



A U S T R A L I A N T R A N S P O R T S A F E T Y B U R E A U

TRANSPORT STATISTICS REPORT

Australian Bus Safety



COMMONWEALTH DEPARTMENT OF TRANSPORT AND REGIONAL SERVICES



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Australian Transport Safety Bureau

Australian Bus Safety

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Forward

This publication provides information on the incidence and characteristics of bus crashes in Australia. It examines the number of bus occupants fatally injured or hospitalised within Australia. The relative safety of bus occupants was also compared with other vehicle occupant safety. Additionally, the report examines crash site and temporal characteristics of bus crashes, and the characteristics of people involved in bus crashes.

Data sources

The data used in this publication was extracted from three Australian Transport Safety Bureau (ATSB) databases: the *Casualty Crash Database* (1990 to 1998), the *Fatality Crash Database* (1990 to 1998) and the *Monthly Crash Database* (1990 to 2000). All three databases were utilised as they contain different levels of information.

The *Monthly Crash Database* contains the most recent information on fatal crashes. The *Casualty Crash Database* contains information for both hospitalisation and fatal crashes. Both these databases are compiled by the ATSB using fatal and hospitalisation data forwarded by police and transport authorities in each State and Territory.

The *Fatality Crash Database* contains more detailed crash information regarding vehicles, road users and crash characteristics than both the *Monthly Crash Database* and the *Casualty Crash Database*, but only for fatal crashes that occurred in 1990, 1992, 1994, 1996, 1997 and 1998. This database is coded by the ATSB from coronial documents and police reports.

Bureau of Transport Economics data on passenger kilometres travelled was used to derive fatality and hospitalisation rates.

1. MAIN FINDINGS

- Bus occupants accounted for only a very small proportion (0.6 of a percentage point) of all road fatalities between 1990 and 1998 and hospitalisations between 1990 and 1997. In these time periods there were 103 fatalities and 988 hospitalisations amongst bus occupants.
- Bus occupant fatalities and hospitalisations have fluctuated substantially since 1990 but have trended downwards.
- Bus travel in 1997 was clearly the safest mode of road transport with the least number of fatalities per 100 million passenger kilometres travelled (0.06). This compared with 0.49 fatalities per 100 million passenger kilometres travelled for passenger cars and 10.38 fatalities per 100 million passenger kilometres travelled for motorcycles. Similar trends were observed with hospitalisation rates.
- Over the period 1990 to 1998, Queensland recorded the highest number of bus occupant fatalities (42) and hospitalisations (347), while the Australian Capital Territory recorded none in either category.
- Most buses involved in fatal crashes between 1990 and 1998 were urban buses travelling short distances (58.7 per cent), and the majority of these urban buses were on scheduled service routes at the time of the crash.
- The majority of fatal^a and hospitalisation^b bus crashes occurred in speed zones of 60 kilometres per hour or less (57.6 per cent and 70.9 per cent respectively).
- The highest proportion of fatal^a and hospitalisation^b bus crashes involved at least one other vehicle (55.6 per cent and 61.4 per cent respectively), followed by pedestrian crashes (34.3 per cent and 22.7 per cent respectively). The remaining were single vehicle crashes, only involving the bus.
- Compared with the rest of the week, a higher proportion of hospitalisation^b bus crashes on Saturday and Sunday occurred during the early morning (midnight to 5:59am). Of all hospitalisation bus crashes, 14.0 per cent of Saturday crashes and 14.6 per cent of Sunday crashes occurred during the early morning, whereas between Monday and Friday the proportion of early morning crashes ranged from 1.3 per cent to 4.4 per cent.
- Of all age groups, more people over 70 years were fatally injured (21.7 per cent) and more people between 17 and 25 years (21.4 per cent) were hospitalised in bus crashes between 1990 and 1997.

a. Includes crashes between 1997 and 2000.

b. Includes crashes between 1996 and 1997.

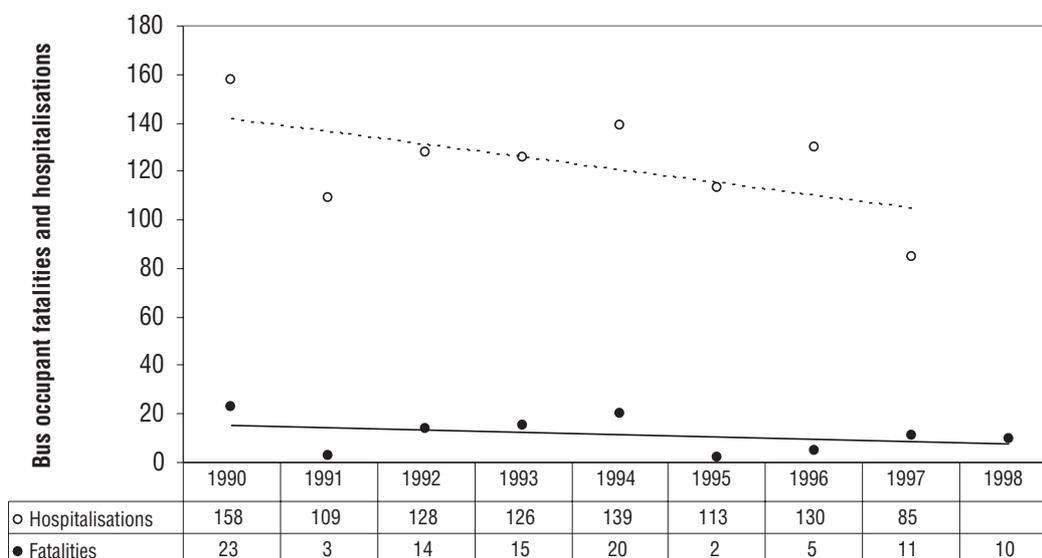
2. GENERAL TRENDS

2.1 Australian bus occupant fatalities and hospitalisations

In Australia between 1990 and 1998, there were 17 840 road fatalities and bus occupants accounted for 0.6 of a percentage point of these fatalities. Bus occupants also accounted for 0.6 of a percentage point of the 178 567 road hospitalisations that occurred between 1990 and 1997.

