TRUCKS AND ROAD TRAUMA

This monograph focuses on the impact of road trauma on the road transport industry and outlines the issues that face drivers of rigid and articulated trucks. For all fatalities resulting from a crash on Australian roads, one in five crashes involves a truck. Trucks are also involved in 10 per cent of serious injury crashes. However, for most of these fatalities and serious injuries, the truck driver is not at fault. In fact, car drivers were primarily responsible for 5 out of 6 crashes involving an articulated truck, and 2 out of 3 crashes involving a rigid truck.

A better understanding of fatal and serious injuries that result from road crashes involving trucks is important on two levels. First, road trauma affects the community as a whole. The road transport industry has been involved in continuing efforts to reduce economic, personal and productivity losses and has been successful in reducing the level of trauma associated with road transport. Second, the workers in this industry should be aware of the occupational health and safety issues related to driving articulated and rigid trucks. Again, the road transport industry has been actively addressing this issue.

The fatality and serious injury statistics used in this monograph are mainly from the Federal Office of Road Safety serious injury database for 1995, which is based on police reports of casualty crashes. Serious injury is defined as an injury requiring hospital admission. To look at changes over time, the 1990 serious injury database was also used.

General trends

There has been a general decline of 17% in the number of fatalities and serious injuries resulting from all crashes involving trucks since 1990. In 1995 there were 199 fatalities involving articulated trucks compared to 262 in 1990, which represents a decrease of 24 per cent. Fatalities involving rigid trucks also declined from 289 in 1990 to 215 in 1995, which is a 26 per cent decrease.

Table 1: Fatalities and serious injuries per 100 million vehicle kilometres travelled, by vehicle type, 1995

	Killed	Injured
Articulated truck	3.91	13.64
Rigid truck	3.20	20.12
All Vehicles	1.21	13.39

A decrease has also occurred with serious injuries resulting from crashes involving trucks. While articulated trucks only experienced a 3 per cent decrease from 716 to 695 serious injuries, rigid trucks showed a 20 per cent decrease from 1690 to 1353 serious injuries.

The decline in truck related road trauma exceeds the general decline in fatalities and serious injuries for all types of vehicles (Monograph 1 and 11 outline these general trends). In 1995, there was a 14 per cent decline in all fatalities and a 9 per cent decline in all serious injuries since 1990.

However, truck drivers have a greater level of exposure, i.e. they drive many more kilometres than the average driver, and this needs to be taken into account when comparing trends. Looking at the numbers killed or seriously injured per 100 million kilometres travelled provides a measure of risk that takes into account the level of exposure. Table 1 shows the difference between trucks and other vehicles, where both articulated and rigid trucks have higher fatality and serious injury rates than the whole vehicle population. Monograph 17 discusses these issues in greater depth.

Articulated trucks

Who is killed or seriously injured?

The person most often killed or injured in a crash involving an articulated truck tends to be the driver or passenger of a car involved. As Figure 1 shows, 38 per cent of people killed are the drivers of a car and 21 per cent are the passengers in the car. Overall, almost 60 per cent of people killed are the car occupants. The drivers of the articulated truck comprise a further 16 per cent of those killed.

Figure 1: Percentage of persons killed in crashes involving articulated trucks by road user catagory, 1995

