



Australian Government

**Australian Institute of
Health and Welfare**

*Better information and statistics
for better health and wellbeing*

INJURY RESEARCH AND STATISTICS SERIES

Number 53

Serious injury due to land transport accidents, Australia 2006–07

Geoff Henley and James E Harrison

December 2009

Australian Institute of Health and Welfare

Canberra

Cat. no. INJCAT 129

The Australian Institute of Health and Welfare is Australia's national health and welfare statistics and information agency. The Institute's mission is better information and statistics for better health and wellbeing.

© Australian Institute of Health and Welfare 2009

This work is copyright. Apart from any use as permitted under the *Copyright Act 1968*, no part may be reproduced without prior written permission from the Australian Institute of Health and Welfare. Requests and enquiries concerning reproduction and rights should be directed to the Head, Media and Communications Unit, Australian Institute of Health and Welfare, GPO Box 570, Canberra ACT 2601.

This publication is part of the Australian Institute of Health and Welfare's Injury Research and Statistics Series. A complete list of the Institute's publications is available from the Institute's website <www.aihw.gov.au>. Electronic copies of publications in this series can be downloaded from the Research Centre for Injury Studies website <www.nisu.flinders.edu.au>

ISSN 1444-3791

ISBN 978 1 74024 985 0

Suggested citation

AIHW: Henley G and Harrison JE 2009. Serious injury due to land transport accidents, Australia 2006–07. Injury research and statistics series no. 53. Cat. no. INJCAT 129. Canberra: AIHW.

Australian Institute of Health and Welfare

Board Chair

Hon. Peter Collins, AM, QC

Director

Penny Allbon

Any enquiries about or comments on this publication should be directed to:

Geoff Henley

Research Centre for Injury Studies

Flinders University

GPO Box 2100

Adelaide SA 5001

Phone: (08) 8201 7602

Email: Geoffrey.Henley@flinders.edu.au

Published by the Australian Institute of Health and Welfare

Proof reading and layout editing by Stacey Avefua

**Please note that there is the potential for minor revisions of data in this report.
Please check the online version at <www.aihw.gov.au> for any amendments.**

Contents

Acknowledgments.....	iv
Abbreviations.....	v
Summary	vi
1 Introduction.....	1
Overview of all serious injury due to transport	1
2 Serious injury due to land transport in 2006-07.....	3
State and territory of usual residence	4
Age and sex distribution.....	6
Circumstances of serious injury for young children aged 0-4 years	7
Circumstances of serious injury for children aged 5-17 years	8
Circumstances of serious injury for adults aged 18 years and older	10
Road user group.....	12
Mechanism of injury.....	13
3 Serious injury due to road vehicle traffic crashes, Australia, 2006-07.....	17
Age and sex distribution.....	18
Mechanism of injury.....	21
Road user group.....	21
Vehicle type by number of registered vehicles and kilometres travelled.....	23
Road user group by state and territory of residence.....	27
High threat to life injury by road user group and state and territory of residence	32
Remoteness area of residence.....	34
Length of stay in hospital.....	35
Length of stay in hospital by road user group.....	37
Body part injured	37
Length of stay in hospital by body part injured	39
4 Trends in serious injury due to road vehicle traffic crashes from 2000-01 to 2006-07 ..	43
Trends in serious injury by state and territory of residence	47
Trends in serious injury with a high threat to life due to road vehicle traffic crashes from 2002-03 to 2006-07.....	49
Trends in serious injury with a high threat to life by state and territory of residence	52
Appendix 1: Data issues	54
References.....	59
List of tables	60
List of figures	62

Acknowledgments

Thanks to Jesia Berry (Adelaide University) for her assistance in some of the technical aspects of this report.

The AIHW acknowledges the financial and project support for this publication provided by the Australian Government Department of Infrastructure, Transport, Regional Development and Local Government (DITRD LG).

Abbreviations

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
ARIA	Accessibility/Remoteness Index of Australia
ASGC	Australian Standard Geographical Classification
DITRDLG	Department of Infrastructure, Transport, Regional Development and Local Government
GISCA	National Key Centre for Social Applications of Geographic Information Systems
ICD	International Classification of Diseases
ICD-10-AM	International Classification of Diseases, 10th Revision, Australian Modification
ICISS	ICD-based Injury Severity Score
LOS	Length of Stay
NHMD	National Hospital Morbidity Database
SLA	Statistical Local Area
SRR	Standardised Rate Ratio

Summary

Land transport

Land transport accidents accounted for 0.7% of all hospitalisations and 11.4% of all hospitalisations due to injury in Australia during 2006–07.

There were 52,066 persons seriously injured due to land transport injury, resulting in 232,290 patient days in hospital and a mean length of stay of 4.5 days.

Of those seriously injured, 63.0% ($n = 32,777$) were due to traffic (on-road) accidents, while 26.2% ($n = 13,639$) were due to non-traffic (off-road) accidents. For 10.9% ($n = 5,650$) of serious injury cases, the location was not specified.

Males were 2.2 times more likely than females to be seriously injured as a result of a land transport accident, while just over 50% of those seriously injured were aged less than 30 years.

When looking at mode of transport, car occupants accounted for 34.8% ($n = 18,128$) of all serious injury cases, followed by motorcyclists (26.4%, $n = 13,726$) and pedal cyclists (17.8%, $n = 9,246$).

For traffic (on-road) accidents, 49.5% of those seriously injured were car occupants, 22.3% were motorcyclists and 14.6% were pedal cyclists, while for non-traffic (off-road) accidents, 43.4% were motorcyclists, 30.6% were pedal cyclists and only 9.5% were car occupants.

Road vehicle traffic crashes

For those seriously injured due to traffic (on-road) accidents, 28.2% were judged to be suffering from injuries which were considered to be high threat to life.

When looking at injury rates in relation to the number of registered vehicles, motorcyclists had by far the highest rate of 1,430 serious injury cases per 100,000 registered vehicles. This was more than 10 times the rate for car occupants.

When looking at injury rates in relation to the number of kilometres travelled, motorcyclists also had by far the highest rate of 385 serious injury cases per 100 million kilometres travelled. This was more than 37 times the rate for car occupants.

Trends

For the period from 2000-01 to 2006-07, there was an increase of 47% in age-standardised rates of serious injury for motorcyclists and an increase of 47% in rates for pedal cyclists. All other modes of transport recorded only relatively small changes in rates over this period. A similar pattern was seen for those seriously injured with high threat to life injuries.

Rates for the Northern Territory remained higher than those for all other jurisdictions over the entire period from 2000-01 to 2006-07. The difference in rates between the Northern Territory and other jurisdictions over this period was even more pronounced when only high threat to life cases were considered.

1 Introduction

The primary purpose of this publication is to present estimates of the number of persons seriously injured in Australia due to transport accidents that occurred on land in the one-year period 2006–07 (Table 1.2), the latest year for which data were available at the time this report was prepared.

The main focus is on accidents involving road vehicles travelling on public roads (called travelling in ‘traffic’). This is the subject of Chapters 3 and 4. Road vehicles include motor vehicles, pedal cycles and other road vehicles such as trams, animals and animal-drawn vehicles (when they travel on the road). Trends in non-fatal injury rates in road crashes are examined over a seven-year period, 2000–01 to 2006–07 (Chapter 4).

Serious injury is defined for this report as an injury which results in the person being admitted to hospital, and subsequently discharged alive either on the same day or after one or more nights stay in a hospital bed (i.e. deaths in hospital are excluded). The definition of transport injury used in this report includes only unintentional injuries. Hence, cases given an external cause of intentional self-harm, assault or undetermined intent are excluded. Readers should consult the appendix for notes on the methodology employed and for the meaning of technical terms used in this report such as ‘separations’.

This report also provides analysis on cases of serious injury resulting from road traffic crashes which are defined as being high threat to life. These cases are selected on the basis of having an ICD-based Injury Severity Score (ICISS) of less than 0.941. ICISS is a measure of injury severity based upon a patient's injury diagnoses. The ICISS measure for this report is based upon ICD-10-AM coding and was derived using Australian hospital separations data (Stephenson et al. 2004). More detail on the ICISS method is provided in the appendix of this report.

Overview of all serious injury due to transport

The main topic of this report is serious injury due to land transport accidents. Table 1.1 puts this topic into the context of serious injury due to all forms of transport accidents. During 2006–07 there was an estimated 53,553 serious injury cases due to some form of transport accident. Most transport serious injury cases (97.2%; $n = 52,066$) were known to have involved land transport. Almost two-thirds of those seriously injured in a land transport accident were injured in traffic conditions (i.e. on public roads).

Table 1.1: Mode of transport for serious injury, Australia 2006–07

Mode of transport	Count [*]	Per cent	Rate [‡]
Car occupant	18,128	33.9	86.5
traffic	16,234	30.3	77.5
non-traffic	1,291	2.4	6.2
Motorcyclist	13,726	25.6	66.7
traffic	7,303	13.6	35.3
non-traffic	5,920	11.1	28.9
Pedal cyclist	9,246	17.3	45.3
traffic	4,789	8.9	23.3
non-traffic	4,180	7.8	20.6
Pedestrian	3,845	7.2	18.4
traffic	2,824	5.3	13.5
non-traffic	656	1.2	3.1
Occupant of pick-up truck or van	491	0.9	2.4
traffic	323	0.6	1.5
non-traffic	134	0.3	0.6
Occupant of heavy transport vehicle	793	1.5	3.8
traffic	469	0.9	2.3
non-traffic	203	0.4	1.0
Bus occupant	463	0.9	2.1
traffic	210	0.4	1.0
non-traffic	74	0.1	0.3
Animal rider or occupant of animal-drawn vehicle	3,262	6.1	15.8
Occupant of special all-terrain or off-road vehicle	829	1.5	4.0
Occupant of three-wheeled motor vehicle	56	0.1	0.3
Occupant of a tram	65	0.1	0.3
Occupant of a train	116	0.2	0.5
Occupant of special industrial vehicle	147	0.3	0.7
Occupant of special agricultural vehicle	181	0.3	0.8
Occupant of special construction vehicle	64	0.1	0.3
Other and unspecified land transport	654	1.2	3.1
Total (land transport)	52,066	97.2	251.0
Occupant of watercraft	882	1.6	4.2
Occupant of aircraft	118	0.2	0.6
Other and unspecified transport	487	0.9	2.4
Total (all transport)	53,553	100.0	259.8

Notes

Shading denotes the 3 highest figures for a column. 'Mode of transport' here means the vehicle the person was travelling in at the time of being injured in a transport accident. 'Other and unspecified' includes V87, V88, V89, and V98 for ICD-10-AM A 'special all-terrain or off-road motor vehicle' refers only to such vehicles that are not registrable for on-road use and does not include registrable 4WDs (e.g. Pajeros) which are included under 'car occupants'. A traffic accident is any vehicle accident occurring on a public road [i.e. originating on, terminating on, or involving a vehicle partially on the road]. A non-traffic accident is any accident that occurs entirely at any place other than a public road

^{*} Totals for road user groups stratified by traffic and non-traffic include cases that are unspecified as to whether traffic or non-traffic.

[‡] Per 100,000 population, adjusted by direct standardisation to the Australian population in June 2001.

2 Serious injury due to land transport in 2006–07

This section examines non-fatal injury due to road and rail transport. Road and rail transport includes traffic (occurring on a public road), non-traffic and unspecified as to whether traffic or non-traffic.

The number of persons seriously injured during 2006–07 was 52,066 (Table 2.1). For road traffic crashes, twice as many males than females were seriously injured while for non-traffic (off-road) crashes, almost five times as many males than females were seriously injured.

There was a total of 7,602,917 hospital separations during 2006–07 from public, private and psychiatric hospitals in Australia corresponding to a total of 24,924,565 patient days (AIHW 2008). Land transport accidents accounted for 0.8% of these separations and 11.4% of all injury-related hospital separations (Table 2.2).

During 2006–07, there were 2,040,088 injury-related patient days in hospital, with a mean length of stay of 4.4 days. There were 232,290 land transport-related patient days, with a mean length of stay of 4.5 days. They accounted for 0.9% of all patient days in Australia and 11.4% of all injury-related patient days.

In 32% of serious injury cases, the injured person was discharged on the same day as they were admitted (33% for traffic and 32% for non-traffic). Nearly two-thirds (63%) of serious injury cases due to land transport accidents occurred in traffic conditions, that is, they resulted from road vehicle traffic crashes (see Section 3).

The age-standardised rate of land transport serious injury cases was 251 per 100,000 population. The male: female age-standardised rate ratio was 2.2:1.0, indicating that, after accounting for any difference in age composition, more than twice as many males as females were seriously injured as a result of land transport injury, 345 per 100,000 population compared with 156 per 100,000 population.

Table 2.1: Land transport injury, Australia 2006–07

Seriously injured[†]	Males	Females	Persons
Road traffic crashes	21,741	11,036	32,777
Non-traffic crashes	11,292	2,346	13,639 ^(a)
Unspecified as to whether traffic or non-traffic	2,692	2,958	5,650
Total	35,725	16,340	52,066^(a)

[†] In this report 'seriously injured' means admitted to hospital due to injury (see Data issues 'Serious injury', p 54).

(a) Includes one case where sex is missing or indeterminate.

Table 2.2: Key indicators for serious land transport injury, Australia 2006–07

Indicator	Persons*				
	Males	Females	Traffic	Non-traffic	Total*
Seriously injured[†]#					
Person admitted to hospital ^(a)	35,725	16,340	32,777	13,639	52,066 [§]
Percentage of all hospital separations	1.1	0.4	0.5	0.2	0.8
Percentage of all hospital separations due to injury	13.8	8.3	7.1	3.0	11.4
Same day hospitalisations	11,376	5,519	10,754	4,377	16,896 [§]
Mean length stay in hospital (days) [‡]	4.4	4.5	5.0	3.4	4.5
Total patient days (including same day and deaths in hospital)	158,505	73,782	162,796	46,907	232,290 [§]
Crude rate/100,000 population**	344.6	155.8	157.2	65.4	249.7
Age-standardised rate/100,000 population***	344.8	155.7	157.4	66.5	251.0

[†] Includes cases where Principal Diagnosis was coded to ICD-10-AM S00–T98.

* Includes cases where sex is missing or indeterminate.

[§] This includes 5,650 hospital cases, 1,765 same day hospitalisations and 22,587 total patient days where it is unspecified as to whether the crash occurred in traffic or non-traffic conditions.

** Using population denominators in December 2006.

*** Adjusted by direct standardisation to the Australian population in June 2001.

[‡] This is the average number of days a person is likely to stay in hospital when seriously injured. Refer to the Data issues section of this report for details on how mean length of stay is calculated.

In this report 'seriously injured' means admitted to hospital due to injury (see Data issues 'Serious injury').

State and territory of usual residence

Nationally, and in each jurisdiction, the rates of serious injury due to land transport accidents were highest at ages 15–24 years (Table 2.3).

The Northern Territory had the highest age-standardised rate of serious injury due to land transport accidents (343 per 100,000 population) and Western Australia had the lowest rate (210 per 100,000 population). Of the 776 persons seriously injured in the Northern Territory, 243 (31.3%) were Aboriginal and Torres Strait Islanders. Transport injury among Aboriginal and Torres Strait Islander Australians during 2005–06 has been the subject of a previous report in this series (Berry et al. 2007).

(a) In total, there were 57,622 admissions to hospital for land transport injury for an estimated 52,410 persons, of whom 344 (0.7%) died while in hospital. These deaths are included in estimates of fatal transport injury provided elsewhere by organisations such as the Department of Infrastructure, Transport, Regional Development and Local Government (DITRD LG) and are omitted from the seriously injured counts in Table 2.1 and throughout Section 2 in order to avoid double-counting. The estimate of total patient days includes separations in which the person died in hospital.

Table 2.3: Land transport – age-specific rates of serious injury per 100,000 population by state and territory of residence, Australia 2006–07

State and Territory	Age group (years)															All ages (crude)	Age Std*			
	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74			75–79	80–84	85+
NSW	60.0	182.0	319.9	458.4	405.1	299.2	267.1	255.2	227.1	185.0	173.7	153.3	146.0	146.4	153.0	199.9	236.4	202.1	236.0	237.4
Vic	54.0	163.0	322.4	464.1	435.2	339.0	312.7	262.6	243.5	207.7	203.4	178.2	148.1	135.8	147.3	195.9	228.6	204.3	250.7	251.1
Qld	77.5	240.3	450.5	595.2	491.5	351.2	290.4	283.3	252.5	194.0	183.5	175.4	158.5	142.5	130.9	150.9	193.2	191.9	276.9	277.1
WA	63.2	131.1	273.8	453.3	404.0	327.7	214.4	212.8	181.1	144.8	126.8	127.0	123.8	101.9	128.3	125.4	207.9	197.1	209.4	209.8
SA	54.2	175.2	346.4	508.2	419.9	305.8	311.9	238.3	189.1	188.4	165.9	145.2	118.0	131.3	120.2	147.9	215.4	173.4	232.7	237.4
Tas	82.1	192.1	424.5	563.9	498.6	368.4	286.6	299.8	233.1	164.7	149.6	118.2	135.0	103.0	100.6	153.4	64.8	159.9	247.7	258.0
ACT	43.5	146.6	386.0	412.9	428.3	306.4	229.3	243.4	226.5	171.0	207.9	179.7	174.3	233.1	143.5	129.9	167.3	112.2	244.0	236.4
NT	113.3	180.5	400.3	799.8	514.8	423.4	439.1	467.0	428.7	325.5	227.9	240.9	93.8	284.3	244.0	0.0	0.0	0.0	370.5	343.2
National	63.4	183.9	350.9	499.8	445.4	334.1	286.9	263.2	233.9	190.7	180.5	162.7	147.0	140.3	143.4	178.2	217.5	195.6	249.7	251.0

Note: Rates are age-specific rates per 100,000 population unless otherwise stated. Case numbers and population denominators grouped by state and territory of usual residence.

* Adjusted by direct standardisation to the Australian population in June 2001.

Age and sex distribution

Over half (51%; $n = 26,691$) of the persons seriously injured in a land transport accident were less than 30 years of age. Young people aged 15–24 years represented over a quarter (26%) of all land transport-related serious injury cases (Table 2.4).

Table 2.4: Serious injury due to land transport by age group, Australia 2006–07

Age group	Males		Females		Persons	
	Count	Per cent	Count	Per cent	Count	Per cent
0–4 years	535	1.5	301	1.8	836	1.6
5–14 years	5,270	14.8	2,111	12.9	7,381	14.2
15–24 years	9,839	27.5	3,871	23.7	13,711	26.3
25–44 years	12,119	33.9	4,543	27.8	16,662	32.0
45–64 years	5,782	16.2	3,153	19.3	8,935	17.2
65+ years	2,180	6.1	2,361	14.4	4,541	8.7
Total	35,725	100.0	16,340	100.0	52,066^(a)	100.0

(a) Includes cases where sex is missing or indeterminate.

Circumstances of serious injury for young children aged 0–4 years

Table 2.5 shows the place of occurrence and road user group for children aged 0–4 years seriously injured in a land transport accident. For more than one-third of the records ($n = 316$), the place of occurrence was not specified, so results should be interpreted with caution (proportions could be underestimates or the distribution of cases across the different circumstances might not be the same if the circumstances of all the cases were known). Of these, 174 were a non-traffic accident, 71 were a traffic accident and 71 were unspecified as to whether they were traffic or non-traffic. Almost 30% of the seriously injured children aged 0–4 years were travelling in a car, just under one-third were pedal cyclists (32.2%) and almost one-fifth (19.0%) were pedestrians. Thirty-seven per cent ($n = 311$) of young children aged 0–4 years were seriously injured in a transport accident that occurred on a roadway, street, highway, footpath or cycleway and 17.7% were seriously injured in a transport accident that occurred at a home.

Of the 51 children injured in the driveway of a home, 37 were pedestrians and 28 of these cases involved a collision with a motor vehicle. None of the seven pedal cyclists who were seriously injured in a driveway had been involved in a collision with a motor vehicle. Of the 89 children injured at another or unspecified place at a home, 7 were pedestrians and five of these cases involved a collision with a motor vehicle, 64 were pedal cyclists, with only one of these cases involving a collision with a motor vehicle (although there were 17 cases where the accident type was unspecified).