Figure 1 shows the number of bus occupant fatalities and hospitalisations between 1990 and 1998. There was a downward trend of approximately one bus occupant fatality each year, however the actual number of fatalities fluctuated between a high of 23 fatalities in 1990 and a low of 2 fatalities in 1995. The number of bus occupant hospitalisations also trended downwards by approximately five hospitalisations per year between 1990 and 1997.

Figure 1:
Bus occupant fatalities and hospitalisations, Australia, 1990 to 1998



Note: National hospitalisation figures were not available for 1998 at the time of publication.

2.2 Australian States and Territories bus occupant fatalities and hospitalisations

Between 1990 and 1998, Queensland recorded the highest number of bus occupant fatalities (42) and hospitalisations (347) in Australia, whilst the Australian Capital Territory recorded none in either category. Queensland also recorded the highest number of bus occupant fatalities (16 in 1994) and hospitalisations (62 in 1994) for one individual year (see table 1).

Figures 2 and 3 show the distribution of fatal and hospitalisation bus crashes for Australian States and Territories. Queensland, New South Wales and Victoria accounted for 83.6 per cent of bus occupant fatalities and 79.6 per cent of bus occupant hospitalisations, compared with their 77 per cent share of Australia's population in 1998.

Table 1:
Bus occupant fatalities and hospitalisations by State/Territory, 1990 to 1998

	<i>Year</i>	<i>NSW</i>	<i>Vic</i>	<i>Qld</i>	<i>SA</i>	<i>WA</i>	<i>Tas</i>	<i>NT</i>	<i>ACT</i>	<i>Australia</i>
Fatalities	1990	3	1	11	1	0	0	7	0	23
	1991	1	0	1	0	0	0	1	0	3
	1992	9	1	1	0	2	1	0	0	14
	1993	1	10	3	1	0	0	0	0	15
	1994	3	1	16	0	0	0	0	0	20
	1995	0	0	2	0	0	0	0	0	2
	1996	0	1	3	0	1	0	0	0	5
	1997	8	0	2	0	1	0	0	0	11
	1998	4	1	3	0	2	0	0	0	10
Total fatalities		29	15	42	2	6	1	8	0	103
Hospitalisations	1990	47	19	58	17	2	0	15	0	158
	1991	53	15	30	5	4	0	2	0	109
	1992	61	7	33	6	12	5	4	0	128
	1993	18	41	35	16	15	0	1	0	126
	1994	30	22	62	2	22	1	0	0	139
	1995	15	22	46	11	7	5	7	0	113
	1996	39	21	43	9	12	0	6	0	130
	1997	40	10	19	0	13	2	1	0	85
	1998	N/A	12	21	9	11	0	8	0	N/A
Total hospitalisations ^a		303	169	347	75	98	13	44	0	988

a. NSW figures not available for 1998, therefore totals for NSW and Australia are based on 1990 to 1997 only.

Figure 2:
Bus occupant fatalities by State/Territory, 1990 to 1998

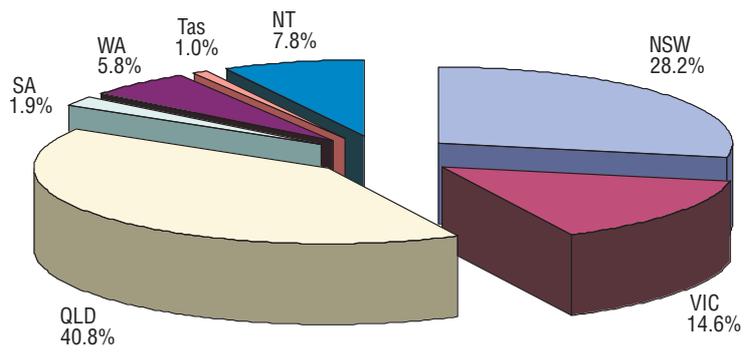
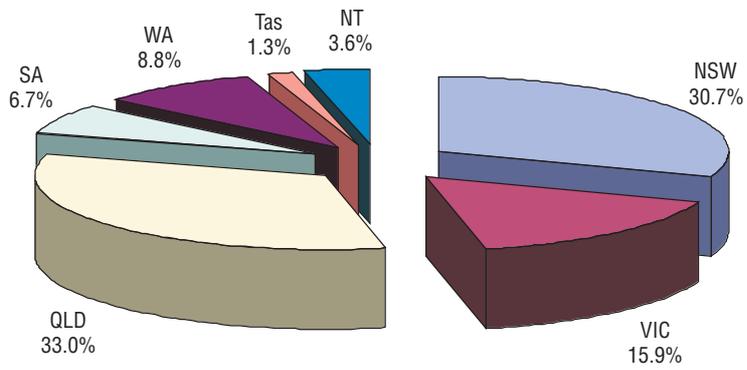


Figure 3:
Bus occupant hospitalisations by State/Territory, 1990 to 1997



3. CRASH CHARACTERISTICS

3.1 Type of bus and use at the time of the crash

The majority of buses involved in fatal crashes were urban buses (58.7 per cent), and most of these urban buses were travelling short distances on scheduled routes. Of all fatal bus crashes, 14.8 per cent involved a designated school bus (see table 2). However, 18 of these fatal crashes did not involve a school bus occupant fatality.

Table 2:
Type of buses involved in fatal crashes by vehicle usage, 1990, 1992, 1994, 1996, 1997 and 1998

