Status Summary 2022:
Road Safety Risk Factors

Bloomberg Philanthropies Initiative for Global Road Safety

GUAYAQUIL, ECUADOR

JOHNS HOPKINS
BLOOMBERG SCHOOL
of PUBLIC HEALTH

International
Injury Research Unit

Beginning in 2022, the Johns Hopkins International Injury Research Unit, through the Bloomberg Philanthropies Initiative for Global Road Safety, has been conducting observations in Guayaquil 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 in May 2022.

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

More than half of all vehicles were observed speeding

53%

Seat-belt use was very low among adult rear-seat passengers

12%

Almost two-thirds of all vehicles were observed speeding on roads with a speed limit of 50 km/h

65%

Correct helmet use among all motorcyclists was low

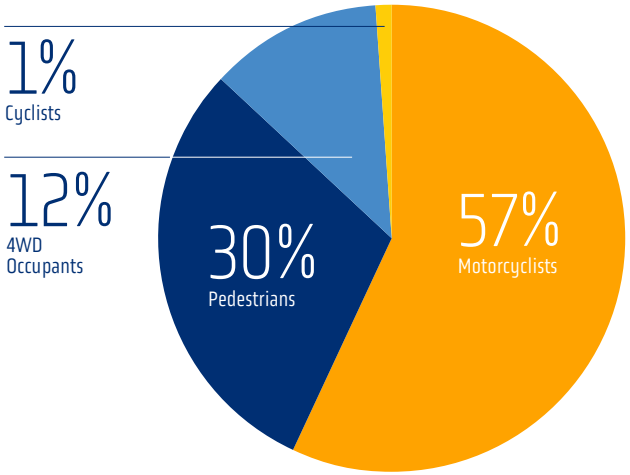
72%

Road Traffic Fatalities in Guayaquil

2019–2022

2019	2020	2021	2022
134	160	182	236

Deaths by road user, 2022



Vulnerable road users (motorcyclists, pedestrians, and cyclists) **accounted for 88% 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

Municipal Transit Authority (ATM)

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

Department of Public Works

- Implement speed-calming measures such as speed bumps, rumble strips, safe speed signage, and designation of low-speed areas, especially in areas with the highest frequency of fatalities and serious injuries.
- Implement mass-media campaigns in coordination with enhanced enforcement efforts, focusing on:
  - The dangers of speeding.
  - Correct helmet use.
  - Seat-belt and child restraint use.

Speed in Guayaquil

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.

More than half of all vehicles (53%) were observed speeding.

63% of all motorcycles observed were speeding

Speeding was most common on Sundays (67%) and Mondays (63%).

Applying the global recommendation (30 km/h for local and collector roads and 50 km/h for arterial roads), **87% of the observed vehicles were speeding.**

Observed speeding was 58% on arterial roads and 50% on collector roads.

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.

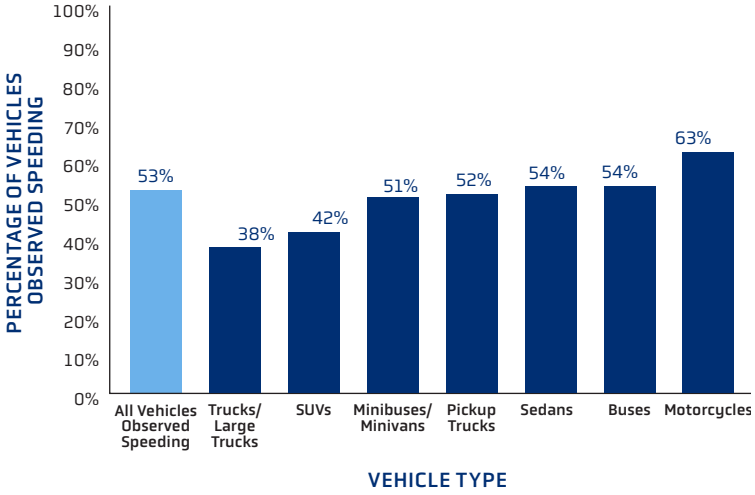
Local road: These roads provide limited mobility and are the primary access to residential areas, businesses, farms, and other local areas.

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.