Table 2.5: Place of occurrence and road user group for young children aged 0–4 years seriously injured due to a land transport accident, Australia 2006–07

Place	Count	Per cent	Road user group			
			Pedestrian	Pedal cycle	Car	Other
Driveway to home	51	6.1	37	7	*	*
Other and unspecified place in home	89	10.6	7	64	5	13
Street and highway	311	37.2	73	22	200	16
<i>Roadway</i>	293	35.0	66	19	193	15
<i>Footpath next to road</i>	7	0.8	*	*	*	*
<i>Other and unspecified street and highway</i>	11	1.3	*	*	7	*
Farm	20	2.4	*	*	*	16
School	6	0.7	*	6	*	*
Other specified place of occurrence	43	5.1	15	12	*	15
Unspecified place of occurrence	316	37.8	25	157	35	99
Total	836	100.0	159	269	248	160

* Small counts are omitted ($n < 5$).

Circumstances of serious injury for children aged 5–17 years

Table 2.6 shows the place of occurrence and road user group for children aged 5–17 years seriously injured in a land transport accident in Australia during the one-year period 2006–07. For 45% ($n = 5,075$) of the records, the place of occurrence was not specified, so results should be interpreted with caution. Of these, 2,653 were a non-traffic accident, 1,518 were a traffic accident and 904 were unspecified as to whether they were traffic or non-traffic. Thirty-nine per cent of the seriously injured children aged 5–17 years were pedal cyclists, over a quarter were motorcyclists (26.7%), nearly a sixth were travelling in a car (16.3%), 8.3% were animal-riders or occupants of an animal-drawn vehicle and 5.7% were pedestrians. Injuries to motorcyclists and animal riders were more frequently recorded as occurring at off-road places than on streets and highways.

Almost a third (33.1%, $n = 3,773$) of children aged 5–17 years were seriously injured in a land transport accident on a roadway, street, highway, footpath or cycleway. Of these, a collision with a motor vehicle accounted for 648 (39.1%) of the 1,657 car occupants, 242 (22.5%) of the 1,077 pedal cyclists, 434 (93.3%) of the 465 pedestrians and 97 (21.8%) of the 444 motorcyclists. Non-collision transport accidents accounted for 606 (56.3%) of the 1,077 pedal cyclists and 211 (47.5%) of the 444 motorcyclists.

Table 2.6: Place of occurrence and road user group for young children aged 5–17 years seriously injured due to a land transport accident, Australia 2006–07

Place	Count	Per cent	Road user group						
			Pedestrian	Pedal cycle	Car	Motorcycle	Animal or animal-drawn vehicle	Bus	Other
Driveway to home	66	0.6	19	27	6	10	*	*	*
Other and unspecified place in home	438	3.8	12	180	12	161	42	0	31
Street and highway	3,773	33.1	465	1,077	1,657	444	14	26	90
<i>Roadway</i>	3,442	30.2	440	906	1,593	397	9	22	75
<i>Footpath next to road</i>	113	1.0	12	80	7	*	*	*	*
<i>Cycleway</i>	23	0.2	0	22	0	*	0	0	0
<i>Other specified public highway, street or road</i>	71	0.6	7	11	27	17	*	*	5
<i>Unspecified public highway, street or road</i>	124	1.1	6	58	30	20	*	0	8
Parking place	15	0.1	*	8	*	*	0	0	*
Farm	382	3.4	6	10	25	224	69	0	48
School	46	0.4	5	30	*	*	6	0	*
Sports and athletics area	950	8.3	22	354	7	437	103	0	27
Forest, beach, area of water and other specified countryside	270	2.4	*	61	9	163	9	0	28
Other specified place of occurrence	387	3.4	22	186	18	108	32	0	21
Unspecified place of occurrence	5,075	44.5	95	2,470	120	1,494	673	*	220
Total	11,402	100.0	650	4,403	1,855	3,044	949	29	472

* Small counts are omitted (n<5). In some instances, counts equal to zero or counts >= 5 have also been omitted.

Circumstances of serious injury for adults aged 18 years and older

Table 2.7 shows the place of occurrence and road user group for adults aged 18 years and older seriously injured in a land transport accident in Australia during the one-year period 2006–07. For 21% ($n = 8,221$) of the records, the place of occurrence was not specified, so results should be interpreted with caution. Of these, 3,141 were a non-traffic accident, 2,972 were a traffic accident and 2,108 were unspecified as to whether they were traffic or non-traffic. Forty per cent of the seriously injured adults aged 18 years and older were travelling in a car, over a quarter were motorcyclists (26.7%), 11.5% were pedal cyclists, 7.6% were pedestrians and 5.7% were animal-riders or occupants of an animal-drawn vehicle.

Two-thirds (65.9%, $n = 26,254$) of adults aged 18 years and older were seriously injured in a land transport accident on a roadway, street, highway, footpath or cycleway. Of these, a collision with a motor vehicle accounted for 7,244 (49.5%) of the 14,642 car occupants, 1,770 (33.4%) of the 5,292 motorcyclists, 853 (33.3%) of the 2,558 pedal cyclists and 2,003 (89.8%) of the 2,230 pedestrians. Non-collision transport accidents accounted for 2,110 (39.9%) of the 5,292 motorcyclists and 1,140 (44.6%) of the 2,558 pedal cyclists.

Table 2.7: Place of occurrence and road user group for adults aged 18 years and older seriously injured due to a land transport accident, Australia 2006-07

Place	Count	Per cent	Road user group						
			Pedestrian	Pedal cycle	Car	Motorcycle	Animal or animal-drawn vehicle	Heavy transport vehicle	Other
Driveway to home	292	0.7	106	13	102	52	0	5	14
Other and unspecified place in home	510	1.3	58	28	64	182	115	*	60
Street and highway	26,254	65.9	2,230	2,558	14,642	5,292	43	495	994
<i>Roadway</i>	24,812	62.3	2,050	2,248	14,112	5,011	35	477	879
<i>Footpath next to road</i>	470	1.2	117	103	124	56	*	*	61
<i>Cycleway</i>	125	0.3	5	105	6	6	*	*	*
<i>Other specified public highway, street or road</i>	390	1.0	34	37	188	100	*	8	21
<i>Unspecified public highway, street or road</i>	457	1.1	24	65	212	119	*	*	31
Parking place	148	0.4	67	11	56	11	0	0	*
Farm	1,038	2.6	20	*	60	489	243	*	217
School	13	0.0	*	*	*	*	*	*	*
Sports and athletics area	1,331	3.3	21	141	69	688	343	*	67
Forest, beach, area of water and other specified countryside	908	2.3	13	133	35	590	46	*	91
Other specified place of occurrence	1,113	2.8	142	136	140	302	76	68	249
Unspecified place of occurrence	8,221	20.6	377	1,548	856	3,019	1,402	186	833
Total	39,828	100.0	3,035	4,574	16,025	10,626	2,272	765	2,530

* Small counts are omitted (n<5). In some instances, counts equal to zero or counts >= 5 have also been omitted.

Road user group

Table 2.8 shows the number of serious injury cases by road user group and state and territory in which the person usually lived. The three most common road user groups involved in serious injury were car occupants (34.8% of cases), motorcyclists (26.4%) and pedal cyclists (17.8%). Over three-quarters (78%) of the persons seriously injured resided in the three most populous jurisdictions: New South Wales, Victoria and Queensland. These three jurisdictions constitute 77.5% of the population of Australia.

Table 2.8: Land transport – serious injury cases by road user group and state or territory of usual residence, Australia 2006–07

Road user group	Serious injury case counts											Total				
	Car	Motor-cycle	Pedal cycle	Pedestrian	Animal or animal-drawn vehicle	Heavy transport vehicle	Pick-up truck or van	Special all-terrain or off-road vehicle†	Bus	Special industrial, agricultural or construction vehicle	Train		Three-wheeled motor vehicle	Tram	Unknown	
State and territory																
NSW	5,782	4,071	2,809	1,394	1,031	229	135	171	187	98	44	20	6	200	16,177	
VIC	4,847	2,961	2,594	989	715	198	118	113	106	81	45	14	46	122	12,949	
QLD	3,152	3,762	1,975	635	993	213	90	239	59	116	15	9	6	175	11,439	
WA	1,532	1,224	729	288	154	67	56	141	48	33	5	*	*	73	4,357	
SA	1,486	891	569	275	155	55	43	68	38	44	*	6	*	29	3,667	
TAS	423	332	207	75	68	15	13	36	8	15	*	*	*	25	1,218	
ACT	300	206	200	44	39	*	6	5	9	*	*	*	*	5	821	
NT	293	186	96	63	62	*	21	38	*	*	*	*	*	8	776	
Missing	312	92	67	82	45	6	9	18	7	*	0	*	*	16	659	
Total†	18,128	13,726	9,246	3,845	3,262	793	491	829	463	392	116	56	65	654	52,066	

Notes

‡A 'special all-terrain or off-road motor vehicle' refers only to such vehicles that are not registrable for on-road use and does not include registrable 4WD passenger vehicles, which are included under 'Car'.

† Total includes other territories such as Cocos (Keeling) Islands, Christmas Island and Jervis Bay (n<5).

* Small counts are omitted (n<5). In some instances, counts equal to zero or counts >= 5 have also been omitted.

Mechanism of injury

Many injuries result from a collision between a person's mode of transport and another vehicle, or collision with some other object. In this report, the other vehicle or object is called the counterpart. The counterpart in land transport crashes that result in the serious injury of Australians is specified in Tables 2.9 (for events recorded as occurring in traffic), 2.10 (for events recorded as occurring in non-traffic) and 2.11 (for instances where it is unspecified as to whether it is traffic or non-traffic)². Note that ICD-10-AM does not allow 'heavy transport vehicle' to be distinguished from 'bus' as a counterpart, nor 'pedestrian' to be disaggregated from 'animal'.

Seven types of land transport accidents accounted for over half (50.9%) of all serious injury cases (whether traffic, non-traffic or unspecified). They were:

1. Car occupant injured on a public road in a collision with a car, pick-up truck or van (14.2%),
2. Motorcyclist injured off-road in a non-collision transport accident (8.0%),
3. Car occupant injured on a public road in a collision with a fixed or stationary object (7.5%),
4. Pedal cyclist injured off-road in a non-collision transport accident (6.1%),
5. Car occupant injured on a public road in a non-collision transport accident (5.8%),
6. Motorcyclist injured on a public road in a non-collision transport accident (4.7%), and
7. Pedestrian injured on a public road in a collision with a car, pick-up truck or van (4.6%).

(2) The codes provided in the ICD-10-AM for injuries to animal riders and occupants of animal-drawn vehicles do not allow traffic/non-traffic to be recorded. Hence, all cases of these types are in Table 2.10.

Table 2.9: Traffic serious injury — mechanism for persons seriously injured in land transport accidents, Australia 2006–07

Injured person	Counterpart in collision										Total
	Car, pick-up truck or van	2- or 3-wheeled motor vehicle	Pedal cycle	Pedestrian or animal	Heavy transport vehicle or bus	Train	Other non-motor vehicle	Fixed or stationary object	Non-collision transport accident†	Other and unspecified transport accidents	
Car occupant	7,411	35	11	110	580	16	28	3,908	3,026	1,109	16,234
Motorcyclist	1,722	129	9	86	70	*	22	716	2,451	2,097	7,303
Pedal cyclist	1,064	9	132	27	48	*	*	199	1,605	1,700	4,789
Pedestrian	2,403	62	42	5	98	21	9	0	0	184	2,824
Occupant of pick-up truck or van	87	*	0	7	27	*	*	63	114	21	323
Occupant of heavy transport vehicle	59	*	0	6	58	6	0	45	251	42	469
Bus occupant	59	*	*	*	10	*	0	13	99	25	210
Animal rider or occupant of animal-drawn vehicle	*	*	0	0	0	0	0	0	*	*	*
Occupant of special all-terrain or off-road vehicle	*	0	0	0	0	*	0	0	0	94	94
Occupant of three-wheeled motor vehicle	*	0	*	0	*	0	0	*	*	8	19
Occupant of a tram	0	0	0	0	0	0	0	0	0	*	*
Occupant of a train	0	0	0	0	0	0	0	0	0	9	9
Occupant of special agricultural or industrial or construction vehicle	0	0	0	0	0	0	0	0	0	42	42
Unknown	0	0	0	0	0	0	0	0	49	409	458
Total	12,809	238	195	245	892	49	62	4,945	7,599	5,743	32,777

Notes

Shading denotes categories included in the seven most common types of land transport accidents resulting in serious injury as listed in the 'mechanism of injury' section.

Includes cases where Principal diagnosis was coded to ICD-10-AM S00–T98.

A 'special all-terrain or off-road vehicle' refers only to such vehicles that are no longer registrable for on-road use and does not include registrable 4WD passenger vehicles, which are included under 'car occupants'.

* Small counts are omitted (n<5). In some instances, counts equal to zero have also been omitted.

† Includes non-collision accidents such as overturning, falling or being thrown from a vehicle.

Table 2.10: Non-traffic serious injury – mechanism for persons seriously injured in land transport accidents, Australia 2006–07

Injured person	Counterpart in collision										Total
	Car, pick-up truck or van	2- or 3-wheeled motor vehicle	Pedal cycle	Pedestrian or animal	Heavy transport vehicle or bus	Train	Other non-motor vehicle	Fixed or stationary object	Non-collision transport accident†	Other and unspecified transport accidents	
Car occupant	127	*	*	17	11	*	*	396	603	131	1,291
Motorcyclist	51	251	*	38	*	*	9	766	4,145	656	5,920
Pedal cyclist	32	5	87	20	0	0	9	271	3,177	579	4,180
Pedestrian	308	30	41	41	19	9	16	0	0	192	656
Occupant of pick-up truck or van	*	0	0	0	*	0	0	8	101	23	134
Occupant of heavy transport vehicle	*	*	0	*	*	0	*	5	143	49	203
Bus occupant	*	0	0	0	*	0	0	0	51	21	74
Animal rider or occupant of animal-drawn vehicle	0	0	0	0	0	0	0	*	0	0	*
Occupant of special all-terrain or off-road vehicle	0	0	0	0	0	0	0	*	0	728	728
Occupant of three-wheeled motor vehicle	*	*	0	*	0	*	0	*	20	*	34
Occupant of a tram	0	0	0	0	0	0	*	*	0	*	*
Occupant of a train	0	0	0	0	0	0	0	*	*	*	*
Occupant of special agricultural or industrial or construction vehicle	0	0	0	0	0	0	0	0	0	312	312
Unknown	0	0	0	0	0	0	0	0	14	92	106
Total	524	290	130	118	36	13	36	1,450	8,254	2,788	13,639

Notes

Shading denotes categories included in the seven most common types of land transport accidents resulting in serious injury as listed in the 'mechanism of injury' section.

Includes cases where Principal diagnosis was coded to ICD-10-AM S00–T98.

A 'special all-terrain or off-road vehicle' refers only to such vehicles that are no longer registrable for on-road use and does not include registrable 4WD passenger vehicles, which are included under 'car occupants'.

* Small counts are omitted (n<5). In some instances, counts equal to zero have also been omitted.

†Includes non-collision accidents such as overturning, falling or being thrown from a vehicle.

Table 2.11: Unspecified as to whether traffic or non-traffic serious injury – mechanism for persons seriously injured in land transport accidents, Australia, 2006–07

Injured person	Counterpart in collision										Total
	Car, pick-up truck or van	2- or 3-wheeled motor vehicle	Pedal cycle	Pedestrian or animal	Heavy transport vehicle or bus	Train	Other non-motor vehicle	Fixed or stationary object	Non-collision transport accident†	Other and unspecified transport accidents	
Car occupant	12	0	0	0	*	0	0	5	355	230	603
Motorcyclist	0	*	0	0	0	0	0	2	24	476	503
Pedal cyclist	*	0	0	0	0	0	0	3	9	264	277
Pedestrian	199	19	23	*	*	*	9	0	0	100	365
Occupant of pick-up truck or van	0	0	0	0	0	0	0	0	17	17	34
Occupant of heavy transport vehicle	0	0	0	0	0	0	0	0	47	74	121
Bus occupant	*	0	0	0	*	0	0	0	136	41	179
Animal rider or occupant of animal-drawn vehicle	0	*	0	11	0	0	9	26	2,336	880	3,262
Occupant of special all-terrain or off-road vehicle	*	0	0	0	*	0	0	*	*	*	*
Occupant of three-wheeled motor vehicle	0	*	0	0	0	0	0	0	*	*	*
Occupant of a tram	*	0	0	0	0	0	0	0	0	61	61
Occupant of a train	0	0	0	0	0	0	0	0	*	106	107
Occupant of special agricultural or industrial or construction vehicle	0	*	0	0	0	0	0	0	0	38	38
Unknown	0	0	0	0	0	0	0	0	0	90	90
Total	214	20	23	15	*	*	18	36	2,925	2,387	5,650

Notes

Includes cases where Principal diagnosis was coded to ICD-10-AM S00–T98.

A 'special all-terrain or off-road vehicle' refers only to such vehicles that are no longer registrable for on-road use and does not include registrable 4WD passenger vehicles, which are included under 'car occupants'.

* Small counts are omitted (n<5). In some instances, counts equal to zero or counts >= 5 have also been omitted.

†Includes non-collision accidents such as overturning, falling or being thrown from a vehicle.

3 Serious injury due to road vehicle traffic crashes, Australia, 2006–07

The remainder of this report is restricted to road vehicle traffic crashes only, i.e. crashes involving a motor vehicle, pedal cycle or other road vehicle such as an animal, animal-drawn vehicle or tram on a public road^(c). These are crashes that road safety authorities focus on in their development of safety programmes. The definition of 'road vehicle traffic' used in this report has been aligned as much as possible with that used in the ABS document entitled *Guidelines for reporting and classifying road vehicle crashes* (ABS 1983).

In the one-year period 2006–07, land transport accidents that involved road vehicles on a public road accounted for 0.5% of all hospital separations in Australia and 7.1% of all injury-related hospital separations (Table 3.1).

During 2006–07, there were 162,796 patient days attributable to road vehicle traffic crashes, with a mean length of stay of 5.0 days. They accounted for 0.7% of all patient days in Australia and 8.0% of all injury-related patient days. In 33% of serious injury cases, the injured person was discharged on the same day as they were admitted.

The age-standardised rate of serious injury due to road vehicle accidents was 157 per 100,000 persons. The male: female age-standardised rate ratio was 2:1, indicating that, after accounting for any difference in age composition, twice as many males as females were seriously injured as a result of a road traffic crash, 210 per 100,000 population, compared with 105 per 100,000 population.

(c) This chapter does not include cases unspecified as to whether traffic or non-traffic (Table 2.10), some of which will have occurred in traffic.

Table 3.1: Key indicators for serious injury due to road vehicle traffic crashes, Australia 2006–07

Indicator	Males	Females	Persons*
Seriously injured[‡]			
Persons admitted to hospital ^(d)	21,741	11,036	32,777
Percentage of all hospital separations	0.7	0.3	0.5
Percentage of all hospital separations due to injury	8.3	5.6	7.1
Same day hospitalisations	6,971	3,783	10,754
Mean length of stay in hospital (days) [‡]	5.0	4.9	5.0
Total patient days (including same day and deaths in hospital)	108,643	54,153	162,796
Crude rate/100,000 population**	209.7	105.3	157.2
Age-standardised rate/100,000 population***	209.6	104.7	157.4

† Includes cases where Principal diagnosis was coded to ICD-10-AM S00–T98.

* Includes cases where sex is missing or indeterminate.

** Using population denominators in December 2006.

*** Adjusted by direct standardisation to the Australian population in June 2001.

‡ This is the average number of days a person is likely to stay in hospital when seriously injured. Refer to the Data issues section of this report for details on how mean length of stay is calculated.

In this report 'seriously injured' means admitted to hospital due to injury (see Data issues 'Serious injury').

Age and sex distribution

The burden of injury due to road vehicle traffic crashes was mainly among those of 'working age'; 81% of persons seriously injured were aged 15–64 years (Table 3.2). Males accounted for two-thirds (66%) of serious injury cases due to road vehicle traffic crashes in 2006–07.