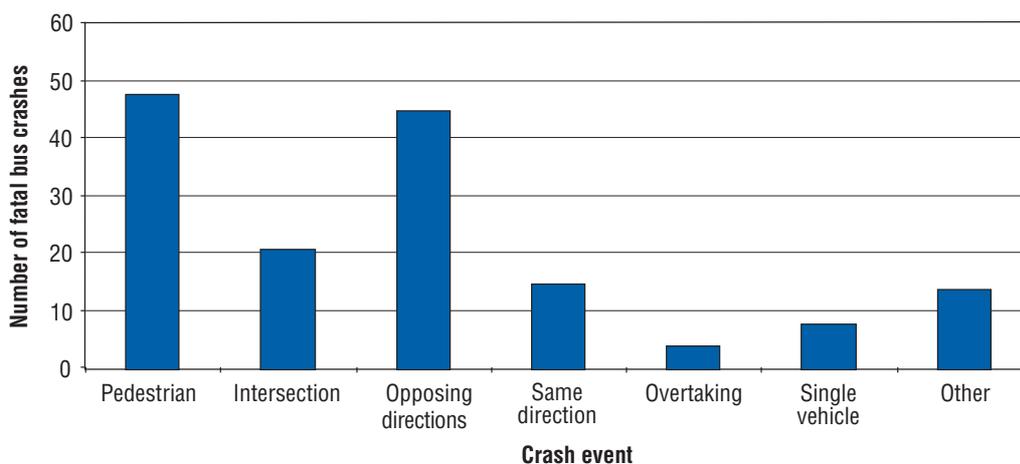
<i>Vehicle usage</i>	<i>BUS TYPE</i>								<i>Total</i>	
	<i>Urban</i>		<i>Shuttle</i>		<i>Coach</i>		<i>Unknown</i>			
School bus	18	11.6% ^a	3	1.9%	2	1.3%	0	0.0%	23	14.8%
Scheduled service bus	53	34.2%	1	0.6%	8	5.2%	2	1.3%	64	41.3%
Tourist/special bus	2	1.3%	6	3.9%	19	12.3%	0	0.0%	27	17.4%
Private use	4	2.6%	8	5.2%	0	0.0%	0	0.0%	12	7.7%
Unknown	13	8.4%	5	3.2%	7	4.5%	1	0.6%	26	16.8%
Not applicable (parked)	1	0.6%	1	0.6%	0	0.0%	1	0.6%	3	1.9%
Total	91	58.7%	24	15.5%	36	23.2%	4	2.6%	155	100%

a. Percentage of total buses involved in fatal bus crashes

3.2 Crash event (DCA)

Figure 4 shows that the most common crash event for fatal bus crashes involved a pedestrian (31 per cent). Most of the pedestrian crashes involved a pedestrian stepping off the kerb and being struck by the front of the bus. The second most common event involved one bus and another vehicle travelling in opposite directions before the collision (29 per cent). The majority of these crashes were head on collisions where neither vehicle was overtaking.

Figure 4:
Crash event (DCA) for fatal bus crashes, 1990, 1992, 1994, 1996, 1997 and 1998



3.3 Driver intent and point of impact

Buses involved in frontal impacts were responsible for 59.4 per cent of fatalities in the six years of available data from 1990 to 1998. The majority of bus drivers involved in fatal crashes were driving, or had intended to drive, straight ahead at time of the crash (75.5 per cent), while stationary buses were seldom involved in fatal crashes (see table 3).

Table 3:
Buses involved in fatal crashes by bus driver intent and point of fatal impact on the bus, 1990, 1992, 1994, 1996, 1997 and 1998

<i>Point of impact</i>	<i>DRIVER INTENT</i>								<i>Total</i>	
	<i>Straight ahead</i>		<i>Stopped/parked</i>		<i>Turning</i>		<i>Other</i>			
Front	78	50.3% ^a	2	1.3%	11	7.1%	1	0.6%	92	59.4%
Driver's side	6	3.9%	0	0.0%	0	0.0%	0	0.0%	6	3.9%
Left side	6	3.9%	0	0.0%	6	3.9%	0	0.0%	12	7.7%
Front right corner	2	1.3%	0	0.0%	0	0.0%	0	0.0%	2	1.3%
Front left corner	0	0.0%	0	0.0%	0	0.0%	1	0.6%	1	0.6%
Rear	1	0.6%	3	1.9%	2	1.3%	1	0.6%	7	4.5%
Overturn	4	2.6%	0	0.0%	2	1.3%	0	0.0%	6	3.9%
Other/none	18	11.6%	0	0.0%	5	3.2%	3	1.9%	26	16.8%
Unknown	2	1.3%	0	0.0%	1	0.6%	0	0.0%	3	1.9%
Total	117	75.5%	5	3.2%	27	17.4%	6	3.9%	155	100%

a. Percentage of total buses involved in fatal bus crashes

3.4 Speed limit and crash type

The highest proportion of fatal and hospitalisation bus crashes were multiple vehicle crashes involving a bus and at least one other vehicle (55.6 per cent and 61.4 per cent respectively), followed by pedestrian crashes (34.3 per cent and 22.7 per cent respectively) (see tables 4 and 5). Single vehicle crashes accounted for the lowest proportion of all bus crashes. While 40.4 per cent of fatal and 38.6 per cent of hospitalisation crashes not involving a bus were single vehicle crashes, only 10.1 per cent of fatal crashes and 15.9 per cent of hospitalisation crashes involving a bus were single vehicle crashes (see appendix A).

The majority of fatal and hospitalisation bus crashes occurred in speed zones of 60 kilometres per hour or less (57.6 per cent and 70.9 per cent respectively) (see tables 4 and 5). This was similar to the pattern for hospitalisation crashes not involving a bus, where the majority of crashes also occurred in speed zones of 60 kilometres per hour or less. However, the majority of fatal crashes not involving a bus occurred in speed zones of 100 kilometres per hour or more (see appendix A).

The most common type of fatal bus crashes were pedestrian crashes occurring in speed zones of 60 kilometres per hour or less (27.3 per cent) (see figure 5). The most common type of bus hospitalisation crashes involved multiple vehicles and also occurred in speed zones of 60 kilometres per hour or less (42.0 per cent) (see figure 6).

