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Hospital separations due to injury and poisoning, Australia 2007–08

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Contents

Abbreviations

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AIHW	Australian Institute of Health and Welfare
ASGC	Australian Standard Geographical Classification
CI	Confidence interval
ICD-9	International Classification of Diseases, 9th Revision
ICD-10-AM	International Classification of Diseases, 10th Revision Australian Modification
LOS	Length of stay
MLOS	Mean length of stay
NHMD	National Hospital Morbidity Database
NISU	National Injury Surveillance Unit
NPHP	National Public Health Partnership
NSW	New South Wales
NT	Northern Territory
Qld	Queensland
SA	South Australia
Tas	Tasmania
Vic	Victoria
WA	Western Australia

Symbols

n	number
n.p.	Not published. Small cell counts have been supressed to prevent patient identification.

Summary

This report, covering injuries resulting in admission to Australian hospitals in the financial year 2007–08, is the sixth in the series which started in 2001–02 (Berry & Harrison 2006).

The focus of the report is analysis of community injury (that is, injuries typically sustained in the home, workplace, street, etc.). The report also includes short sections on work and sports related injury, complications of surgical and medical care and residual injury such as adverse effects not elsewhere classified.

Trends are also covered in this report, as in the 2005–06 report (Kreisfeld & Harrison 2010).

An estimated 394,505 community injury cases required hospitalisation during the twelve-month period 2007–08 (230,676 males and 163,823 females).

A total of 1,601,483 patient days were attributed to hospitalised community injury equating to a mean length of stay of 3.8 days per hospitalised case.

The leading cause of hospitalised injury was an unintentional fall, accounting for 37% of all community injury cases. Unlike for most other types of community injury, females outnumbered males (56% to 44%) and rates were highest for older Australians.

The second most common cause of hospitalised injury was transport accidents (14% or 53,587 cases). Males had higher rates of transport injury hospitalisations than females across all age groups, with the highest rates among those aged 10–29.

For very young children aged 0–4, the most common specific causes of injury were falls (40%), smoke, fire, heat and hot substances (8%) and poisoning by drugs (7%). Falls were also the most common cause of injury for older children aged 5–14 (44%), followed by transport accidents (18%). The most common causes of injury for young adults aged 15–24 were transport accidents (20%), falls (14%), assault (12%) and intentional self-harm (10%). A similar pattern was seen in adults aged 25–44 where transport accidents accounted for 17% of hospitalisations, falls for 15%, and assault and intentional self-harm for 11% each. For older adults (45–64), unintentional falls were prominent, accounting for 32% of hospitalisations, followed by transport accidents (14%) and intentional self-harm (7%). For those aged 65 and over, more than three-quarters of hospitalisations were the result of falls (76%).

More than a quarter of all hospitalised injury cases occurred at home. A higher percentage of females than males were injured at home (36% vs. 19%) or in a residential institution (9% vs. 2%). Males were more likely than females to have been injured on a street or highway, as well as in sports and athletics areas, trade and construction areas, and farms.

Rates of community injury increased with geographical remoteness. The lowest rate of 1,660 per 100,000 was found for *Major cities* while the highest rate was found for *Very remote* regions (4,068 per 100,000 population).

There has been an upward trend in the age-standardised rates of hospitalised community injury from 1,724 cases per 100,000 population in 1999–00 to 1,827 cases per 100,000 in 2007–08. This trend was observed for both males and females.

1 Introduction

This report describes the occurrence of injuries requiring hospitalisation in Australia during 2007–08. It uses data for episodes of inpatient care that ended (separations) between 1 July 2007 and 30 June 2008 and that were due to injury and poisoning. It continues the series begun with the first report on hospital separations from 2001–02 (Berry & Harrison 2006). Hospitalised injury is described according to major types of injury and poisoning and detailed analysis of the external causes of injury is undertaken.

A small proportion of all incident injury cases result in admission to a hospital. For each hospital admission, many more cases present to emergency departments and are not admitted, or are seen by a general practitioner (Harrison & Steenkamp 2002). A larger number of generally minor cases do not receive medical treatment. In addition, a smaller number of severe injuries that quickly result in death go unrecorded in terms of hospital separations, but are captured in mortality data (Kreisfeld et al. 2004). Although injury cases admitted to hospital comprise a small proportion of the number of incident cases of injury, they account for a large proportion of estimated costs of injury (Watson & Ozanne-Smith 1997).

Hospital separations data

National hospital separations data were provided by the Australian Institute of Health and Welfare (AIHW) National Hospital Morbidity Database (NHMD). A separation is defined as:

> A formal, or statistical process, by which an episode of care for an admitted patient ceases (AIHW 2001).

Hospital separations reported here were coded according to the 5th edition of ICD-10-AM (NCCH 2006).

Selecting injury and poisoning cases

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

- Hospital separations occurring in Australia 1 July 2007 to 30 June 2008 and
- Principal diagnosis in the ICD-10-AM range S00–T98 using Chapter XIX *Injury, poisoning and certain other consequences of external causes* codes.

Cases referred to as 'injury' can be defined in many ways, usually on the basis of the presence of certain types of injury diagnosis. The presence of information about the external causes of injury may also be required, especially if analysis focuses on causes and prevention of injury. The starting point for this report was a file containing records of all separations from Australian hospitals in the study period that contain any ICD-10-AM diagnosis code in the range S00–T98 or any external cause code. Since some injuries result in more than one episode in hospital due to transfers and readmissions, a file of separations is likely to overestimate the number of new cases of injury. Australian hospital data files, at national level, lack direct means to avoid such over-counting.

In this report, a method has been used to reduce over-counting of cases, by omitting records 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 more than one separation record that meets the operational definition of injury. It should be recognised that this method for avoiding multiple counting of cases is approximate. It should allow for cases involving transfer between or within hospitals. It cannot allow for readmissions which meet the project's selection criteria. All records for cases involving hospital transfers are however included in the calculation of the number of patient days.

Most injuries occur in settings such as car crashes, inter-personal violence, sporting and recreational activities, and work. In this report, these are referred to as community injury. Community injury is the main subject of this report. Other injuries occur in the context of surgical and medical care, where they are often referred to as complications. These are considered briefly in this report, and are referred to here as *Complications of surgical and medical care*. The remaining injuries are referred to as Residual injuries which comprise only a small number of injury separations including adverse effects not elsewhere classified.

Since Australian hospital separations records should include a principal diagnosis code and, for 2007–08, could include up to 50 additional diagnosis codes, community injury and *Complications of surgical and medical care* can be specified in various ways.

Table 1.1 provides summary counts where selection is based solely on principal diagnosis and the mode of admission excludes cases where transfer from another acute-care hospital has occurred. Table A1 further expands on these counts to take account of additional diagnosis codes.

We have used principal diagnosis as the basis of case inclusion (Table 1.1). The case selection criteria used in this report have the effect of almost completely restricting the cases included to the acute care type. Care for rehabilitation and other sub-acute care is not generally included.

Confidence intervals around single estimates are provided in some figures and tables to show non-sampling variation. Confidence intervals are also provided for estimated trends in rates, which are also subject to non-sampling variation. In both instances, variation can be large when case numbers are small. Further information is provided in Data Issues.

Injury hospitalisations 2007–08 overview

For public and private hospitals combined, episodes of care separating from hospital between 1 July 2007 and 30 June 2008 attributed to *Injury and poisoning and certain other consequences of external causes* (S00–T98) ranked 4th in the total number of hospitalisations after *Factors influencing health status & contact with health services* (Z00–Z99), *Diseases of the digestive system* (K00–K93) and *Neoplasms* (C00–D48) when records are groups as in Australian Hospital Statistics (AIHW 2009). This ranking is the same as in previous reports (Bradley & Harrison 2008; Kreisfeld & Harrison 2010; Norton & Harrison 2012). Over half a million hospital separations were directly attributed to injury and poisoning in 2007–08 (Table 1.1). These separations accounted for 7% of all episodes of care in Australian hospitals in this year. Approximately two million patient days were utilised by injury separations in 2007–08. These patient days accounted for a higher proportion of all patient days (8%) than injury separations contributed to all separations (7%). This difference was more apparent for injuries involving females than males; injury separations accounted for 5% of all hospital

separations involving females but the episodes of care associated with these injuries accounted for 8% of all patient days for females.

Table 1.1: Injury hospitalisations overview: males, females and persons, Australia 2007–08

	Males	Females	Persons[(b)]
Total number of hospital separations for any cause[(a)]	3,724,423	4,149,381	7,873,946
Total number of hospital patient days[(a)]	11,980,750	13,661,430	25,642,518
Separations due to injury and poisoning (S00–T98)[(c)]	296,124	222,354	518,486
Percentage of all separations	8.0	5.4	6.6
Patient days due to injury and poisoning	1,034,156	1,074,297	2,108,472
Percentage of all patient days	8.6	7.9	8.2
Community injury separations (S00–T75 or T79)[(c)]	248,590	177,352	425,949
Percentage of all injury separations	83.9	79.8	82.2
Patient days due to community injury	771,056	830,410	1,601,483
Percentage of injury patient days	74.6	77.3	76.0
Complications of surgical and medical care separations (T80–T88)[(c)]	41,505	38,988	80,494
Percentage of all injury separations	14.0	17.5	15.5
Patient days due to complications injury	259,459	239,252	498,713
Percentage of injury patient days	25.1	22.3	23.7
Residual injury separations (T78, T89 or T90–T98)[(c)]	2,734	3,242	6,025
Percentage of all injury separations	0.9	1.5	1.2
Patient days due to residual injury separations	3,641	4,635	8,276
Percentage of injury patient days	0.4	0.4	0.4

(a) Source: Australian Hospital Statistics 2007–08 (AIHW 2009) pp. 192–196.

(b) Includes separations for which sex was not reported.

(c) Separations defined according to principal diagnosis.

Unit records classed as community injury separations (principal diagnosis S00–T75 or T79) accounted for 82% (n = 425,949) of all injury separations in 2007–08. More community injury separations involved males (248,590 vs. 177,352 for females), but more patient days were utilised by females (830,410 vs. 771,056 for males). Conversely, males and females were involved in relatively similar numbers of separations and patient days due to injuries defined as complications of surgical and medical care. The patient days utilised by complications separations accounted for a much higher proportion of all patient days due to injury and poisoning (24%) than the number of complications separations proportionately contributed to all injury and poisoning separations (16%).

Residual injury separations accounted for a very small proportion of both all injury separations and patient days due to injury (1% and 0.4%, respectively).

Profiles of priority injury areas

The National Injury Prevention and Safety Promotion Plan: 2004 Onwards has identified seven national injury prevention areas for action (Pointer et al. 2003; NPHP 2005); children (0–14), youth and young people (15–24), adults (25–64), older people (65+), Aboriginal and Torres Strait Islander people, rural and remote populations, and alcohol and injury. Where appropriate, results have been presented to highlight the impact of injury on the targeted age groups. Aboriginal and Torres Strait Islander cases are not distinguished in this report, largely because limitations of identification of Indigenous status necessitate a special approach. Injury among Aboriginal and Torres Strait Islander Australians is the subject of separate reports (Helps & Harrison 2004, 2006). Results for rural and remote populations, according to the Australian Standard Geographical Classification (ASGC) remoteness structure, are presented in this report.

Trends in injury rates

The analysis of trends over time is undertaken in this report. During the time period covered in the trends analysis the system used for classifying diagnoses and external injury changed from ICD-9-CM to ICD-10-AM. All jurisdictions were using ICD-10-AM by the end of the financial year 1999–00. Enumerating trends when different classification systems are used can result in inconsistencies that limit the comparability of major injury groups.

2 Community injury, Australia

ICD-10-AM case inclusion

Principal diagnosis: S00–T75, T79, *Injury, poisoning and certain other complications of external causes*

2.1 All community injury hospitalisations

Table 2.1.1: Key indicators for all community injury cases, Australia 2007–08

Indicator	Males	Females	Persons[(a)]
Total number of hospital separations due to injury and poisoning	296,124	222,354	518,486
Separations from hospital due to community injury	248,590	177,352	425,949
Percentage of all separations due to injury and poisoning	83.9	79.8	82.2
Estimated community injury cases[(b)]	230,676	163,823	394,505
Crude rate/100,000 population	2,184.5	1,534.2	1,857.6
Age-standardised rate/100,000 population[(c)]	2,201.8	1,419.9	1,827.1
Total patient days[(d)]	771,056	830,410	1,601,483
Mean length of stay (days)	3.3	5.1	4.1

(a) Includes separations and cases for which sex was not reported.

(b) Excludes records with a mode of admission of 'transfer from another acute hospital'.

(c) Standardised to the Australian estimated resident population 30th June 2001.

(d) Includes records with a mode of admission of 'transfer from another acute hospital' as contributing to hospital burden due to injury.

Overview

For public and private hospitals combined, *Injury, poisoning and certain other consequences of external causes* ranked fourth in the number of separations after *Factors influencing health status and contact with health services, Diseases of the digestive system and Neoplasms* (AIHW 2009).

In 2007–08, community injury accounted for 425,949 hospital separations, 82% of a total of 518,486 hospital separations due to injury and poisoning from public, private and psychiatric hospitals in Australia (Table 2.1.1) (AIHW 2009). There were an estimated 394,505 incident injury cases in 2007–08. Community injury accounted for around 1.6 million patient days, at an average of 4.1 days per episode (Table 2.1.1).

The six most commonly reported identifiable causes of community injury were:

- Falls (37%)
- Transportation (14%)
- Intentional self-harm (6%)
- Assault (6%)
- Poisoning, pharmaceuticals (2%)
- Smoke, fire, heat and hot substances (2%)

The male to female rate ratio (M:F rate ratio), based on age-standardised rates, was 1.6:1 indicating that more males than females were hospitalised for community injury.

Cases with a principal diagnosis of S00–T75, T79 are included in Table 2.1.1, even if they lack an external cause or have a first reported external cause code of complications of surgical and medical care. Such cases (n = 2,416 in 2007–08) make up a small proportion of community injury (1%). These cases meet the principal diagnosis definition of community injury but lack a meaningful external cause which necessitates coding of these cases as 'other/missing' for analysis of external cause.

Age and sex distribution

The age and sex profile of community injury in 2007–08 (Figure 2.1.1) has followed a characteristic pattern for the past six reports (Berry & Harrison 2006; Berry & Harrison 2007; Bradley & Harrison 2008; Helps et al. 2002; Kreisfeld & Harrison 2010; Norton & Harrison 2012). Male age-specific rates were low through childhood with a peak between the ages of 15–24, this was followed by a decrease to age 65 and then a steep increase in injury rates from 70+. Female age-specific rates followed a similar pattern with a small peak in the late teens, after which age-specific rates were relatively constant up to 65 of age when injury rates then increased steeply overtaking the male rates.

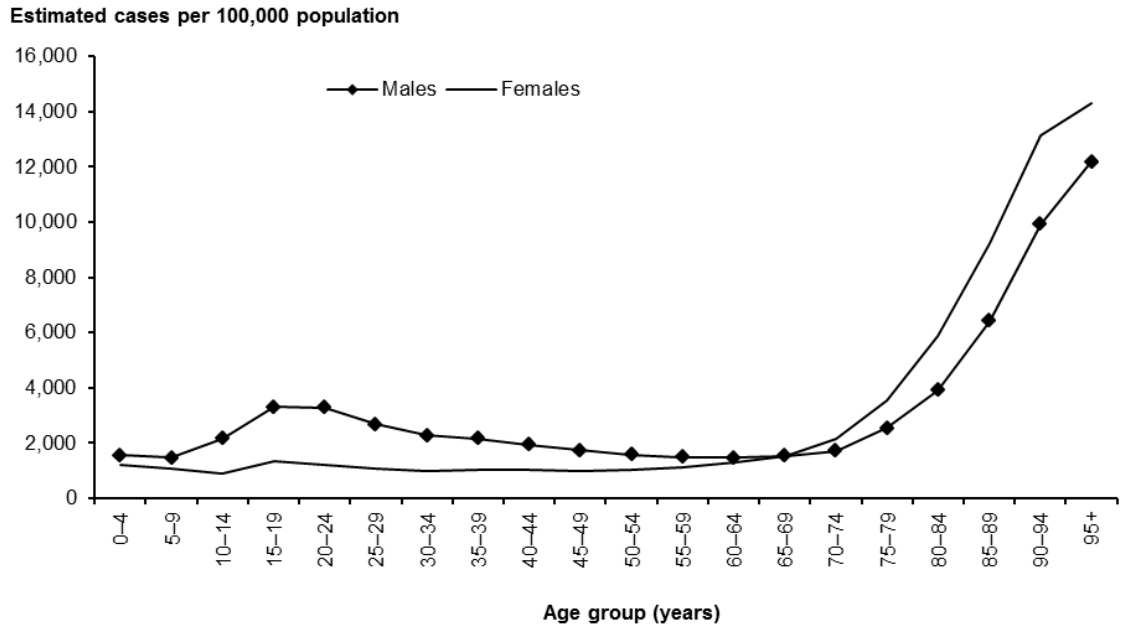


Figure 2.1.1: Age-specific estimated cases of community injury by sex, Australia, 2007–08

The percentage of community injury hospitalisations attributed to the age groups identified in the National Injury Prevention and Safety Promotion Plan: 2004–14 (NPHP 2005) were 15% (*n* = 57,787) for children aged 0–14, 17% (*n* = 68,807) for youth and young adults aged 15–24, 43% (*n* = 170,437) for adults aged 25–64 and 25% (*n* = 97,474) for older people aged 65 and over (Table 2.1.2).