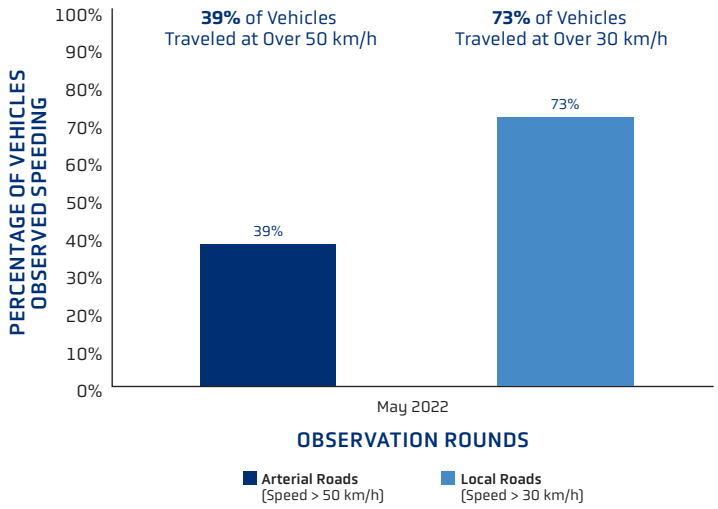
These roads provide less mobility than arterials at lower speeds and for shorter distances.

Key Findings on Speed in Guayaquil

Speeding was most common among motorcycles



Speeding above the recommended speed limit was more common on collector roads



Recommendations

Municipal Transit Authority (ATM)

- Increase enforcement of speed limits, focusing on:
  - Motorcycles.
  - Roads with a posted speed limit of 50 km/h.
  - Areas with the highest frequency of fatalities and serious injuries.
  - Weekends and Mondays.
- 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.
- Implement speed-calming measures such as speed bumps, rumble strips, safe speed signage, and designation of low-speed areas.

Helmet Use* in Guayaquil

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 was is 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.

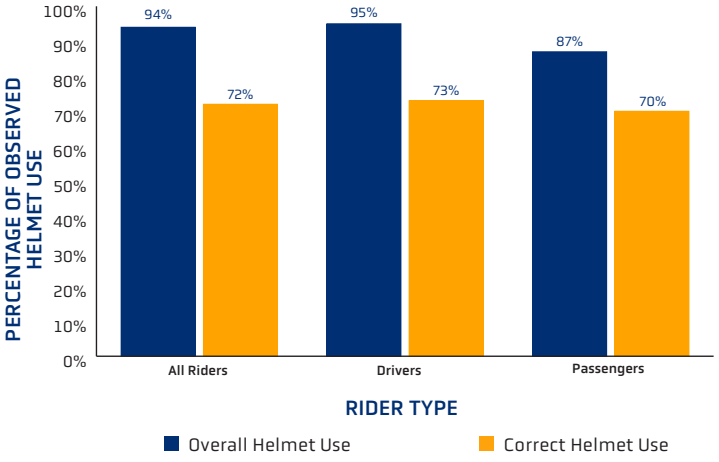
Correct helmet use was lower among passengers (70%) compared with drivers (73%).

Correct helmet use was low among motorcyclists traveling on arterial roads (72%) and collector roads (74%).

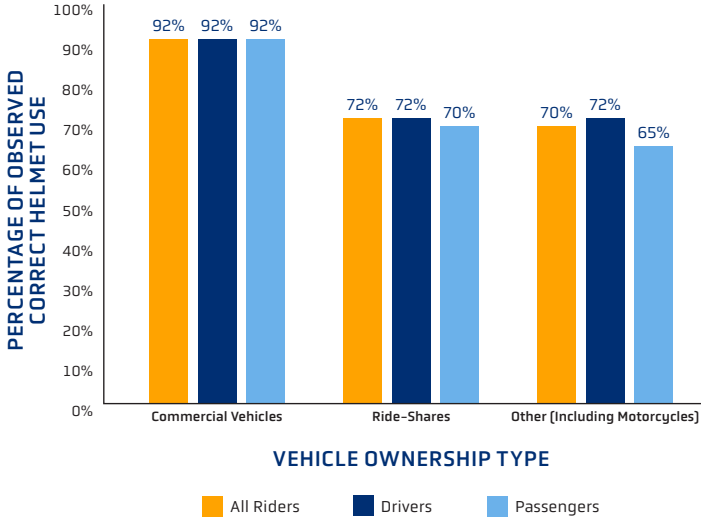
Correct helmet use was low among motorcyclists on ride-shares (70%) and private motorcycles (72%).

Key Findings on Helmet Use in Guayaquil

Correct helmet use was low among all motorcyclists



Correct helmet use was low among motorcyclists on ride-shares and private motorcycles



Recommendations

Municipal Transit Authority (ATM)

- Increase enforcement of correct helmet use, focusing on:
  - All motorcyclists.
  - Arterial roads.
  - Ride-shares and private motorcycles.
- Implement mass media campaigns in coordination with enhanced enforcement efforts, focusing on correct helmet use.