Table 4:
Fatal bus crashes by speed limit and crash type, 1997 to 2000

<i>Crash type</i>	<i>SPEED LIMIT</i>								<i>Total</i>	
	<i>60 km/h or less</i>		<i>70–90 km/h</i>		<i>100 km/h or more</i>		<i>Unknown</i>			
Single	6	6.1%	1	1.0%	3	3.0%	0	0.0%	10	10.1%
Multiple	24	24.2%	14	14.1%	15	15.2%	2	2.0%	55	55.6%
Pedestrian	27	27.3%	4	4.0%	3	3.0%	0	0.0%	34	34.3%
Total	57	57.6%	19	19.2%	21	21.2%	2	2.0%	99	100%

Table 5:
Hospitalisation bus crashes by speed limit and crash type, 1996 to 1997

<i>Crash type</i>	<i>SPEED LIMIT</i>								<i>Total</i>	
	<i>60 km/h or less</i>		<i>70–90 km/h</i>		<i>100 km/h or more</i>		<i>Unknown</i>			
Single	36	8.2%	6	1.4%	28	6.4%	0	0.0%	70	15.9%
Multiple	185	42.0%	38	8.6%	37	8.4%	10	2.3%	270	61.4%
Pedestrian	91	20.7%	2	0.5%	6	1.4%	1	0.2%	100	22.7%
Total	312	70.9%	46	10.5%	71	16.1%	11	2.5%	440	100%

Figure 5:
Fatal bus crashes by speed limit and crash type, 1997 to 2000

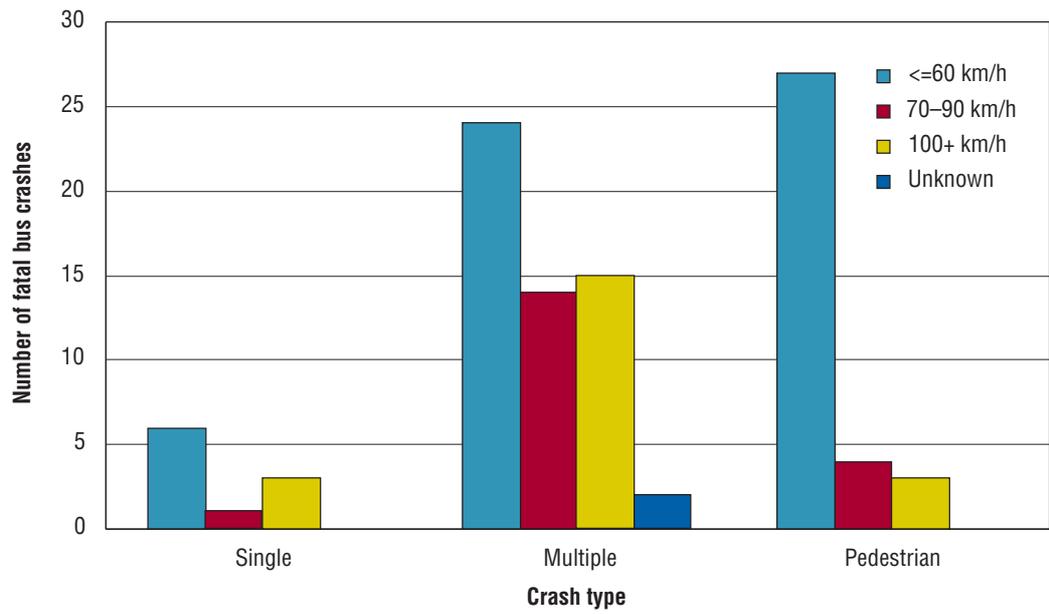
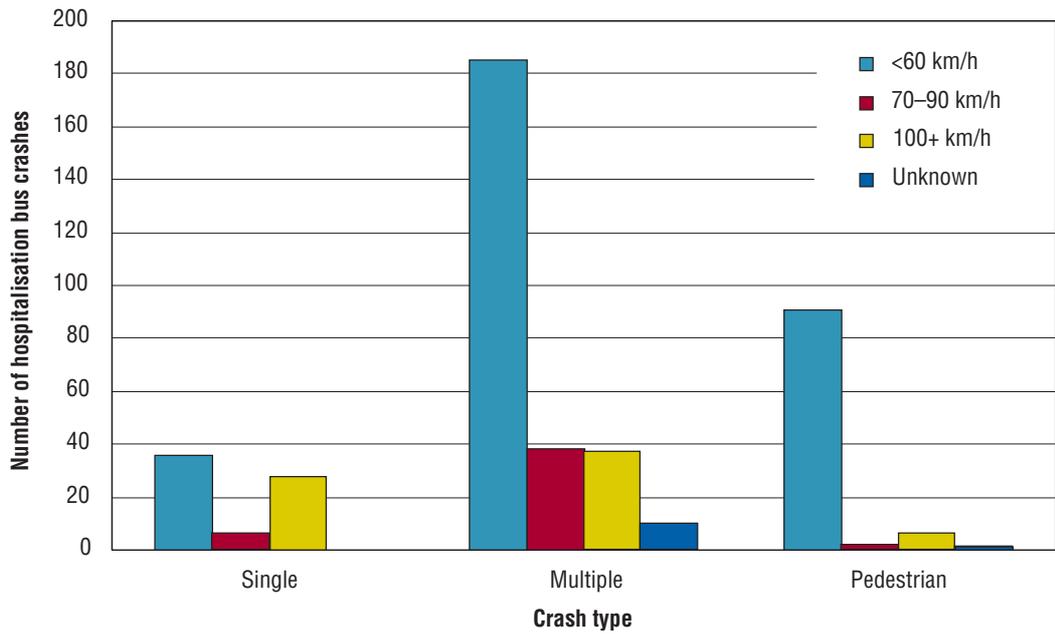


Figure 6:
Hospitalisation bus crashes by speed limit and crash type, 1996 to 1997



3.5 Time of day and day of week

The majority of fatal and hospitalisation bus crashes occurred during the daytime between 6:00am and 5:59pm (68.7 per cent and 78.8 per cent respectively). In comparison, lower proportions of fatal and hospitalisation crashes not involving a bus occurred during the daytime (55.2 per cent and 64.0 per cent respectively) (see Appendix A).

Whilst the majority of bus crashes occurred during the daytime, more fatal bus crashes occurred in the morning (37.4 per cent) than in the afternoon (31.3 per cent), and more hospitalisation bus crashes occurred in the afternoon (47.7 per cent) than in the morning (31.1 per cent). Overall, the smallest proportion of fatal and hospitalisation bus crashes occurred during the early morning (10.1 per cent and 5.0 per cent respectively) (see tables 6 and 7).

There did not appear to be any trend regarding the day of week on which the bus crash occurred on. However, a larger proportion of fatal bus crashes occurred on Fridays (21.2 per cent), and a larger proportion of hospitalisation bus crashes occurred on Thursdays (20.7 per cent).