External cause

Falls constituted the largest proportion of community injury hospitalisations (37%, *n* = 145,675) and was the predominant external cause for most age groups except for those aged 15–24. Transportation was the second most common specific external cause type (14%, *n* = 53,587) and was the leading cause of injury for persons aged 15–24 (Table 2.1.2). Intentional injuries accounted for 14% (*n* = 52,287) of community injury hospitalisations.

Table 2.1.2: Major external cause groups for community injury cases by age, Australia 2007–08

	Age group (years)						
External cause	**0–4**	**5–14**	**15–24**	**25–44**	**45–64**	**65+**	**All ages**
Unintentional injuries							
Transportation	880	6,931	13,814	17,191	9,901	4,870	53,587
Drowning	195	53	53	83	46	20	450
Poisoning, pharmaceuticals	1,399	233	1,041	1,809	1,054	1,016	6,552
Poisoning, other substances	381	103	423	651	461	242	2,261
Falls	7,450	17,049	9,271	14,843	22,648	74,414	145,675
Fires, burns and scalds	1,549	684	917	1,339	844	478	5,811
Other unintentional injuries	6,702	12,643	27,004	38,934	26,427	13,756	125,466
Intentional injuries							
Intentional self-harm	5	446	6,666	10,750	5,025	978	23,870
Assault	208	521	7,997	11,147	2,977	465	23,315
Undetermined intent	75	163	1,419	2,363	839	243	5,102
Other or missing	37	80	202	466	639	992	2,416
Total community injury cases	**18,881**	**38,906**	**68,807**	**99,576**	**70,861**	**97,474**	**394,505**

The pattern of injury hospitalisations by age groups is shown in Figure 2.1.2. Injuries related to transportation peaked at 15–24, as did intentional self-harm and assaults. Falls accounted for a large proportion of injuries for those aged 0–14 and for those over 44. Falls were the predominant cause of injury hospitalisations in those aged over 65. Likewise, in children aged 0–4 falls accounted for more than one-third of injury hospitalisations. Smoke, fire, heat and hot substances comprised 8% of injury hospitalisations in 0–4 olds, followed by poisoning by pharmaceuticals (7%). Hospitalised intentional injuries, both self-inflicted and assaults were most common for Australians aged 15–44.

The community injury category with the largest number of cases in total after falls was other unintentional injuries. This was a mixed category; it contained a large proportion of work- and sports-related injuries, but not all of them. In this report, other unintentional injuries are the subject of section 2.8. In addition, the overlapping subjects of injury due to work and sport have been made the subjects of separate short Chapters 3 and 4.

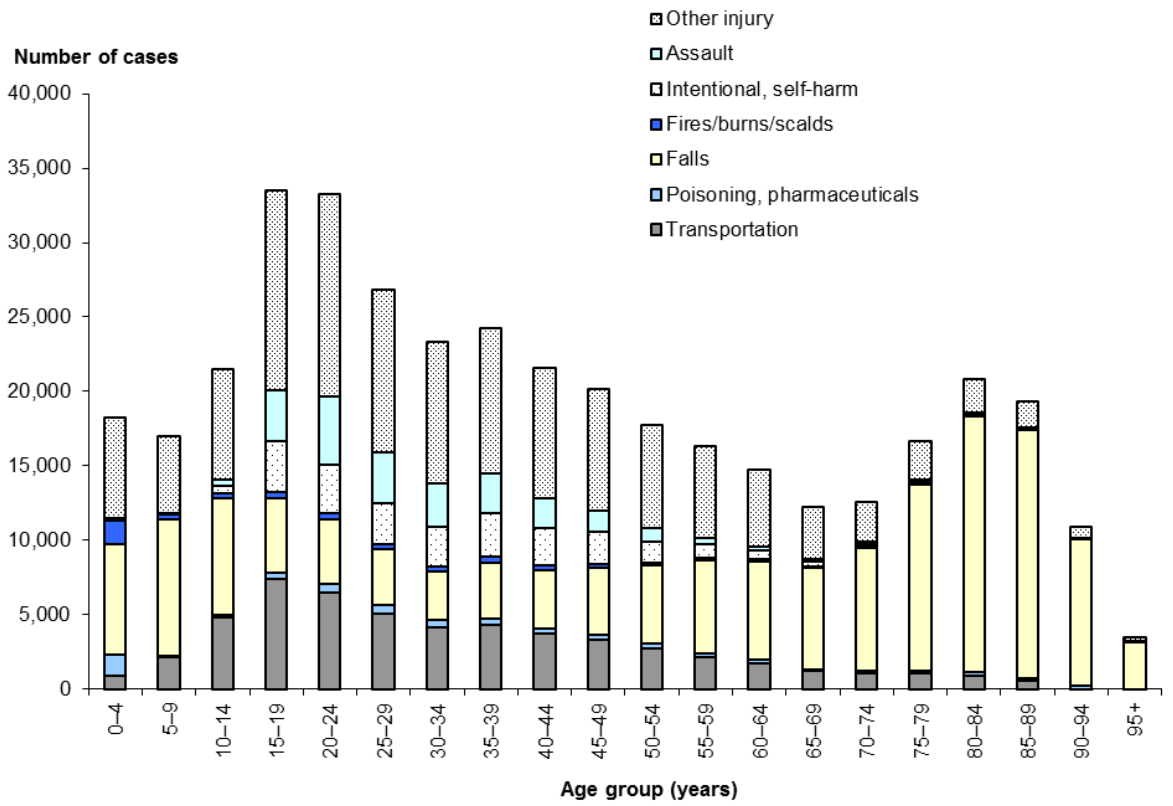


Figure 2.1.2: Age distribution of cases for selected major causes of injury, Australia, 2007–08

Place and activity

Overall, where place of injury was specified, the highest proportions of cases occurred at home (26%), on a street or highway (10%) in a sports and athletics area (5%) or a residential institution (5%). This pattern for place of injury varied between males and females: a substantially higher percentage of females than males were injured at home (36% vs. 19%); males were more likely than females to have been injured in a sports and athletics area (7% vs. 2%) (Table 2.1.3).

The majority of cases (93%) occurring in residential institutions took place in aged care facilities (not shown in table). The most frequently specified locations for incidents occurring in trade and service areas were cafes, hotels and restaurants (48%) and shops and stores (29%). Of incidents that happened in industrial and construction areas, 40% occurred in a factory or plant and 23% on a construction site. Among other specified places of occurrence, the most frequent were a beach (14%), a large area of water (12%) and a forest (8%).

Place was recorded as 'Other specified place of occurrence' or 'Unspecified place of occurrence' for 45% of cases. For a small percentage of cases (0.1%) no place of occurrence had been recorded or it was not required (according to standard ICD-10-AM coding rules, place codes are applicable within the range of external cause categories V01–Y89) (Table 2.1.3).

Table 2.1.3: Place of occurrence for all community injury, case counts, Australia, 2007–08

Place of occurrence	Males	Percentage of male cases	Females	Percentage of female cases	Persons[(a)]	Percentage of all cases
Home	44,138	19.1	58,759	35.9	102,901	26.1
Residential institution	5,425	2.4	14,020	8.6	19,445	4.9
School	4,635	2.0	2,486	1.5	7,121	1.8
Health Service area	2,447	1.1	3,217	2.0	5,665	1.4
Other specified institution and public administrative area	597	0.3	620	0.4	1,217	0.3
Sports and athletics area	16,324	7.1	3,957	2.4	20,281	5.1
Street and highway	24,862	10.8	14,461	8.8	39,323	10.0
Trade and service area	7,730	3.4	4,517	2.8	12,247	3.1
Industrial and construction area	5,798	2.5	351	0.2	6,149	1.6
Farm	2,930	1.3	832	0.5	3,762	1.0
Other specified place of occurrence	10,683	4.6	4,758	2.9	15,441	3.9
Unspecified place of occurrence	104,951	45.5	55,739	34.0	160,691	40.7
Place not reported/not applicable	156	0.1	106	0.1	262	0.1
Total	**230,676**	**100.0**	**163,823**	**100.0**	**394,505**	**100.0**

(a) Includes separations for which sex was not reported.

Overall, where the type of activity was specified, the highest proportions of cases occurred while playing sports (10%) or while working for income (7%). This pattern varied between males and females: more than twice as many males were injured playing sport than were females (14% compared with 5%); and a considerably higher proportion of males were injured while working for income when compared with females (10% vs. 2%, respectively). Females were more likely to be injured while resting, sleeping, eating or engaging in other vital activities (7%) compared with 3% of males (Table 2.1.4).

Football was the most frequently reported sporting activity (36%). For those cases where a football code was specified (n = 11,561), the most common were Australian Rules football (35%) and soccer (32%). Among cases that occurred while the person was working for an income, the most commonly specified industries were construction (11%) and agriculture (9%).

For a high proportion of cases (73%) the type of activity being undertaken at the time of injury was recorded as 'Other specified activity 'or 'Unspecified activity'. For a small percentage of cases (1%) no activity had been recorded or it was not required (according to standard ICD-10-AM coding rules, activity codes are applicable within the range of external cause categories V01–Y34) (Table 2.1.4).

The large number of injury cases lacking detail on the activity code limits meaningful interpretation of these counts. For this reason, activity data are not reported extensively in this report. Coding was more complete for place of occurrence, but more than 40% did not specify useful information on where the injury occurred. Variability may exist in the completeness of the coding of the activity being undertaken at the time of injury and the place of occurrence. For example, injuries that occur at work or while working for income may be better coded than other injuries. The activity and place of occurrence codes may have

a different distribution for cases not given a code compared with injury cases that have a specified activity or place of occurrence.

Table 2.1.4: Activity when injury occurred for all community injury, case counts, Australia, 2007–08

Activity	Males	Percentage of male cases	Females	Percentage of female cases	Persons[(a)]	Percentage of all cases
While engaged in sports	31,335	13.6	8,787	5.4	40,122	10.2
While engaged in leisure	3,760	1.6	2,315	1.4	6,075	1.5
While working for income	21,940	9.5	3,631	2.2	25,571	6.5
While engaged in other types of work	7,963	3.5	5,773	3.5	13,736	3.5
While resting, sleeping, eating, etc.	7,572	3.3	11,728	7.2	19,300	4.9
Other specified activity	33,014	14.3	30,930	18.9	63,946	16.2
Unspecified activity	123,835	53.7	99,825	60.9	223,663	56.7
Activity not reported/not applicable	1,257	0.5	834	0.5	2,092	0.5
Total	**230,676**	**100.0**	**163,823**	**100.0**	**394,505**	**100.0**

(a) Includes separations for which sex was not reported.

Principal diagnosis and body part injured

Body part injured is classified here and in similar tables elsewhere in this report according to principal diagnosis. If a patient is admitted due to injury and has injuries to more than one body part, then the most serious injury is normally coded as the principal diagnosis and others as Additional Diagnoses.

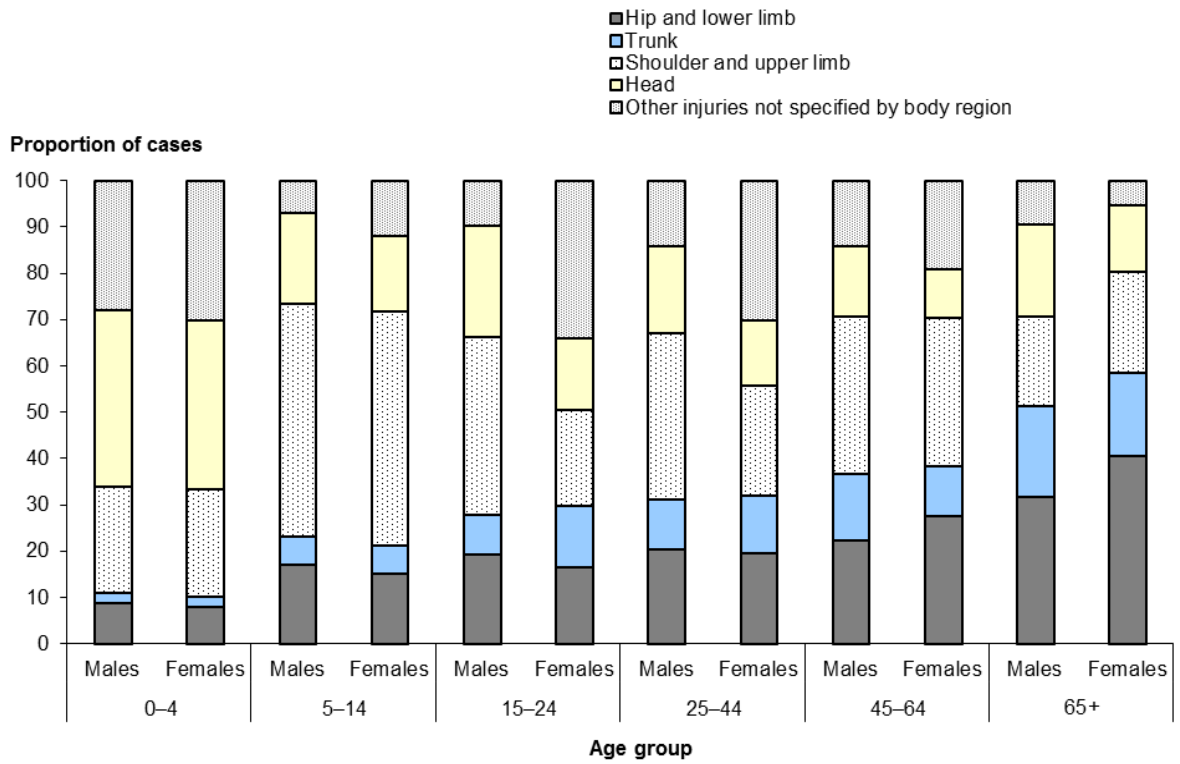
The head was the most commonly injured body region overall (Table 2.1.5). For males, injuries to the wrist and hand were the second most common principal diagnosis. More than three-quarters of wrist and hand injuries were attributed to males (77%, *n* = 41,757). For females, injuries to the hip and thigh constituted the second most common diagnostic category (*n* = 20,749). Sex specific data can be found in Figure 2.1.3.