Seat–Belt and Child Restraint Use in Guayaquil

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.

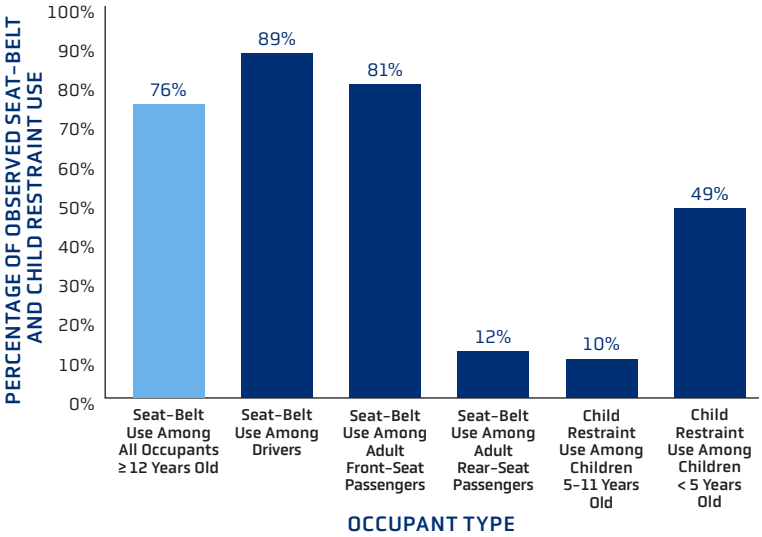
Seat-belt use among occupants ≥ 12 years old was low (76%).

Age-appropriate child restraint use was very low among children 5-11 years old (10%), and low among children < 5 years old (49%).

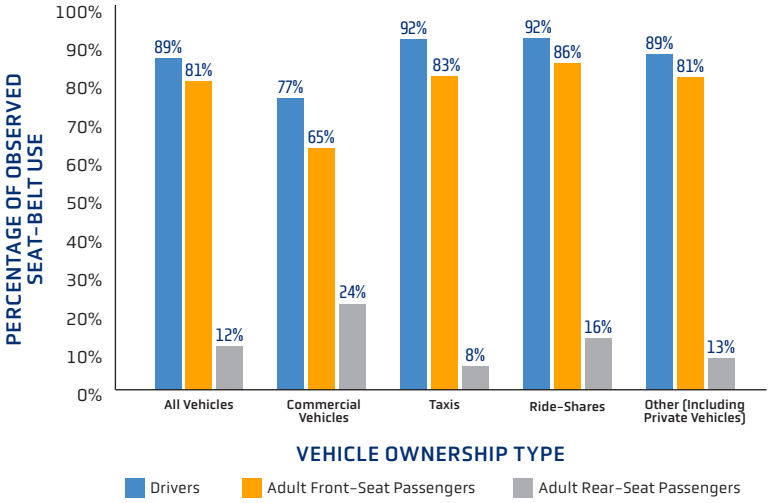
Seat-belt use was very low among adult rear-seat passengers (12%).

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

Seat-belt use among adult rear-seat passengers and child restraint use among children 5–11 years old was very low



Seat-belt use was lower among all occupants in commercial vehicles



Recommendations

Municipal Transit Authority (ATM)

- Increase enforcement of:
  - Seat-belt use among adult rear-seat passengers.
  - Seat-belt use among all occupants in commercial vehicles.
  - Age-appropriate child restraint use.
- Implement mass-media campaigns in coordination with enhanced enforcement efforts, emphasizing the importance of seat-belt use among rear-seat passengers and age-appropriate child restraints.

Department of Public Works

- Advocate for legislation to increase the use of age-appropriate child restraints.

Transit agent enforcing safe street crossing for pedestrians in Guayaquil, Ecuador.

METHODS

Since 2022, the Johns Hopkins International Injury Research Unit has partnered with the Centro de Investigación en Salud Pública y Epidemiología Clínica (CISPEC) to conduct roadside observations. The methods for these findings were developed by the Johns Hopkins International Injury Research Unit and implemented in collaboration with CISPEC. 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. For speed, there were 38,189 observations; for helmet use, there were 33,295 observations; and for seat-belt and child restraint use, there were 68,169 observations.

Observation sites were randomly selected, conditional on the safety of observers. Fifteen 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. The selection of the observation sites was done by random selection, including feasible (due to road safety and security considerations) observation sites in every administrative region (parroquias), and weighted by resident population. Some sites were not used due to security considerations for the observers.

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 perform the analyses available in this report.

ACKNOWLEDGMENTS

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