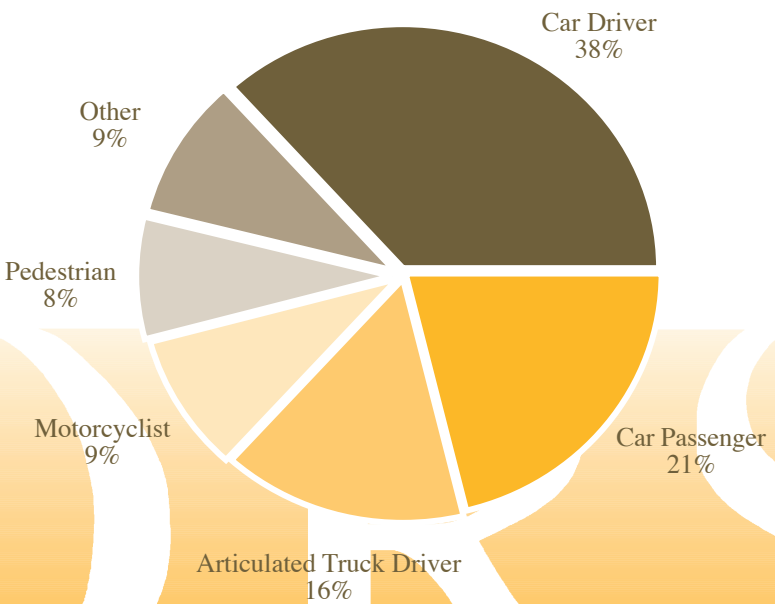
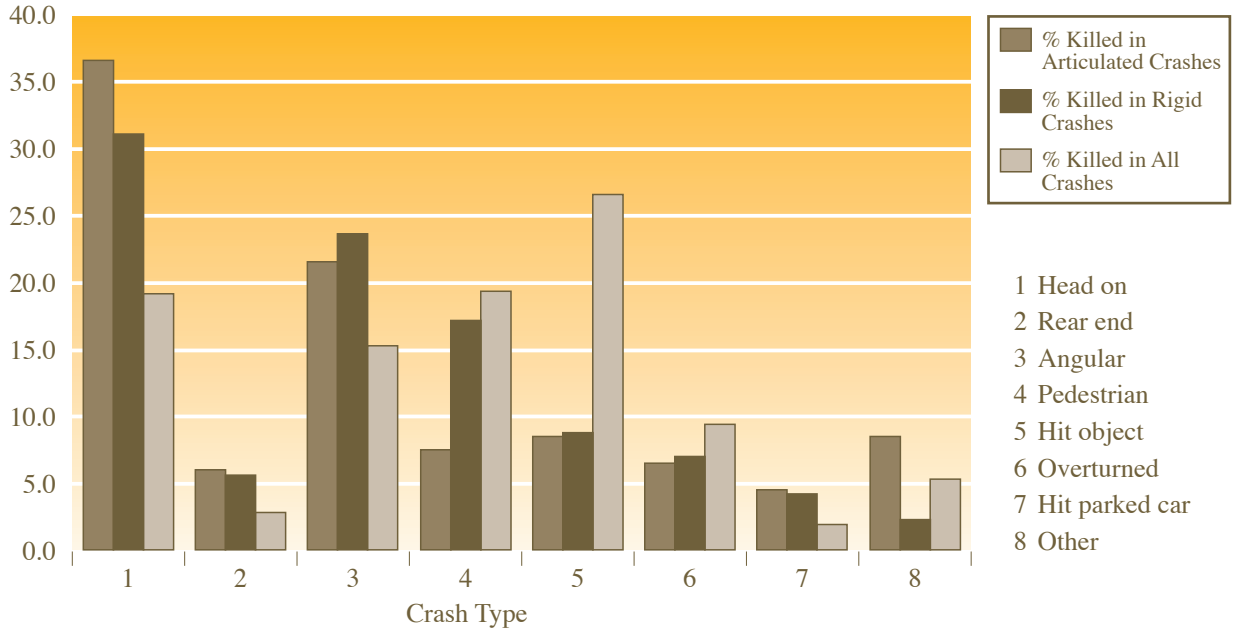


Figure 2: Percentage of persons killed by crash type 1995



Articulated truck drivers, however, make up a larger proportion of those seriously injured (22%). Nevertheless car occupants are still the most commonly injured in articulated truck crashes (58%), with car drivers accounting for 36 per cent and passengers 22 per cent of those injured.

What type of crash?

The particular road users that are killed or seriously injured in road crashes depends largely on what type of crash occurs. For example, if the crash is a single vehicle only the driver or passenger of the truck can be killed or injured. Multiple vehicle crashes, however, can result in the injury or death of the occupants of other vehicles. Thus truck crashes have a significant impact upon other road users.

The typical type of fatal crash involving an articulated vehicle is quite different from the typical type of crash for all vehicles. More people are killed in head on crashes with an articulated truck than in any other type of crash involving an articulated truck. The percentage of people killed in head on crashes with an articulated truck is almost double that for all crashes (19%). Also a greater proportion of people are killed in angular crashes involving articulated trucks compared to all vehicles. On the other hand, the most common type of fatal crash for all vehicles is where a single vehicle hits an object such as a tree or utility pole. Relatively few people are killed in crashes of this type involving an articulated truck.

Generally, there are very few articulated truck crashes that involve pedestrians. Only 8 per cent of people killed and 3 per cent of people injured involve an articulated truck striking a pedestrian. This is much lower than for all vehicle crashes where 19 per cent of people killed and 12 per cent of people injured are pedestrians.

One particular aspect of articulated truck crashes which differs greatly from all crashes is the rate of seat belt usage by drivers. As Table 2 shows, in fatal crashes involving an articulated truck, 94 per cent of the articulated truck drivers were not wearing their seat belt. In serious injury crashes, 58 per cent of articulated truck drivers were not wearing their seat belts. This is a very low rate of seat belt usage compared to all other drivers killed or injured.

