



Status Summary 2023: Road Safety Risk Factors

Bloomberg Philanthropies Initiative for Global Road Safety

SÃO PAULO STATE,
BRAZIL



JOHNS HOPKINS
BLOOMBERG SCHOOL
of PUBLIC HEALTH

International
Injury Research Unit

Beginning in 2021, the Johns Hopkins International Injury Research Unit, through the Bloomberg Philanthropies Initiative for Global Road Safety, has been conducting observations on roads in the state of São Paulo to reduce road injuries and fatalities.

The following report highlights results from an ongoing study that captured observations of three risk factors:* speed, drink driving, helmet use, and seat-belt and child restraint use. Results are based on data collected between February 2021 and May 2023.

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

Driving above the posted speed limits on expressways was



Correct helmet use among all riders was high



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



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

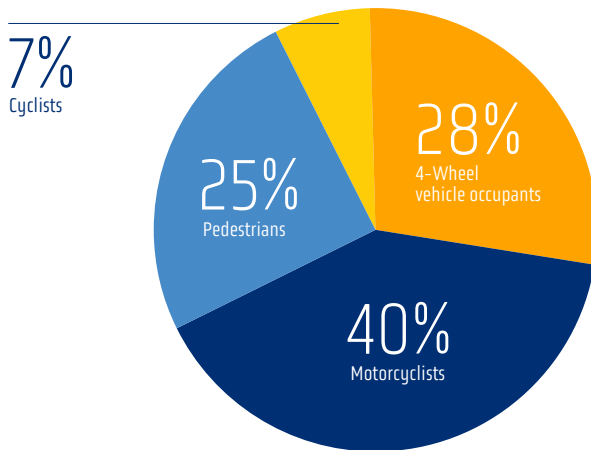


Road Traffic Fatalities in São Paulo State

2019-2022



Deaths by road user, 2022



Vulnerable road users (motorcyclists, pedestrians, and cyclists) **accounted for 72% of road traffic fatalities.**

Note: Mortality data presented here comprises the entire state of São Paulo whereas the risk factor data only represents roads surrounding the city of São Paulo. Data from existing sources were used for the outcome data indicators.

Police crash data systems are prone to underreporting.

Recommendations

Military Police

- Increase enforcement of:
 - Speed limits, particularly among heavy vehicles and motorcycles.
 - Seat-belt use, particularly among rear-seat passengers and in commercial vehicles.
 - Age-appropriate child restraint use.
- Continue enforcement of correct helmet use among all motorcyclists.
- Make enforcement operations regular, visible, and widespread.

São Paulo State Governor's Office

- Adopt and implement World Health Organization recommended speed limits across the state.
- Implement mass-media campaigns in coordination with enhanced enforcement efforts, emphasizing the dangers of speeding, focusing on heavy vehicles and motorcycles.
- Monitor and evaluate all enforcement activities and mass-media campaigns to assess their sustained effectiveness.
- Implement infrastructure changes in order to promote safe speeds, prioritizing areas with the highest frequency of fatalities and serious injuries.

Speed in São Paulo 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.



Driving above the already high speed limits of expressways was 3% in May 2023, with little change since August 2021 (2%).



Driving above the speed limit was slightly higher among heavy vehicles (4%) compared with light vehicles (3%) and motorcycles (3%).

Functional classification of roads

Expressways: These are roadways with high traffic volume at high speeds, connecting cities; they are controlled, preventing pedestrians from crossing them, and tend to have medians and barriers on the sides.

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

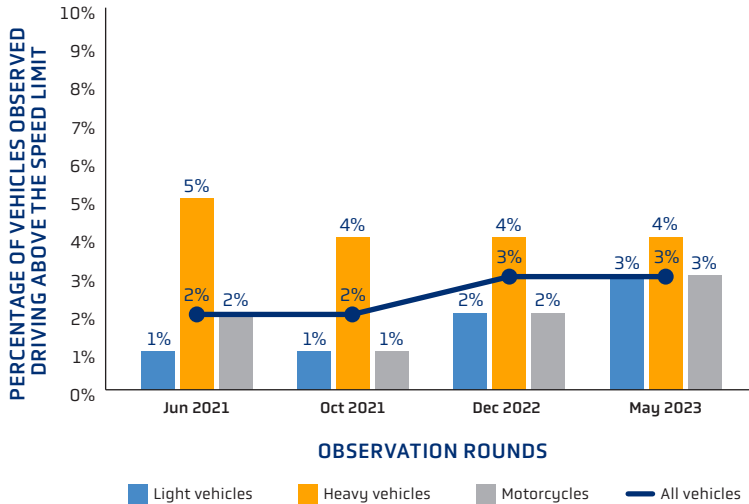
Light vehicle: Sedans, saloons, SUVs, minibuses, minivans, pickup trucks, light trucks, and three-wheelers.