Table 2.1.5: Principal diagnosis groups for community injury cases by age, Australia 2007–08

	0–4	5–14	15–24	25–44	45–64	65+	All ages
Injuries to the head	7,057	7,161	14,823	17,164	9,290	15,889	71,384
Injuries to the neck	104	720	1,910	2,695	1,608	1,423	8,460
Injuries to the thorax	44	271	1,563	3,529	3,873	6,554	15,834
Injuries to the abdomen, lower back, lumbar spine and pelvis	260	1,352	3,186	4,993	3,663	9,945	23,399
Injuries to the shoulder and upper arm	1,041	3,128	3,650	5,451	5,449	8,313	27,032
Injuries to the elbow and forearm	1,612	12,343	5,496	7,592	7,272	8,228	42,543
Injuries to the wrist and hand	1,706	4,189	14,106	19,007	10,893	4,020	53,921
Injuries to the hip and thigh	453	960	1,292	1,980	3,393	24,761	32,839
Injuries to the knee and lower leg	531	3,636	8,702	13,672	10,947	9,915	47,403
Injuries to the ankle and foot	620	1,792	2,857	4,403	2,986	1,975	14,633
Injuries involving multiple body regions	n.p.	21	48	74	n.p.	80	277
Injuries to unspecified parts of trunk, limb or body region	57	138	386	578	471	738	2,368
Effects of foreign body entering through natural orifice	1,425	944	489	1,252	1,532	1,352	6,994
Burns	1,693	863	1,248	1,793	1,099	537	7,233
Frostbite	n.p.	0	18	22	n.p.	0	44
Poisoning by drugs, medicaments and biological substances	1,439	670	7,241	11,944	5,954	2,108	29,356
Toxic effects of non-medical substances	496	477	1,157	2,096	1,516	595	6,337
Other and unspecified effects of external causes	306	155	415	957	601	695	3,129
Certain early complications of trauma	29	86	220	374	264	346	1,319
Total	**18,881**	**38,906**	**68,807**	**99,576**	**70,861**	**97,474**	**394,505**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

Patterns of injury by body region and age are presented in Figure 2.1.3. The distribution of body region injured is similar for both males and females in the 0–4 age group, head injuries predominate (38% of male cases and 37% of female cases). Similarly, in the 5–14 age group half of all injuries were shoulder and upper limb (51% of both male and female cases). In males aged 15–44 the shoulder and upper limb was the most commonly injured body region. While for females in the same 15–44 age group 'Other injuries not specified by body region' was the most common category. This group includes poisoning by drugs, medicaments and biological substances and toxic effects of non-medical substances. The hip and lower limbs were the most common body region injured in both males and females over the age of 65 (32% of males and 41% of females).



Note: Trunk includes the neck, thorax, abdomen, lower back, lumbar spine and pelvis.

Figure 2.1.3: Body region affected by principal diagnosis for community injury cases by age, Australia 2007–08

Length of stay

Patient days are the number of full and partial days a patient was in hospital if they separated from hospital during the reporting period, and is summed for all patients to give an aggregate of the length of stay (the term LOS is used in tables throughout this report to refer to the count of patient days). Inwards transfers and newly admitted cases are included in the calculation of LOS, but only estimated cases are included in the estimation of case counts (as a best available approximation of newly admitted cases). One patient day is counted for same day patients (admitted and discharged from hospital on the same day). LOS 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 (MLOS), which is a term used throughout this report, is the average number of days each patient stays in hospital. This is calculated by dividing the total number of patient days for a reporting period (including inward transfers) by the estimated number of cases for the same period.

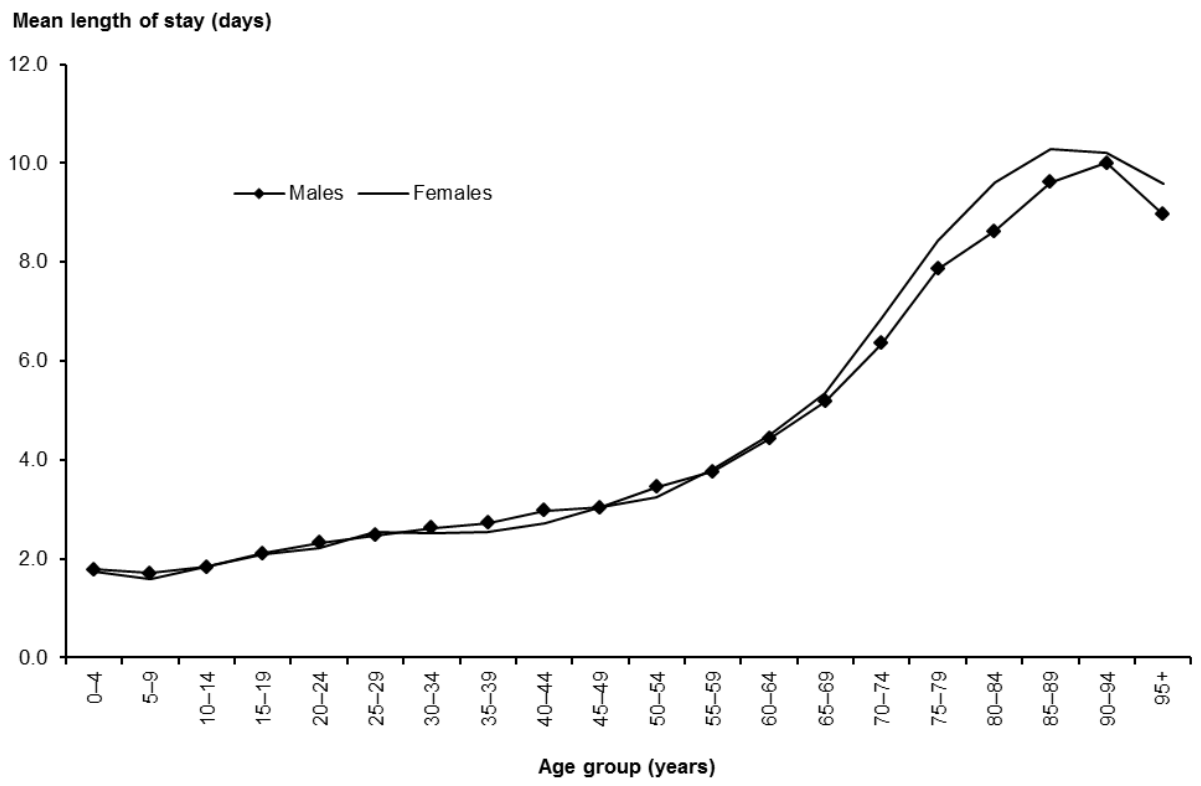


Figure 2.1.4: Length of stay per episode for all community injury by age and sex, Australia, 2007–08

The MLOS for all community injury was similar for males and females and rose with age (Figure 2.1.4). The average stay was shortest for children aged 0–14 at 1.8 days, followed by 2.2 days for young people aged 15–24. MLOS was 2.6 days for adults aged 25–44, 3.6 days for adults aged 45–64 and 8.5 days for older people aged 65+.

Table 2.1.6 presents an aggregate estimate of LOS and MLOS. In 2007–08 the overall MLOS for community injury was 4.1 days (more than 1.6 million patient days for just over 394,500 cases) and was shorter for males (3.3 days) compared with females (5.1 days). Discharge occurred on the same day of admission for 36% (n = 143,555) of these injury cases.

More than half of the community injury patient days were attributed to falls (56%), followed by transport injuries (15%). Injuries due to falls had the longest MLOS for persons overall (6.1 days) followed by smoke, fire, heat and hot substances (5.4 days). For males, smoke, fire, heat and hot substances resulted in the longest hospitalisations (5.6 days) while for females, falls resulted in the longest hospitalisations (7.0 days).

Table 2.1.6: Length of stay for all community injury: case counts, patient days, percentage of total patient days for injury and mean length of stay, Australia, 2007–08

	Males				Females				Persons[(a)]			
External cause	Count	LOS	Per cent	MLOS	Count	LOS	Per cent	MLOS	Count	LOS	Per cent	MLOS
Unintentional												
Transport	37,322	160,887	20.9	4.3	16,265	72,333	8.7	4.4	53,587	233,220	14.6	4.4
Drowning	317	749	0.1	2.4	133	306	0.0	2.3	450	1,055	0.1	2.3
Poisoning, pharmaceuticals	3,069	6,981	0.9	2.3	3,483	9,376	1.1	2.7	6,552	16,357	1.0	2.5
Poisoning, other substances	1,377	3,304	0.4	2.4	884	1,581	0.2	1.8	2,261	4,885	0.3	2.2
Falls	64,283	319,204	41.4	5.0	81,392	573,310	69.0	7.0	145,675	892,519	55.7	6.1
Fires, burns, scalds	3,741	21,015	2.7	5.6	2,069	10,648	1.3	5.1	5,811	31,668	2.0	5.4
Other unintentional injuries	89,715	174,432	22.6	1.9	35,751	96,179	11.6	2.7	125,466	270,611	16.9	2.2
Intentional												
Intentional self-harm	9,089	31,496	4.1	3.5	14,778	42,364	5.1	2.9	23,870	73,865	4.6	3.1
Assault	17,841	40,630	5.3	2.3	5,473	12,158	1.5	2.2	23,315	52,789	3.3	2.3
Undetermined intent	2,491	5,596	0.7	2.2	2,611	5,414	0.7	2.1	5,102	11,010	0.7	2.2
Other/missing	1,431	6,762	0.9	4.7	984	6,741	0.8	6.9	2,416	13,504	0.8	5.6
Total	**230,676**	**771,056**	**100.0**	**3.3**	**163,823**	**830,410**	**100.0**	**5.1**	**394,505**	**1,601,483**	**100.0**	**4.1**

Note: Length of stay (LOS) refers to total patient days.

(a) Includes separations for which sex was not reported.

State and territory differences

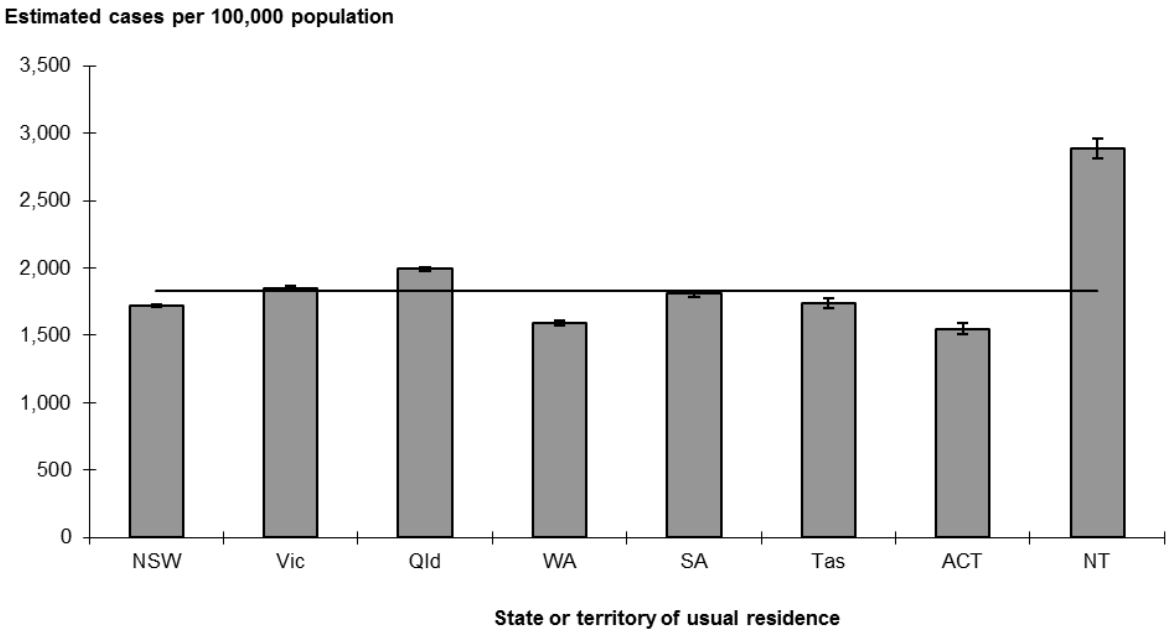
Standard practice for reports in this series is to analyse rates of hospitalised community injury cases according to the state of usual residence of the patient. As in previous reports the Northern Territory and Queensland had the highest rates of hospitalised community injury cases (Table 2.1.7 and Figure 2.1.5). The lowest rate was observed in the Australian Capital Territory. Less than one per cent of all cases did not have a state of usual residence reported (1%, n = 2,878) or were from other Territories (0.07%, n = 281). The other Territories consist of the Cocos and Keeling Islands, Christmas Island and Jervis Bay.

Table 2.1.7: Age-standardised estimated cases of community injury, states and territories, 2007–08

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI[(a)]
NSW	1,722	1,712–1,731
Vic	1,852	1,840–1,863
Qld	1,990	1,977–2,004
WA	1,591	1,575–1,608
SA	1,807	1,787–1,828
Tas	1,735	1,698–1,772
ACT	1,549	1,507–1,591
NT	2,889	2,817–2,961
Australia[(b)]	1,827	**1,821–1,833**

(a) Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

(b) Includes residents of other territories and persons with unspecified jurisdiction of residence.



Notes

1. The thick horizontal line shows the rate for Australia.

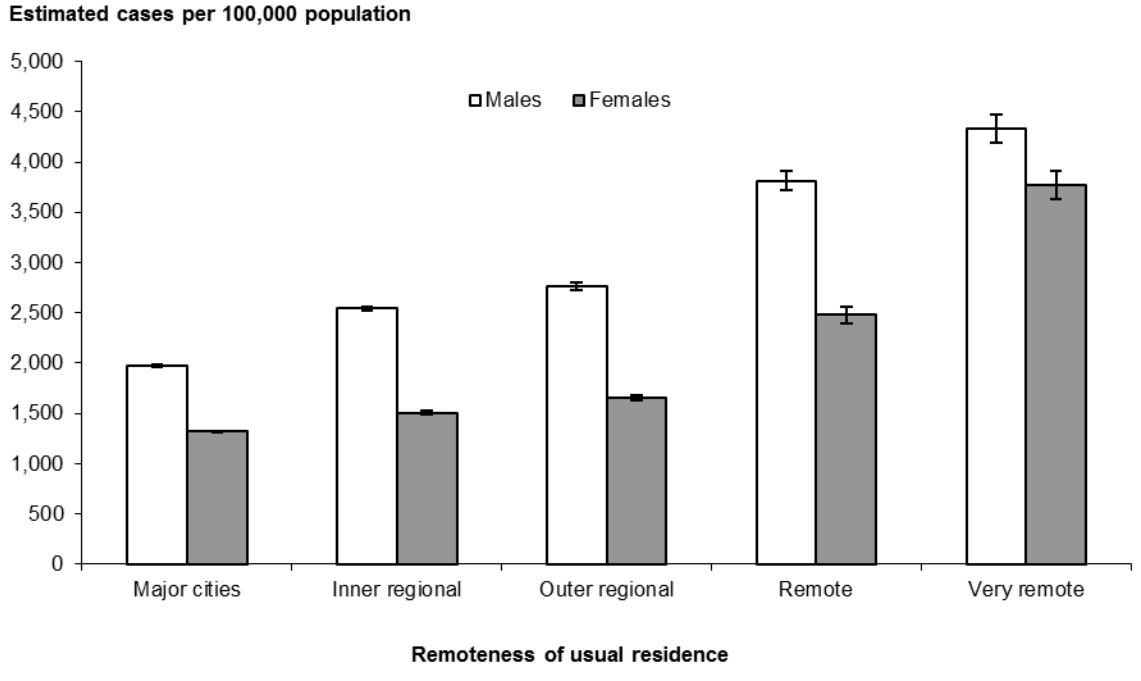
2. Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.1.5: Age-standardised estimated cases of community injury, states and territories, 2007–08

Remoteness of usual residence

Rates of hospitalised community injury cases were also analysed according to the remoteness classification of the person's usual residence. The Remoteness Structure of the Australian Standard Geographical Classification (ASGC) categorises census collection districts which share common characteristics into broad geographical regions called Remoteness Areas (RAs). The AGSC Remoteness Structure is more fully described in the Data Issues section.

The age-standardised rate of hospitalised community injury cases in 2007–08 increased with increasing remoteness of the person's place of usual residence; the lowest rate was observed for residents of Australia's *Major cities* (1659.8 per 100,000 population) and the highest rate was observed for residents of Australia's *Very remote* regions (4,068.3 per 100,000 population). This pattern was also seen for both males and females separately (Figure 2.1.6) and is similar to patterns observed in previous years (Kreisfeld & Harrison 2010). Differences in injury mortality rates across Remoteness Areas has also been reported by Henley and colleagues (2007). The high rate of injury morbidity for residents of the more remote areas of Australia may be partly attributable to higher injury risk among Aboriginal and Torres Strait Islander Australians, who comprise a relatively large proportion of the remote area populations (Berry et al. 2009; Helps & Harrison 2006). The high rate of hospitalised injury for residents of the Northern Territory, described in the previous section, is most likely related to remoteness factors; the majority of the Territory being classed as *Remote* or *Very remote* (ABS 2004; AIHW 2004).