Table 2: Percentage of people killed or seriously injured by seatbelt usage, 1995.

	Fatal	Serious Injury
Articulated Truck Drivers		
Seat belt worn	6%	42%
Seat belt not worn	94%	58%
Rigid Truck Drivers		
Seat belt worn	58%	81%
Seat belt not worn	42%	16%
All Other Road Users		
Sealt belt worn	75%	94%
Seat belt not worn	25%	6%

Where does the crash occur?

Fatalities involving articulated trucks mainly occur outside of capital cities (77%). This is higher than the proportion for all other vehicles (65 %).

Of serious injury crashes where an articulated truck was involved, 68 per cent occur outside of capital city boundaries compared to 49 per cent for all other crashes. The fact that more articulated truck crashes occur in non-capital areas than other crashes reflects that articulated trucks undertake a great deal of rural travel.

Who is responsible and what are the major factors?

Information on responsibility for crashes is not currently available for 1995. However, this information is recorded in the 1992 Fatality Database which is coded from coroners reports. This file relates to fatal crashes and does not include information on serious injury crashes.

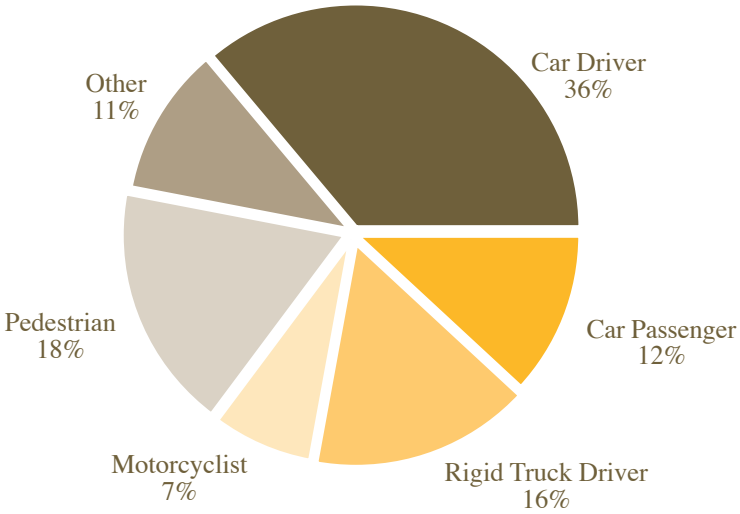
When considering responsibility it is useful to analyse single vehicle, multiple vehicle and pedestrian crashes separately as the factors involved in each type of crash differ.

Single Vehicle Crashes

Approximately 1 in 5 fatalities involving articulated vehicles occur in a single vehicle crash. In the great majority of cases coroners found that the driver of the articulated truck contributed to their own deaths.

There are three major factors which can be attributed as a cause. Of these single vehicle crashes in 35 per cent of fatalities the articulated driver at fault lost control of the vehicle, either on a curve or a straight stretch of road. In one quarter of fatalities the articulated truck driver was speeding. And in another quarter of fatalities involving an articulated truck where the driver was at fault, the driver was fatigued. The use of drugs or alcohol was not a major factor.

Figure 3: Percentage of persons killed in crashes involving rigid trucks by road user catagory, 1995



Multiple Vehicle Crashes

Multiple vehicle crashes are the most common form of crash in which an articulated truck driver is involved. Over 70 per cent of fatalities occur in a multiple vehicle crash. Responsibility for multiple vehicle crashes tends to rest with the driver of the other vehicle involved. The other driver was responsible in 84% of cases while the driver of the articulated truck was primarily responsible for less than 1 in 6 crashes. In the few cases where the driver was responsible, fatigue, speed and dangerous manoeuvring were mentioned as factors.

Pedestrian Crashes

Only about 10 per cent of fatalities involving an articulated truck arise from a pedestrian crash. This means that the actual number of pedestrian fatalities is very small. In these few cases, the articulated truck driver is responsible for the fatality 27 per cent of the time. Articulated trucks are rarely involved in pedestrian crashes. In 1992, 15 pedestrians were killed in collisions with an articulated truck. In the majority of cases, the pedestrian contributed to their own death. The driver was considered responsible in about one in four cases. As crashes where the driver was responsible are not particularly common it is difficult to conclude what the contributing factors might be.

Rigid trucks

Who is killed or seriously injured?