Heavy vehicle: Buses, trucks, and large trucks.

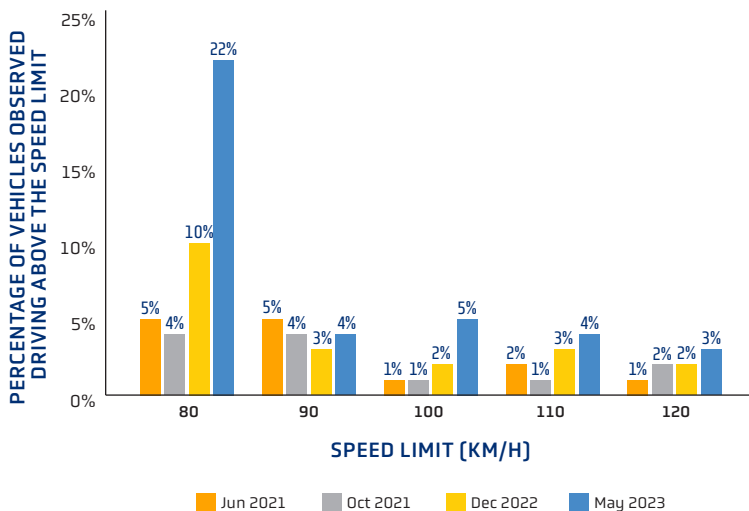
Note: Speed in Sao Paulo state was only measured on expressways.

Key Findings on Speed in São Paulo State

Driving above the speed limit was more common among heavy vehicles



Driving above the speed limit was more common on roads with a speed limit of 80 km/h



Recommendations

Military Police

- Increase enforcement of speed limits, focusing on:
 - Heavy vehicles.
 - Motorcycle Roads with speed limits of 80 km/h or below.
 - Areas with more vulnerable road users and the highest frequency of fatalities and serious injuries.
- Make enforcement operations regular, visible, and widespread.
- Expand speed enforcement competencies of all Military Police officers.

São Paulo State Governor's Office

- Increase the enforcement of speed limits in areas with more vulnerable road users and the highest frequency of fatalities and serious injuries.
- Implement mass-media campaigns in coordination with enhanced enforcement efforts, focusing on the dangers of speeding.

Drink Driving in São Paulo State

Drink driving is a key risk factor for one out of three road injuries. The World Health Organization recommends countries stipulate blood alcohol content levels lower than 0.05g/dL for experienced drivers and 0.02g/dL for novice and commercial drivers.*

*World Health Organization. The SAFER technical package: five areas of intervention at national and subnational levels. Geneva: World Health Organization; 2019.



3% of all drivers tested positive for the screening test.



0.1% of all drivers that were required and accepted to take the quantitative test were positive for drink driving.



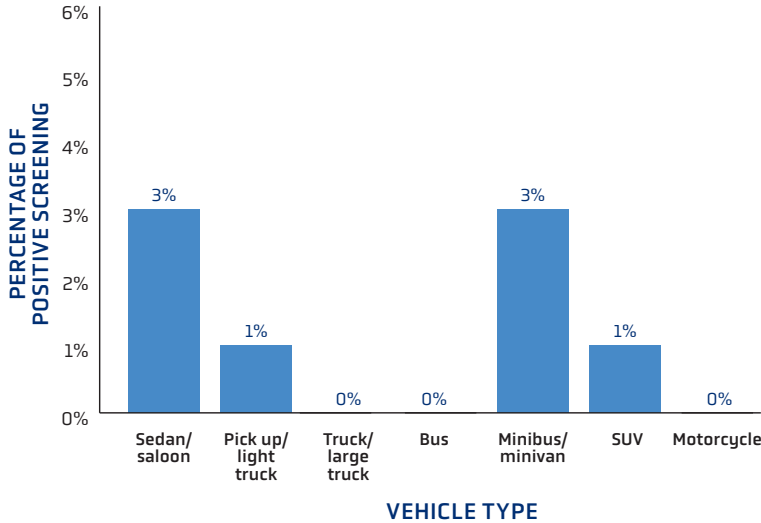
1% of all drivers refused the screening test and 93% of drivers required to conduct a quantitative test refused it.