Compared with the rest of the week, a higher proportion of Saturday and Sunday hospitalisation bus crashes occurred during the early morning. That is, 14.0 per cent of Saturday bus crashes and 14.6 per cent of Sunday bus crashes occurred in the early morning. Whereas between Monday and Friday the proportion of early morning crashes ranged from a low of 1.3 per cent on Friday to a high of 4.4 per cent on Thursday.

Overall, the most common time of day and day of week for fatal bus crashes were Wednesday mornings and Friday afternoons. For bus hospitalisation crashes, the most common time of day and day of week were Thursday afternoons (see figures 7 and 8).

Table 6:
Fatal bus crashes by time of day and day of week, 1997 to 2000

<i>Day of week</i>	<i>TIME OF DAY</i>								<i>Total crashes</i>	
	<i>Early morning</i>		<i>Morning</i>		<i>Afternoon</i>		<i>Evening</i>			
Monday	2	2.0%	8	8.1%	7	7.1%	1	1.0%	18	18.2%
Tuesday	1	1.0%	4	4.0%	3	3.0%	3	3.0%	11	11.1%
Wednesday	1	1.0%	10	10.1%	3	3.0%	3	3.0%	17	17.2%
Thursday	0	0.0%	4	4.0%	4	4.0%	4	4.0%	12	12.1%
Friday	2	2.0%	5	5.1%	10	10.1%	4	4.0%	21	21.2%
Saturday	3	3.0%	4	4.0%	1	1.0%	5	5.1%	13	13.1%
Sunday	1	1.0%	2	2.0%	3	3.0%	1	1.0%	7	7.1%
Total	10	10.1%	37	37.4%	31	31.3%	21	21.2%	99	100%

Table 7:
Hospitalisation bus crashes by time of day and day of week, 1996 to 1997

<i>Day of week</i>	<i>TIME OF DAY</i>								<i>Total crashes</i>	
	<i>Early morning</i>		<i>Morning</i>		<i>Afternoon</i>		<i>Evening</i>			
Monday	2	0.5%	23	5.2%	32	7.3%	7	1.6%	64	14.5%
Tuesday	2	0.5%	23	5.2%	31	7.0%	8	1.8%	64	14.5%
Wednesday	1	0.2%	18	4.1%	34	7.7%	9	2.0%	62	14.1%
Thursday	4	0.9%	29	6.6%	42	9.5%	16	3.6%	91	20.7%
Friday	1	0.2%	24	5.5%	40	9.1%	10	2.3%	75	17.0%
Saturday	6	1.4%	8	1.8%	20	4.5%	9	2.0%	43	9.8%
Sunday	6	1.4%	12	2.7%	11	2.5%	11	2.5%	41	9.3%
Total	22	5.0%	137	31.1%	210	47.7%	70	15.9%	440	100%

Figure 7:
Fatal bus crashes by time of day and day of week, 1997 to 2000

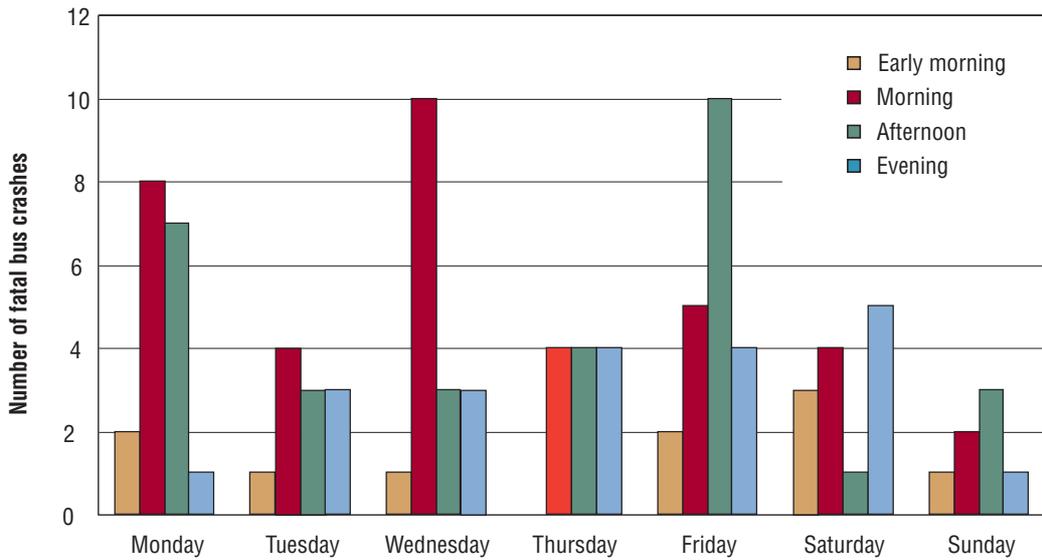
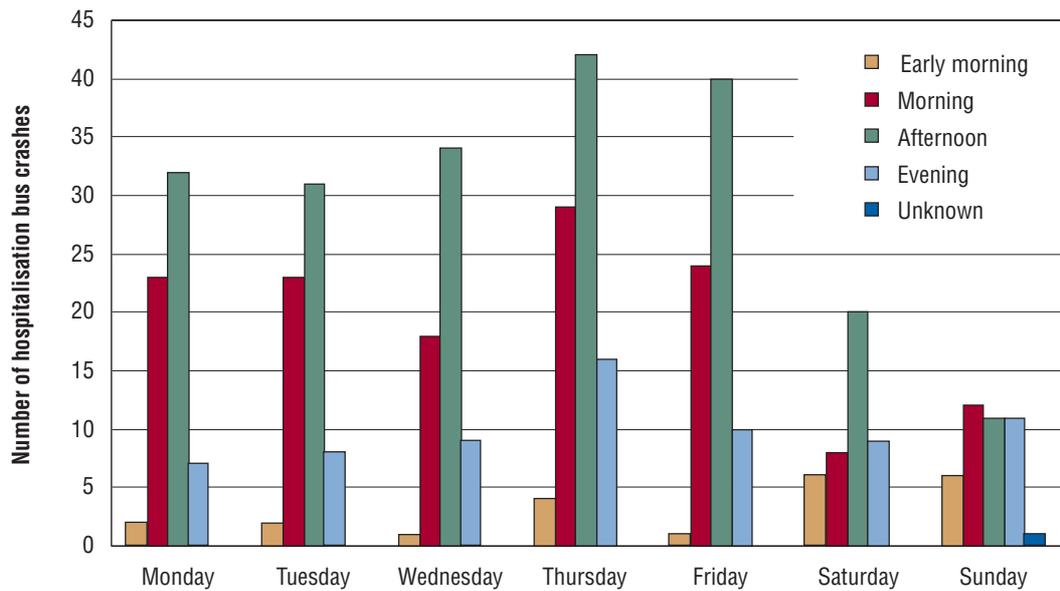