Table 3.2: Serious injury due to road vehicle traffic crashes by age group, Australia 2006–07

Age group	Males		Females		Persons	
	Count	Per cent	Count	Per cent	Count	Per cent
0–4 years	232	1.1	142	1.3	374	1.1
5–14 years	2,027	9.3	801	7.3	2,828	8.6
15–24 years	6,054	27.8	2,820	25.6	8,874	27.1
25–44 years	7,974	36.7	3,332	30.2	11,306	34.5
45–64 years	3,950	18.2	2,277	20.6	6,227	19.0
65+ years	1,504	6.9	1,664	15.1	3,168	9.7
Total	21,741	100.0	11,036	100.0	32,777	100.0

(d) In total, there were 36,097 admissions to hospital for road vehicle traffic crashes for an estimated 33,071 persons, of whom 294 (0.9%) died while in hospital. These deaths are included in estimates of fatal transport injury provided elsewhere by organisations such as the DITRD LG and are omitted from the seriously injured counts in Table 3.1 and throughout Section 3 in order to avoid double counting. The estimate of total patient days includes separations in which the person died in hospital.

Male rates of serious injury in road vehicle traffic crashes exceeded female rates due to much higher rates of motorcyclist and pedal cyclist serious injury cases, and higher rates of car driver serious injury cases (except at ages 45–69 years) (Figure 3.1). Rates of car passenger serious injury cases were similar for both males and females up until 40 years of age after which the male rates were higher while male rates for pedestrian serious injury cases were moderately higher than female rates up until 60 years of age.

The rates of serious injury among car drivers were high at ages 15–24 years and peaked at ages 20–24 years (males: 116 and females: 97 per 100,000). For male motorcyclists, the rate of serious injury peaked at ages 20–24 years (156 per 100,000). For car passengers, the rate of serious injury peaked at ages 15–19 years (males: 74 and females: 72 per 100,000). For pedal cyclists, the serious injury rate peaked at ages 10–14 years (males: 111 and females: 22 per 100,000) whereas for pedestrians it was highest in the elderly (males: 37 per 100,000 at ages 85 years and older, females: 28 per 100,000 at ages 80–84 years).

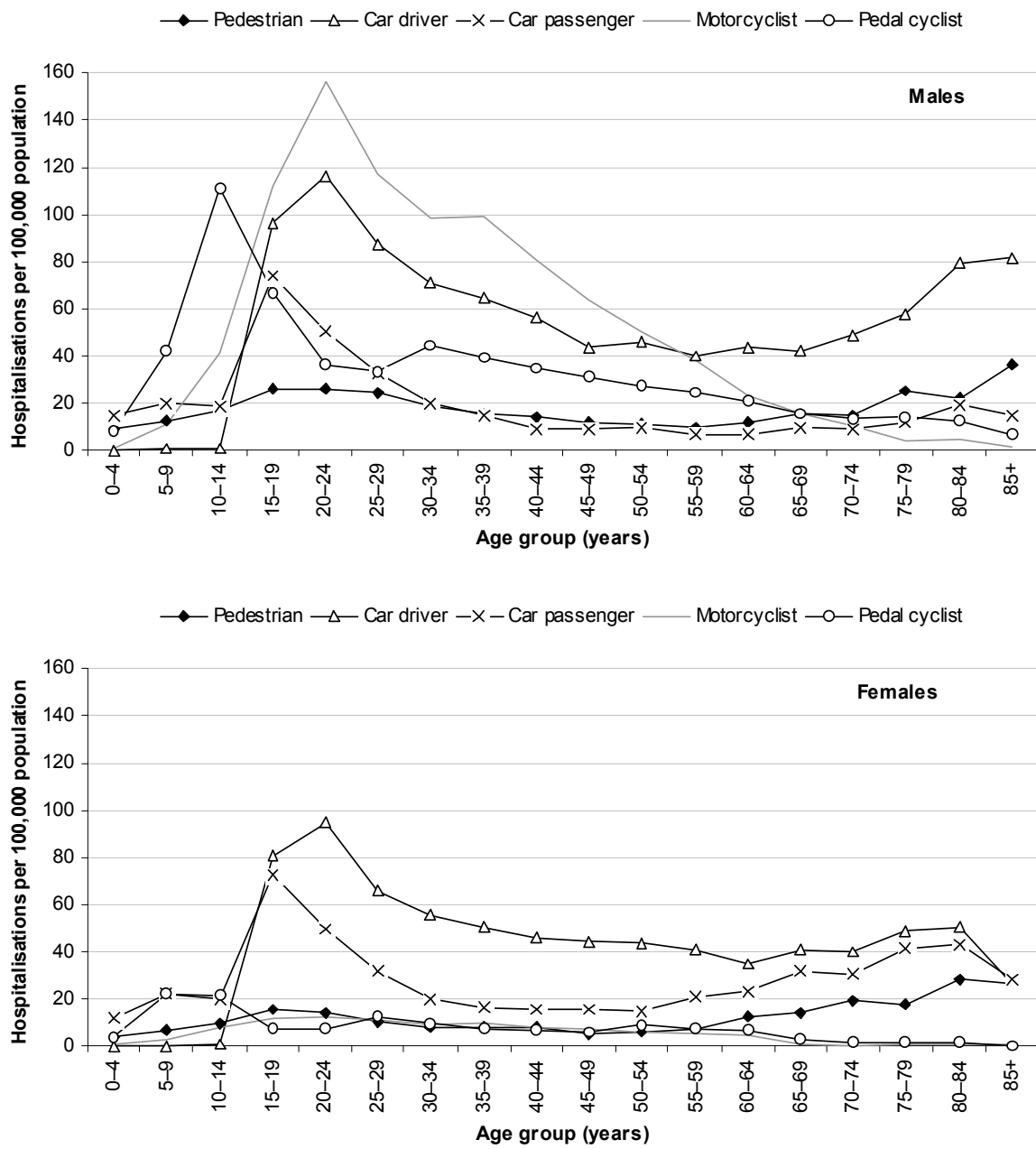


Figure 3.1: Road vehicle traffic crashes – age-specific serious injury rates by sex, Australia 2006–07

Mechanism of injury

In 2006–07, nine circumstances accounted for about 80% of all persons seriously injured in road vehicle traffic crashes (Table 3.3). Collisions of a car with a car, pick-up truck or van accounted for almost 23% ($n = 7,411$) of all serious injury cases due to road vehicle traffic crashes.

Table 3.3: Nine most common mechanisms of serious injury for road vehicle traffic crashes, Australia 2006-07

Type of collision	Seriously injured	
	Count	Per cent of road vehicle traffic serious injury cases ($n = 32,777$)
Car in collision with car, pick-up truck or van	7,411	22.6
Car in collision with fixed or stationary object	3,908	11.9
Car in non-collision transport accident	3,026	9.2
Motorcyclist in non-collision transport accident	2,451	7.5
Pedestrian in collision with a car, pick-up truck or van	2,403	7.3
Motorcyclist in other and unspecified transport accident	2,097	6.4
Motorcyclist in collision with car, pick-up truck or van	1,722	5.3
Pedal cyclist in other and unspecified transport accident	1,700	5.2
Pedal cycle in non-collision transport accident	1,605	4.9
Total of the most common mechanisms	26,323	80.3

Road user group

Counts, proportions and age-standardised rates for persons seriously injured according to road user group are shown in Table 3.4. The numbers for car drivers and car occupants do not add up to the total for car occupants in Table 3.4. This is because car occupants include a number of cases where the position of the person in the car is unspecified. Throughout the report, the term ‘car occupant’ is used to specify all car occupants including those in which the position in the car is unspecified. Some figures (e.g. Figure 3.1 and Figure 3.3) display age-standardised rates of serious injury for car drivers and car passengers only.

Almost half (49.5%) of the persons seriously injured in road vehicle traffic crashes were car occupants. There was a large discrepancy between sexes with only 38.3% of seriously injured males being car occupants, compared with 71.6% of females.

Other prominent road user types seriously injured in road vehicle traffic crashes included motorcyclists (22.3%), pedal cyclists (14.6%) and pedestrians (8.6%). Notably, 30.4% of seriously injured males were motorcyclists, compared with only 6.3% of females.

For males, the four most frequently injured road user types were, in order, motorcyclists, car drivers, pedal cyclists and car passengers. For females, the most frequently injured road user types were car drivers, car passengers, pedestrians and pedal cyclists.

Twenty-eight per cent (28.2%) of serious injury cases due to road vehicle traffic crashes presented a high threat to life (Table 3.4). Pedestrians (39.8%) were more likely to sustain a high threat to life injury than any other road user group, while pedal cyclists (18.1%) were least likely to sustain a high threat to life injury. For males, almost 45% of high threat to life cases were car occupants compared with only 38% for all male cases, while for females, almost 16% of high threat to life cases were pedestrians compared with only 10% for all female cases.

Table 3.4: Serious injury due to road vehicle traffic crashes by road user group, Australia 2006–07

Road user group	Seriously injured [†]						
	All cases			High threat-to-life cases*			Per cent high threat-to-life
	Count	Per cent	Rate [‡]	Count	Per cent	Rate [‡]	
Males							
Car occupant	8,330	38.3	80.3	2,799	44.7	27.0	33.6
<i>Car driver</i>	5,461	25.1	52.7	1,872	29.9	18.1	34.3
<i>Car passenger</i>	2,213	10.2	21.3	770	12.3	7.4	34.8
Motorcyclist	6,609	30.4	63.5	1,720	27.4	16.5	26.0
Pedal cyclist	3,885	17.9	37.5	741	11.8	7.1	19.1
Pedestrian	1,731	8.0	16.8	656	10.5	6.4	37.9
Heavy transport vehicle	437	2.0	4.2	156	2.5	1.5	35.7
Pick-up truck or van occupant	247	1.1	2.4	85	1.4	0.8	34.4
Bus occupant	80	0.4	0.8	34	0.5	0.3	42.5
Other or unknown	422	1.9	4.1	75	1.2	0.7	17.8
Total	21,741	100.0	209.6	6,266	100.0	60.3	28.8
Females							
Car occupant	7,904	71.6	74.9	2,110	71.0	19.6	26.7
<i>Car driver</i>	4,577	41.5	43.3	1,168	39.3	10.9	25.5
<i>Car passenger</i>	2,834	25.7	26.9	854	28.7	8.0	30.1
Motorcyclist	694	6.3	6.7	147	4.9	1.4	21.2
Pedal cyclist	904	8.2	8.9	128	4.3	1.2	14.2
Pedestrian	1,093	9.9	10.1	469	15.8	4.2	42.9
Heavy transport vehicle	32	0.3	0.3	5	0.2	0.0	15.6
Pick-up truck or van occupant	76	0.7	0.7	24	0.8	0.2	31.6
Bus occupant	130	1.2	1.1	43	1.4	0.4	33.1
Other or unknown	203	1.8	1.9	47	1.6	0.4	23.2
Total	11,036	100	104.7	2,973	100	27.6	26.9
Persons							
Car occupant	16,234	49.5	77.5	4,909	53.1	23.3	30.2
<i>Car driver</i>	10,038	30.6	47.8	3,040	32.9	14.4	30.3
<i>Car passenger</i>	5,047	15.4	24.2	1,624	17.6	7.7	32.2
Motorcyclist	7,303	22.3	35.3	1,867	20.2	9	25.6
Pedal cyclist	4,789	14.6	23.3	869	9.4	4.1	18.1
Pedestrian	2,824	8.6	13.5	1,125	12.2	5.3	39.8
Heavy transport vehicle	469	1.4	2.2	161	1.7	0.8	34.3
Pick-up truck or van occupant	323	1.0	1.5	109	1.2	0.5	33.7
Bus occupant	210	0.6	1.0	77	0.8	0.4	36.7
Other or unknown	625	1.9	3.0	122	1.3	0.6	19.5
Total	32,777^(a)	100.0	157.4	9,239^(a)	100.0	43.9	28.2

[†] Includes cases where Principal diagnosis was coded to ICD-10-AM S00–T98.

* ICD-based Injury Severity Score (ICISS) <0.941.

[‡] Per 100,000 population, adjusted by direct standardisation to the Australian population in June 2001.

(a) Includes cases where sex is missing or indeterminate.

Vehicle type by number of registered vehicles and kilometres travelled

This section shows injury rates for the different types of vehicles registered in Australia. Registered vehicles are those authorised to travel on public roads. The numerator is the number of serious injury cases among the occupants of each vehicle type due to traffic accidents (on public roads). The denominator is the number of each vehicle type registered by state and territory, sourced from the Australian Bureau of Statistic's *Motor Vehicle Census* (ABS 2008a) and the kilometres travelled, sourced from the *Survey of Motor Vehicle Use, Australia* (ABS 2008b).

Serious injury rates are restricted to the occupants of the types of registered vehicles within the scope of the ABS publications. Hence, serious injury rates for special all-terrain and off-road vehicles, pedal cycles, pedestrians, animal riders or occupants of animal-drawn vehicles, occupants of special agricultural, industrial or construction vehicles and trams or trains are not presented.

Table 3.5 compares the number of serious injury cases per 100,000 registered vehicles by vehicle type. Motorcycles had the highest serious injury rate; for each 100,000 motorcycles registered in Australia, there were 1,430 riders seriously injured. There were 271 serious injury cases per 100,000 buses, a serious injury rate second only to motorcycles and higher than the corresponding rate for cars (142 persons seriously injured per 100,000 cars). Overall, the Northern Territory had by far the highest rate of the number of serious injury cases per 100,000 registered vehicles with 333 persons. This was more than 80% higher than the next highest rate of 181 persons recorded by the Australian Capital Territory. Western Australia recorded the lowest rate of 127 serious injury cases per 100,000 motor vehicle registrations. It should be noted that these rates do not take into account the average distance travelled by each type of vehicle per year and the average number of occupants per vehicle. This is likely to contribute to the high rate for buses. A perhaps more useful denominator would be passenger-kilometres but this is not available for Australian road transport.

Vehicle kilometres are available, however, and Table 3.6 compares risk based on the number of serious injury cases for each 100 million kilometres travelled by each vehicle type. This comparison is important because it accounts for variation in the number of different types of vehicles in use in Australia and their distance of travel. The serious injury rate for motorcyclists was almost thirty-seven times that for car occupants (385 motorcyclists compared with 10 car occupants were seriously injured per 100 million vehicle kilometres travelled). The rate of serious injury was similar for bus occupants compared with car occupants (10 bus occupants were seriously injured per 100 million vehicle kilometres travelled). A comparison of rates on a passenger-kilometre basis would probably show a lower rate for buses relative to other vehicle types, but the relevant data are not available. Occupants of heavy transport vehicles had a lower rate of serious injury compared with car occupants (about 3 seriously injured per 100 million vehicle kilometres travelled). Occupants of pick-up trucks or vans had the lowest rate overall (less than 1 seriously injured per 100 million vehicle kilometres travelled). The category 'pick-up trucks or vans' should include serious injury cases of occupants of utilities and panel vans, but some such cases may be incorrectly coded as 'occupant of a car', leading to an underestimate of the serious injury rate.

The highest rate of 26 persons seriously injured per 100 million vehicle kilometres travelled for cars was in the Northern Territory. This was more than double the next highest rate recorded by South Australia (13 persons seriously injured per 100 million vehicle kilometres travelled). New South Wales was the only other state with a rate which was significantly

higher than the national rate. The lowest rate for car occupants was recorded by Western Australia (8 persons seriously injured per 100 million vehicle kilometres travelled).

The serious injury rate for motorcycles was highest in Northern Territory and significantly higher than the national rate, whereas rates for motorcyclists in New South Wales, Queensland and Western Australia were lower, although only the rate for Western Australia was significantly lower. The Northern Territory and South Australia had serious injury rates for pick up trucks or vans that were significantly higher than the national rate, whereas the rate of injury in Queensland was significantly lower. The Australian Capital Territory had the highest rate of serious injury for heavy transport vehicles, although this rate was not significantly higher than the national rate. None of the other states or territories had a rate which was significantly different from the national rate. South Australia had the highest rate of serious injury for buses, although not significantly higher than the national rate. Queensland was the only state or territory with a significantly lower rate than the national rate.

The ABS estimates of motor vehicle kilometres travelled are based on information collected for a sample, rather than a full enumeration of registered motor vehicles in Australia, and are therefore subject to sampling error. Thus, the serious injury rate estimates presented in Table 3.6 may differ from the estimates that would be produced if the denominator included a full enumeration.

Table 3.5: Road vehicle traffic crashes – serious injury rate per 100,000 registered vehicles by vehicle type and state and territory, Australia 2006-07

State and territory	Crude injury rate per 100,000 vehicles (95% CI)						Total ^(b)
	Cars‡	Motorcycles*	Pick-up trucks or vans**	Heavy transport vehicles † ^(a)	Buses		
NSW	150 (146–154)	1,615 (1,548–1,684)	12.3 (9.83–15.5)	105 (89.0–124)	366 (292–458)	175 (171–179)	
Vic	144 (140–149)	1,281 (1,220–1,346)	16.3 (13.1–20.3)	99.3 (82.8–119)	308 (235–404)	163 (159–167)	
Qld	124 (119–128)	1,605 (1,537–1,677)	10.9 (8.46–14.0)	116 (97.5–139)	121 (79.0–186)	164 (159–168)	
WA	110 (104–116)	950 (879–1,026)	14.5 (10.6–19.9)	64.5 (48.2–88.9)	240 (166–347)	127 (122–133)	
SA	144 (136–152)	1,268 (1,159–1,389)	23.5 (16.9–32.7)	105 (75.3–146)	418 (267–656)	163 (156–171)	
Tas	135 (122–150)	1,485 (1,275–1,729)	11.8 (6.16–22.7)	58.9 (28.1–124)	86.7 (21.7–346)	146 (134–158)	
ACT	141 (125–159)	1,474 (1,239–1,753)	19.3 (7.23–51.3)	157 (58.9–418)	428 (161–1,141)	181 (165–200)	
NT	361 (321–406)	2,383 (1,966–2,887)	43.4 (25.2–74.7)	42.7 (10.7–171)	32.3 (4.55–229)	333 (301–367)	
National	142 (139–144)	1,430 (1,398–1,463)	14.8 (13.2–16.5)	100 (91.4–109)	271 (237–310)	166 (164–168)	

Notes

Case numbers grouped by state and territory of usual residence and vehicle denominators grouped by state and territory of registration of vehicle.

The vehicle types in this table are defined according to ICD-10-AM, which are very close to the definitions used by the ABS from which the denominators are derived.

Defined in the ABS Motor Vehicle Census as ‡ Passenger vehicles, ** Light commercial vehicle and † Rigid truck and articulated truck. * Motorcycles as defined in the ABS Motor Vehicle Census include two or three-wheeled motor vehicles, so three-wheeled motor vehicles are also included in the numerator for this table.

(a) For trucks, data are presented for state and territory of operation rather than state and territory of registration.

(b) Includes in the denominator the ABS Motor Vehicle Census data for campervans and non-freight carrying trucks as these would be coded using ICD-10-AM variously as cars, trucks, pick-up trucks or vans and hence included in the numerator.