Note: Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.1.6: Age-standardised cases (± 95% CI) of community injury cases: males and females by remoteness of usual residence (ASGC regions), 2007–08

Time trends

Age-standardised rates for community injury did not vary greatly over time. It was 1,724 per 100,000 of the population in 1999–00 (males: 2,069 per 100,000, females: 1,343 per 100,000) and 1,827 per 100,000 of the population in 2007–08 (males: 2,202 per 100,000, females: 1,420 per 100,000). Age-standardised rates for males were consistently higher than for females (Figure 2.1.7).

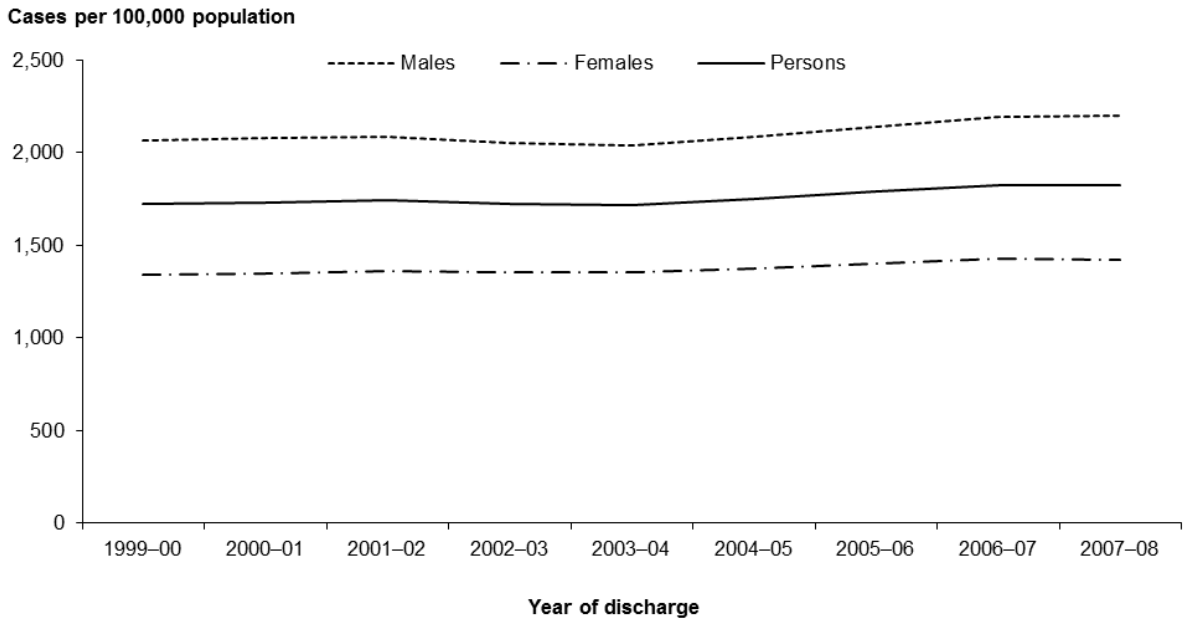


Figure 2.1.7: Age-standardised cases of community injury, Australia, 1999–00 to 2007–08

Part A: Unintentional injuries

2.2 Transportation

ICD-10-AM case inclusion

Principal diagnosis: S00–T75, T79 and

First reported external cause: V01–V99

Table 2.2.1: Key indicators for transport cases, Australia, 2007–08

Indicator	Males	Females	Persons[a]
Separations from hospital due to transport-related injury	41,128	17,673	58,801
Percentage of all community injury separations	16.5	10.0	13.8
Estimated cases[b]	37,322	16,265	53,587
Crude rate/100,000 population	353.4	152.3	252.3
Age-standardised rate/100,000 population[c]	353.7	152.2	253.6
Total patient days[d]	160,887	72,333	233,220
Mean length of stay (days)	4.3	4.4	4.4

(a) Includes separations for which sex was not reported.

(b) Excludes records with a mode of admission of 'transfer from another acute hospital'.

(c) Standardised to the Australian estimated resident population 30th June 2001.

(d) Includes records with a mode of admission of 'transfer from another acute hospital' as contributing to hospital burden due to injury.

This chapter covers all hospitalisations due to unintentional transport-related injuries, including cases occurring in railway, water, land and air transport. More detailed information on unintentional transport injuries is provided in reports on the topic, which are available on the AIHW website. Transportation accidents were responsible for 14% of all injury hospitalisations in the financial year 2007–08 (Table 2.2.1).

This chapter excludes transport-related injury cases that were registered as *intentional self-harm by jumping or lying before a moving object* (*n* = 60), *intentional self-harm by crashing of motor vehicle* (*n* = 76), *assault by pushing or placing victim before moving object* and *assault by crashing of motor vehicle* (*n* = 32), *falling, lying or running before or into moving object, undetermined intent* and *crashing of motor vehicle, undetermined intent* (*n* = 3) and *sequelae of transport accidents* (*n* = 89).

Of the 53,587 transport injury cases in 2007–08, 2% were water transport (male *n* = 645, female *n* = 249), 0.3% were air and space transport (male *n* = 130, female *n* = 29) and 1% were other and unspecified transport (male *n* = 400, female *n* = 136).

Age and sex distribution

More males than females were hospitalised for transport injury (based on age-standardised rates) with a M:F ratio of 2.3:1. Males had a higher rate of transport injury at all ages. The highest age-specific rate for males was 717.1 per 100,000 at ages 15–19. This was more than 2.5 times the rate of 280.8 per 100,000 for females of the same age (Figure 2.2.1). More than 57% of transport injuries occurred to people aged 15–44 (Table 2.2.2).

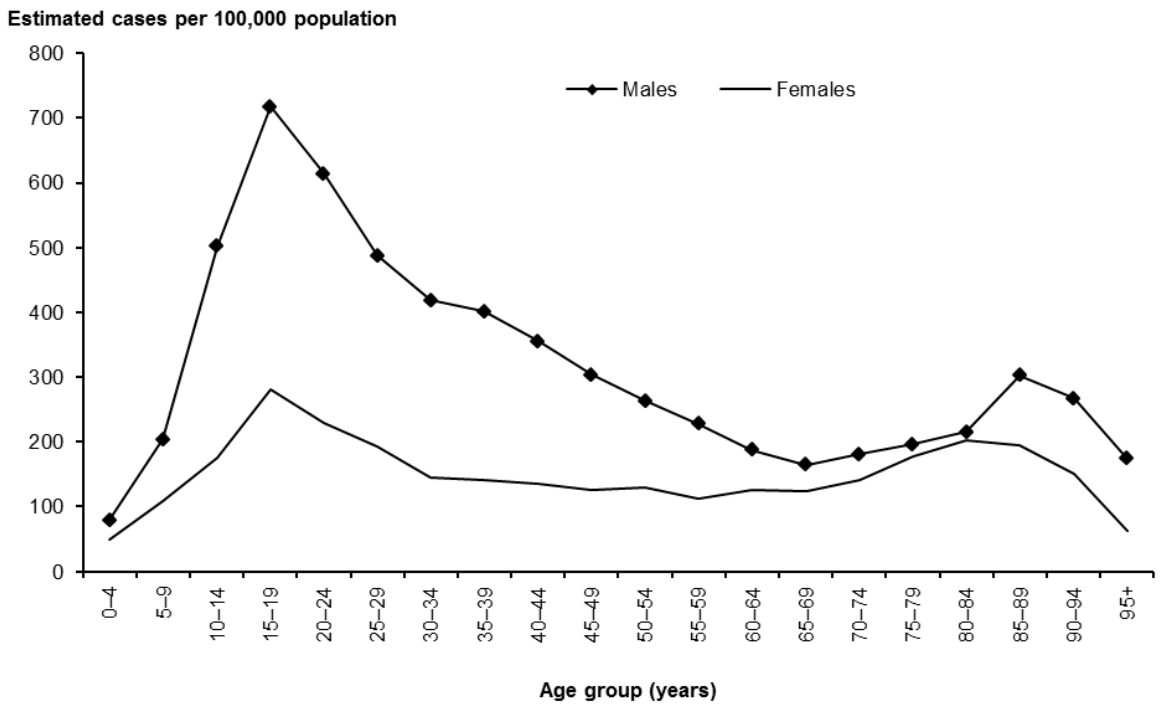


Figure 2.2.1: Age-specific estimated cases of transport injury by sex, Australia, 2007–08

Table 2.2.2: Transportation cases by age group, Australia, 2007–08

	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–4	552	1.5	328	2.0	880	1.6
5–14	5,016	13.4	1,915	11.8	6,931	12.9
15–24	10,130	27.1	3,684	22.6	13,814	25.8
25–44	12,557	33.6	4,634	28.5	17,191	32.1
45–64	6,614	17.7	3,287	20.2	9,901	18.5
65+	2,453	6.6	2,417	14.9	4,870	9.1
Total	**37,322**	**100.0**	**16,265**	**100.0**	**53,587**	**100.0**

Injured person's vehicle

Table 2.3.3 shows age and sex differences for injuries by the mode of transport. Overall, 'car occupant injured in a transport accident' was the most common type of external cause attributed to transport related injury cases (35%; *n* = 17,917).

The most common type of transport related external cause for males was 'motorcycle rider injured in transport accidents' (34%), and for females was 'car occupant injured in transport accidents' (52%). The highest proportion of both male and female car occupants who were injured were adults aged 25–44 (followed by young men and women aged 15–24). Close to ten times more males than females were hospitalised due to motorcycle accidents. The highest proportion of motorcycle injuries occurred in adults aged 25–44 for both males (40%) and females (36%).

Males had more than four times as many pedal cycle accidents as females. The majority of pedal cycle accidents occurred to young children aged 0–14 (36% of male and 40% of female pedal cycle injuries).

More male pedestrians were injured compared with females. For males, the highest proportion of pedestrian accidents were in the 25–44 age group, whereas for females, pedestrians aged 65+ were most frequently injured.

More females were injured in bus accidents compared with males; the highest proportion of those injured was aged 65+ for both males (39%) and females (68%).

The frequency of injury to an animal rider or occupant of an animal-driven vehicle was greater for females than for males. For both males and females, the highest proportion of animal rider or occupant of an animal-driven vehicle accidents occurred among adults aged 25–44 (males 34%, females 33%).

Table 2.2.3: Injured person's mode of transport by age group, Australia, 2007–08

Injured person's mode of transport	0–14	Per cent	15–24	Per cent	25–44	Per cent	45–64	Per cent	65+	Per cent	Total	Per cent
Males												
Pedestrian	380	16.2	506	21.6	694	29.6	412	17.5	356	15.2	2,348	100
Pedal cycle	2,638	35.8	1,529	20.7	1,802	24.4	1,125	15.3	282	3.8	7,376	100
Motorcycle	1,493	11.7	4,110	32.1	5,109	39.9	1,883	14.7	213	1.7	12,808	100
Car	504	5.3	3,005	31.7	3,141	33.2	1,710	18.1	1,105	11.7	9,465	100
Pick-up truck or van	20	5.1	105	26.6	125	31.7	113	28.7	31	7.9	394	100
Heavy transport	5	0.6	47	6	330	42.4	349	44.9	47	6	778	100
Bus	16	8.7	19	10.3	30	16.3	48	26.1	71	38.6	184	100
Animal or animal-driven	99	9.5	190	18.3	353	33.9	320	30.7	79	7.6	1,041	100
Special all-terrain or off-road	171	22.6	184	24.3	253	33.4	105	13.9	44	5.8	757	100
Other land transport	86	8.6	211	21.2	299	30	263	26.4	137	13.8	996	100
Water transport	34	5.3	120	18.6	250	38.8	189	29.3	52	8.1	645	100
Other and unspecified[(a)]	122	30.7	103	32.1	171	75.6	96	48.5	36	13.2	528	100
Total[(b)]	**5,568**	**14.9**	**10,130**	**27.1**	**12,557**	**33.6**	**6,614**	**17.7**	**2,453**	**6.6**	**37,320**	**100**

(continued)

Table 2.2.3: Injured person's mode of transport by age group, Australia, 2007–08

Injured person's mode of transport	0–14	Per cent	15–24	Per cent	25–44	Per cent	45–64	Per cent	65+	Per cent	Total	Per cent
Females												
Pedestrian	195	13.5	228	15.8	351	24.3	269	18.6	400	27.7	1,443	100
Pedal cycle	698	40.2	171	9.9	421	24.3	375	21.6	70	4	1,735	100
Motorcycle	233	17.7	324	24.6	475	36	252	19.1	34	2.6	1,318	100
Car	428	5.1	2,254	26.6	2,468	29.2	1,823	21.5	1,488	17.6	8,461	100
Pick-up truck or van	n.p.	n.p.	30	33	29	31.9	21	23.1	n.p.	n.p.	91	100
Heavy transport	n.p.	n.p.	5	12.8	15	38.5	11	28.2	n.p.	n.p.	39	100
Bus	5	1.7	15	5.1	21	7.1	53	17.9	202	68.2	296	100
Animal or animal-driven	491	26.7	430	23.4	598	32.6	297	16.2	21	1.1	1,837	100
Special all-terrain or off-road	86	37.1	58	25	49	21.1	25	10.8	14	6	232	100
Other land transport	27	6.8	80	20.1	96	24.1	83	20.8	113	28.3	399	100
Water transport	28	11.2	65	26.1	71	28.5	49	19.7	36	14.5	249	100
Other and unspecified[(a)]	42	30.9	24	31.2	40	64.7	29	34.8	30	38.3	165	200
Total	**2,243**	**13.8**	**3,684**	**22.6**	**4,634**	**28.5**	**3,287**	**20.2**	**2,417**	**14.9**	**16,265**	**100**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

(a) Includes 159 cases (130 males, 29 females) for air and space transport.

(b) Total includes two cases that did not involve a motor vehicle.

Principal diagnosis and body part injured

Injuries sustained in transportation accidents involved all major body regions with similar frequency (Table 2.2.4).

Table 2.2.4: Principal diagnosis by body region and sex for transport injury, Australia, 2007–08

	Males		Females		Persons	
Principal diagnosis by body region	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Head	7,822	21.0	3,265	20.1	11,087	20.7
Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis)	9,142	24.5	5,998	36.9	15,140	28.3
Shoulder and upper limb	10,846	29.1	3,680	22.6	14,526	27.1
Hip and lower limb	8,780	23.5	2,999	18.4	11,779	22.0
Other injuries not specified by body region	732	2.0	323	2.0	1,055	2.0
All body regions	**37,322**	**100.0**	**16,265**	**100.0**	**53,587**	**100.0**

Length of stay

Mean length of stay for transportation injury cases rose with age for both males and females (Figure 2.2.2). Mean length of stay for males ranged from 2.1 days for children aged 0–4 to a high of 8.9 days for those aged 85 and over, while the mean length of stay for females ranged from a low of 2.4 days for children aged 5–9 to a high of 9.5 days for those aged 85 and over.