Figure 8:
Hospitalisation bus crashes by time of day and day of week, 1996 to 1997



3.6 Time of week and month

Most fatal and hospitalisation bus crashes occurred during the week (73.7 per cent and 78.2 per cent respectively) rather than on the weekend (weekend starts 6:00pm Friday and ends 5:59am Monday) (see tables 8 and 9). In comparison, a lower proportion of fatal and hospitalisation crashes not involving a bus occurred during the week (59.3 per cent and 63.5 per cent respectively) (see Appendix A).

There did not appear to be any particular seasonal variation or trend regarding the month the bus crash occurred. However more fatal crashes occurred during August (14.1 per cent) and more hospitalisation crashes occurred during March (11.4 per cent) than any other month (see table 8 and 9).

There were more weekday fatal bus crashes in August and more weekend fatal bus crashes in January than any other month (see figure 9). For hospitalisation bus crashes as there were more weekday crashes in October and more weekend crashes in March than any other month (see figure 10).

Table 8:
Fatal bus crashes by time of week and month, 1997 to 2000

<i>Month</i>	<i>TIME OF WEEK</i>				<i>Total crashes</i>	
	<i>Weekday</i>		<i>Weekend^a</i>			
January	5	5.1%	4	4.0%	9	9.1%
February	7	7.1%	2	2.0%	9	9.1%
March	4	4.0%	1	1.0%	5	5.1%
April	9	9.1%	1	1.0%	10	10.1%
May	5	5.1%	3	3.0%	8	8.1%
June	8	8.1%	3	3.0%	11	11.1%
July	7	7.1%	1	1.0%	8	8.1%
August	11	11.1%	3	3.0%	14	14.1%
September	4	4.0%	2	2.0%	6	6.1%
October	6	6.1%	3	3.0%	9	9.1%
November	4	4.0%	1	1.0%	5	5.1%
December	3	3.0%	2	2.0%	5	5.1%
Total	73	73.7%	26	26.3%	99	100%

a. Weekend = 6.00pm Friday to 5.59am Monday

Table 9:
Hospitalisation bus crashes by time of week and month, 1996 to 1997

<i>Month</i>	<i>TIME OF WEEK</i>				<i>Total crashes</i>	
	<i>Weekday</i>		<i>Weekend^a</i>			
January	17	3.9%	8	1.8%	25	5.7%
February	29	6.6%	5	1.1%	34	7.7%
March	36	8.2%	14	3.2%	50	11.4%
April	29	6.6%	10	2.3%	39	8.9%
May	28	6.4%	11	2.5%	39	8.9%
June	28	6.4%	6	1.4%	34	7.7%
July	33	7.5%	10	2.3%	43	9.8%
August	25	5.7%	4	0.9%	29	6.6%
September	29	6.6%	3	0.7%	32	7.3%
October	37	8.4%	8	1.8%	45	10.2%
November	24	5.5%	7	1.6%	31	7.0%
December	29	6.6%	10	2.3%	39	8.9%
Total	344	78.2%	96	21.8%	440	100%

a. Weekend = 6.00pm Friday to 5.59am Monday

Figure 9:
Fatal bus crashes by time of week and month, 1997 to 2000

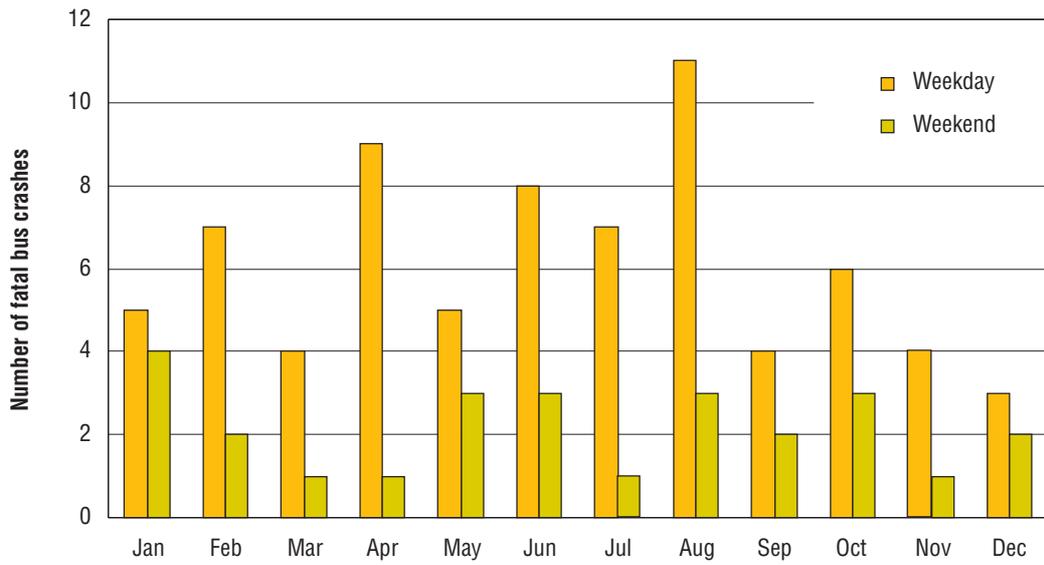
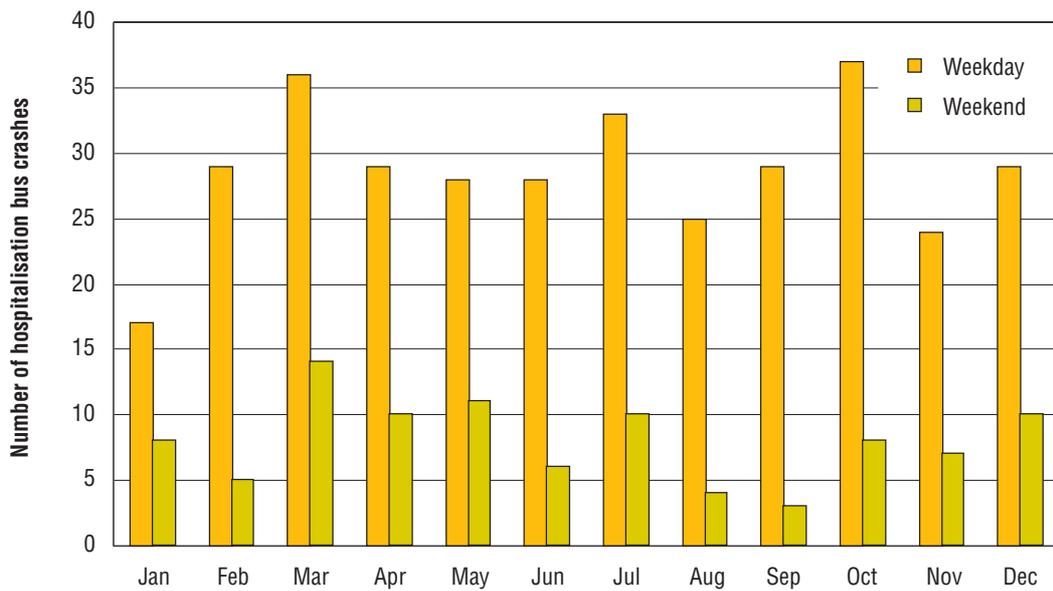