Table 3.6: Road vehicle traffic crashes – serious injury rate per 100 million vehicle kilometres travelled by vehicle type and state and territory, Australia 2006–07

State and territory	Injury rate per 100 million vehicle kilometres travelled (95% CI)					Total ^(b)
	Cars [‡]	Motorcycles [#]	Pick-up trucks or vans ^{**}	Heavy transport vehicles ^{† (a)}	Buses	
NSW	10.8 (10.6–11.1)	[^] 370 (355–386)	0.762 (0.607–0.957)	3.39 (2.87–4.00)	13.9 (11.1–17.4)	12.2 (11.9–12.4)
Vic	9.99 (9.70–10.3)	[^] 415 (395–436)	0.930 (0.748–1.156)	2.73 (2.28–3.28)	11.5 (8.77–15.1)	10.8 (10.5–11.0)
Qld	8.87 (8.54–9.21)	[*] 367 (351–383)	0.588 (0.457–0.758)	3.23 (2.71–3.85)	4.30 (2.81–6.60)	10.8 (10.5–11.1)
WA	7.89 (7.49–8.32)	[^] 331 (307–358)	0.878 (0.642–1.20)	2.24 (1.65–3.05)	[^] 8.21 (5.67–11.9)	8.77 (8.41–9.15)
SA	12.5 (11.8–13.2)	[^] 442 (403–483)	1.57 (1.13–2.19)	3.33 (2.39–4.64)	15.0 (9.54–23.5)	13.3 (12.7–13.9)
Tas	11.1 (10.0–12.3)	[*] 426 (366–496)	0.746 (0.388–1.43)	[^] 2.07 (0.984–4.33)	4.65 (1.16–18.6)	11.1 (10.2–12.1)
ACT	10.5 (9.31–11.8)	[^] 413 (347–491)	[^] 1.10 (0.414–2.94)	4.26 (1.60–11.3)	11.1 (4.17–29.6)	13.2 (12.0–14.5)
NT	26.2 (23.2–29.5)	[^] 578 (477–700)	2.48 (1.44–4.27)	1.50 (0.376–6.01)	1.59 (0.224–11.3)	22.0 (19.9–24.3)
National	10.3 (10.1–10.4)	385 (376–394)	0.864 (0.775–0.964)	3.01 (2.75–3.30)	10.0 (8.75–11.5)	11.4 (11.3–11.6)

Notes

Case numbers grouped by state and territory of usual residence and million vehicle kilometres travelled denominators grouped by state and territory of registration of vehicle.

The vehicle types in this table are defined according to ICD-10-AM, which are very close to the definitions used by the ABS from which the denominators are derived.

Defined in the ABS Survey of Motor Vehicle Use as † Passenger vehicles, ** Light commercial vehicles and ‡ Rigid trucks and Articulated trucks. # Motorcycles as defined in the ABS Survey of Motor Vehicle Use include two or three-wheeled motor vehicles, so three-wheeled motor vehicles are also included in the numerator for this table.

[^] Estimate for the denominator (number of kilometres travelled) has a relative standard error of 10% to less than 25% and should be used with caution.

^{*} Estimate for the denominator (number of kilometres travelled) has a relative standard error of 25% to less than 50% and should be used with extreme caution.

(a) For trucks, million vehicle kilometres travelled denominators are presented for state and territory of operation rather than state and territory of registration.

(b) Includes in the denominator the ABS Survey of Motor Vehicle Use data for non-freight carrying trucks as these would be coded using ICD-10-AM variously as cars, trucks, pick-up trucks or vans and hence included in the numerator.

Road user group by state and territory of residence

The hospital dataset used for this report does not contain specific information on the crash location. There are two options for presenting the hospital data on location: by state and territory of hospitalisation or by state and territory of residence. Presenting serious injury cases by the state and territory of the hospital where the person was treated may give a better indication of place of occurrence. This would be the case if a person was treated in a hospital close to the crash site. However, the practice of airlifting (or driving) seriously injured patients to major metropolitan hospitals, sometimes across borders, complicates such analyses. Table 3.7 shows that most persons who were seriously injured were hospitalised in the same state in which they resided, but about 28% of persons hospitalised in the Australian Capital Territory were residents of New South Wales. For patients hospitalised in a state other than their state of residence, it is unknown whether the location of the crash was interstate or the crash occurred in the same state that the patient resided in but they were transferred to an interstate hospital.

Table 3.7: Serious injury due to road vehicle traffic crashes – state and territory of hospitalisation versus state and territory of usual residence, Australia 2006–07

State or territory of residence	State or territory of hospitalisation								National
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	
NSW	9,780	109	150	13	27	16	193	8	10,296
Vic	155	8,253	39	*	51	20	12	17	8,551
Qld	251	24	6,216	6	13	*	*	22	6,542
WA	7	9	5	2,665	13	*	*	21	2,723
SA	18	26	*	11	2,320	*	*	29	2,411
Tas	*	5	*	*	*	716	0	*	739
ACT	41	*	6	*	*	0	485	*	539
NT	*	*	8	5	8	*	0	472	498
Not reported	203	79	102	60	23	8	*	0	476
National[†]	10,459	8,513	6,535	2,770	2,460	771	697	572	32,777

Notes

*Small counts are omitted (n<5). In some instances, counts equal to zero or counts >= 5 have also been omitted.

† Includes *Other territories* such as Cocos (Keeling) Islands, Christmas Island and Jervis Bay (n<5).

Nearly a third (31.4%) of the cases of persons seriously injured resided in New South Wales, over a quarter resided in Victoria (26.1) and 20.0% resided in Queensland (Table 3.8).

Table 3.8: Serious injury due to road vehicle traffic crashes by gender and state and territory of residence, Australia 2006–07

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	National
Males									
Car occupant	2,578	2,167	1,496	748	695	202	120	169	8,330
<i>Car driver</i>	1,796	1,512	900	422	462	135	78	82	5,461
<i>Car passenger</i>	600	531	430	244	190	54	29	77	2,213
Motorcyclist	1,974	1,427	1,794	576	434	152	119	92	6,609
Pedal cyclist	1,183	1,150	790	268	247	82	86	50	3,885
Pedestrian	652	441	281	110	138	33	8	25	1,731
Heavy transport occupant	132	109	116	37	31	*	*	*	437
Pick-up truck or van occupant	64	63	46	25	25	7	*	11	247
Bus occupant	30	19	6	7	11	*	*	*	80
Other or unknown	124	70	104	55	22	28	*	6	422
Total	6,737	5,446	4,633	1,826	1,603	511	343	355	21,741^(a)
Females									
Car occupant	2,602	2,234	1,249	629	637	170	156	104	7,904
<i>Car driver</i>	1,553	1,376	693	328	358	91	106	40	4,577
<i>Car passenger</i>	917	751	426	246	249	66	43	57	2,834
Motorcyclist	171	154	220	68	34	13	9	12	694
Pedal cyclist	245	296	210	63	43	18	16	*	904
Pedestrian	416	320	140	76	66	20	8	17	1,093
Heavy transport occupant	6	7	7	*	*	*	*	*	32
Pick-up truck or van occupant	10	18	14	14	10	*	*	*	76
Bus occupant	46	33	15	21	8	*	*	0	130
Other or unknown	63	43	54	22	*	*	*	6	203
Total	3,559	3,105	1,909	897	808	228	196	143	11,036^(a)
Persons									
Car occupant	5,180	4,401	2,745	1,377	1,332	372	276	273	16,234
<i>Car driver</i>	3,349	2,888	1,593	750	820	226	184	122	10,038
<i>Car passenger</i>	1,517	1,282	856	490	439	120	72	134	5,047
Motorcyclist	2,145	1,581	2,014	644	468	165	128	104	7,303
Pedal cyclist	1,428	1,446	1,000	331	290	100	102	51	4,789
Pedestrian	1,068	761	421	186	204	53	16	42	2,824
Heavy transport occupant	138	116	123	41	35	*	*	*	469
Pick-up truck or van occupant	74	81	60	39	35	9	*	13	323
Bus occupant	76	52	21	28	19	*	*	*	210
Other or unknown	187	113	158	77	28	31	5	12	625
Total	10,296	8,551	6,542	2,723	2,411	739	539	498	32,777^(a)

(a) There were 476 (male: 285, female: 191) cases missing data on state and territory of usual residence and 2 male cases that were *Other territories*. *Other territories* include Cocos (Keeling) Islands, Christmas Island and Jervis Bay.

*Small counts are omitted (n<5). In some instances, counts >= 5 have also been omitted.

On a population basis, age-standardised rates of serious injury due to road vehicle traffic crashes were significantly greater than the national rate for residents in the Northern Territory and Victoria. New South Wales and Western Australia were significantly lower than the national rate (Table 3.9). The 95% confidence intervals for the other states and territories overlap with those of the national rate.

Car occupants in the Northern Territory and South Australia (mainly car passengers), and Victoria (mainly car drivers) had population-based serious injury rates that were significantly above the national rate (Table 3.9 and Figure 3.2). Serious injury rates for car occupants were significantly below the national rate for residents in Queensland and Western Australia.

Motorcyclists who resided in Queensland and the North Territory had population-based serious injury rates that were significantly above the national rate. Serious injury rates for motorcyclists were significantly below the national rate in New South Wales, Victoria, Western Australia and South Australia.

Pedal cyclists in Victoria and the Australian Capital Territory had population-based serious injury rates that were significantly above the national rate. Serious injury rates for pedal cyclists were significantly below the national rate in New South Wales, Western Australia and South Australia.

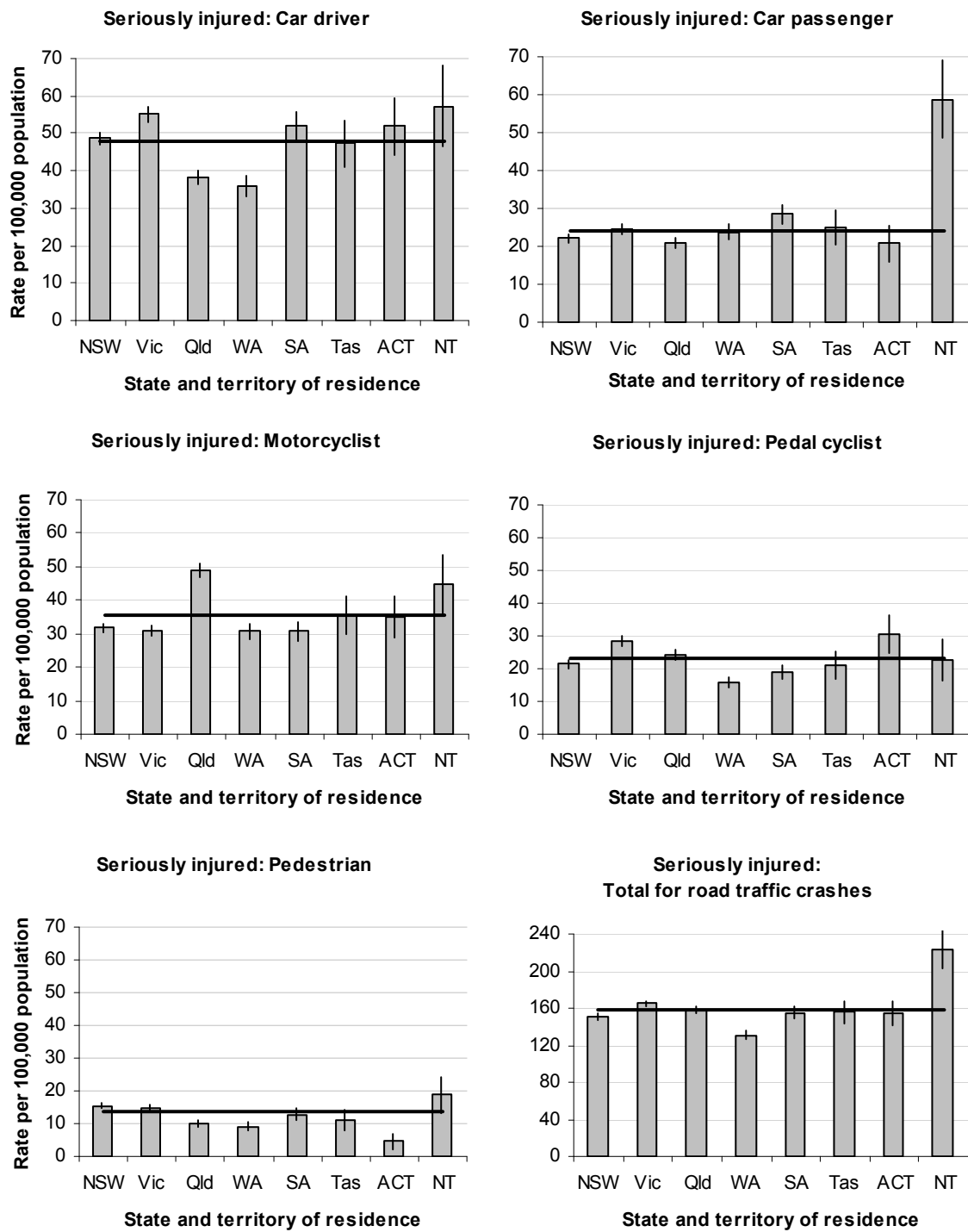
Pedestrians who resided in New South Wales had population-based serious injury rates that were significantly above the national rate. Serious injury rates for pedestrians were significantly below the national rate in Queensland, Western Australia and the Australian Capital Territory.

Table 3.9: Road vehicle traffic crashes – age-standardised rates of serious injury by road user group and state and territory of residence, Australia, 2006–07

Seriously injured person	Age-standardised rate per 100,000 population (95% CI)								
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	National
Car occupant	75 (73–77)	84 (82–87)	66 (64–69)	66 (63–70)	85 (81–90)	78 (70–86)	78 (69–88)	124 (109–139)	78 (76–79)
Car driver	49 (47–50)	55 (53–57)	38 (37–40)	36 (33–38)	52 (49–56)	47 (41–53)	52 (44–60)	57 (46–68)	48 (47–49)
Car passenger	22 (21–23)	25 (23–26)	21 (19–22)	24 (22–26)	28 (26–31)	25 (21–30)	21 (16–26)	59 (49–69)	24 (24–25)
Motorcyclist	32 (30–33)	31 (29–32)	49 (47–51)	31 (28–33)	31 (28–34)	36 (30–41)	35 (29–41)	45 (36–54)	35 (34–36)
Pedal cyclist	21 (20–22)	29 (27–30)	24 (23–26)	16 (14–18)	19 (17–21)	21 (17–25)	31 (25–36)	23 (16–29)	23 (23–24)
Pedestrian	15 (15–16)	15 (14–16)	10 (9–11)	9 (8–10)	13 (11–15)	11 (8–14)	5 (2–7)	19 (13–24)	13 (13–14)
Total for road traffic crashes	151 (148–154)	165 (161–168)	158 (154–162)	131 (126–135)	155 (149–161)	155 (144–167)	154 (141–167)	223 (203–243)	157 (156–159)
Total case numbers	10,296	8,551	6,542	2,723	2,411	739	539	498	32,777

Note: Shaded areas indicate jurisdictions with rates significantly above the national rate.

(a) There were 476 cases missing data on state and territory of usual residence and 2 cases that were *Other territories*. *Other territories* include Cocos (Keeling) Islands, Christmas Island and Jervis Bay.



Note: The thick horizontal line shows the rate for all people in Australia.

Figure 3.2: Road vehicle traffic crashes – age-standardised rates of serious injury by road user group and state and territory of residence, Australia 2006-07

High threat to life injury by road user group and state and territory of residence

On a population basis, age-standardised rates of serious injury with a high threat to life in road vehicle traffic crashes were significantly above the national rate for residents in the Northern Territory and South Australia, whereas Western Australia and New South Wales were significantly below the national rate (Table 3.10). The 95% confidence intervals for the other states and territories overlap with those of the national rate.

Car occupants in the Northern Territory (car drivers and car passengers), South Australia (car passengers) and in Tasmania had population-based serious injury rates with a high threat to life that were significantly above the national rate (Table 3.10 and Figure 3.3). Serious injury rates with a high threat to life for car occupants (car passengers) in New South Wales and car drivers in Western Australia were significantly below the national rate.

Motorcyclists who resided in the Northern Territory and Queensland had population-based serious injury rates with a high threat to life that were significantly above the national rate. No other jurisdiction recorded injury rates that were significantly different from the national rate.

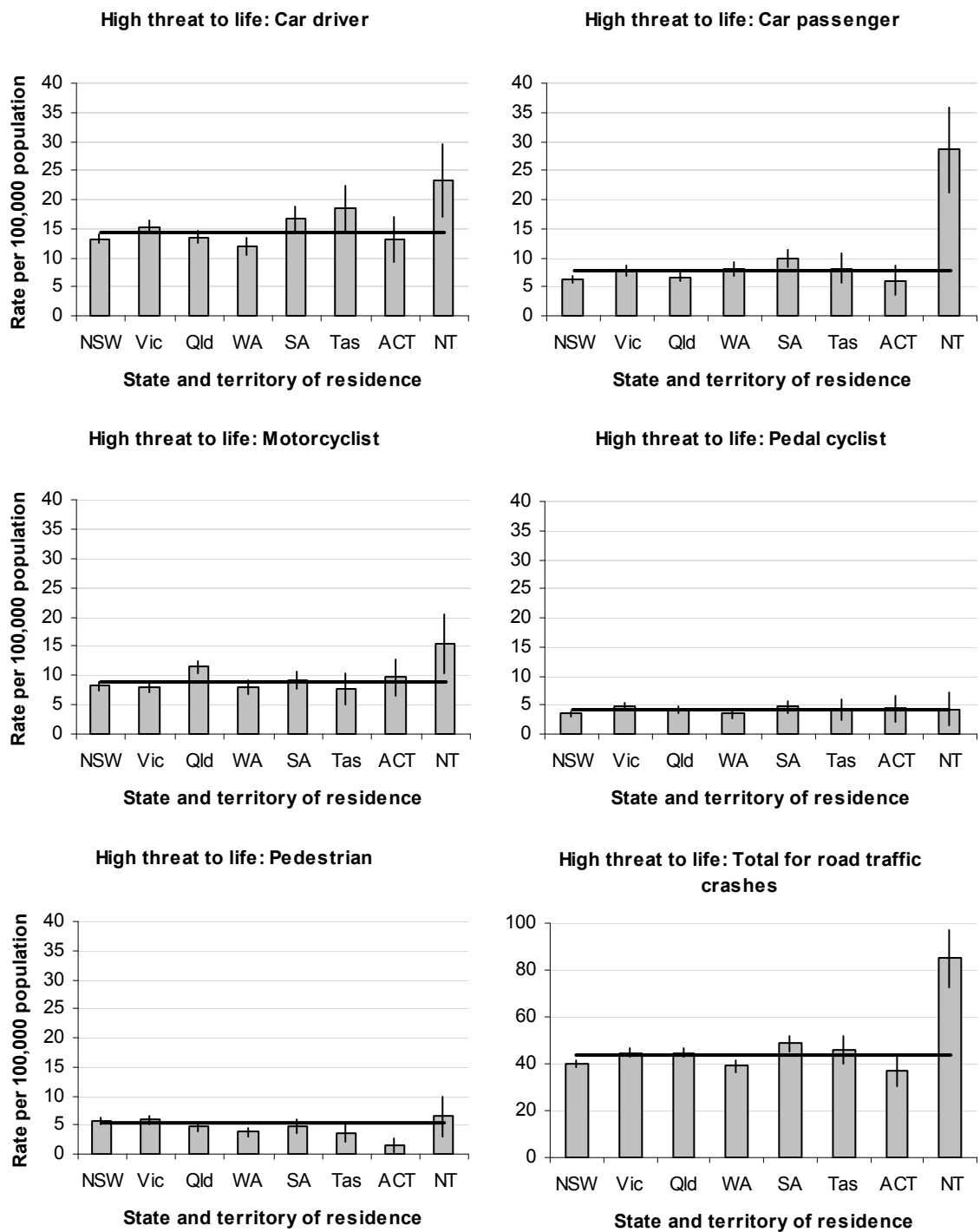
Population-based serious injury rates with a high threat to life did not significantly differ by jurisdiction for pedal cyclists and pedestrians, except for pedestrians in Western Australia and the Australian Capital Territory, who had rates that were significantly below the national rate.