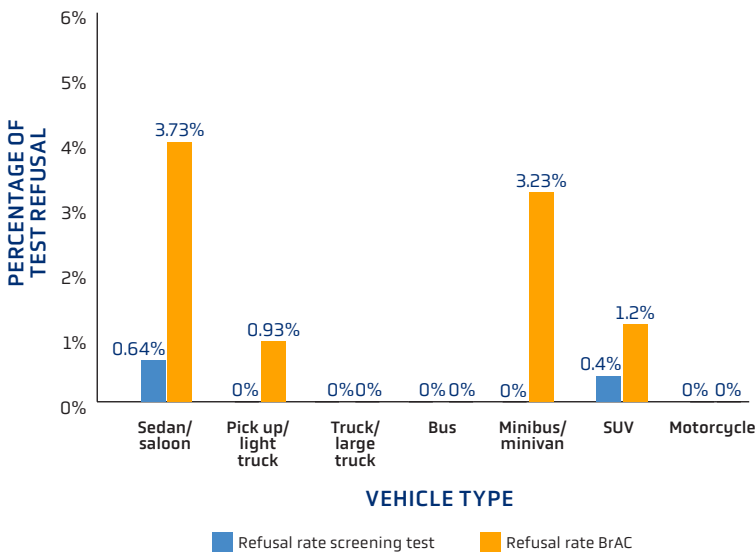
Assuming all drivers refusing the quantitative test are positive, 0.6% of all drivers would be drunk.

Key Findings on Drink Driving in São Paulo State

Positive screening was more common among sedan/saloons and minibus/minivan



BrAC test refusal rate was more common among sedan/saloons and minibus/minivan



Recommendations

São Paulo Military Police and the Companhia de Engenharia de Tráfego (CET)

- Increase enforcement against drink driving through mobile, unpredictable, visible, widespread, and daily checkpoints around the clock.
- Promote strategies to persuade drivers to accept the quantitative test.

Secretary of Mobility and Transit

- Implement mass-media campaigns in coordination with enforcement efforts, focusing on the dangers of drink driving.
- Advocate for changing the National Traffic Law so higher penalties can be applied for drivers refusing testing, in line with current evidence.
- Monitor and evaluate all enforcement efforts and mass-media campaigns to assess their sustained effectiveness, including combining data with forensic data.
- Continue promoting regular testing for alcohol for all road traffic casualties to improve the monitoring of this risk factor.

Speeding Trends (Overall)

■ Prevalence under 10%

■ Prevalence between 11% and 20%

■ Prevalence above 21%

Guadalajara (R5)

30% prevalence
Speeding =

Cali (R5)

48% prevalence
Speeding ↓

Bogotá (R4)

39% prevalence
Speeding ↑

Quito (R4)

20% prevalence
Speeding ↓

Guayaquil (R1)

53% prevalence
Speeding N/A

Cordoba (R1)

29% prevalence
Speeding N/A

Buenos Aires (R4)

29% prevalence
Speeding ↑





Mexico City (R3)
34% prevalence
Speeding ↓

Recife (R5)
24% prevalence
Speeding =

Salvador (R5)
7% prevalence
Speeding ↓

São Paulo city (R4)
11% prevalence
Speeding ↑

São Paulo State (R4)
3% prevalence
Speeding =

Campinas (R2)
21% prevalence
Speeding ↑

Helmet Use* in São Paulo 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.