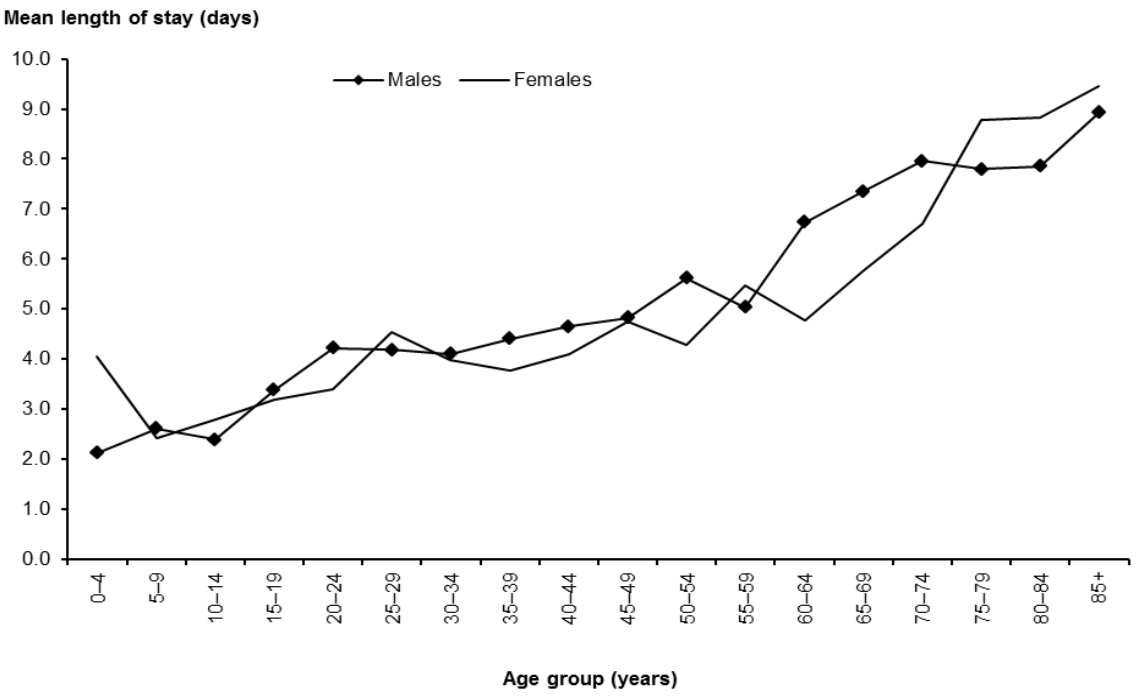


Figure 2.2.2: Length of stay per episode for transport injury by age and sex, Australia, 2007–08

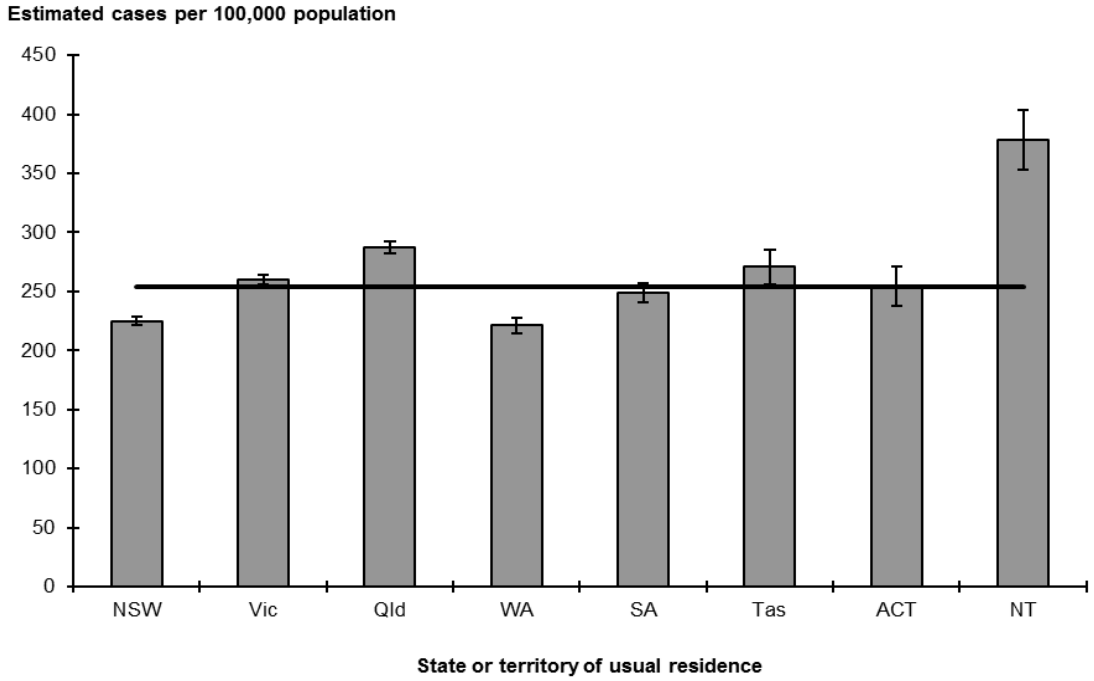
State and territory differences

Victoria, South Australia, Tasmania and the Australian Capital Territory had rates of transport injury that were similar to the national rate (Table 2.2.5 and Figure 2.2.3). New South Wales and Western Australia had rates that below the national rate. Rates of transport injury cases were highest for residents of Queensland and the Northern Territory.

Table 2.2.5: Age-standardised estimated cases of transport injury, states and territories, 2007–08

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI[(a)]
NSW	225.0	221.4–228.5
Vic	260.1	255.8–264.5
Qld	287.5	282.3–292.6
WA	221.2	214.9–227.5
SA	249.1	241.2–256.9
Tas	270.7	255.9–285.5
ACT	254.5	237.8–271.2
NT	378.0	352.5–403.4
Australia	**253.6**	**251.5–255.8**

(a) Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.



Notes

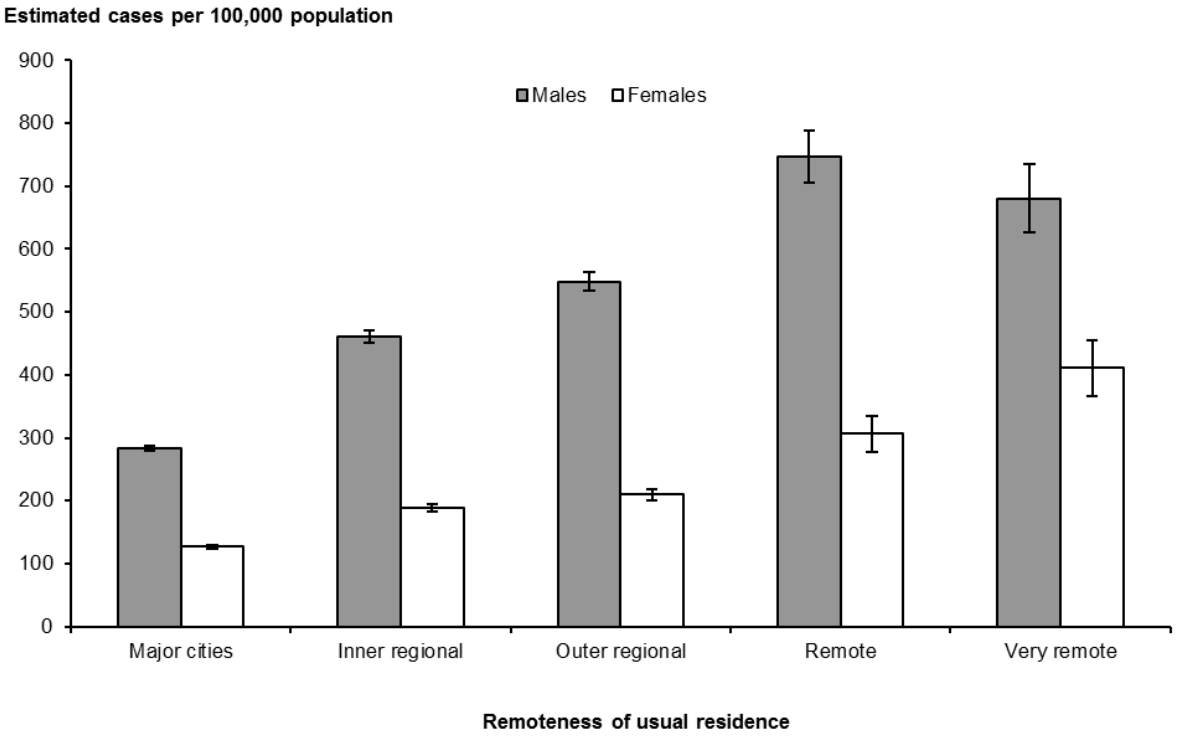
1. The thick horizontal line shows the rate for Australia.
2. Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.2.3: Age-standardised estimated cases of transport injury, states and territories, 2007–08

Remoteness of usual residence

The age-standardised rates of injury increased according to remoteness of the person's usual residence from an urban centre. Male rates of serious injury were 2.2 to 2.6 times the rate observed for females in each remoteness area, except for the *Very remote* zone where the male rate was 1.7 times the female rate (Figure 2.2.4). The lowest rate was observed for residents of Australia's *Major cities* (205.4 per 100,000 population) and the highest rate was observed for residents of Australia's *Very remote* regions (551.4 per 100,000).

The high rate of injury morbidity for residents of the more remote areas of Australia may be partly attributable to higher injury risk among Aboriginal and Torres Strait Islander Australians, who comprise a relatively large proportion of the remote area populations (Helps & Harrison 2006). Transport injury among Aboriginal and Torres Strait Islander Australians during 2007–08 has been the subject of a previous report in this series (Henley & Harrison 2010).



Note: Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.2.4: Age-standardised cases (± 95% CI) of transport injury cases: males and females by remoteness of usual residence (ASGC regions), 2007–08

Time trends

Age-standardised rates for hospitalised transport injury rose from 249 per 100,000 of the population in 1999–00 to 254 per 100,000 in 2007–08, with fluctuations in intervening (Figure 2.2.8). Age-standardised rates for males underwent a similar pattern of fluctuation, increasing from 337 per 100,000 in 1999–00 to 354 per 100,000 in 2007–08. Male rates were consistently higher than female rates which fell slightly from 160 per 100,000 in 1999–00 to 152 per 100,000 in 2007–08. A detailed report on trends in transport injury has recently been published (Henley & Harrison 2011).

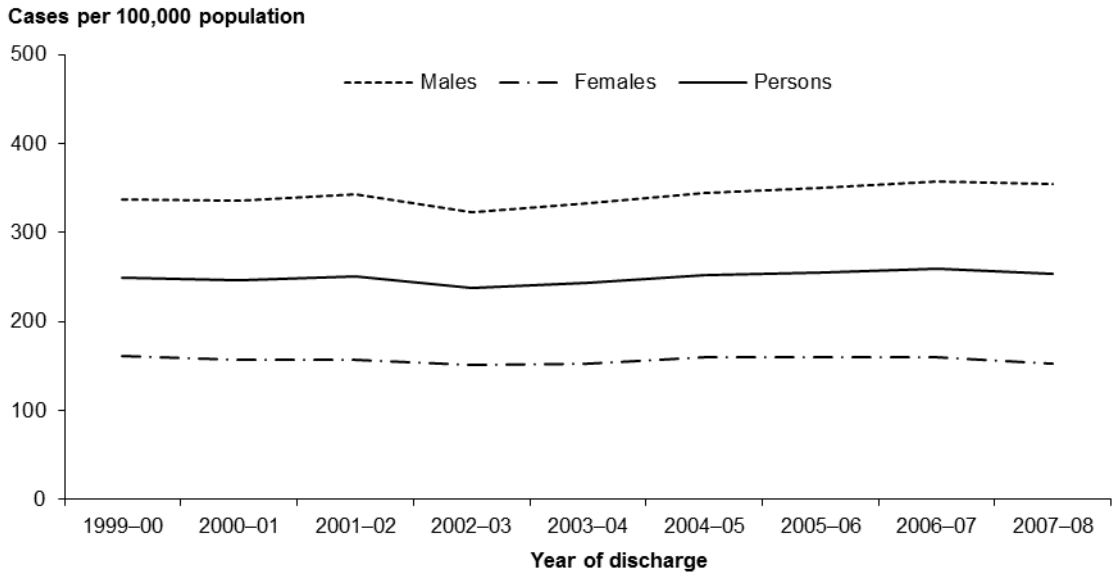


Figure 2.2.8: Age-standardised cases of transport injury, Australia, 1999–00 to 2007–08

2.2.1 Land transportation

ICD-10-AM case inclusion

Principal diagnosis: S00–T75, T79 and

First reported external cause: V01–V89

The following section concentrates on land transport accidents (*n* = 51,998; see Table 2.2.6); 35% of people hospitalised due to land transport accidents were car occupants (*n* = 17,926); more than one-quarter were motorcyclists (27%; *n* = 14,126); 18% (*n* = 9,111) were pedal cyclists; and 7% (*n* = 3,791) were pedestrians.

A traffic accident is any vehicle accident occurring on a public highway. A non-traffic accident is any vehicle accident that occurs entirely in any place other than a public highway. Of all people hospitalised due to land transport accidents, 63% were injured in traffic accidents.

Table 2.2.6 and Figure 2.2.5 describe modes of transport for traffic and non-traffic cases. For non-traffic accidents (*n* = 13,893), the most frequent mode of transport was a motorcycle (43%; *n* = 6,030) followed by a pedal cycle (29%; *n* = 3,956). The most common mode of transport for males injured in a non-traffic accident was a motorcycle (48%; *n* = 5,516) followed by a pedal cycle (28%; *n* = 3,233), whereas the most common mode of transport for females injured in a non-traffic accident was a pedal cycle (30%; *n* = 723) followed by a car (23%; *n* = 542).

For traffic accident cases (*n* = 32,829), the most frequent mode of transport of the injured person was a car (49%; *n* = 15,951) followed by a motorcycle (23%; *n* = 7,560). There were gender differences; slightly more than one-third of males were car occupants (38%; *n* = 8,362), 31% were on a motorcycle (*n* = 6,814) and 18% were pedal cyclists (*n* = 3,883). In comparison, nearly three-quarters of females injured in traffic accidents were car occupants (70%; *n* = 7,589), 10% were pedestrians (*n* = 1,073), and 9% were pedal cyclists (*n* = 939).

Of accidents designated unspecified as to whether traffic or non-traffic (Table 2.2.6), more than half (55%; *n* = 2,878) involved an animal rider or occupant of an animal-drawn vehicle.

Table 2.2.6: Mode of transport for land transport injury cases, Australia, 2007–08

Injured person's mode of transport	Non-traffic accident	Traffic accident	Unspecified	Total
Males				
Car	833	8,362	270	9,465
Motorcycle	5,516	6,814	478	12,808
Pedal cycle	3,233	3,883	260	7,376
Pedestrian	414	1,731	203	2,348
Animal or animal-drawn vehicle	0	0	1,041	1,041
Heavy transport vehicle	209	469	100	778
Pick-up truck or van	109	245	40	394
Bus	37	n.p.	n.p.	184
Three-wheeled motor vehicle	23	n.p.	n.p.	44
Other land transport	1,124	428	157	1,709
Total	**11,498**	**22,048**	**2,601**	**36,147**
Females				
Car	542	7,589	330	8,461
Motorcycle	514	746	58	1,318
Pedal cycle	723	939	73	1,735
Pedestrian	261	1,073	109	1,443
Animal or animal-drawn vehicle	0	0	1,837	1,837
Heavy transport vehicle	n.p.	29	n.p.	39
Pick-up truck or van	n.p.	59	n.p.	91
Bus	49	106	141	296
Three-wheeled motor vehicle	10	9	0	19
Other land transport	266	231	115	612
Total	**2,395**	**10,781**	**2,675**	**15,851**
Persons				
Car	1,375	15,951	600	17,926
Motorcycle	6,030	7,560	536	14,126
Pedal cycle	3,956	4,822	333	9,111
Pedestrian	675	2,804	312	3,791
Animal or animal-drawn vehicle	0	0	2,878	2,878
Heavy transport vehicle	215	498	104	817
Pick-up truck or van	n.p.	304	n.p.	485
Bus	86	204	190	480
Three-wheeled motor vehicle	n.p.	27	n.p.	63
Other land transport	1,390	659	272	2,321
Total	**13,893**	**32,829**	**5,276**	**51,998**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

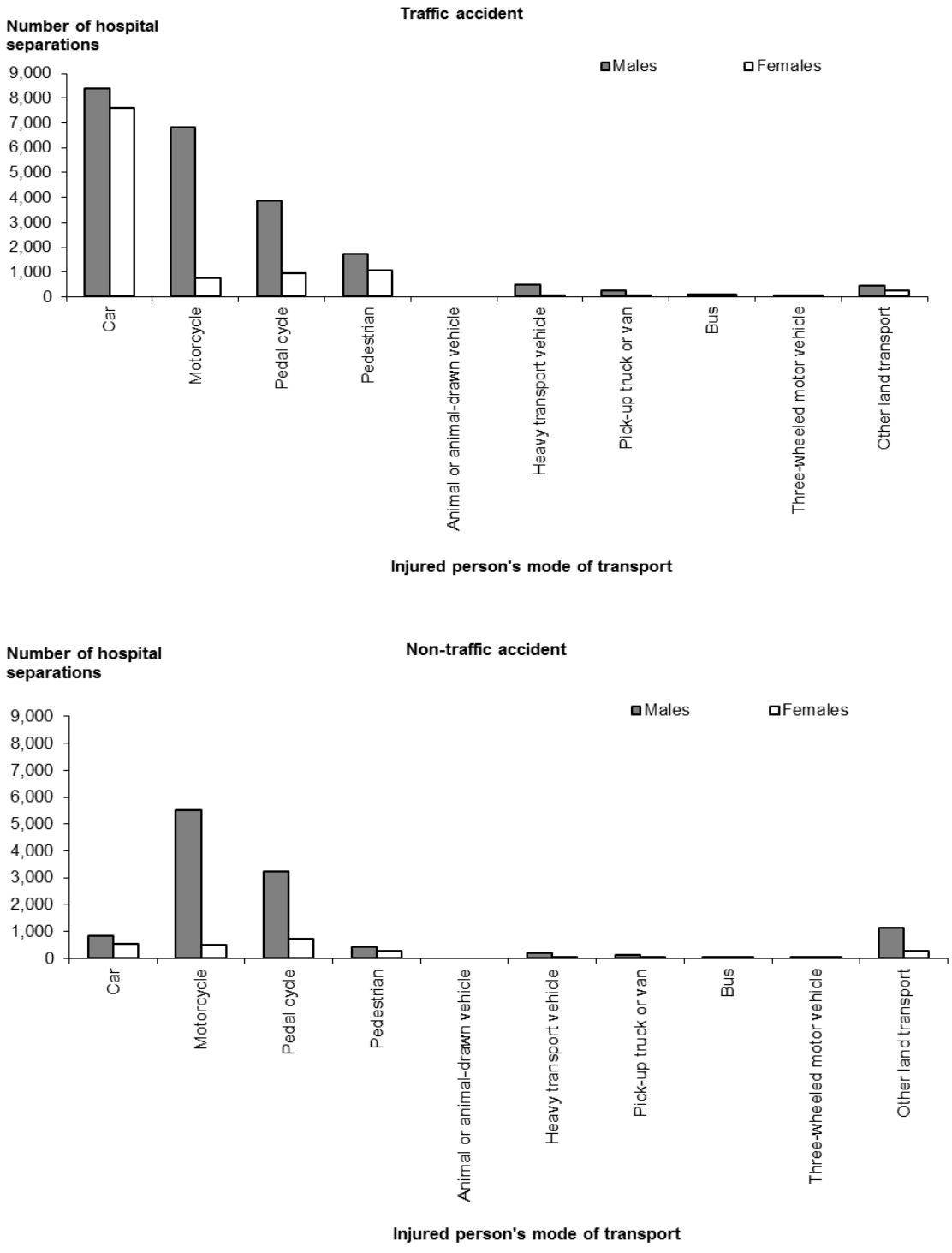


Figure 2.2.5: Mode of transport for land transport injury cases, Australia, 2007–08

Mechanism of injury

Most injuries result from collision with another vehicle or collision with some other object. The other vehicle or object is often called the 'counterpart'. Table 2.2.7 details the counterpart in land transport crashes. However, some injuries result from non-collision events, such as car roll-over.