Table 3.10: Serious injury with a high threat to life – age-standardised rates for road vehicle traffic crashes by road user group and state and territory of residence, Australia, 2006–07

Seriously injured person	Age-standardised rate per 100,000 population (95% CI)								
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	National
Car occupant	21 (19–22)	24 (23–25)	22 (21–23)	21 (19–23)	27 (25–30)	29 (24–34)	20 (16–25)	54 (44–64)	23 (23–24)
Car driver	13 (12–14)	15 (14–16)	14 (12–15)	12 (10–13)	17 (15–19)	19 (15–22)	13 (9–17)	23 (17–30)	14 (14–15)
Car passenger	6 (6–7)	8 (7–9)	7 (6–7)	8 (7–9)	10 (8–11)	8 (6–11)	6 (3–9)	29 (21–36)	8 (7–8)
Motorcyclist	8 (7–9)	8 (7–9)	11 (10–13)	8 (7–9)	9 (8–11)	8 (5–10)	10 (6–13)	15 (10–20)	9 (9–9)
Pedal cyclist	4 (3–4)	5 (4–5)	4 (4–5)	3 (3–4)	5 (4–6)	4 (2–6)	4 (2–7)	4 (1–7)	4 (4–4)
Pedestrian	6 (5–6)	6 (5–7)	5 (4–5)	4 (3–5)	5 (4–6)	4 (2–5)	2 (0–3)	6 (3–10)	5 (5–6)
Total for road traffic crashes	40 (39–42)	45 (43–46)	45 (43–47)	39 (36–42)	49 (45–52)	46 (40–52)	37 (30–43)	85 (73–97)	44 (43–45)
Total case numbers	2,782	2,335	1,850	815	770	222	131	190	9,239

Note: Shaded areas indicate jurisdictions with rates significantly above the national rate.

(a) There were 143 cases missing data on state and territory of usual residence and 1 case that was *Other territories*. *Other territories* include Cocos (Keeling) Islands, Christmas Island and Jervis Bay.



Note: The thick horizontal line shows the rate for all people in Australia.

Figure 3.3: Serious injury with high threat to life—age-standardised rates of road vehicle traffic crashes by road user group and state and territory of residence, Australia 2006–07

Remoteness area of residence

The majority (83.0%) of persons seriously injured in road vehicle traffic crashes resided in Major cities or Inner regional areas (Table 3.11). A further 4% of serious injury cases were residents of Remote or Very remote areas. Male rates of serious injury were about twice the rate observed for females in each remoteness area. Age-standardised rates of injury increased according to remoteness of the person's usual residence from an urban centre (Table 3.12 and Figure 3.4).

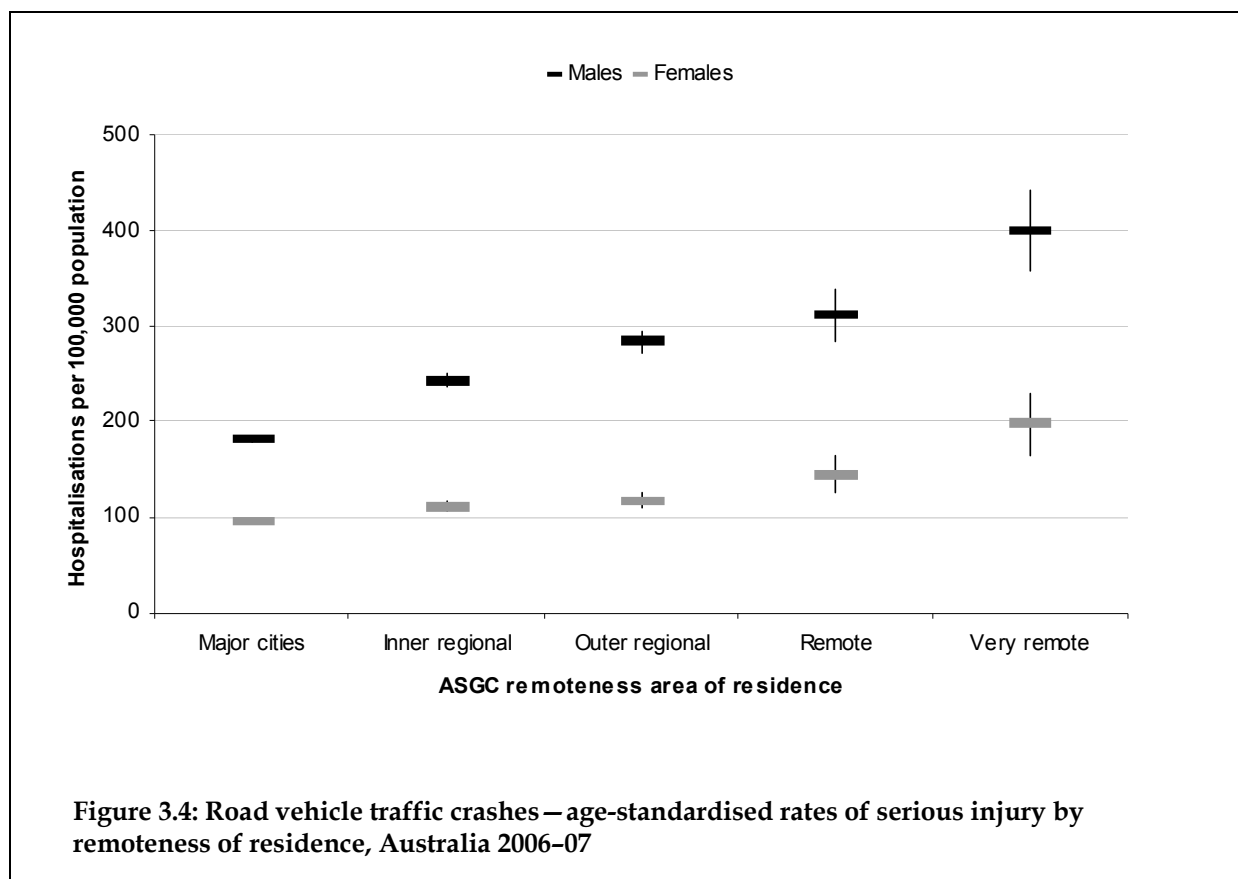
Table 3.11: Serious injury cases by remoteness area of residence for road vehicle traffic crashes, Australia 2006–07

ASGC remoteness area of residence	Males	Females	Persons		
	Count	Count	Count	Per cent	Per cent male cases
Major cities	13,091	7,084	20,175	62	65
Inner regional	4,746	2,270	7,016	21	68
Outer regional	2,723	1,096	3,819	12	71
Remote	503	210	713	2	71
Very remote	361	152	513	2	70
Total†	21,741	11,036	32,777		66

† Total includes cases for which ASGC remoteness area of residence not reported (m = 317, f = 224) persons.

Table 3.12: Age-standardised serious injury rates by remoteness area of residence for road vehicle traffic crashes, Australia, 2006–07

ASGC remoteness area of residence	Age-standardised rate per 100,000 population (95% CI)		
	Males	Females	Persons
Major cities	182 (179–185)	96 (94–98)	139 (137–141)
Inner regional	243 (236–250)	112 (107–116)	178 (173–182)
Outer regional	284 (273–294)	118 (111–125)	203 (197–209)
Remote	312 (285–340)	145 (125–164)	233 (215–250)
Very remote	400 (358–442)	198 (166–230)	305 (278–331)



Length of stay in hospital

Length of stay provides an approximate indication of case severity, that is, severe injuries are more likely to result in longer episodes of care than minor injuries. The mean length of stay in hospital for persons seriously injured in road vehicle traffic crashes was 5.0 days. Mean length of stay in hospital for persons seriously injured in road vehicle traffic crashes rose with age (Figure 3.5). For the 9,239 persons with serious injuries that posed a high threat to life, the mean length of stay in hospital was 11.5 days and the mean length of stay was greater across all age groups (Figure 3.6). The rise in mean length of stay with age was less pronounced for persons with serious injuries that posed a high threat to life than for all persons seriously injured in road vehicle traffic crashes. The higher than expected mean length of stay of 19.5 days for females aged 5-9 years was largely as a result of a small number of cases with lengths of stay of around 100 days or more. Refer to the Data issues section of the report for details on how mean length of stay is calculated.

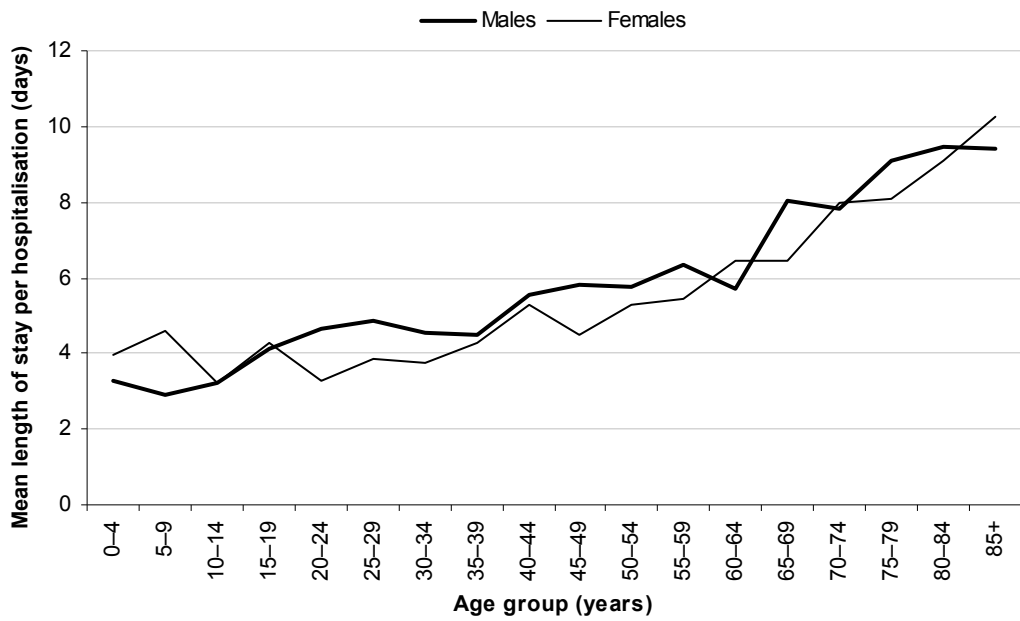


Figure 3.5: Road vehicle traffic crashes – mean length of stay in hospital for serious injury by age and sex, Australia 2006-07

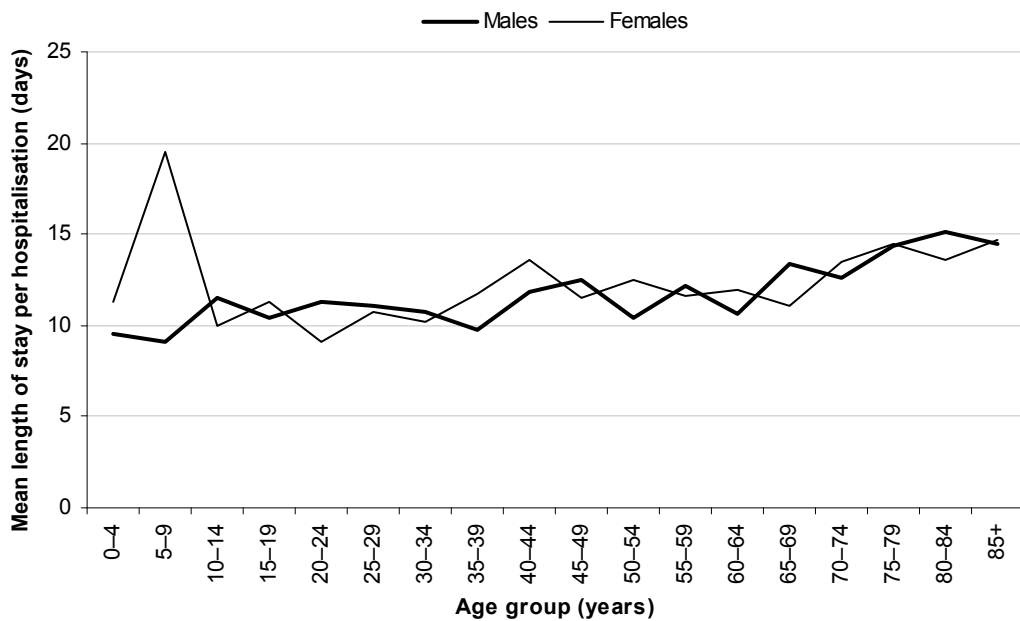
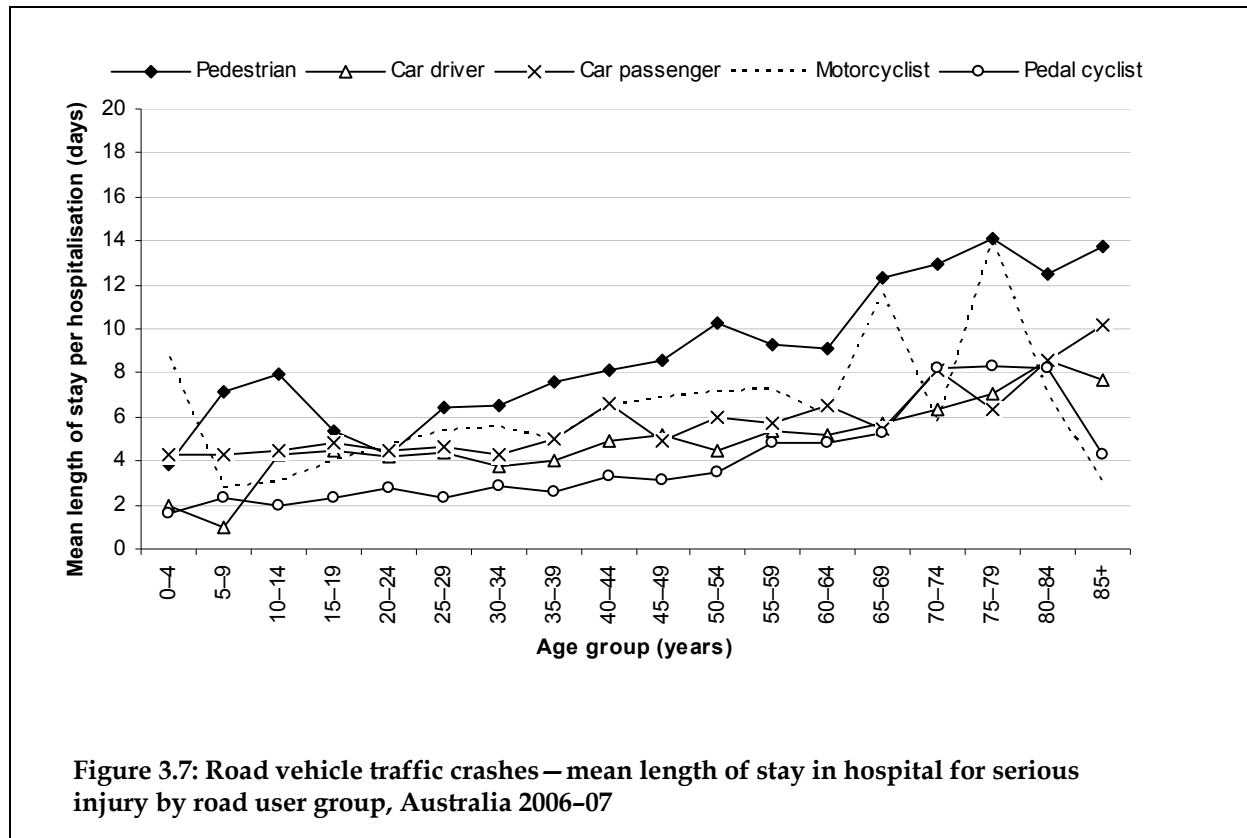


Figure 3.6: Serious injury with a high threat to life – mean length of stay in hospital for road vehicle traffic crashes by age and sex, Australia 2006-07

Length of stay in hospital by road user group

Among persons seriously injured due to road vehicle traffic crashes, pedestrians had the longest episodes of care, with a mean length of stay of 8.1 days in hospital. The mean length of stay in hospital was 5.4 days for motorcyclists, 5.2 days for car passengers, 4.8 days for car drivers and 2.9 days for pedal cyclists. Mean length of stay generally increased with age in most age groups (Figure 3.7).



Body part injured

The body region injured in road vehicle traffic crashes differed according to road user group (Table 3.13). Nearly a third (33%) of pedestrians sustained head injuries while a further 27% had lower limb injuries. The injuries sustained by car drivers and car passengers were similar; nearly a quarter sustained head injuries and nearly a fifth had injuries involving the thorax (chest). Shoulder and upper limb injuries were the most common among motorcyclists (35%), followed by lower limb injuries (29%). Shoulder and upper limb injuries were the most common among pedal cyclists (43%) with head injuries being the second most frequent (24%).

Table 3.13: Case counts and proportions by body region for serious injury due to road vehicle traffic crashes, Australia 2006-07

Body region injured	Pedestrian		Car occupant †		Car driver		Car passenger		Motorcyclist		Pedal cyclist	
	Count	Per cent	Count	Per cent	Count	Per cent	Count	Per cent	Count	Per cent	Count	Per cent
Head	922	32.7	3,844	23.7	2,412	24.0	1,163	23.0	780	10.7	1,131	23.6
Neck	63	2.2	2,693	16.6	1,827	18.2	741	14.7	188	2.6	107	2.2
Thorax	130	4.6	3,019	18.6	1,904	19.0	973	19.3	545	7.5	253	5.3
Abdomen, lower back, lumbar spine and pelvis	274	9.7	2,164	13.3	1,155	11.5	883	17.5	569	7.8	323	6.7
Shoulder and upper limb	433	15.3	2,277	14.0	1,324	13.2	692	13.7	2,552	34.9	2,067	43.2
Hip and thigh	198	7.0	493	3.0	301	3.0	160	3.2	421	5.8	235	4.9
Lower limb	767	27.2	1,419	8.7	928	9.2	341	6.8	2,086	28.6	642	13.4
Other injuries not specified by body region	37	1.3	325	2.0	187	1.9	94	1.9	162	2.2	31	0.7
Road user totals	2,824	100.0	16,234	100.0	10,038	100.0	5,047	100.0	7,303	100.0	4,789	100.0

Notes

Shading denotes the 2 highest figures for a column.

† Includes 1,149 cases where the position of the person in the car is unspecified.

The 'body region injured' is the principal diagnosis recorded by the hospital as chiefly responsible for occasioning an episode of admitted patient care, i.e. a person might have suffered other injuries as well. Information on precisely how injuries were sustained, e.g. the role of vehicle features, is not available from the data sources used for this report.

Length of stay in hospital by body part injured

Persons with hip and thigh injuries had the longest episodes of care, with a mean length of stay in hospital of 9.4 days. The peak at ages 0–4 years for hip and thigh injuries is largely due to a small number of cases having a serious injury that resulted in long lengths of stay. Length of stay in hospital tended to rise with age (Figure 3.8).

