobility and Transport

- Implement mass-media campaigns in coordination with enforcement efforts, focusing on:
 - Seat-belt use among rear-seat passengers in commercial vehicles, taxis, and private or government vehicles.
 - Seat-belt and child restraint use, as required by the State Mobility Law.*

*According to Article 71 of the State Mobility Law, children under 12 years old should travel with a child restraint in the center-rear seat.



Measuring speed using speed control radars for public transportation in Guadalajara, Mexico.

METHODS

Since 2020, the Johns Hopkins International Injury Research Unit has partnered with the Instituto Nacional de Salud Pública to conduct roadside observations. The methods for these findings were developed by the Johns Hopkins International Injury Research Unit and implemented in collaboration with the Instituto Nacional de Salud Pública. This report provides results from observational surveys that represent the population-level (citywide) prevalence of important road safety risk factors—speed, helmet use, and seat-belt and child restraint use—at baseline, followed by additional speed observations to show changes over time. In the last round of observations, for speed, there were 77,367 observations; for helmet use, there were 8,320 observations; and for seat-belt and child restraint use, there were 12,536 observations.

Observation sites were randomly selected, conditional on the safety of observers. Ten sites were randomly selected to capture the prevalence of risk factors that could be attributed to either implementation of targeted interventions or secular trends. For each risk factor, a standardized protocol for data collection was implemented. All risk factors were observed by selecting vehicles in a systematic quasi-random fixed sequence for

two to six weeks in 10 observation sites in the city. Selection of the observation sites was done proportionally to the number of roads, weighted by the population density of each administrative region. Observations were performed between 7:00 a.m. and 7:00 p.m. on both weekdays and weekend days. The methods were designed to estimate citywide prevalence and cannot provide insights into interventions conducted in specific locations in the city. The data management team at Johns Hopkins International Injury Research Unit reviewed and cleaned the data to produce the analyses available in this report.

ACKNOWLEDGMENTS

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