Table 2.2.7 lists the five most common mechanisms of injury in land transport crashes as being 1) a collision of a car with either a car, pick-up truck or van, 2) a motorcycle in a non-collision transport accident, 3) a pedal cycle in a non-collision transport accident, 4) a collision of a car with a fixed or stationary object, and 5) a car in a non-collision transport accident.

Of injured car occupants, 41% were involved in a collision with a car, pick-up truck or van, 24% were involved in a collision with a fixed or stationary object and 22% were involved in a non-collision transport accident.

Nearly half (47%) of motorcyclists were involved in a non-collision transport accident, 13% collided with a car, pick-up truck or van and 11% collided with a fixed or stationary object.

More than half (51%) of pedal cyclists were involved in a non-collision transport accident and 12% collided with a car, pick-up truck or van.

Of pedestrians injured, 78% were hit by a car, pick-up truck or van.

For animal riders or occupants of an animal-driven vehicle, 69% were injured in a non-collision accident. (These cases would usually be the result of falling from, or being thrown from, a horse.)

Of heavy transport vehicle occupants, 56% were involved in a non-collision transport accident, 9% collided with a fixed or stationary object, 8% collided with another heavy transport vehicle or bus and 6% hit a car, pick-up truck or van.

Of pick-up truck or van occupants, 46% were involved in a non-collision transport accident, 15% hit a car, pick-up truck or van and 15% collided with a fixed or stationary object.

Sixty-two per cent of bus occupants were involved in a non-collision transport accident.

Road user group

Tables 2.2.8 and 2.2.9 characterise the road user group (for example, the position of the injured person in or outside of the vehicle) for land transport accidents according to whether they were traffic or non-traffic accident.

Excluding the other and unspecified road user group, 63% of car occupants injured in a traffic accident were drivers and 30% were passengers. Among motorcyclists injured in a traffic accident 65% were drivers and 3% were passengers however 31% did not have a road user type specified.

Again excluding the other and unspecified road user group, 53% of car occupants involved in a non-traffic accident were drivers and 27% were passengers. In comparison, 84% of those injured in a non-traffic accident while on a motorcycle were drivers and 2% were passengers.

In cases where the traffic status was unspecified as to traffic or non-traffic, more than half (54%) of the injuries were involving an animal rider or occupant of an animal driven vehicle.

Table 2.2.7: Mechanism of injury for land transport injury cases, Australia, 2007–08

	Counterpart									
Injured person's mode of transport	**Pedestrian or animal**	**Pedal cyclist**	**Two- or three-wheeled motor vehicle**	**Car, pick-up truck or van**	**Heavy transport vehicle or bus**	**Railway train or railway vehicle**	**Other non-motor vehicle**	**Fixed or stationary object**	**Non-collision transport accident**	**Other and unspecified transport**
Car occupant	155	n.p.	33	7,356	622	15	21	4,325	4,012	1,385
Motorcyclist	216	n.p.	395	1,795	87	n.p.	20	1,598	6,671	3,339
Pedal cyclist	52	262	13	1,124	56	7	5	457	4,600	2,535
Pedestrian	0	94	101	2,952	150	28	40	0	0	426
Animal rider or occupant of animal-driven vehicle	5	0	0	0	0	0	5	37	1,982	849
Occupant of heavy transport vehicle	7	0	n.p.	52	63	n.p.	0	75	460	156
Occupant of pick-up truck or van	5	0	n.p.	73	28	0	n.p.	74	223	80
Bus occupant	n.p.	0	0	34	18	n.p.	0	15	299	107
Three wheeled motor vehicle	n.p.	0	n.p.	12	0	n.p.	0	7	26	12
Total (*n* = 49,677)[(a)]	**447**	**362**	**545**	**13,398**	**1,024**	**59**	**92**	**6,588**	**18,273**	**8,889**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

(a) Excludes 2,321 cases that are 'Other land transport accidents' (V81–V89) and 1,589 cases due to water, air and space, and other and unspecified transport.

Table 2.2.8: Mode of transport for traffic land transport injury cases, Australia, 2007–08

Injured person's vehicle	Pedestrian	Driver	Passenger	Person on outside of vehicle	Other and unspecified	Total
Pedestrian	2,804	0	0	0	0	2,804
Pedal cycle	0	2,831	32	0	1,959	4,822
Motorcycle	0	4,950	240	0	2,370	7,560
Car	0	10,010	4,794	76	1,071	15,951
Pick-up truck or van	0	186	74	19	25	304
Heavy transport vehicle	0	371	47	13	67	498
Bus	0	44	127	n.p.	n.p.	204
Three wheeled motor vehicle	0	14	n.p.	n.p.	n.p.	27
Other land transport	0	82	n.p.	11	539	659
Total	**2,804**	**18,488**	**5,347**	**123**	**6,067**	**32,829**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

Table 2.2.9: Mode of transport for non-traffic land transport injury cases, Australia, 2007–08

Injured person's vehicle	Pedestrian	Driver	Passenger	Person on outside of vehicle	Other and unspecified	Total
Pedestrian	675	0	0	0	0	675
Pedal cycle	0	3,004	49	0	903	3,956
Motorcycle	0	5,090	122	0	818	6,030
Car	0	730	369	124	152	1,375
Pick-up truck or van	0	n.p.	n.p.	51	34	133
Heavy transport vehicle	0	55	n.p.	90	60	215
Bus	0	n.p.	58	n.p.	n.p.	86
Three wheeled motor vehicle	0	26	n.p.	n.p.	n.p.	33
Other land transport	0	883	101	143	263	1,390
Total	**675**	**9,814**	**733**	**411**	**2,260**	**13,893**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

Age and sex distribution by traffic status

Traffic

For traffic accidents, hospitalised injury rates for males peaked at ages 20–24. This appears to be driven by the high rates of injury for motorcyclists and car drivers in this age group (144.5 per 100,000 for motorcyclists and 121.1 per 100,000 for car drivers) (Figure 2.2.6). For females, rates for car passengers peaked at age 15–19 (74.3 per 100,000 population) and rates for car drivers peaked at age 20–24 (82.9 per 100,000).

Rates of pedal cycle injury in traffic peaked in the 10–14 age group for both males and females (105.9 per 100,000 and 24.9 per 100,000, respectively). Pedestrian injury rates in traffic were highest in the oldest age groups (43.4 per 100,000 for males aged 85+ and 25.8 per 100,000 for females aged 80–84).

Non-traffic

For non-traffic accidents, hospitalised injury rates were highest for males and females aged 10–14. This can be attributed to the high injury rates among pedal cyclists (136.0 and 23.9 per 100,000, for males and females respectively) and motorcyclists (110.9 and 13.5 per 100,000, for males and females respectively). For both male and female car drivers rates peaked at ages 15–19 with rates of 17.6 and 11.2 per 100,000 respectively (Figure 2.2.7). For male car passengers, the injury rate was highest at 15–19 (11.7 per 100,000), while for female car passengers the rate was highest for those aged over 85 (7.7 per 100,000). Pedestrian injury rates in non-traffic was highest for males aged 80–84 (11.4 per 100,000) and for females 75–79 (6.7 per 100,000).

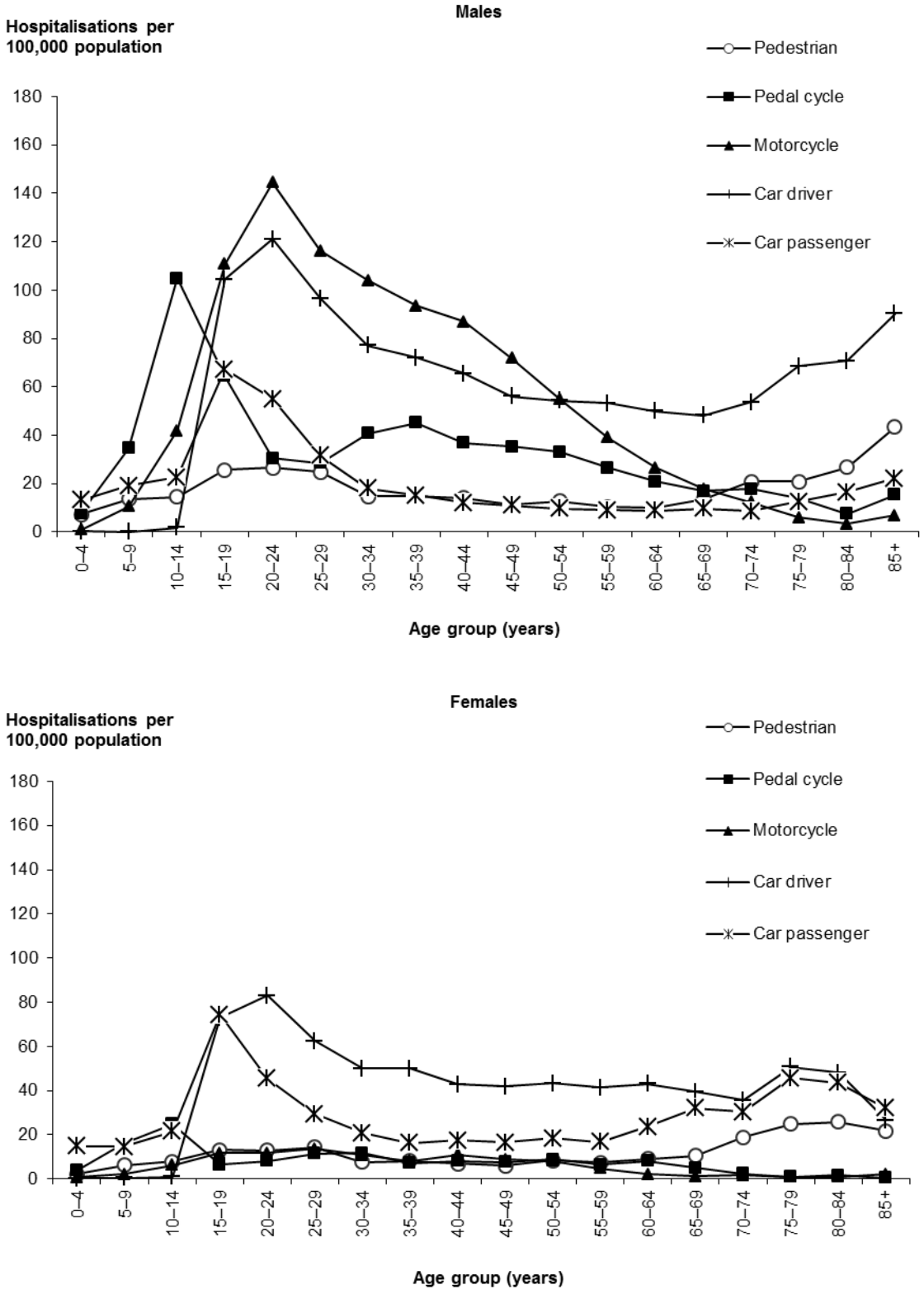


Figure 2.2.6: Traffic accidents—age-specific hospital separation rates by sex, Australia, 2007–08

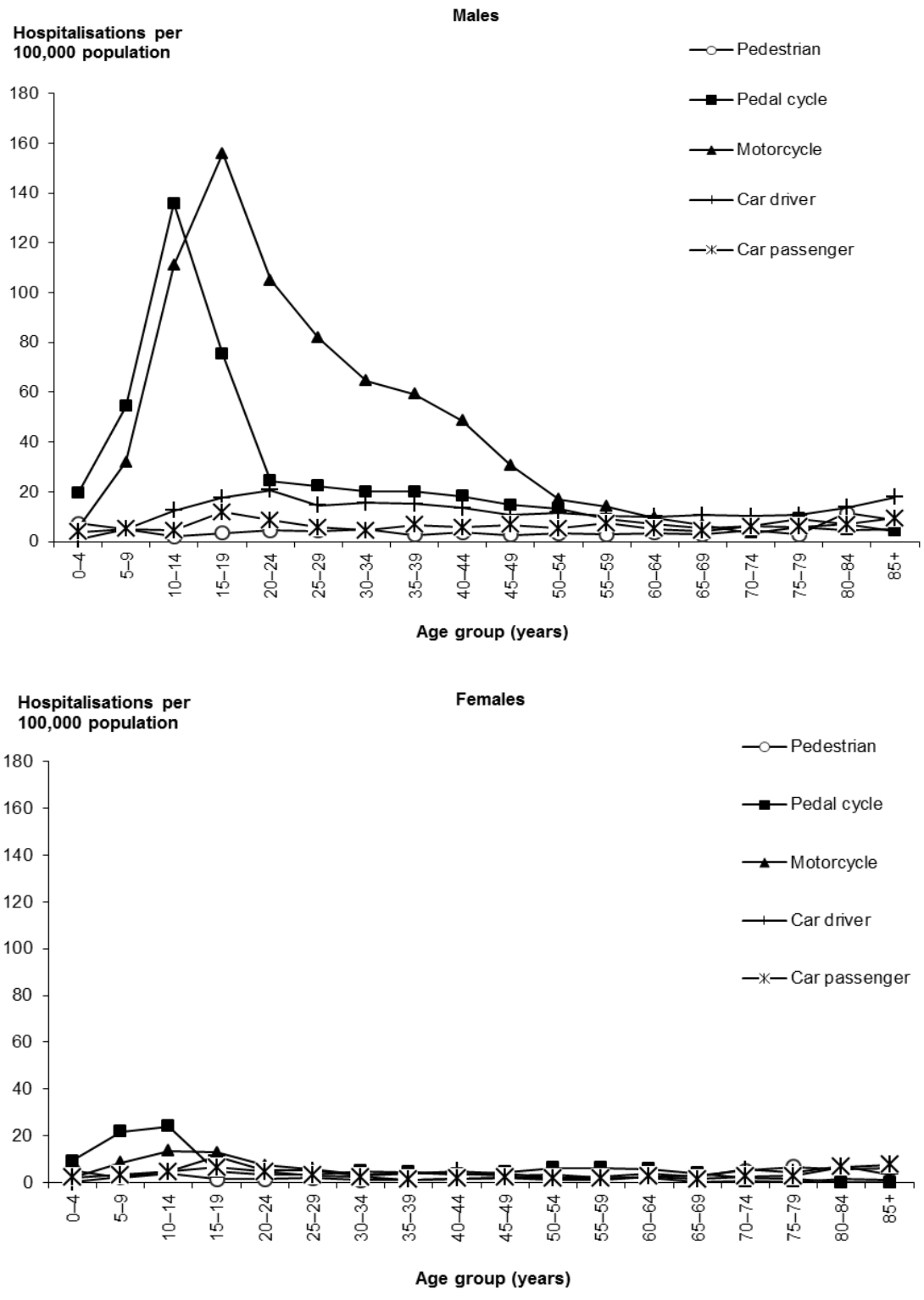


Figure 2.2.7: Non-traffic accidents—age-specific hospital separation rates by sex, Australia, 2007–08

2.3 Drowning and near-drowning

ICD-10-AM case inclusion

Principal diagnosis: S00–T75, T79 and

First reported external cause: W65–W74

Table 2.3.1: Key indicators for drowning and near-drowning cases, Australia, 2007–08

Indicator	Males	Females	Persons
Separations from hospital due to drowning and near-drowning	352	145	497
Percentage of all community injury separations	0.1	0.1	0.1
Estimated cases[(a)]	317	133	450
Crude rate/100,000 population	3.0	1.2	2.1
Age-standardised rate/100,000 population[(b)]	3.0	1.3	2.2
Total patient days[(c)]	749	306	1,055
Mean length of stay (days)	2.4	2.3	2.3

(a) Excludes records with a mode of admission of 'transfer from another acute hospital'.