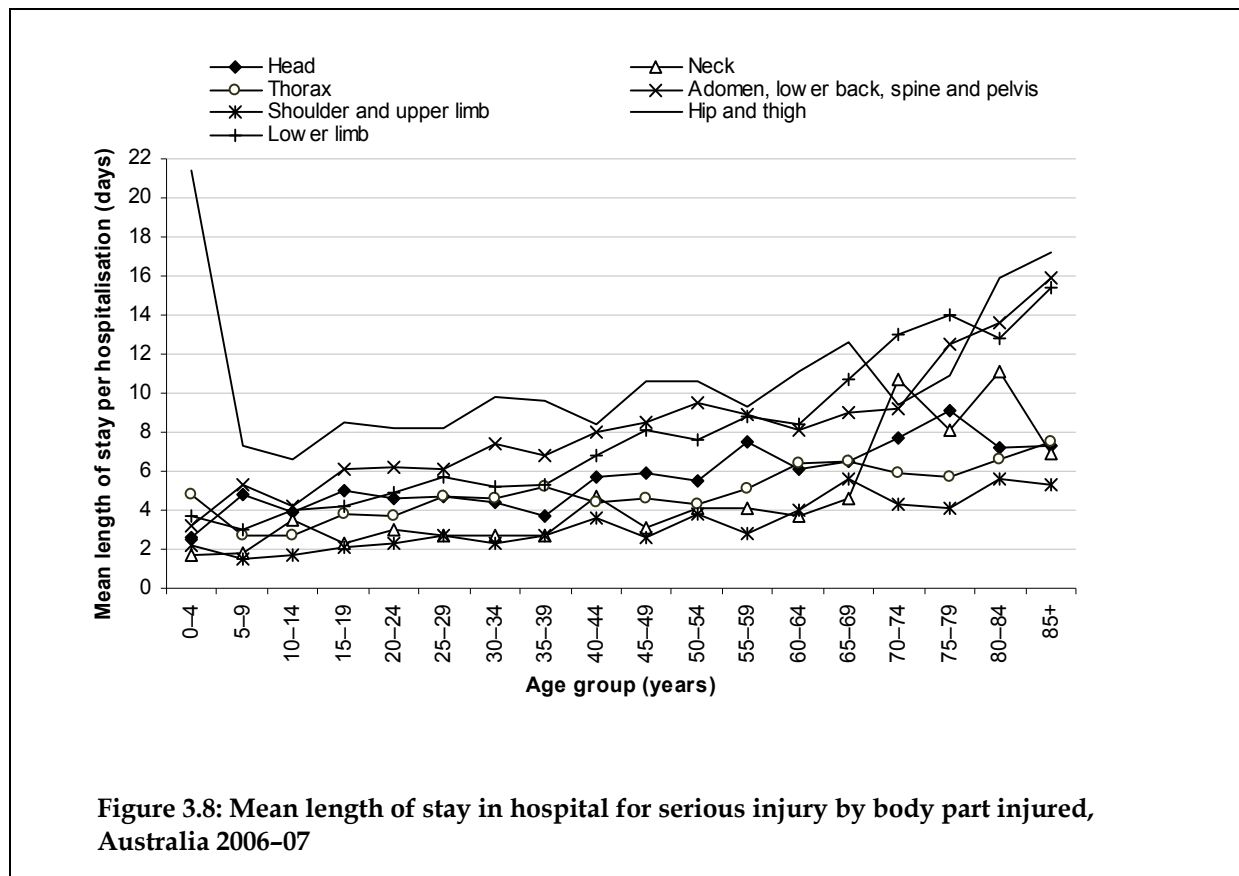


Table 3.14 shows the number of patient days by road user group and body part injured. Head injuries (32%) and lower limb injuries (30%) resulted in the highest numbers of patient days for pedestrians. For car drivers, it was head injuries (26%), followed by thorax injuries (17%). For car passengers, it was head injuries (23%) and injuries of the abdomen, lower back, lumbar spine and pelvis (22%). For motorcyclists, it was lower limb injuries (29%) and injuries of the shoulder and upper limb (17%). For pedal cyclists, it was shoulder/upper limb injuries (26%) and head injuries (24%).

Table 3.15 shows the number of patient days for road vehicle traffic crashes by the seriously injured person's vehicle and the counterpart in the collision. Nearly two thirds (63%) of patient days in hospital were due to five types of road vehicle traffic crashes: 1) a car occupant injured on a public road in a collision with a car, pick-up truck or van (19%), 2) a car occupant injured on a public road in a collision with a fixed or stationary object (14%), 3) a pedestrian injured on a public road in a collision with a car, pick-up truck or van (12%); 4) a car occupant injured on a public road in a non-collision transport accident (10%); and 5) a motorcyclist injured on a public road in a collision with a car, pick-up truck or van (8%).

Table 3.14: Road vehicle traffic crashes – patient days in hospital for serious injury by body region, Australia 2006–07

Body part injured	Pedestrian		Car occupant †		Car driver		Car passenger		Motor cyclist		Pedal cyclist	
	Patient days	Per cent	Patient days	Per cent	Patient days	Per cent	Patient days	Per cent	Patient days	Per cent	Patient days	Per cent
Head	7,281	31.7	19,207	24.3	12,356	25.7	5,883	22.5	5,192	13.2	3,312	24.1
Neck	366	1.6	8,989	11.4	5,739	11.9	2,931	11.2	1,261	3.2	419	3.0
Thorax	1,453	6.3	13,123	16.6	7,960	16.5	4,516	17.2	4,076	10.3	1,340	9.7
Abdomen, lower back, lumbar spine and pelvis	3,177	13.8	13,787	17.5	7,520	15.6	5,594	21.3	5,472	13.9	1,583	11.5
Shoulder and upper limb	1,916	8.4	7,463	9.5	4,438	9.2	2,469	9.4	6,855	17.4	3,559	25.8
Hip and thigh	1,819	7.9	5,424	6.9	3,059	6.4	2,122	8.1	4,221	10.7	1,215	8.8
Lower limb	6,846	29.8	9,671	12.3	6,237	13.0	2,423	9.2	11,558	29.3	2,270	16.5
Other injuries not specified by body region	93	0.4	1,260	1.6	809	1.7	272	1.0	776	2.0	76	0.6
Length of stay in hospital totals	22,951	100.0	78,924	100.0	48,118	100.0	26,210	100.0	39,411	100.0	13,774	100.0

Notes

Shading denotes the 2 highest figures for a road user group.

† Includes 4,596 patient days for which the position of the person in the car is unspecified.

The 'body region injured' is the principal diagnosis recorded by the hospital as **chiefly** responsible for occasioning an episode of admitted patient care, i.e. a person might have suffered other injuries as well. Information on precisely how injuries were sustained, e.g. the role of vehicle features, is not available from the data sources used for this report.

Table 3.15: Road vehicle traffic crashes – patient days in hospital by seriously injured person’s vehicle and the counterpart in the collision, Australia 2006–07

Seriously injured person	Counterpart in collision										Total
	Car, pick-up truck or van	2- or 3-wheeled motor vehicle	Pedal cycle	Pedestrian or animal	Heavy transport vehicle or bus	Train	Other non-motor vehicle	Fixed or stationary object	Non-collision transport accident†	Other and unspecified transport accidents	
Car occupant	31,311	261	25	502	4,032	135	101	22,278	15,815	4,464	78,924
Motorcyclist	13,396	522	57	464	791	279	150	5,982	10,487	7,283	39,411
Pedal cyclist	4,283	58	378	59	398	10	12	673	4,256	3,647	13,774
Pedestrian	19,636	506	230	0	1,314	195	27	0	0	1,031	22,951
Occupant of pick-up truck or van	392	*	*	7	177	*	*	436	524	97	1,638
Occupant of heavy transport vehicle	213	19	0	57	533	59	0	176	1,096	136	2,289
Bus occupant	242	0	0	22	41	0	0	70	592	130	1,097
Animal rider or occupant of animal-drawn vehicle	0	*	*	0	0	0	0	*	0	0	*
Occupant of special all-terrain or off-road vehicle	0	0	0	0	0	0	0	*	0	351	351
Occupant of three-wheeled motor vehicle	33	0	*	0	34	0	0	*	54	43	167
Occupant of a tram	0	0	0	0	0	0	0	0	0	53	53
Occupant of a train	0	0	0	0	0	0	0	0	0	36	36
Occupant of special agricultural or industrial or construction vehicle	0	0	0	0	0	0	0	0	0	250	250
Unknown	0	0	0	0	0	0	0	0	197	1,658	1,855
Total	69,506	1,367	692	1,111	7,320	681	291	29,616	33,021	19,179	162,796

Notes

Shading denotes the 5 highest figures in the table.

Includes cases where Principal diagnosis was coded to ICD-10-AM S00–T98.

* Small counts are omitted (<5).

† Includes non-collision accidents such as overturning, falling or being thrown from a vehicle.

A 'special all-terrain or off-road motor vehicle' refers only to such vehicles that are not registrable for on-road use and does not include registrable 4WD passenger vehicles, which are included under 'car occupants'.

4 Trends in serious injury due to road vehicle traffic crashes from 2000–01 to 2006–07

Case counts and trends in the rates of serious injury over a seven-year period by sex and by road user group are shown in Tables 4.1, 4.2, 4.3 and Figure 4.1. Results must be interpreted with caution as there is potential for variation over time in admission practice, especially for lower severity cases and changes over time in the coding of external causes (Harrison & Steenkamp 2002). Injuries with a high threat to life have been found elsewhere to be less susceptible to changes over time in admission practice (Langley et al. 2003; Cryer & Langley 2006) and are presented in Tables 3.10, 4.5, 4.6, 4.7 and Figures 3.3 and 4.3.

The age-standardised rate of serious injury due to road vehicle traffic crashes increased by 14% over the seven-year period from 2000–01 to 2006–07 with most of this increase occurring from 2002–03 onwards (Table 4.1). Increases in male rates were only slightly greater than increases in female rates.

The age-standardised rate of serious injury among motorcyclists increased by 47% over the seven-year period from 24.0 per 100,000 in 2000–01 to 35.3 per 100,000 in 2006–07 (Figure 4.1 and Table 4.2). The increase was mainly attributable to male motorcyclists; the male rate of serious injury increased by 45% from 43.9 per 100,000 in 2000–01 to 63.5 per 100,000 in 2006–07, whereas the rate among female motorcyclists, although rising by 67% over the seven-year period, remained only about one-tenth the rate for males.

There was a 49% increase in the rate of serious injury among male pedal cyclists from 25.3 per 100,000 in 2000–01 to 37.5 per 100,000 in 2006–07. For females there was a 42% increase in the rate of serious injury from 6.3 per 100,000 in 2000–01 to 8.9 per 100,000 in 2006–07.

The age-standardised rate of serious injury declined by 11% among pedestrians between 2000–01 and 2002–03 from 15.1 per 100,000 to 13.5 per 100,000. However, there were only minor fluctuations in this rate from 2002–03 to 2006–07. A similar pattern was seen for female pedestrian rates which declined by 16% between 2000–01 and 2002–03. Male pedestrian rates were relatively steady fluctuating between 15.3 per 100,000 in 2004–05 and to 18.6 per 100,000 in 2001–02.

Rates of serious injury among car drivers and car passengers recorded only minor fluctuations over the seven-year period for both males and persons overall. For females there was a 14% increase in the rates for car drivers over the seven-year period from 38.0 per 100,000 in 2000–01 to 43.3 per 100,000 in 2006–07, while for car passengers rates were relatively stable over this period.

Table 4.1: Road vehicle traffic crashes – trends in the age-standardised rates of serious injury by sex, Australia 2000–01 to 2006–07

Seriously injured	Age-standardised rate per 100,000 population (95% CI)						
	2000–01	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07
Males	180 (177–183)	191 (188–193)	183 (180–186)	189 (187–192)	194 (192–197)	201 (198–204)	210 (207–212)
Females	97 (95–99)	101 (99–103)	96 (94–98)	98 (97–100)	100 (98–102)	103 (101–105)	105 (103–107)
Persons	138 (137–140)	146 (144–147)	139 (138–141)	144 (142–146)	147 (146–149)	152 (150–154)	157 (156–159)
Seriously injured	Case numbers						
	2000–01	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07
Males	17,292	18,530	17,980	18,846	19,604	20,546	21,741
Females	9,402	9,910	9,546	9,934	10,244	10,657	11,036
Persons	26,694	28,440	27,526	28,782 ^(a)	29,850 ^(a)	31,204 ^(a)	32,777

(a) Includes cases where sex is missing or indeterminate.

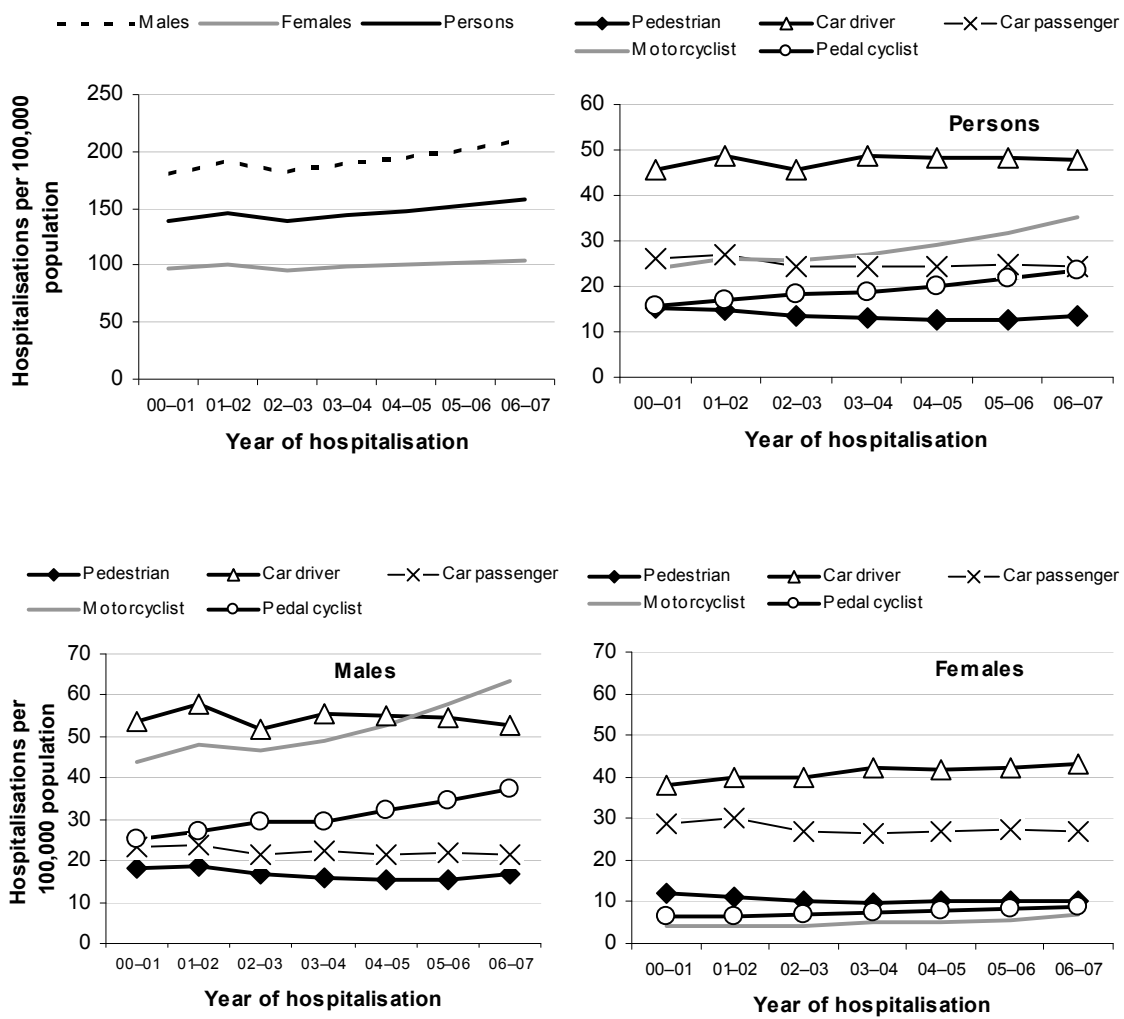


Figure 4.1: Road vehicle traffic – trends in age-standardised rates of serious injury sex and road user group, Australia 2000-01 to 2006-07

Table 4.2: Road vehicle traffic crashes – trends in the age-standardised rates of serious injury by sex and road user group, Australia 2000–01 to 2006–07

Road user group	Age-standardised rate per 100,000 population (95% CI)						
	2000–01	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07
Males							
Pedestrian	18.3 (17.4–19.1)	18.6 (17.7–19.4)	16.9 (16.0–17.7)	16.0 (15.2–16.8)	15.3 (14.5–16.0)	15.5 (14.7–16.2)	16.8 (16.0–17.6)
Car driver	53.9 (52.4–55.4)	57.9 (56.4–59.5)	52.0 (50.6–53.5)	55.3 (53.9–56.8)	55.0 (53.5–56.5)	54.5 (53.0–55.9)	52.6 (51.2–54.0)
Car passenger	23.3 (22.3–24.2)	23.6 (22.6–24.6)	21.6 (20.7–22.5)	22.6 (21.6–23.5)	21.6 (20.7–22.5)	22.1 (21.2–23.1)	21.3 (20.4–22.2)
Motorcyclist	43.9 (42.6–45.2)	47.9 (46.5–49.3)	46.9 (45.5–48.2)	49.0 (47.6–50.3)	52.8 (51.4–54.3)	57.7 (56.2–59.1)	63.5 (62.0–65.1)
Pedal cyclist	25.3 (24.3–26.3)	27.2 (26.2–28.2)	29.3 (28.2–30.3)	29.5 (28.4–30.5)	32.3 (31.2–33.5)	34.5 (33.3–35.6)	37.5 (36.4–38.7)
Females							
Pedestrian	12.0 (11.3–12.7)	11.3 (10.6–11.9)	10.2 (9.5–10.8)	9.8 (9.2–10.4)	10.3 (9.7–11.0)	10.2 (9.6–10.9)	10.1 (9.5–10.7)
Car driver	38.0 (36.8–39.2)	40.0 (38.8–41.3)	40.0 (38.7–41.2)	42.0 (40.8–43.3)	41.8 (40.5–43.0)	42.4 (41.2–43.7)	43.3 (42.0–44.6)
Car passenger	28.6 (27.5–29.7)	30.2 (29.1–31.3)	26.9 (25.9–28.0)	26.4 (25.4–27.4)	26.9 (25.9–27.9)	27.5 (26.5–28.5)	26.9 (25.9–27.9)
Motorcyclist	4.0 (3.6–4.4)	4.2 (3.8–4.7)	4.2 (3.8–4.6)	5.0 (4.5–5.4)	5.2 (4.7–5.6)	5.7 (5.2–6.1)	6.7 (6.2–7.2)
Pedal cyclist	6.3 (5.8–6.8)	6.4 (5.9–6.9)	7.1 (6.5–7.6)	7.4 (6.8–7.9)	7.7 (7.1–8.2)	8.4 (7.9–9.0)	8.9 (8.3–9.5)
Persons							
Pedestrian	15.1 (14.6–15.7)	14.8 (14.3–15.4)	13.5 (13.0–14.0)	12.9 (12.4–13.4)	12.8 (12.3–13.3)	12.8 (12.3–13.3)	13.5 (13.0–14.0)
Car driver	45.7 (44.8–46.7)	48.8 (47.8–49.8)	45.8 (44.9–46.8)	48.5 (47.6–49.5)	48.2 (47.2–49.1)	48.3 (47.3–49.2)	47.8 (46.9–48.7)
Car passenger	26.1 (25.4–26.8)	27.0 (26.3–27.7)	24.4 (23.7–25.1)	24.6 (23.9–25.2)	24.4 (23.7–25.1)	24.9 (24.2–25.6)	24.2 (23.5–24.9)
Motorcyclist	24.0 (23.3–24.7)	26.1 (25.4–26.8)	25.6 (24.9–26.3)	27.1 (26.3–27.8)	29.1 (28.4–29.9)	31.8 (31.0–32.6)	35.3 (34.5–36.1)
Pedal cyclist	15.8 (15.3–16.4)	16.9 (16.3–17.4)	18.3 (17.7–18.9)	18.5 (17.9–19.1)	20.1 (19.5–20.7)	21.6 (20.9–22.2)	23.3 (22.7–24.0)

Table 4.3: Road vehicle traffic crashes – serious injury cases by sex and road user group, Australia 2000–01 to 2006–07

Road user group	Case numbers						
	2000–01	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07
Males							
Pedestrian	1,731	1,777	1,633	1,568	1,522	1,563	1,731
Car driver	5,122	5,588	5,085	5,490	5,523	5,576	5,461
Car passenger	2,255	2,306	2,132	2,251	2,190	2,273	2,213
Motorcyclist	4,252	4,683	4,630	4,891	5,344	5,901	6,609
Pedal cyclist	2,455	2,672	2,905	2,951	3,277	3,527	3,885
Females							
Pedestrian	1,185	1,124	1,037	1,010	1,072	1,081	1,093
Car driver	3,691	3,944	3,992	4,248	4,285	4,410	4,577
Car passenger	2,772	2,966	2,683	2,656	2,750	2,840	2,834
Motorcyclist	390	413	410	494	517	577	694
Pedal cyclist	601	620	686	725	761	843	904
Persons							
Pedestrian	2,916	2,901	2,670	2,578	2,594	2,644	2,824
Car driver	8,813	9,532	9,077	9,738	9,809 ^(a)	9,986	10,038
Car passenger	5,027	5,272	4,815	4,908 ^(a)	4,941 ^(a)	5,113	5,047
Motorcyclist	4,642	5,096	5,040	5,385	5,861	6,479 ^(a)	7,303
Pedal cyclist	3,056	3,292	3,591	3,676	4,038	4,370	4,789

(a) Includes cases where sex is missing or indeterminate.

