

VEHICLE TYPE AND THE RISK OF TRAVELLING ON THE ROAD

Australia is one of the safest countries in the world for those who travel by road and our road safety record has improved steadily since 1970. However, the degree of safety one experiences on the road is in part related to the vehicle in which one travels and the characteristics of other vehicles on the road.

This report looks at the risk associated with travel according to the different types of vehicles that use our roads. It compares the number of deaths and serious injuries in road crashes involving passenger vehicles, motorcycles, articulated trucks, rigid trucks and buses by vehicle distance travelled. These deaths and injuries relate to all persons involved in the crash including pedestrians and occupants of other vehicles, and are not restricted to the occupants of the particular vehicle under consideration. The risk of driver death or injury is also examined by type of vehicle. In this case, the analysis refers to the driver of a particular type of vehicle.

This Monograph reports statistics for 1995 and indicates changes in risk that have occurred since 1991. For the purposes of this analysis, serious injury is defined as an injury requiring admission to hospital.

Measuring risk

Risk is measured according to the number of deaths/serious injuries for every 100 million vehicle kilometres travelled by vehicle type. This probability considers the actual risk of travelling on the road. This is important because the number and likely use of different types of vehicles varies considerably.

For example, there are few deaths associated with public and private buses but, of course, there are fewer buses on the road than other passenger vehicles. In 1995, the number of deaths involving passenger vehicles was about 80 times greater than those involving buses. However, the distance travelled by passenger vehicles was 100 times greater than that travelled by buses.

The number of kilometres travelled is based on the Australian Bureau of Statistics publication Survey of Motor Vehicle Use. This survey was undertaken in 1991 and 1995. The fatality and serious injury figures are from the Federal Office of Road Safety serious injury database for 1991 and 1995 which is based on police reports of casualty crashes.

Risk of death or serious injury to all road users in 1995

Table 1 shows the fatalities and serious injuries for all road users, distance travelled and casualty rates by each vehicle type in 1995. For all vehicles in 1995, there were 1.21 deaths and 13.39 serious injuries per 100 million kilometres travelled.

Motorcycles are more likely than other vehicles to be involved in a crash resulting in the death or serious injury of any road user. The risk of any death in a crash involving a motorcycle was nearly twelve times that for all vehicles combined. The risk of serious injury was even higher. As is evident from the next section of this Monograph, the majority of those killed in crashes involving motorcyclists were the motorcyclists themselves.

Articulated and rigid trucks both had relatively high rates of being involved in a crash resulting in death compared to passenger vehicles and buses. Despite this, the risk of involvement in a crash resulting in serious injury was about the same for passenger vehicles and articulated trucks, and slightly higher for

Table 1: Vehicle distance travelled, fatalities, serious injuries, and casualty rates by vehicle type for 1995

Vehicle Type	Fatalities	Serious Injuries	Fatalities per 100 million km travelled	Serious injury per 100 million km travelled	Distance travelled (100 million km)
All crashes involving a passenger vehicle	1709	19812	1.13	13.08	1514.42
All crashes involving a bus	21	310	1.42	20.96	14.79
All crashes involving a motorcycle	213	2687	13.96	176.08	15.26
All crashes involving an articulated truck	199	695	3.91	13.64	50.94
All crashes involving a rigid truck	215	1,353	3.20	20.11	67.25
Total*	2013	22257	1.21	13.39	1662.66

*Fatalities and Serious Injuries may not total because crashes sometimes involve more than one type of vehicle. Such fatalities and serious injuries are included in the tallies of each vehicle type involved.

Table 2: Vehicle distance travelled, fatalities, serious injuries, and casualty rates for vehicle drivers by vehicle type for 1995

Vehicle Type	Fatalities	Serious Injuries	Fatalities per 100 million km travelled	Serious injury per 100 million km travelled	Distance travelled (100 million km)
All crashes involving a passenger vehicle	792	9444	0.52	6.24	1514.42
All crashes involving a bus	1	23	0.07	1.56	14.79
All crashes involving a motorcycle	191	2345	12.52	153.67	15.26
All crashes involving an articulated truck	31	156	0.61	3.06	50.94
All crashes involving a rigid truck	35	301	0.52	4.48	67.25
Total	1050	12269	0.63	7.38	1662.66

rigid trucks and buses. The role of articulated and rigid trucks in fatal and serious injury crashes is discussed in more detail in Monograph 18.

The level of involvement in a fatal crash per distance has declined from 1991 to 1995 for all vehicle types. There was an overall reduction of around 14 per cent in the risk of death with the biggest reduction in risk being for buses (38%) followed by articulated trucks (15%), rigid trucks (15%), passenger vehicles (13%) and motorcycles (12%).

There was a similar reduction in the risk of serious injury at nearly 11 per cent. The decrease in risk was greatest for rigid trucks (24%) followed by passenger vehicles (9%), motorcycles (9%), and articulated trucks (6%). The rate for buses was nearly unchanged.

Risk of driver death or serious injury in 1995

Table 2 shows the driver fatalities and serious injuries, distance travelled and casualties per distance travelled by each vehicle type in 1995. Overall, there were 0.63 driver deaths and 7.37 serious injuries per 100 million kilometres travelled in 1995.

As noted above, motorcyclists are the main victims of crashes involving

motorcycles. In fact, motorcycle riders are more than 20 times more likely to be killed or seriously injured than a passenger vehicle driver for every kilometre travelled.

The risk of death is very similar for drivers of passenger vehicles, articulated trucks and rigid trucks although truck drivers have lower rates of serious injury than the drivers of passenger vehicles. Bus drivers had by far the lowest rates of death and injury of any class of driver.

Driver risk has also decreased from 1991 to 1995. There was an overall reduction in the rate of driver fatalities of 21 per cent. The biggest reduction in driver fatality rates occurred for rigid truck drivers (26%), followed by articulated truck drivers (24%), passenger vehicle drivers (13%) and motorcycle riders (11%). There was no change in the rate of fatalities for bus drivers although the absolute level of risk was so low that this is not surprising (with only one driver death in each of 1991 and 1995).

The reduction in risk of serious injury for drivers was somewhat lower at almost 6 per cent. The biggest reduction was again for rigid truck drivers (25%), followed by articulated truck drivers (17%) and motorcycle riders (6%). There was very little change in the risk for bus and passenger vehicle drivers.

Summary

- Overall, the risk of death and injury has decreased by 14 per cent from 1991 to 1995.
- Motorcycles are involved in more deaths and serious injuries per distance travelled than any other vehicle.
- Riders of motorcycles are 20 times more likely to be killed or admitted to hospital than the drivers of other types of vehicles.
- Drivers of passenger vehicles and trucks have about the same risk of being killed. Truck drivers, however, are less likely to be severely injured than drivers of passenger vehicles.
- Bus drivers have the lowest risk of death or injury.
- In terms of all deaths on the road, trucks were associated with higher risk levels than passenger vehicles and buses.