(b) Standardised to the Australian estimated resident population 30th June 2001.

(c) Includes records with a mode of admission of 'transfer from another acute hospital' as contributing to hospital burden due to injury.

Increasingly, the term 'drowning' is used to refer to 'the process of experiencing respiratory impairment from submersion/immersion in liquid' (van Beek et al. 2005). Framed this way, drowning can have various outcomes: death, survival with lasting consequences of greater or lesser severity, survival with transient morbidity or survival with no detectable consequences. 'Near drowning' is less well defined. It can refer to survived episodes of respiratory impairment from submersion/immersion in liquid. It can also refer to episodes in which a person nearly, but not quite, experiences respiratory impairment from submersion/immersion in liquid (e.g. a person who becomes exhausted while swimming, but manages to reach a shore, perhaps with assistance). This report provides data on episodes of non-fatal drowning that resulted in admission to a hospital.

Drowning and near-drowning accounted for less than one per cent of all injury hospitalisations in the financial year 2007–08 (Table 2.3.1). The age-standardised rate of accidental drowning or near-drowning cases was 2.2 per 100,000 population. This chapter predominantly focuses on estimated cases of *Accidental drowning and submersion* that have an external cause, *Accidental drowning and submersion* in the ICD-10-AM range W65–W74 (n = 450). However, there were 45 additional cases that had an external cause code outside the range of *Accidental Drowning and submersion* (ICD-10-AM W65–W74) but had a principal diagnosis of T75.1 *Drowning and nonfatal submersion.* These cases are not included in Table 2.3.1 but are summarised in Table 2.3.2.

Overview of all drowning and near-drowning cases

All identifiable hospitalised drowning and near-drowning cases in Australia in 2007–08 are summarised in Table 2.3.2. There are a small number of cases of drowning and submersion that fall outside the range W65–W74 but still specifically refer to drowning and submersion,

for example V90 *Accident to water craft causing drowning and submersion*. These specific cases are included in the coverage of other sections in this report, for example records with an external cause code of V90 are included in the Other transport section. The cases without an explicit drowning and submersion external cause that have a principal diagnosis of T75.1 *Drowning and nonfatal submersion*, in Table 2.3.2 these are summarised under the heading Various external cause codes that do not mention drowning.

Table 2.3.2: All identifiable drowning and near-drowning cases, Australia, 2007–08

Number in 2007–08	Per cent of all drowning cases	ICD-10-AM Code	Description	Coverage in this report
450	90.9	W65–W74	Accidental drowning and submersion	Drowning
12	2.4	V90	Accident to water craft causing drowning and submersion	Other transport
5	1.0	V92	Water transport related drowning and submersion without accident to water craft	Other transport
14	2.8	X71	Intentional self-harm by drowning and submersion	Intentional, self-harm
n.p.	n.p.	X92	Assault by drowning and submersion	Assault
n.p.	n.p.	Y21	Drowning and submersion, undetermined intent	Undetermined intent
10	2.0		Various external cause codes that do not mention drowning (for example, fall)	Various
495	**100.0**			

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

Note: The total number of drowning hospital separations is the sum of cases with a first reported external cause code in the range W65–W74 and cases where the first reported external cause code fell outside this range but the case had a principal diagnosis code of T75.1 Drowning and non-fatal submersion.

Age and sex distribution

The following sections focus on the *Accidental drowning and submersion* (ICD-10-AM W65–W74) category (*n* = 450 cases). Close to half of the drowning and near-drowning injury cases occurred in young children aged 0–4 and of these 68% involved males (Table 2.3.3).

Table 2.3.3: Drowning and near-drowning cases by age group, Australia, 2007–08

	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–4	131	41.3	64	48.1	195	43.3
5–14	37	11.7	16	12.0	53	11.8
15–24	38	12.0	15	11.3	53	11.8
25–44	68	21.5	15	11.3	83	18.4
45–64	30	9.5	16	12.0	46	10.2
65+	13	4.1	7	5.3	20	4.4
Total	**317**	**100.0**	**133**	**100.0**	**450**	**100.0**

The highest age-specific rates were in children aged 0–4 (males: 18.8 per 100,000, females: 9.7 per 100,000) (Figure 2.3.1) and rates were much lower at older ages. Caution should be exercised in interpreting rates over the age of about 85 due to extremely small case numbers. More males than females were hospitalised for drowning and near-drowning (based on age-standardised rates). The overall rate of drowning and near-drowning for males was 3.0 per 100,000 population while for females this rate was 1.3 per 100,000 population (M:F ratio 2.3:1).

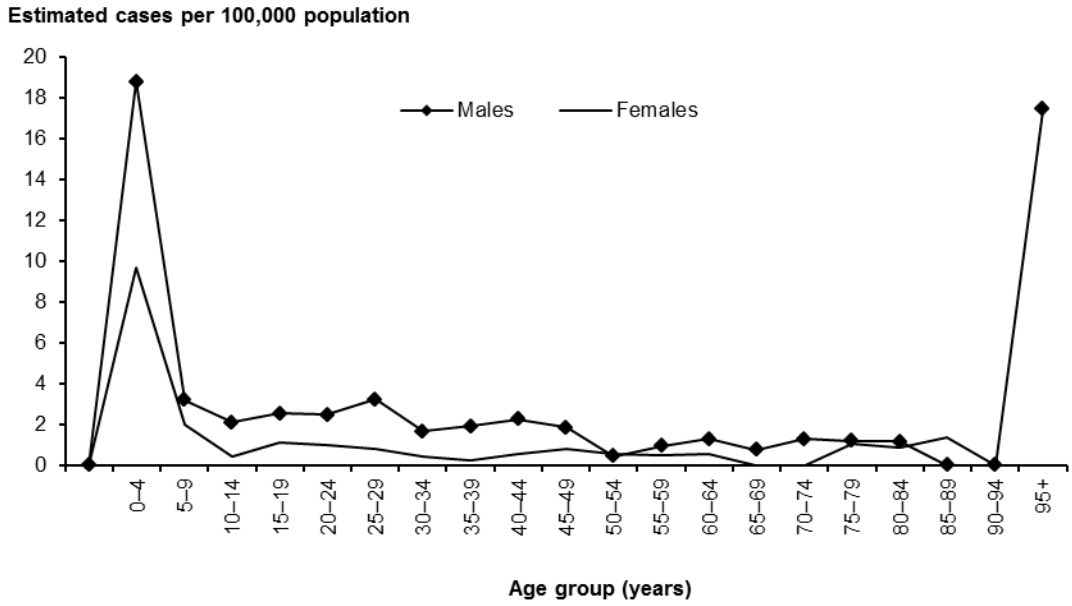


Figure 2.3.1: Age-specific estimated cases of drowning and near-drowning by sex, Australia, 2007–08

Place of occurrence

Overall, swimming pools were the most common setting for drowning-related cases (41% of all drowning and near-drowning cases) and especially for young children aged 0–4 (61% of all drowning cases in that age group and 65% of all cases that occurred in swimming pools). Bodies of natural water (for example, rivers, lakes, the ocean) were the second most common setting of drowning and near-drowning overall and the principal place for adults (59% in people aged 25–44). Drowning and near-drowning in bathtubs (8%) occurred less frequently with the majority of these cases involving children aged 0–4 (91%) (Table 2.3.4).

Table 2.3.4: Circumstances of accidental drowning and near-drowning cases by age, Australia, 2007–08

	Age group (years)													
	0–4		5–14		15–24		25–44		45–64		65+		All ages	
Circumstances of drowning	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**	**Total**	**Per cent**
Swimming pool	119	61.0	30	56.6	9	17.0	15	18.1	6	13.0	5	25.0	184	40.9
Natural water	10	5.1	13	24.5	26	49.1	49	59.0	25	54.3	7	35.0	130	28.9
Bathtub	31	15.9	0	0.0	0	0.0	0	0.0	n.p.	n.p.	n.p.	n.p.	34	7.6
Other or unspecified	35	17.9	10	18.9	18	34.0	19	22.9	n.p.	n.p.	n.p.	n.p.	102	22.7
Group Total	**195**	**100.0**	**53**	**100.0**	**53**	**100.0**	**83**	**100.0**	**46**	**100.0**	**20**	**100.0**	**450**	**100.0**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

Length of stay

The total number of patient days attributed to hospitalised drowning and near-drowning in 2007–08 was 1,055. The mean length of stay (2.3 days) was relatively short compared with other types of injuries, this was because a large number of drowning and near-drowning hospitalisations had a length of stay of one day or less (n = 385, 86%). The mean length of stay was shortest for children aged 0–4 (1.8 days) and longest for older people aged 65+ (6.2 days).

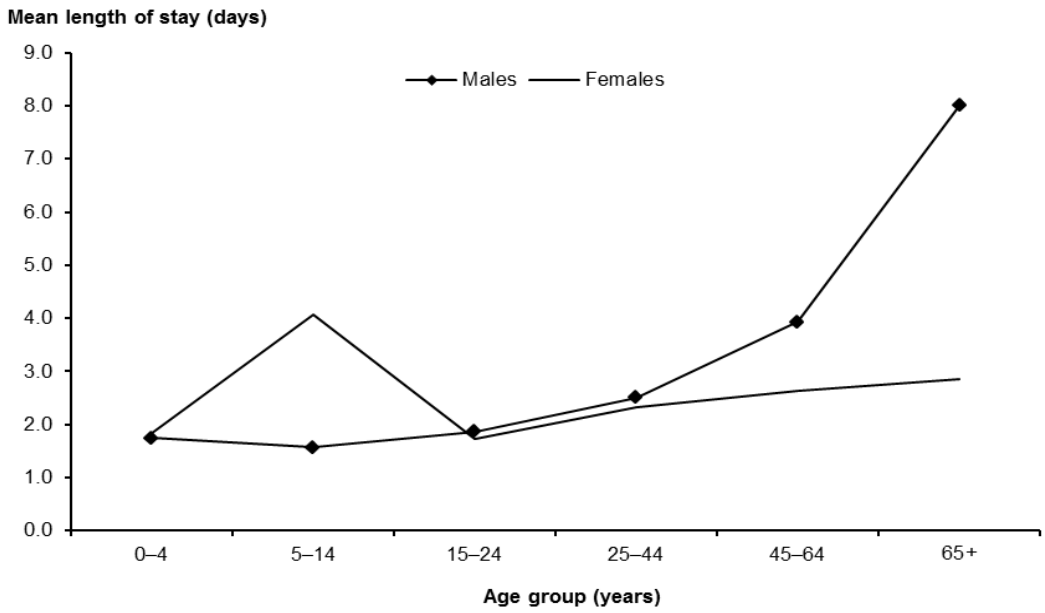


Figure 2.3.2: Length of stay per case for drowning and near-drowning injuries; males and females by age, Australia 2007–08

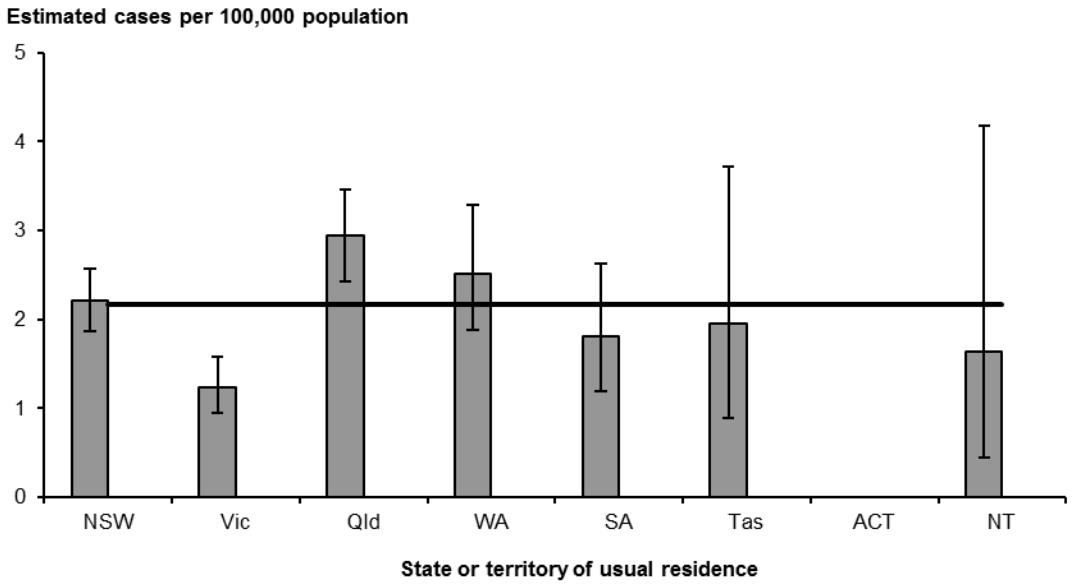
State and territory differences

Age-standardised rates of hospitalised drowning and near drowning for most states were lower than the national rate (2.2 per 100,000 population) (Table 2.3.5 and Figure 2.3.3). Queensland had a rate above the all-Australia rate. In previous rates for the Northern Territory were higher than the national rate (4.6 and 5.1 per 100,000 in 2005–06 and 2006–07 respectively). However, in 2007–08 the rates were lower than the national rate. No hospital separations for drowning and near drowning were recorded for the Australian Capital Territory in 2007–08.

Table 2.3.5: Age-standardised estimated cases of drowning and near-drowning, states and territories, 2007–08

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI[(a)]
NSW	2.2	1.9–2.6
Vic	1.2	0.9–1.6
Qld	2.9	2.4–3.5
WA	2.5	1.9–3.3
SA	1.8	1.2–2.6
Tas	2.0	0.9–3.7
ACT	0.0	0.0–0.0
NT	1.6	0.4–4.2
Australia	**2.2**	**2.0–2.4**

(a) Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.