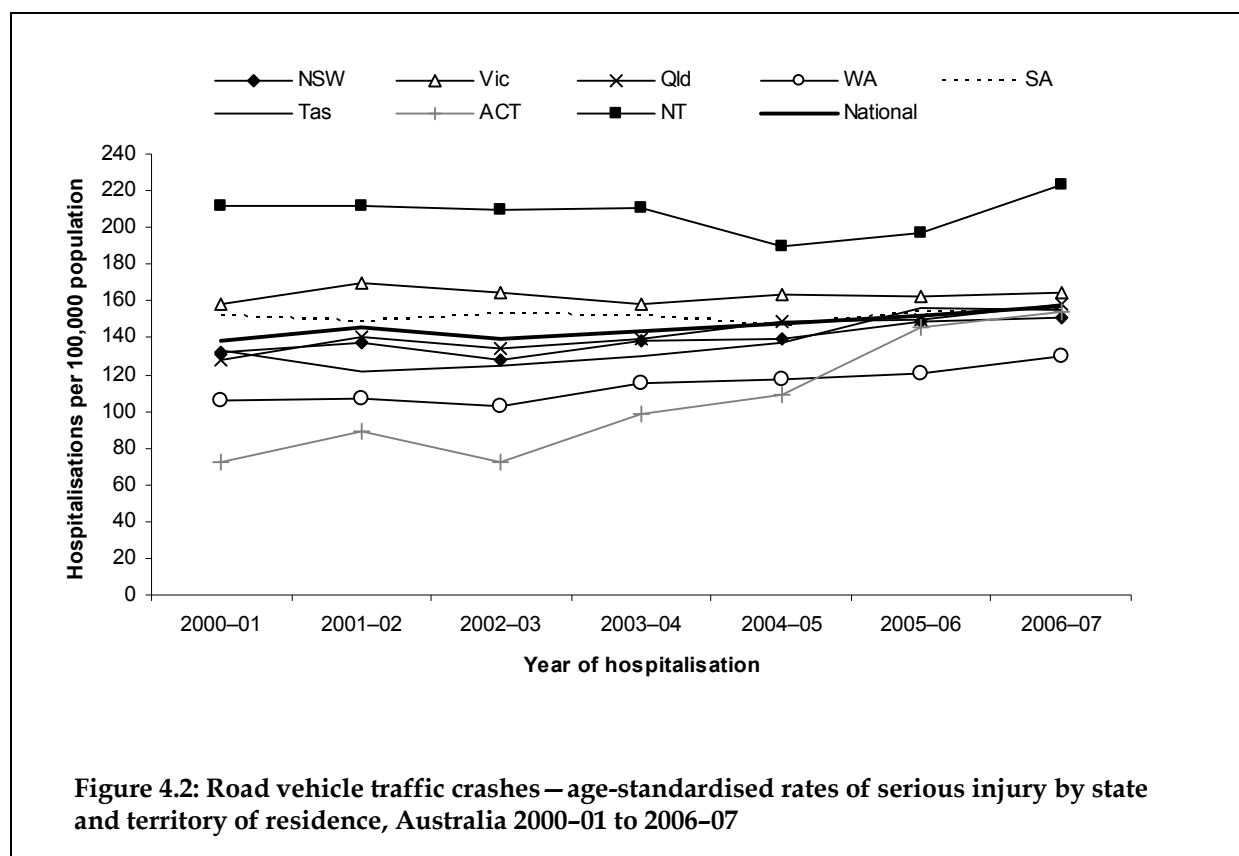
Trends in serious injury by state and territory of residence

Trends in the rate of serious injury due to road vehicle traffic crashes over a seven-year period by state and territory of residence are shown in Table 4.4 and Figure 4.2. Results must be interpreted with caution as there is potential for variation between jurisdictions in admission practice, especially for lower severity cases, and differences in the coding of external cause. Injuries with a high threat to life have been found elsewhere to be less susceptible to changes over time in admission practice (Langley et al. 2003; Cryer & Langley 2006) and may also provide more accurate comparisons between jurisdictions (see next section).

Over the seven-year period (2000–01 to 2006–07), the Northern Territory and Victoria had rates of serious injury that were significantly greater than the national rate. Western Australia had rates that were significantly lower than the national rate. The Australian Capital Territory had rates significantly below the national rate prior to 2005–06, but a rate similar to the national rate for 2005–06 and 2006–07. Serious injury rates remained relatively constant in each jurisdiction over the seven-year period, with the exception of the Australian Capital Territory.

Table 4.4: Road vehicle traffic crashes – age-standardised rates of serious injury by state and territory of residence, Australia 2000–01 to 2006–07

State and territory	Age-standardised rate per 100,000 population (95% CI)						
	2000–01	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07
NSW	132 (129–135)	137 (134–140)	128 (125–131)	139 (136–141)	140 (137–142)	149 (146–152)	151 (148–154)
Vic	158 (154–162)	170 (167–174)	164 (161–168)	158 (155–162)	164 (160–167)	163 (159–166)	165 (161–168)
Qld	128 (124–132)	141 (137–145)	135 (131–138)	140 (136–143)	149 (145–153)	150 (146–154)	158 (154–162)
WA	106 (101–110)	107 (103–112)	103 (99–108)	115 (111–120)	117 (112–122)	121 (116–125)	130 (126–135)
SA	152 (145–158)	149 (142–155)	153 (147–159)	152 (146–158)	147 (140–153)	154 (148–160)	155 (149–161)
Tas	133 (123–144)	122 (112–132)	125 (115–136)	130 (119–140)	137 (126–147)	156 (145–168)	155 (144–167)
ACT	73 (63–82)	89 (79–100)	73 (63–82)	99 (88–109)	109 (98–120)	146 (133–159)	154 (141–167)
NT	212 (190–234)	212 (191–232)	210 (189–231)	210 (189–231)	190 (170–210)	197 (176–218)	223 (203–243)
National	138 (137–140)	146 (144–147)	139 (138–141)	144 (142–146)	147 (146–149)	152 (150–154)	157 (156–159)



Trends in serious injury with a high threat to life due to road vehicle traffic crashes from 2002–03 to 2006–07

The age-standardised rate of serious injury due to road vehicle traffic crashes for injuries with a high threat to life showed a steady increase over the five-year period (Tables 4.5 and Figure 4.3). Years prior to 2002–03 are not included in this section for reasons outlined in the appendix on 'data issues'. Male rates increased by 17% from 51 per 100,000 in 2002–03 to 60 per 100,000 in 2006–07, while female rates increased by 16% from 24 per 100,000 in 2002–03 to 28 per 100,000 in 2006–07.

The age-standardised rate of serious injury with a high threat to life among motorcyclists increased by 49% over the five-year period from 6.0 per 100,000 in 2002–03 to 9.0 per 100,000 in 2006–07 (Table 4.6 and Figure 4.3). The increase was mainly attributable to male motorcyclists; the male rate of serious injury increased by 48% from 11.1 per 100,000 in 2002–03 to 16.5 per 100,000 in 2006–07, whereas the rate among female motorcyclists was low over the five-year period.

The age-standardised rate of serious injury with a high threat to life among pedal cyclists increased by 39% over the five-year period from 3.0 per 100,000 in 2002–03 to 4.1 per 100,000 in 2006–07. The increase was mainly attributable to male pedal cyclists; the male rate of serious injury increased by 39% from 5.1 per 100,000 in 2002–03 to 7.1 per 100,000 in 2006–07. Although there was a similar increase in the female rate (40%) over the five-year period, this rate remained low at only 1.2 per 100,000.

The age-standardised rate of serious injury with a high threat to life remained steady among pedestrians over the five-year period. There was little change in male rates, while female rates were also relatively steady ranging from 3.7 per 100,000 in 2002–03 to 4.2 per 100,000 in 2006–07.

Rates of serious injury with a high threat to life among car drivers and car passengers remained relatively steady over the five-year period. The most noticeable increase in rates was among female car drivers where the rate increased by 17% from 9.3 per 100,000 in 2002–03 to 10.9 in 2006–07.

Table 4.5: Serious injury with a high threat to life – trends in the age-standardised rates for road vehicle traffic crashes by sex, Australia 2002–03 to 2006–07

High threat to life seriously injured	Age-standardised rate per 100,000 population (95% CI)				
	2002–03	2003–04	2004–05	2005–06	2006–07
Males	51 (50–53)	53 (52–55)	56 (55–58)	58 (57–60)	60 (59–62)
Females	24 (23–25)	25 (24–26)	26 (25–27)	27 (26–28)	28 (27–29)
Persons	38 (37–39)	39 (38–40)	41 (40–42)	42 (41–43)	44 (43–45)
High threat to life seriously injured	Case numbers				
	2002–03	2003–04	2004–05	2005–06	2006–07
Males	5,005	5,274	5,638	5,933	6,266
Females	2,469	2,596	2,725	2,816	2,973
Persons	7,474	7,871	8,365	8,750	9,239

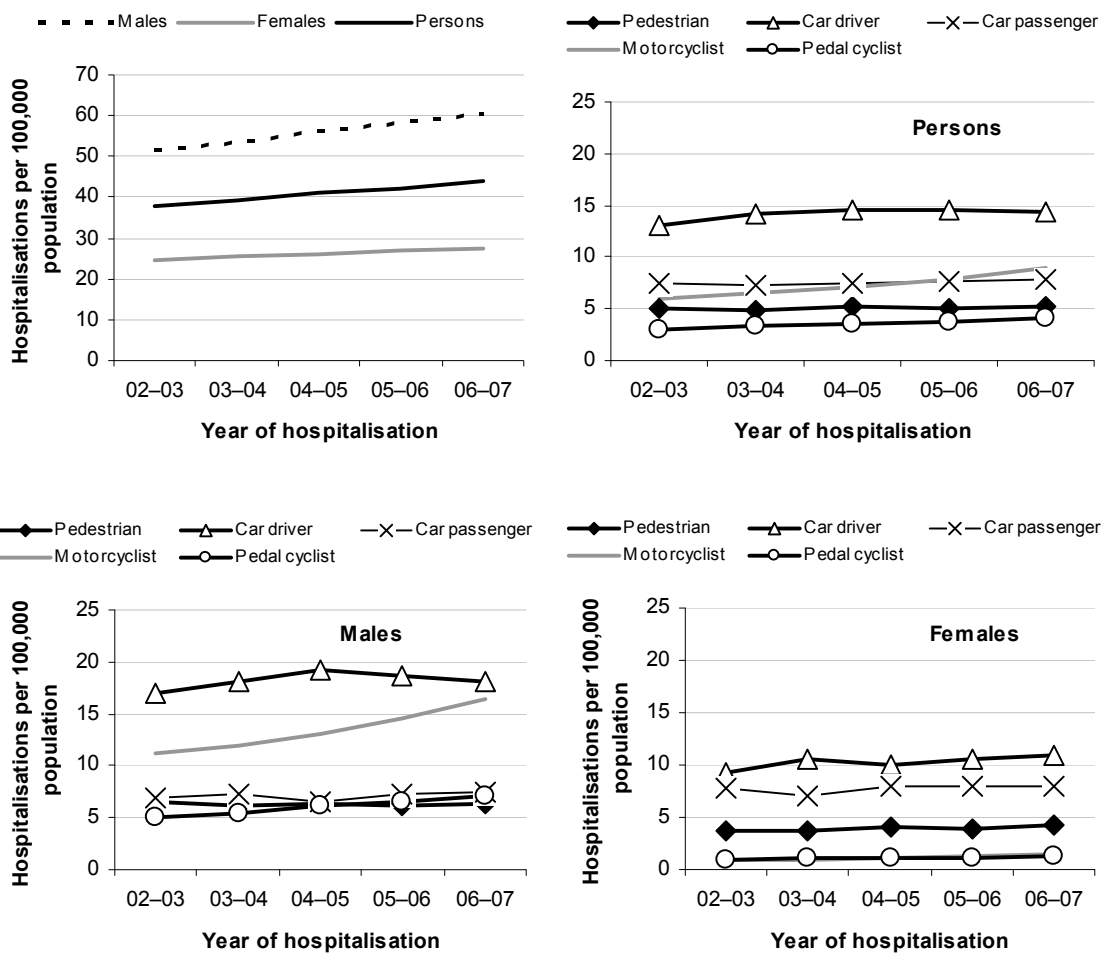


Figure 4.3: Serious injury with a high threat to life – trends in the age-standardised rates for road vehicle traffic crashes by sex and road user group, Australia 2002-03 to 2006-07

Table 4.6: Serious injury with a high threat to life – trends in the age-standardised rates for road vehicle traffic crashes by sex and road user group, Australia 2002–03 to 2006–07

Seriously injured	Age-standardised rate per 100,000 population (95% CI)				
	2002–03	2003–04	2004–05	2005–06	2006–07
Males					
Pedestrian	6.5 (5.9–7.0)	6.1 (5.6–6.6)	6.3 (5.8–6.8)	6.1 (5.6–6.6)	6.4 (5.9–6.9)
Car driver	17.0 (16.2–17.8)	18.0 (17.2–18.9)	19.2 (18.4–20.1)	18.7 (17.8–19.5)	18.1 (17.2–18.9)
Car passenger	6.9 (6.4–7.4)	7.2 (6.7–7.8)	6.6 (6.1–7.1)	7.3 (6.8–7.8)	7.4 (6.9–7.9)
Motorcyclist	11.1 (10.5–11.8)	11.9 (11.2–12.6)	13.1 (12.4–13.8)	14.5 (13.8–15.3)	16.5 (15.7–17.3)
Pedal cyclist	5.1 (4.7–5.5)	5.4 (5.0–5.9)	6.1 (5.6–6.6)	6.5 (6.0–7.0)	7.1 (6.6–7.6)
Females					
Pedestrian	3.7 (3.3–4.1)	3.8 (3.4–4.1)	4.1 (3.7–4.4)	3.9 (3.5–4.2)	4.2 (3.8–4.6)
Car driver	9.3 (8.7–9.9)	10.6 (10–11.3)	10.1 (9.4–10.7)	10.5 (9.9–11.1)	10.9 (10.2–11.5)
Car passenger	7.8 (7.2–8.3)	7.1 (6.6–7.6)	8.0 (7.5–8.6)	8.0 (7.5–8.6)	8.0 (7.4–8.5)
Motorcyclist	0.9 (0.1–1.1)	1.0 (0.1–1.2)	1.1 (0.1–1.4)	1.2 (1.0–1.4)	1.4 (1.2–1.7)
Pedal cyclist	0.9 (0.0–1.1)	1.1 (0.1–1.3)	1.0 (0.1–1.2)	1.0 (0.0–1.2)	1.2 (1.0–1.5)
Persons					
Pedestrian	5.0 (4.7–5.3)	4.9 (4.6–5.2)	5.2 (4.9–5.5)	5.0 (4.7–5.3)	5.3 (5.0–5.6)
Car driver	13.0 (12.5–13.5)	14.2 (13.7–14.7)	14.5 (14.0–15.0)	14.5 (14.0–15.0)	14.4 (13.9–14.9)
Car passenger	7.4 (7.0–7.8)	7.2 (6.8–7.6)	7.4 (7.0–7.8)	7.7 (7.3–8.1)	7.7 (7.4–8.1)
Motorcyclist	6.0 (5.7–6.4)	6.5 (6.1–6.8)	7.1 (6.8–7.5)	7.9 (7.5–8.3)	9.0 (8.6–9.4)
Pedal cyclist	3.0 (2.7–3.2)	3.3 (3.0–3.5)	3.6 (3.3–3.8)	3.8 (3.5–4.0)	4.1 (3.9–4.4)

Table 4.7: Serious injury with a high threat to life – case numbers for road vehicle traffic crashes by sex and road user group, Australia 2002–03 to 2006–07

Road user group	Case numbers				
	2002–03	2003–04	2004–05	2005–06	2006–07
Males					
Pedestrian	613	594	625	615	656
Car driver	1,651	1,773	1,916	1,909	1,872
Car passenger	680	719	667	749	770
Motorcyclist	1,096	1,186	1,326	1,487	1,720
Pedal cyclist	501	542	618	671	741
Females					
Pedestrian	385	396	432	412	469
Car driver	937	1,086	1,049	1,104	1,168
Car passenger	785	722	834	844	854
Motorcyclist	92	101	116	126	147
Pedal cyclist	87	112	103	106	128
Persons					
Pedestrian	998	990	1,057	1,027	1,125
Car driver	2,588	2,859	2,966	3,013	3,040
Car passenger	1,465	1,442	1,502	1,593	1,624
Motorcyclist	1,188	1,287	1,442	1,614	1,867
Pedal cyclist	588	654	721	777	869

Trends in serious injury with a high threat to life by state and territory of residence

Trends over a five-year period in the rate of serious injury with a high threat to life by state and territory of residence due to road vehicle traffic crashes are shown in Table 4.8 and Figure 4.4. The notable finding is that the Northern Territory had rates of serious injury with a high threat to life that were significantly greater than the national rate for each year of the five-year period (2002–03 to 2006–07). Rates of high threat to life injury are more tightly clustered for the other jurisdictions than are the equivalent rates for all serious injuries (Figure 4.2). For each state and territory, the rate of serious injury with a high threat to life increased over the five-year period ranging from 6% for South Australia to 39% for the Australian Capital Territory.

Table 4.8: Serious injury with a high threat to life – age-standardised rates for road vehicle traffic crashes by state and territory of residence, Australia, 2002-03 to 2006-07

State and territory	Age-standardised rate per 100,000 population (95% CI)				
	2002-03	2003-04	2004-05	2005-06	2006-07
NSW	30.8 (29.5–32.1)	37.1 (35.6–38.6)	38.8 (37.4–40.3)	39.4 (37.9–40.9)	40.1 (38.6–41.5)
Vic	41.6 (39.8–43.4)	40.4 (38.7–42.2)	41.4 (39.6–43.2)	43.0 (41.2–44.8)	44.5 (42.7–46.3)
Qld	40.2 (38.2–42.2)	38.8 (36.9–40.8)	43.5 (41.4–45.5)	42.5 (40.5–44.5)	44.6 (42.6–46.7)
WA	32.2 (29.6–34.7)	32.9 (30.3–35.4)	32.3 (29.8–34.8)	35.7 (33.1–38.3)	39.1 (36.4–41.8)
SA	46.0 (42.6–49.5)	42.4 (39.1–45.7)	43.1 (39.8–46.4)	48.5 (45.0–52.0)	48.6 (45.2–52.1)
Tas	37.2 (31.6–42.8)	35.7 (30.3–41.1)	38.8 (33.1–44.5)	48.5 (42.2–54.8)	45.9 (39.8–52.0)
ACT	26.4 (20.7–32.1)	35.3 (28.7–42.0)	34.7 (28.2–41.2)	36.0 (29.5–42.4)	36.7 (30.4–43.1)
NT	72.2 (59.4–85.0)	75.8 (63.0–88.7)	79.4 (65.6–93.3)	80.7 (66.6–94.8)	85.1 (72.7–97.4)
National	37.7 (36.9–38.6)	39.2 (38.3–40.1)	41.0 (40.1–41.9)	42.3 (41.4–43.2)	43.9 (43.0–44.8)



Appendix 1: Data issues

Serious injury

National hospital separations data were sourced from the Australian Institute of Health and Welfare (AIHW) National Hospital Morbidity Database (NHMD). A 'separation' is a term used in Australian hospitals to refer to a formal, or statistical process, by which an episode of care for an admitted patient ceases (AIHW 2001). An 'episode of care' is a period of health care characterised by only one care type. For the lay person, this is perhaps best understood as a stay in a particular ward in a hospital. For example, a person who is in an acute care ward and is then transferred to a rehabilitation ward will have undergone two episodes of care and hence two separations within the hospital.

Hospital cases were defined as being due to a land transport accident if they contained a first reported Chapter 20 external cause code in the ICD-10-AM range V01–V89. Cases with a Principal diagnosis other than injury and cases in which land transportation only appears as an additional external cause code were excluded on the grounds that injury due to a land transport accident was not recorded as being the main reason for admission to hospital (Table A1), resulting in a starting file of 57,622 records.