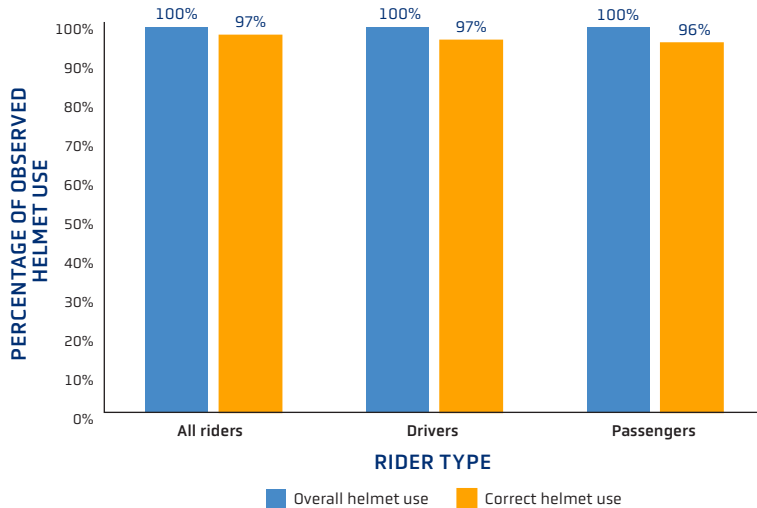
Correct helmet use was high among all riders [97%].



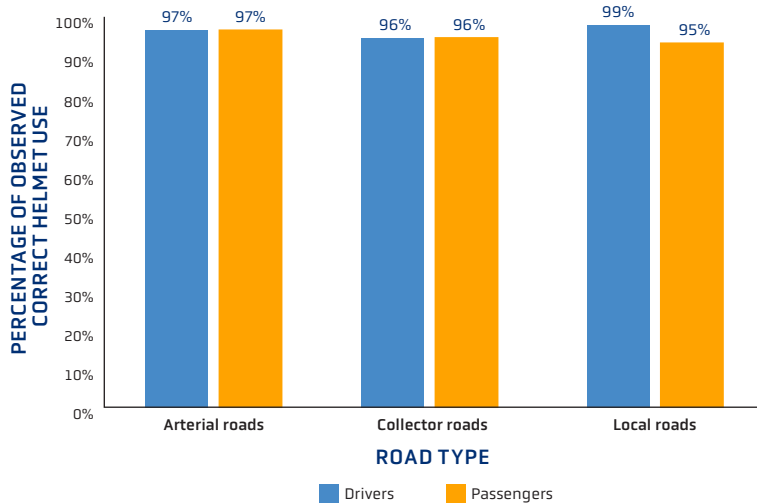
Correct helmet use was similar among drivers [97%] compared with passengers [96%].

Key Findings on Helmet Use in São Paulo State

Correct helmet use was high



Correct helmet use was slightly lower among passengers on collector and local roads



Recommendations

Military Police

- Continue enforcement of correct helmet use among all occupants.
- Make enforcement operations regular, visible, and widespread.

São Paulo State Governor's Office

- Develop mass media campaigns that are coordinated with and complement enhanced enforcement of correct helmet use.
- Advocate for the enforcement of penalties and fines for driving without using a helmet correctly.

Seat-Belt and Child Restraint Use in São Paulo 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. 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 86%.



Seat-belt use was low among adult rear-seat passengers (39%) compared with adult front-seat passengers (87%).



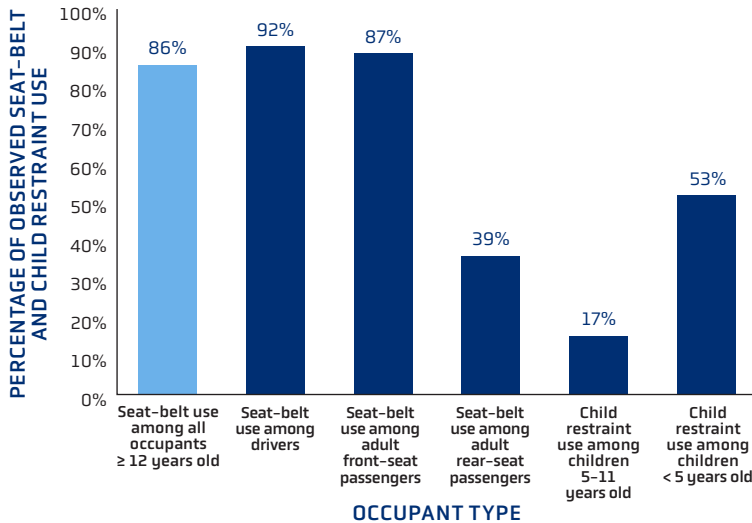
Age-appropriate child restraint use was very low among children 5-11 years old (17%) and low among children < 5 years old (53%).