Figure 10:
Hospitalisation bus crashes by time of week and month, 1996 to 1997



4. FATALITIES AND HOSPITALISATIONS

Between 1990 and 1997, 300 people were fatally injured and 2479 people were hospitalised in bus crashes. Bus occupants accounted for 31.0 per cent of all fatalities and 39.9 per cent of all hospitalisations (see table 10).

The majority of bus drivers fatally injured or hospitalised were male (90.9 per cent and 76.9 per cent respectively) and most of these male drivers were aged between 40 and 54 years. In comparison, most bus passengers fatally injured or hospitalised were female (65.4 per cent and 63.3 per cent respectively).

Other pedestrians (not those getting on or off the bus) were the second most likely road user (after bus passengers) to be fatally injured in bus crashes. The highest proportion of these pedestrians were over 70 years in age with nearly equal numbers of male and female fatalities (54.5 per cent and 45.5 per cent respectively).

Of all age groups, more people over 70 years were fatally injured, and most of these people were bus passengers. However in hospitalisation bus crashes, more people aged between 17 to 25 years were hospitalised than any other age group and most of these people were driving the other vehicle in a multiple vehicle crash.

Most school-aged children (5 to 16 years) fatally injured or hospitalised in bus crashes were bus passengers. These fatalities and hospitalisations represent 4.0 per cent of all bus fatalities and 7.3 per cent of all bus hospitalisations (see table 10).

Table 10:
Fatalities and hospitalisations resulting from bus crashes by road user, age and sex, 1990 to 1997

<i>Road user</i>	<i>AGE GROUP, YEARS</i>							<i>Unknown</i>	<i>Total</i>
	<i><5</i>	<i>5-16</i>	<i>17-25</i>	<i>26-39</i>	<i>40-54</i>	<i>55-69</i>	<i>70+</i>		
FATALITIES									
Bus drivers									
Male	0	0	0	1	8	1	0	0	10
Female	0	0	0	0	1	0	0	0	1
All persons	0	0	0	1	9	1	0	0	11
Other drivers									
Male	0	1	21	4	2	8	8	0	44
Female	0	0	4	7	4	1	5	0	21
All persons	0	1	25	11	6	9	13	0	65
Bus passengers									
Male	1	5	5	5	1	7	4	0	28
Female	1	7	1	5	9	11	19	0	53
All persons	2	12	6	10	10	18	23	0	81
Other passengers									
Male	1	0	3	2	2	3	2	0	13
Female	1	1	1	3	5	5	5	0	21
All persons	2	1	4	5	7	8	7	0	34
Pedestrians getting on/off bus									
Male	0	0	0	0	0	0	0	0	0
Female	0	0	0	0	0	1	0	0	1
All persons	0	0	0	0	0	1	0	0	1
Other pedestrians									
Male	6	5	9	11	8	6	12	0	57
Female	0	1	2	4	2	1	10	0	20
All persons	6	6	11	15	10	7	22	0	77
Other/unknown^a									
Male	1	6	11	10	1	0	0	0	29
Female	0	1	0	1	0	0	0	0	2
All persons	1	7	11	11	1	0	0	0	31
Total fatalities	11	27	57	53	43	44	65	0	300
HOSPITALISATIONS									
Bus drivers									
Male	0	1	14	41	49	27	0	1	133
Female	0	0	2	17	17	4	0	0	40
All persons	0	1	16	58	66	31	0	1	173
Other drivers									
Male	0	2	110	93	63	54	32	8	362
Female	0	2	76	70	63	23	22	2	258
Unknown	0	0	0	0	0	0	0	1	1
All persons	0	4	186	163	126	77	54	11	621
Bus passengers									
Male	3	93	70	34	25	21	34	18	298
Female	8	88	57	50	52	79	111	68	513
All persons	11	181	127	84	77	100	145	86	811
Other passengers									
Male	6	23	32	17	6	5	8	7	104
Female	9	23	41	30	17	26	26	15	187
Unknown	0	2	0	0	0	0	0	0	2
All persons	15	48	73	47	23	31	34	22	293
Pedestrians getting on/off bus									
Male	0	1	0	0	2	0	0	0	3
Female	0	0	0	1	0	0	0	0	1
All persons	0	1	0	1	2	0	0	0	4
Other pedestrians									
Male	5	41	39	43	38	42	19	9	236
Female	3	21	23	15	13	20	32	8	135
Unknown	0	0	0	1	0	0	0	1	2
All persons	8	62	62	59	51	62	51	18	373
Other/unknown^a									
Male	1	30	57	53	18	3	1	8	171
Female	0	8	9	9	3	0	1	0	30
Unknown	0	0	0	0	0	0	0	3	3
All persons	1	38	66	62	21	3	2	11	204
Total hospitalisations	35	335	530	474	366	304	286	149	2479

a. Other/unknown road users include bicyclists, motor cyclists, etc.