Table A1: Selection criteria for hospital records of land transport injury

Record occurring from 1 July 2006 to 30 June 2007	Persons
Records with an ICD-10-AM 'Land Transport Accident' code (V01–V89) as external cause anywhere in the record.*	66,385
Records with a 'Land Transport Accident' as first reported external cause†, and Injury as a Principal Diagnosis (S00–T98)	65,813 57,622

Notes

* There were 572 records with a first reported external cause code of another type of injury (e.g. complications of surgical and medical care, other unintentional injuries, falls, intentional self-harm etc.) but a 2nd or subsequent external cause code indicating a land transport accident.

† There were 8,191 cases with a first reported external cause code indicating a land transport accident but a Principal diagnosis outside of the injury range (S00–T98). The most common Principal diagnoses were care involving use of rehabilitation procedure, unspecified (Z50.9, $n = 3,792$), examination and observation following transport accident (Z04.1, $n = 812$), other specified surgical follow-up care (Z48.8, $n = 183$), cellulitis of lower limb (L03.11, $n = 173$), cervicalgia (M54.2, $n = 162$) and examination and observation following other accident (Z04.3, $n = 141$).

Hospital cases were defined as being due to road vehicle traffic crashes if they contained a Principal Diagnosis in the range S00–T98 and a first reported external cause code of: V0(1–6).1, V09.2(3), V1(0–8).4(5,9), V19.4(5,6,9), V2(0–8).4(5,9), V29.4(5,6,9), V3(0–8).5(6,7,9), V39.4(5,6,9), V4(0–8).5(6,7,9), V49.4(5,6,9), V5(0–8).5(6,7,9), V59.4(5,6,9), V6(0–8).5(6,7,9), V69.4(5,6,9), V7(0–8).5(6,7,9), V79.4(5,6,9), V81(2).1, V82.9, V8(3–6).0(1,2,3), V87, V89.2(3).

Seriously injured is defined for this report as an injury which results in the person being admitted to hospital, and subsequently discharged alive either on the same day or after one or more nights stay in a hospital bed (i.e. deaths are excluded). As discharge from hospital can include transfer to home, to another acute care hospital and to another form of care (e.g. rehabilitation), a method has been used in this report to reduce over-counting of injury

cases by omitting separations in which the mode of admission is recorded as being by transfer from another acute-care hospital, on the grounds that such cases are likely to result in two or more separation records for the same injury.

Records that met the following criteria are included in this report:

- Australian hospital separations occurring 1 July 2006 to 30 June 2007, coded according to the fifth edition of ICD-10-AM (NCCH 2006);
- Principal Diagnosis in the ICD-10-AM range S00–T98 using Chapter XIX Injury, poisoning and certain other consequences of external causes codes;
- First (left-most) external cause of injury or poisoning in ICD-10-AM range V01–V89 (i.e. the ‘Land transport accidents’ section of Chapter XX External causes of morbidity and mortality);
- Mode of admission has any value except the one indicating that transfer from another acute-care hospital has occurred; and
- Mode of separation has any value except the one indicating that the person died while in hospital.

Data for previous years (2000–01 to 2006–07) are included in tables and figures in Chapter 4 for sections relating the road traffic road crashes and for years (2002–03 to 2006–07) in sections relating to high threat to life injuries. The calculation of land transport accidents as a percentage of all hospital separations and the calculation of total patient days (including same day, which are assigned a stay of one day) included all separations (i.e. not omitting separations in which the mode of admission is recorded as being by transfer from another acute-care hospital or separations in which the person died in hospital).

Serious injury with a high threat to life

High threat to life serious injury cases are selected on the basis of having an ICD-based Injury Severity Score (ICISS) of less than 0.941. ICISS is a measure of injury severity based upon a patient's injury diagnoses. The ICISS measure for this report is based upon ICD-10-AM coding and was derived using Australian hospital separations data (Stephenson et al. 2004). ICISS involves calculating a Survival Risk Ratio (SRR), i.e. the probability of survival, for each individual injury diagnosis code as the ratio of the number of patients with that injury code who have not died to the total number of patients diagnosed with that code. Thus, a given SRR approximates the likelihood that a patient will survive a particular injury. Each patient's ICISS score (survival probability) is then the product of the probabilities of surviving each of their injuries individually. This may be a single SRR, as in the case of a patient with a single injury, or it may be multiple SRRs, as in the case of a patient with multiple injuries. Hence a patient's ICISS score can vary from 0 (most severe) to 1 (least severe).

The high threat to life estimates presented in this report are a little lower than the estimates for the same years in the previous report in the series (Berry & Harrison 2008). This is due to a slightly different method in calculating the ICISS scores (Henley & Harrison 2009). In the previous report, standardised rate ratios (SRRs) were calculated using seven data years (1999–00 and 2005–06), whereas the current report utilises only two data years (2005–06 to 2006–07). Another difference is that in this report ICISS was not calculated for data years prior to 2002–03. This is because there was a significant expansion of a number ICD-10-AM codes in the range S00–T89 in the third edition of ICD-10-AM which was used from

July 2002. Hence calculating SRRs for the entire period from 2000–01 to 2006–07 would have required significant back mapping of expanded codes available after this date to their parent codes, with a consequent loss of discrimination.

There is potential for variation over time in admission practice, especially for lower severity cases and changes over time in the coding of external causes (Harrison & Steenkamp 2002). There may also be jurisdictional differences in admission practice. Injuries with a high threat to life have been found elsewhere to be less susceptible to changes over time in admission practice (Langley et al. 2003; Cryer & Langley 2006) and may also provide more accurate comparisons between jurisdictions.

Population and other denominators

With the exception of Tables 3.5 and 3.6, all rates in this report were calculated using, as the denominator, the final estimate of the estimated resident population as at 31 December in the relevant year (e.g. 31 December 2006 for 2006–07 data). The rates in Tables 3.5 and 3.6 were calculated using, as the denominator, the number of each vehicle type registered by state and territory sourced from the Australian Bureau of Statistics Motor Vehicle Census (ABS 2008a) and the kilometres travelled, sourced from the Survey of Motor Vehicle Use, Australia (ABS 2008b). Direct standardisation was used to age-standardise rates, using the Australian population in 2001 as the standard (ABS 2003). Note that it is a convention of the ABS and AIHW to change the standard reference population only once a decade, to the latest yy01 census. Age-standardised rates and 95% confidence intervals were calculated in Stata version 10.1 statistical software (Stata Corporation 2008) using the `-dstdize-` command. For further information on how jurisdiction is defined, see page 27.

Calculation of mean length of stay in hospital

Mean length of stay in hospital was calculated by dividing the total number of patient days for all hospital separations in 2006–07 where admission was as a result of a land transport accident by the estimated number serious injury cases resulting from a land transport accident. The estimated number serious injury cases is calculated by excluding cases transferred from another acute hospital and cases where death occurred in hospital. These exclusions are done in order to prevent double counting of cases (i.e. where a patient may have two or more hospital separations relating to the same injury).

Classification of remoteness area

Remoteness area in this report refers to the place of usual residence of the person who was admitted to hospital. The remoteness areas were specified according to the ABS Australian Standard Geographical Classification (ASGC) (ABS 2001). Remoteness is defined in a manner based on the Accessibility/Remoteness Index of Australia (ARIA), which was developed for the Commonwealth Department of Health and Aged Care by the National Key Centre for Social Applications of Geographic Information Systems (GISCA), Adelaide University. According to this method, remoteness is an index applicable to any point in Australia, based on road distance from urban centres of five sizes. The ABS has provided tables that specify the proportion of the population of each Statistical Local Area (SLA) in Australia whose place of residence is in each of five segments of the remoteness index. These segments are:

- Major cities, with ARIA index value of 0 to 0.2
- Inner regional, with ARIA index value of >0.2 and ≤2.4
- Outer regional, with ARIA index value of >2.4 and ≤5.92
- Remote, with ARIA index value of >5.92 and ≤10.53
- Very remote, with average ARIA index value of >10.53.

These tables were used to assign records to the five areas, on the basis of the SLA of usual residence of the person.

Most SLAs lie entirely within one of the five areas. If this was so for all SLAs, then each record could simply be assigned to the area in which its SLA lies. However, some SLAs overlap two or more of the areas. Records with these SLAs were assigned to remoteness areas in proportion to the area-specific distribution of the resident population of the SLA according to the 2001 census. For hospitalisations, each record in the set having a particular SLA code was assigned to one or other of the areas probabilistically, in proportion to the resident population of that SLA. The resulting values are integers.

The hospital datasets used for this report do not contain information on the crash location and it is therefore not possible to determine with certainty if the crash occurred in the remoteness area of residence of the person injured. Remoteness area of residence is nonetheless a useful classification in itself and an indicator of crash location if it can be assumed that most crashes in which people are seriously injured occur in the vicinity of where they live. The DITRDLG estimates, based on 2000 to 2003 data, that around 30% of operators (drivers, motorcyclists and cyclists) or persons killed in fatal road crashes are involved in crashes within their postcode of residence and a further 50% or more are involved in a fatal road crash within 100 kilometres of the centroid of their postcode of residence (but not within their postcode of residence). It is likely that non-fatal crashes in which people are seriously injured follow a similar pattern.

Suppression of small cell counts in tables

Cell counts in tables that are four cases or fewer have been suppressed as have rates derived from them, to protect confidentiality and because values based on very small numbers are sometimes difficult to interpret. In the instances where only one cell in a row or column has a count of four or less, counts of one or more other cells in the same row or column have generally also been suppressed.

Comparability with other reports

Australian hospitals use an Australian clinical modification of the international standard classification called the International Statistical Classification of Diseases (ICD) when reporting data on persons injured and subsequently admitted to hospital (morbidity data). ICD provides a nationally consistent basis for looking at morbidity due to transport accidents of all kinds (road, rail, water and air). However, it is not necessarily consistent with the approach taken by the DITRDLG or others in looking at safety in each transport mode individually. For example, road safety statistics compiled by the DITRDLG are focused on crashes on public roads, whereas ICD covers road crashes both on and off public roads. Aviation statistics compiled by the DITRDLG do not cover hang-gliders, gliders and other forms of non-powered aircraft, whereas ICD does.

Serious injury data series published previously by the DITRDLG for the period 1999–00 to 2002–03 excluded same-day separations from the definition of serious injury. The previously published reports for the periods 2003–04 (Berry & Harrison 2007) and 2005–06 (Berry & Harrison 2008) and the current report include same-day separations in the figures. This effectively means the threshold for serious injury is now ‘admitted to hospital’, regardless of the length of stay. In 2006–07, same-day separations accounted for one-third of non-fatal transport injury. It has been found that persons with injuries that pose a high threat to life can still be admitted to and discharged from hospital to a place of usual residence on the same day. In 2006–07, for example, there were over 700 such transport injury cases.

The 1999–00 to 2002–03 data series also focused only on serious injury in traffic or accidents on public roads whereas the reports for the periods 2003–04 (Berry & Harrison 2007) and 2005–06 (Berry & Harrison 2008) and the current report have broadened the scope to include non-traffic or off-road accidents in part of the report (Chapter 2), further increasing the overall figures above those previously reported.

For national road deaths, readers should refer to the ‘road safety/statistics’ part of the DITRDLG website at <www.infrastructure.gov.au>, where road death statistics are published on a monthly basis. For details on marine, rail and air safety (aviation death statistics are published monthly), the Australian Transport Safety Bureau (ATSB) website should be consulted at <www.atsb.gov.au>.

References

- ABS (Australian Bureau of Statistics) 1983. Guidelines for reporting and classifying road vehicle crashes. Canberra: ABS.
- ABS 2001. Australian Standard Geographical Classification. ABS cat. no. 1216.0. Canberra: ABS.
- ABS 2003. Population by age and sex, Australian states and territories, 2001 Census edition-final. ABS cat. no. 3201.0. Canberra: ABS.
- ABS 2008a. Motor vehicle census, Australia. ABS cat. no. 9309.0. Canberra: ABS.
- ABS 2008b. Survey of motor vehicle use, Australia. ABS cat. no. 9208.0. Canberra: ABS.
- AIHW (Australian Institute of Health and Welfare) 2001. National health data dictionary, version 10. Cat. no. HWI30. Canberra: AIHW.
- AIHW 2008. Australian hospital statistics 2006-07. Cat. no. HSE 55. Canberra: AIHW.
- Berry J & Harrison J 2007. Serious injury due to land transport accidents, Australia, 2003-04. Cat. no. INJCAT 107. Adelaide: AIHW.
- Berry J & Harrison J 2008. Serious injury due to land transport accidents, Australia, 2005-06. Cat. no. INJCAT 113. Adelaide: AIHW.
- Berry JG, Nearmy DM & Harrison JE 2007. Injury of Aboriginal and Torres Strait Islander people due to transport, 1999-00 to 2003-04. Cat. no. INJCAT 100. Canberra: AIHW and the Australian Transport Safety Bureau.
- Cryer C & Langley J 2006. Developing valid indicators of injury incidence for 'all injury'. *Inj Prev* 12 (3):202-7.
- Harrison J & Steenkamp M 2002. Technical review and documentation of current NHPA injury indicators and data sources. Cat. no. INJCAT 47. Adelaide: AIHW.
- Henley G & Harrison J 2009. Injury severity scaling: A comparison of methods for measurement of injury severity. Cat. no. INJCAT 126. Adelaide: AIHW.
- Langley J, Stephenson S & Cryer C 2003. Measuring road traffic safety performance: monitoring trends in nonfatal injury. *Traffic Inj Prev* 4 (4):291-6.
- NCCH (National Centre for Classification on Health) 2006. The International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification (ICD-10-AM). Fifth Edition 1 July 2006. Sydney: University of Sydney.
- Stata Corporation 2008. Stata statistical software [computer program] version 10.1. College Station, TX: Stata Corporation.
- Stephenson S, Henley G, Harrison J & Langley J 2004. Diagnosis based injury severity scaling: investigation of a method using Australian and New Zealand hospitalisations. *Injury Prevention* 10 (6):379-83.

List of tables

Table 1.1:	Mode of transport for serious injury, Australia 2006–07	2
Table 2.1:	Land transport injury, Australia 2006–07	3
Table 2.2:	Key indicators for serious land transport injury, Australia 2006–07.....	4
Table 2.3:	Land transport – age-specific rates of serious injury per 100,000 population by state and territory of residence, Australia 2006–07.....	5
Table 2.4:	Serious injury due to land transport by age group, Australia 2006–07	6
Table 2.5:	Place of occurrence and road user group for young children aged 0–4 years seriously injured due to a land transport accident, Australia 2006–07.....	7
Table 2.6:	Place of occurrence and road user group for young children aged 5–17 years seriously injured due to a land transport accident, Australia 2006–07.....	9
Table 2.7:	Place of occurrence and road user group for adults aged 18 years and older seriously injured due to a land transport accident, Australia 2006–07.....	11
Table 2.8:	Land transport – serious injury cases by road user group and state or territory of usual residence, Australia 2006–07	12
Table 2.9:	Traffic serious injury – mechanism for persons seriously injured in land transport accidents, Australia 2006–07	14
Table 2.10:	Non-traffic serious injury – mechanism for persons seriously injured in land transport accidents, Australia 2006–07.....	15
Table 2.11:	Unspecified as to whether traffic or non-traffic serious injury – mechanism for persons seriously injured in land transport accidents, Australia, 2006–07	16
Table 3.1:	Key indicators for serious injury due to road vehicle traffic crashes, Australia 2006–07.....	18
Table 3.2:	Serious injury due to road vehicle traffic crashes by age group, Australia 2006–07.....	18
Table 3.3:	Nine most common mechanisms of serious injury for road vehicle traffic crashes, Australia 2006–07	21
Table 3.4:	Serious injury due to road vehicle traffic crashes by road user group, Australia 2006–07.....	22
Table 3.5:	Road vehicle traffic crashes – serious injury rate per 100,000 registered vehicles by vehicle type and state and territory, Australia 2006–07	25
Table 3.6:	Road vehicle traffic crashes – serious injury rate per 100 million vehicle kilometres travelled by vehicle type and state and territory, Australia 2006–07	26
Table 3.7:	Serious injury due to road vehicle traffic crashes – state and territory of hospitalisation versus state and territory of usual residence, Australia 2006–07.....	27
Table 3.8:	Serious injury due to road vehicle traffic crashes by gender and state and territory of residence, Australia 2006–07	28

Table 3.9:	Road vehicle traffic crashes – age-standardised rates of serious injury by road user group and state and territory of residence, Australia, 2006–07.....	30
Table 3.10:	Serious injury with a high threat to life – age-standardised rates for road vehicle traffic crashes by road user group and state and territory of residence, Australia, 2006–07.....	32
Table 3.11:	Serious injury cases by remoteness area of residence for road vehicle traffic crashes, Australia 2006–07	34
Table 3.12:	Age-standardised serious injury rates by remoteness area of residence for road vehicle traffic crashes, Australia, 2006–07.....	34
Table 3.13:	Case counts and proportions by body region for serious injury due to road vehicle traffic crashes, Australia 2006–07.....	38
Table 3.14:	Road vehicle traffic crashes – patient days in hospital for serious injury by body region, Australia 2006–07	40
Table 3.15:	Road vehicle traffic crashes – patient days in hospital by seriously injured person’s vehicle and the counterpart in the collision, Australia 2006–07.....	41
Table 4.1:	Road vehicle traffic crashes – trends in the age-standardised rates of serious injury by sex, Australia 2000–01 to 2006–07	44
Table 4.2:	Road vehicle traffic crashes – trends in the age-standardised rates of serious injury by sex and road user group, Australia 2000–01 to 2006–07	46
Table 4.3:	Road vehicle traffic crashes – serious injury cases by sex and road user group, Australia 2000–01 to 2006–07.....	47
Table 4.4:	Road vehicle traffic crashes – age-standardised rates of serious injury by state and territory of residence, Australia 2000–01 to 2006–07	48
Table 4.5:	Serious injury with a high threat to life – trends in the age-standardised rates for road vehicle traffic crashes by sex, Australia 2002–03 to 2006–07	49
Table 4.6:	Serious injury with a high threat to life – trends in the age-standardised rates for road vehicle traffic crashes by sex and road user group, Australia 2002–03 to 2006–07.....	51
Table 4.7:	Serious injury with a high threat to life – case numbers for road vehicle traffic crashes by sex and road user group, Australia 2002–03 to 2006–07.....	52
Table 4.8:	Serious injury with a high threat to life – age-standardised rates for road vehicle traffic crashes by state and territory of residence, Australia, 2002–03 to 2006–07.....	53
Table A1:	Selection criteria for hospital records of land transport injury.....	54

List of figures

Figure 3.1:	Road vehicle traffic crashes – age-specific hospitalisation rates by sex, Australia 2006–07	20
Figure 3.2:	Road vehicle traffic crashes – age-standardised rates of serious injury by road user group and state and territory of residence, Australia 2006–07.....	31
Figure 3.3:	Serious injury with high threat to life – age-standardised rates of road vehicle traffic crashes by road user group and state and territory of residence, Australia 2006–07	33
Figure 3.4:	Road vehicle traffic crashes – age-standardised rates of serious injury by remoteness of residence, Australia 2006–07	35
Figure 3.5:	Road vehicle traffic crashes – mean length of stay in hospital for serious injury by age and sex, Australia 2006–07	36
Figure 3.6:	Serious injury with a high threat to life – mean length of stay in hospital for road vehicle traffic crashes by age and sex, Australia 2006–07.....	36
Figure 3.7:	Road vehicle traffic crashes – mean length of stay in hospital for serious injury by road user group, Australia 2006–07	37
Figure 3.8:	Mean length of stay in hospital for serious injury by body part injured, Australia 2006–07	39
Figure 4.1:	Road vehicle traffic – trends in age-standardised rates of serious injury sex and road user group, Australia 2000–01 to 2006–07	45
Figure 4.2:	Road vehicle traffic crashes – age-standardised rates of serious injury by state and territory of residence, Australia 2000–01 to 2006–07	48
Figure 4.3:	Serious injury with a high threat to life – trends in the age-standardised rates for road vehicle traffic crashes by sex and road user group, Australia 2002–03 to 2006–07	50
Figure 4.4:	Serious injury with a high threat to life – age-standardised rates for road vehicle traffic crashes by state and territory of residence, Australia 1999–00 to 2005–06.....	53