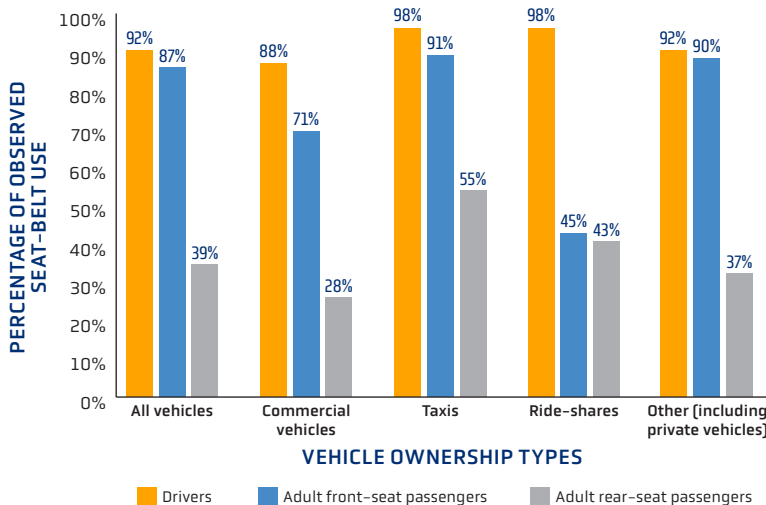
Seat-belt use was low among occupants of ride-sharing vehicles [70%].

Key Findings on Seat-Belt and Child Restraint Use in São Paulo State

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



Seat-belt use among adult rear-seat passengers was particularly low in commercial vehicles



Recommendations

Military Police

- Increase enforcement of child restraint use and seat-belt use, especially among rear-seat passengers, and in both ride-sharing and commercial vehicles.
- Strengthen enforcement of penalties for not using seat-belts or age-appropriate child restraints.
- Make enforcement operations regular, visible, and widespread.

São Paulo State Governor's Office

- Implement mass-media campaigns in coordination with enhanced enforcement efforts, focusing on:
 - Seat-belt use among rear-seat passengers.
 - Age-appropriate child restraint use.
 - The harms of having child passengers unrestrained.
- Monitor and evaluate all enforcement and mass-media campaigns to assess their sustained effectiveness.



A cyclist traveling through a protected temporal bike lane in São José dos Campos in São Paulo State, Brazil.

METHODS

Since 2021, the Johns Hopkins International Injury Research Unit has partnered with the University of São Paulo 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 University of São Paulo. This report provides results from observational surveys that represent the population-level prevalence of important road safety risk factors—speed, drink driving, helmet use, and seat-belt and child restraint use—at baseline in the expressways (in the case of speeding), and arterial, collector and local roads (in the case of helmet and seatbelt use) surrounding the city of São Paulo on a 100 km perimeter. In this round of observations, for speed, there were 59,637 observations (May 2023); for drink driving there were 2,097 observations (December 2022); for helmet use, there were 16,176 observations (February 2021); and for seat-belt and child restraint use, there were 31,448 observations (February 2021).

Observation sites were randomly selected in a 100 km perimeter of the city of Sao Paulo, conditional on the safety of observers. Eleven 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 during a period of three weeks for speeding and three months for helmet use and seat-belt and child restraint use (associated to COVID-19 lockdowns), in eleven observation sites of the state. The selection of the observation sites was done proportionally to traffic flow. Observations were performed between 8:15 a.m. and 5:30 p.m. on both weekdays and weekend days. The methods were not designed to estimate statewide prevalence beyond the perimeter surrounding the city of São Paulo and cannot provide insights into interventions conducted in specific locations in the state. 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

Technical support was provided by officials in São Paulo State, Brazil; a consortium of international initiative partners; and local collaborators at the University of São Paulo.

CONTACT: jhsph.iiru@jhu.edu

CITATION:

Status Summary Report 2023: Road Safety Risk Factors in São Paulo State, Brazil: 2021–2023. Baltimore: Johns Hopkins International Injury Research Unit; 2023.



REPORT
PREPARED BY:

**Bloomberg
Philanthropies**

Initiative for Global
Road Safety

 **Vital
Strategies**


JOHNS HOPKINS
BLOOMBERG SCHOOL
of PUBLIC HEALTH

**International
Injury Research Unit**


MEDICINA

USP