The person most likely to be killed or seriously injured in a crash involving a rigid truck is the driver of a car involved. As Figure 3 shows 36 per cent of people killed in a crash involving a rigid truck are car drivers. Of those people injured car occupants make up 49 per cent of those injured (car drivers 35% and car passengers 14%).

Car drivers represent a high proportion of those killed partly because the majority of rigid truck crashes have multiple vehicles involved. However rigid truck drivers still make up a significant proportion of those killed (16%) and injured (22%).

Pedestrians make up 18 per cent of those killed in rigid truck crashes and are the second most likely type of road user to be killed in a rigid truck crash. The percentage of pedestrians killed in rigid truck crashes is higher than the comparable figure for articulated trucks reflecting the more extensive operation of rigid trucks within capital cities.

What type of crash?

The typical type of crash for rigid trucks is similar in some ways to the typical type of crash for articulated vehicles. As Figure 2 shows, 31 per cent of fatalities involving rigid trucks occur in head on

collisions. Fatalities occurring in angular collisions, account for 24 per cent. As noted above, the typical type of rigid truck fatality differs from articulated trucks in the percentage of pedestrian deaths.

Angular crashes are the most common serious injury crash involving rigid trucks, as 34 per cent of injuries occur in crashes of this type. Head on collisions account for 13 per cent of serious injuries involving a rigid truck despite being the most common type of crash for fatalities involving rigid trucks. Crashes involving pedestrians only form 7 per cent of serious injuries resulting from rigid truck crashes.

Seat belt usage is slightly better for drivers of rigid trucks compared to drivers of articulated trucks but still much lower than the general population. As Table 2 shows, seat belts are not worn in 42 per cent of fatal crashes and 19 per cent of serious injury crashes involving rigid trucks.

Where does the crash occur?

Deaths and injuries resulting from crashes involving rigid trucks mainly occur outside capital cities but not as frequently as for articulated truck crashes. 61 per cent of fatalities occur outside of capital cities and 55 per cent of serious injury crashes occur in crashes outside capital cities. While rural crashes are still an issue for rigid truck drivers, the difference between rigid truck crashes and all crashes is minimal. Rural crashes are more of an issue for articulated truck drivers.

Who is responsible and what are other major factors?

Single Vehicle Crashes

Over 20 per cent of rigid truck fatalities occur in single vehicle crashes. In the majority of these crashes (90%) the driver of the rigid truck was considered to have contributed to their own death.

The main contributing factor in single vehicle fatalities was alcohol, as 50 per cent of fatalities where the rigid truck driver was responsible can be directly attributed to alcohol. Another significant factor for one in three fatalities, where the rigid truck driver was at fault was speed. Speeding features in both rigid and articulated truck crashes whereas alcohol is only a significant factor in rigid truck crashes. Fatigue and loss of control are both contributing factors in about 20 per cent of fatalities where the rigid truck driver was deemed responsible. As with articulated truck drivers, the use of drugs was not a major factor.

Multiple Vehicle Crashes

Multiple vehicle crashes account for 60 per cent of rigid truck crashes. The rigid truck driver is responsible for approximately one in every three fatalities.

The most common factor involved in a fatality resulting from a multiple vehicle rigid truck crash was speed. Speed was a main contributing factor in 25 per cent of rigid truck fatalities where the rigid truck driver was responsible. The next most common factor involved in the crash was alcohol. Alcohol was involved in 15 per cent of fatalities resulting from a rigid truck crash where the truck driver was at fault. Multiple vehicle crashes show a similar pattern to single vehicle crashes as speed and alcohol are involved in both types of crash.

Pedestrian Crashes

About 20% of fatalities involving a rigid truck are pedestrians. The rigid truck driver is primarily responsible in one quarter of these cases. There are insufficient cases where the driver is deemed responsible to draw reasonable conclusions about the factors involved.

Summary

- Trucks are involved in 1 in 5 road deaths and 1 in 10 serious injuries.
- The number of fatalities and serious injuries involving articulated and rigid trucks has been declining at a rate greater than that for the road toll as a whole.
- Car drivers are the people most frequently killed or seriously injured in truck crashes.
- The most common type of fatal crash involving an articulated or rigid truck is a head on collision.
- Seat belt usage for both articulated and rigid trucks is much lower than usage in the general population.
- The majority of articulated and rigid truck crashes occur in non-capital city areas.
- The majority of deaths involving a truck occur in multiple vehicle crashes. In most cases, the driver of the other vehicle is responsible for the crash.
- Where the articulated truck driver is responsible, the major factors involved are loss of control, speed and fatigue.
- Where the rigid truck driver is responsible, the major factors involved are alcohol and speed.