5. FATALITY AND HOSPITALISATION RATES

Passenger kilometres travelled was used as an exposure measure to compare the relative safety of bus travel with other vehicles. This measure takes into account the number of vehicle occupants and distance travelled by each vehicle type.

Bus travel was clearly the safest mode of road transport with the least number of fatalities and hospitalisations per 100 million passenger kilometres travelled in 1994 and 1997. Furthermore, the rate of bus fatalities and hospitalisations per 100 million passenger kilometres travelled decreased between 1994 and 1997 (see table 11).

Table 11:
Fatalities and hospitalisations per 100 million passenger kilometres travelled^a by vehicle type, 1994 and 1997

<i>Vehicle type</i>	<i>Fatalities</i>				<i>Hospitalisations</i>			
	<i>1994</i>		<i>1997</i>		<i>1994</i>		<i>1997</i>	
	<i>Number</i>	<i>Rate</i>	<i>Number</i>	<i>Rate</i>	<i>Number</i>	<i>Rate</i>	<i>Number</i>	<i>Rate</i>
Passenger Car	1201	0.58	1099	0.49	14490	6.94	14515	6.43
Rigid Truck	46	0.57	49	0.6	453	5.61	376	4.57
Articulated Truck	30	0.65	39	0.78	230	4.98	194	3.89
Bus	20	0.12	11	0.06	139	0.84	85	0.47
Motorcycle	192	11.93	177	10.38	2738	170.07	2529	148.34

a. 100 million passenger kilometres travelled data obtained from the Bureau of Transport Economics.

APPENDIX A:

Bus crash characteristics compared with non-bus crash characteristics

Table 12:
Summary of fatal crashes: speed limit, time of day, crash type and time of week, 1997 to 2000

	<i>Bus involved</i>		<i>No bus involved</i>	
Speed limit				
60 km/h and under	57	57.6%	2072	33.1%
70–90 km/h	19	19.2%	1238	19.8%
100 km/h and over	21	21.2%	2857	45.6%
Unknown	2	2.0%	95	1.5%
Time of day				
Day ^a	68	68.7%	3458	55.2%
Night	31	31.3%	2792	44.6%
Unknown	0	0.0%	12	0.2%
Crash type				
Single	10	10.1%	2530	40.4%
Multiple	55	55.6%	2547	40.7%
Pedestrian	34	34.3%	1185	18.9%
Time of week				
Weekday ^b	73	73.7%	3714	59.3%
Weekend	26	26.3%	2544	40.6%
Unknown	0	0.0%	4	0.1%
Total crashes	99		6262	

a. Day = 6:00am to 5:59pm.

b. Weekday = 6:00am Monday to 5:59pm Friday.

Table 13:
Summary of hospitalisation crashes: speed limit, time of day, crash type and time of week, 1996 to 1997

	<i>Bus involved</i>		<i>No bus involved</i>	
Speed limit				
60 km/h and under	312	70.9%	19981	58.4%
70–90 km/h	46	10.5%	5127	15.0%
100 km/h and over	71	16.1%	8313	24.3%
Unknown	11	2.5%	794	2.3%
Time of day				
Day ^a	347	78.9%	21905	64.0%
Night	92	20.9%	12229	35.7%
Unknown	1	0.2%	81	0.2%
Crash type				
Single	70	15.9%	13223	38.6%
Multiple	270	61.4%	16039	46.9%
Pedestrian	100	22.7%	4953	14.5%
Time of week				
Weekday ^b	344	78.2%	21723	63.5%
Weekend	96	21.8%	12469	36.4%
Unknown	0	0.0%	23	0.1%
Total crashes	440		34215	

a. Day = 6:00am to 5:59pm.

b. Weekday = 6:00am Monday to 5:59pm Friday.

Appendix B:

Glossary of terms

Bus

The definition of a bus differs slightly for each State and Territory, however a bus is generally defined as a vehicle that is built to seat 9 or more people (including the driver). Buses include scheduled urban buses, shuttle buses, long distance tourist coaches and other types of buses. They can be private or commercial vehicles.

Bus crash

Any crash that involves at least one bus.

Bus occupant

Includes bus drivers, bus passengers, and pedestrians boarding or alighting from the bus.

Coach

Includes long distance, single and double decker buses.

Day of week

Whether the crash occurred during the week (6.00am Monday to 5:59pm Friday) or the weekend (6.00pm Friday to 5:59am Monday).

DCA (Definition for Classifying Accidents)

This is the set of rules and definitions used to classify road crashes.

Driver intent

This is the intended rather than the actual movement of the vehicle before the crash.

Fatal crash

A road crash that resulted in the death of a person within 30 days as a result of injuries sustained in the crash.

Fatality

The death of a person within 30 days as a result of injuries sustained in a road crash.

Hospitalisation

A person admitted to hospital as a result of injuries sustained in the crash.

Hospitalisation crash

A road crash in which at least one person was classified by police as being admitted to hospital (to receive medical treatment) from resulting injuries but in which there were no fatalities.

Multiple vehicle crash

A crash involving two or more vehicles and no pedestrians.

Pedestrian crash

A crash involving at least one pedestrian and any number of vehicles.

Point of impact

The impact on the vehicle that caused the fatality. It is not necessarily the first impact.

Single vehicle crash

A crash involving only one vehicle and no pedestrians.

Shuttle bus

Includes small buses that usually have less than 20 seats.

Time of day

Whether the crash occurred during the daytime (6:00am to 5:59pm) or during the night time (6:00pm to 5:59am). The day can be further divided into early morning (midnight to 5:59am), morning (6:00am to 11:59am), afternoon (midday to 5:59pm), and evening (6:00pm to 11:59pm).

Urban bus

Includes urban scheduled buses and other short distance buses such as buses operated by community organisations.

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