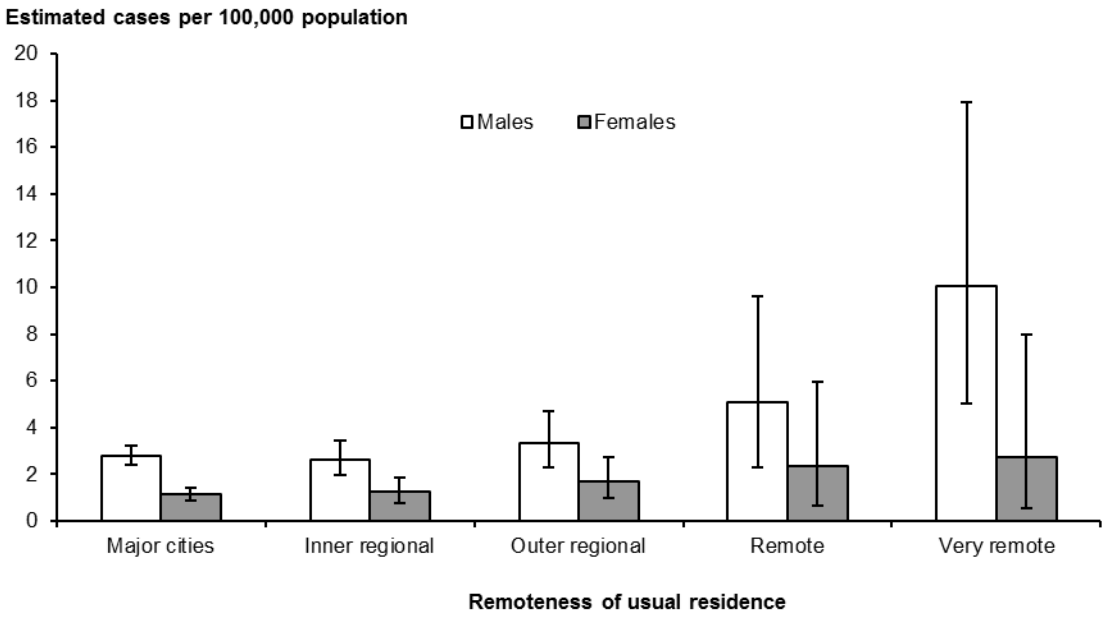
Notes

1. The thick horizontal line shows the rate for Australia.
2. Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.3.3: Age-standardised estimated cases of drowning and near-drowning, states and territories, 2007–08

Remoteness of usual residence

The age-standardised rate of drowning and near-drowning cases in 2007–08 is shown in Figure 2.3.4 according to remoteness of the person's place of usual residence. The lowest rate was observed for residents of Australia's *Major cities* (2.0 per 100,000 population), the highest rate of 6.6 per 100,000 was observed for residents of Australia's *Very remote* regions. Both male and female residents in *Very remote* regions had the highest rates (10.0 per 100,000 population and 2.7 per 100,000 population, respectively). Care should be taken interpreting these data as numbers in each remoteness region are small.



Note: Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.3.4: Age-standardised cases (± 95% CI) of drowning cases: males and females by remoteness of usual residence (ASGC regions), 2007–08

Time trends

Age-standardised rates for hospitalised drowning and near-drowning fluctuated between 2.6 per 100,000 of the population in 1999–00 to 2.2 per 100,000 in 2007–08 (Figure 2.3.5). For each year, age-standardised rates for males were higher than for females (male rates were 3.4 per 100,000 in 1999–00 and 3.0 per 100,000 in 2007–08; female rates were 1.8 per 100,000 in 1999–00 and 1.3 per 100,000 in 2007–08).

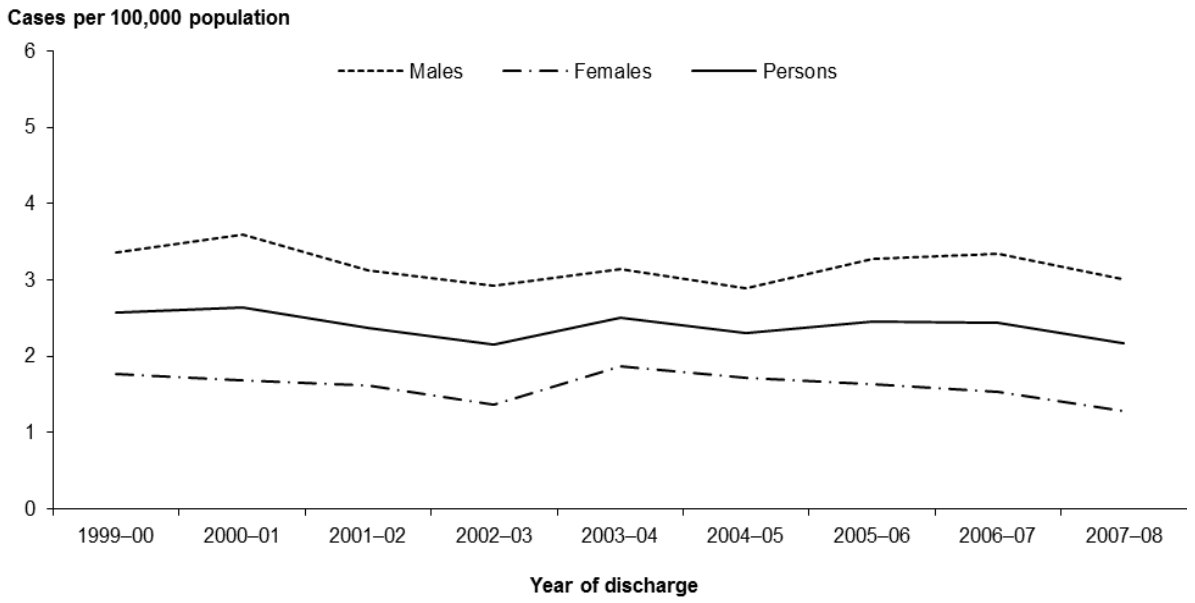


Figure 2.3.5: Age-standardised cases of drowning and near-drowning, Australia, 1999–00 to 2007–08

2.4 Poisoning, pharmaceuticals

ICD-10-AM case inclusion

Principal diagnosis: S00–T75, T79 and

First reported external cause: X40–X44

Table 2.4.1: Key indicators for cases of poisoning by pharmaceutical cases, Australia, 2007–08

Indicator	Males	Females	Persons
Separations from hospital due to poisoning by pharmaceuticals	3,206	3,621	6,827
Percentage of all community injury separations	1.3	2.0	1.6
Estimated cases[(a)]	3,069	3,483	6,552
Crude rate/100,000 population	29.1	32.6	30.9
Age-standardised rate/100,000 population[(b)]	29.3	32.3	30.8
Total patient days[(c)]	6,981	9,376	16,357
Mean length of stay (days)	2.3	2.7	2.5

(a) Excludes records with a mode of admission of 'transfer from another acute hospital'.

(b) Standardised to the Australian estimated resident population 30th June 2001.

(c) Includes records with a mode of admission of 'transfer from another acute hospital' as contributing to hospital burden due to injury.

This chapter describes injury admissions where the first reported external cause code refers to accidental poisoning by a drug or medicament. It includes drugs given or taken in error or inadvertently, and accidental over-dosage. The data does not distinguish between prescribed and non-prescribed pharmaceuticals; illicitly used drugs would be included. Poisoning by pharmaceuticals accounted for almost 2% of all community injury hospitalisations in the financial year 2007–08 (Table 2.4.1).

This chapter does not include poisoning from non-pharmaceutical substances (*n* = 2,261; see Chapter 2.5), intentional self-poisoning by drugs (*n* = 19,601; see Chapter 2.9), assault by drug-related poisoning (*n* = 55; see Chapter 2.10), poisoning of undetermined intent (*n* = 4,438 see Chapter 2.11), or adverse effects of drugs properly administered.

Age and sex distribution

Slightly more females than males were hospitalised for unintentional poisoning by pharmaceuticals (based on age-standardised rates) with a M:F rate ratio of 0.9:1. The age-standardised rate of poisoning by pharmaceuticals for females was 32.3 per 100,000 population, compared with 29.3 per 100,000 population for males. The highest age-specific rates in children were for those aged 0–4 (males: 104.7 per 100,000, females: 101.0 per 100,000) while the lowest rates were in children aged 5–14 (Figure 2.4.1). Rates increased for youth and young people (15–24) and decreased for older age groups—up to about 70, after which rates increased in each age group to peak at 209.0 per 100,000 population for males aged 95+. Readers are cautioned about the small numbers of separations occurring after about age when interpreting these findings.

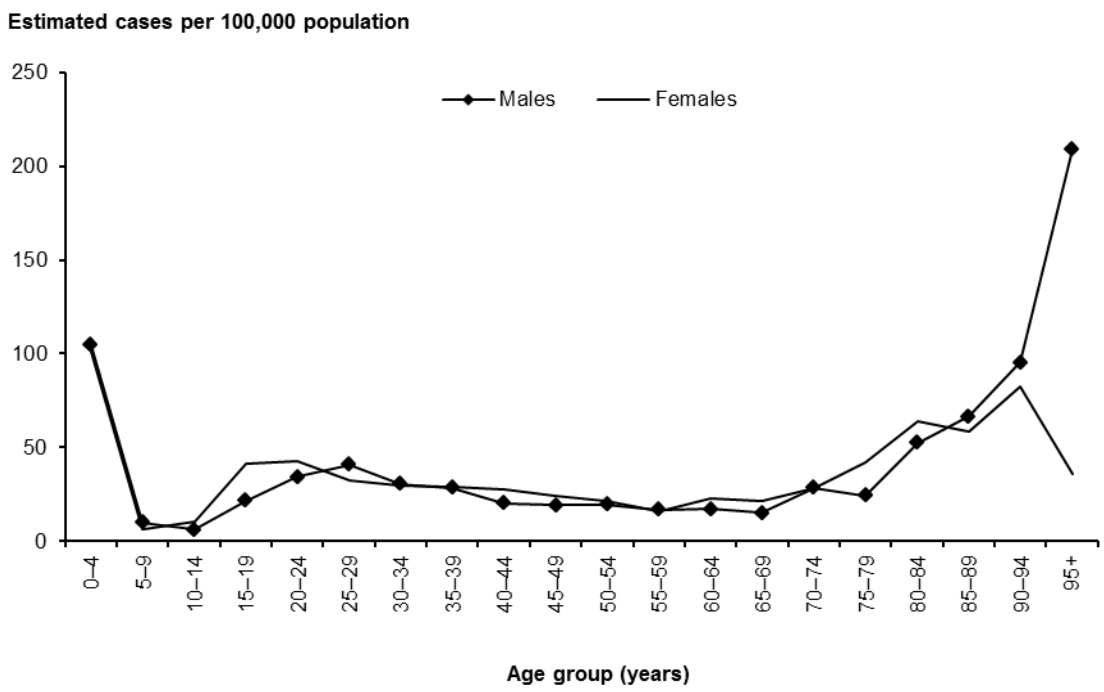


Figure 2.4.1: Age-specific estimated cases of poisoning by pharmaceuticals by sex, Australia, 2007–08

More than one-fifth of cases of poisoning by pharmaceuticals occurred in young children aged 0–4 of age and more than one-quarter occurred in adults aged 25–44 (Table 2.4.2).

Table 2.4.2: Cases of poisoning by pharmaceuticals by age group, Australia, 2007–08

	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–4	731	23.8	668	19.2	1,399	21.4
5–14	115	3.7	118	3.4	233	3.6
15–24	429	14.0	612	17.6	1,041	15.9
25–44	909	29.6	900	25.8	1,809	27.6
45–64	485	15.8	569	16.3	1,054	16.1
65+	400	13.0	616	17.7	1,016	15.5
Total	**3,069**	**100.0**	**3,483**	**100.0**	**6,552**	**100.0**

Mechanism

Almost all (99.6%; *n* = 6,523) unintentional poisoning cases had a principal diagnosis classified as 'Poisoning by drugs, medicaments and biological substances'. In this chapter, external causes are tabulated to describe the basic mechanism of poisoning cases. However, Principal Diagnoses offer a more detailed description of the substance involved. Therefore, we have also referred to principal diagnosis categories in the discussion below.

Thirty-nine per cent (*n* = 2,545) of hospital were *accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs* (Table 2.4.3). This category includes benzodiazepines (16% of all pharmaceutical poisonings cases; *n* = 1,051), other and unspecified antidepressants (5% of all cases; *n* = 336), other and unspecified antipsychotics and neuroleptics (4% of all cases; *n* = 282) and psychostimulants with potential for use disorder (3% of all cases; *n* = 217).

Twenty-seven per cent (*n* = 1,742) of injury cases were *accidental poisoning by and exposure to other and unspecified drugs, medicaments, and biological substances*. This is a diverse group which includes a range of drugs in the broad categories of *poisoning by diuretics and other and unspecified drugs* (*n* = 188), *systemic and haematological agents, not elsewhere classified* (*n* = 288), *poisoning by agents primarily affecting the cardiovascular system* (*n* = 142), *poisoning by anaesthetics and therapeutic gases* (*n* = 136), and various others.

Sixteen per cent (*n* = 1,073) of cases were *accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified*—of which 383 were other opioids such as codeine and morphine (6% of all pharmaceutical poisoning cases), 191 were heroin (3% of all poisoning cases) and 129 were other synthetic narcotics [pethidine] (2% of all poisoning cases).

Fifteen per cent (*n* = 976) of cases were *accidental poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics*—most of which were 4-aminophenol derivatives such as paracetamol (12% of all pharmaceutical poisoning cases; *n* = 776) and other non-steroidal anti-inflammatory drugs (2% of all poisoning cases; *n* = 123).

Three per cent (*n* = 216) were *accidental poisoning by and exposure to other drugs acting on the autonomic nervous system*.

Table 2.4.3: Mechanism of pharmaceutical poisoning by age and sex, Australia, 2007–08

ICD-10-AM Code	Accidental poisoning by and exposure to:	0–14	Per cent	15–24	Per cent	25–44	Per cent	25–44	Per cent	65+	Per cent	Total	Per cent
Males													
X40	Nonopioid analgesics, antipyretics and antirheumatics	116	13.7	74	17.2	111	12.2	63	13.0	17	4.3	381	12.4
X41	Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	286	33.8	169	39.4	402	44.2	201	41.4	101	25.3	1,159	37.8
X42	Narcotics and psychodysleptics [hallucinogens]	49	5.8	110	25.6	270	29.7	113	23.3	51	12.8	593	19.3
X43	Other drugs acting on the autonomic nervous system	66	7.8	n.p.	n.p.	10	1.1	n.p.	n.p.	32	8.0	119	3.9
X44	Other and unspecified drugs, medicaments and biological substances	329	38.9	n.p.	n.p.	116	12.8	n.p.	n.p.	199	49.8	817	26.6
Total		**846**	**100.0**	**429**	**100.0**	**909**	**100.0**	**485**	**100.0**	**400**	**100.0**	**3,069**	**100.0**
Females													
X40	Nonopioid analgesics, antipyretics and antirheumatics	122	15.5	220	35.9	140	15.6	71	12.5	42	6.8	595	17.1
X41	Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	260	33.1	230	37.6	459	51.0	282	49.6	155	25.2	1,386	39.8
X42	Narcotics and psychodysleptics [hallucinogens]	40	5.1	76	12.4	171	19.0	100	17.6	93	15.1	480	13.8
X43	Other drugs acting on the autonomic nervous system	48	6.1	6	1.0	8	0.9	6	1.1	29	4.7	97	2.8
X44	Other and unspecified drugs, medicaments and biological substances	316	40.2	80	13.1	122	13.6	110	19.3	297	48.2	925	26.6
Total		**786**	**100.0**	**612**	**100.0**	**900**	**100.0**	**569**	**100.0**	**616**	**100.0**	**3,483**	**100.0**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

Young children aged 0–4

A considerable proportion of accidental pharmaceutical poisonings at all ages occurred in young children aged 0–4 (21%; *n* = 1,399), and most of these (95%) occurred in young children aged 1–4, whereas only 5% occurred in infants aged less than 1 year (Table 2.4.4).

A*ccidental poisoning by and exposure to other and unspecified drugs, medicaments, and biological substances (X44)* accounted for 9% of all cases due to poisoning by pharmaceuticals in children aged 0–4 (*n* = 558). The drugs implicated were a diverse group, and included the broad categories of *agents primarily affecting the cardiovascular system* (*n* = 133), *poisoning by systemic and haematological agents, not elsewhere classified* (*n* = 124), *poisoning by topical agents primarily affecting skin and mucous membranes and by ophthalmological, otorhinolaryngological and dental drugs* (*n* = 85) and various others.

A*ccidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs (X41)* in children aged 0–4 (*n* = 463) accounted for 7% of all cases due to poisoning by pharmaceuticals. This category included benzodiazepines (*n* = 218), other and unspecified antidepressants (*n* = 90).

A*ccidental poisoning by and exposure to nonopioid analgesics, antipyretics, and antiheumatics (X40)* in children aged 0–4 (*n* = 204) accounted for 3% of all cases due to poisoning by pharmaceuticals. Most were poisoning by 4-aminophenol derivatives such as paracetamol (*n* = 164) and other non-steroidal anti-inflammatory drugs (*n* = 29).

Accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified (X42) and *other drugs acting on the autonomic nervous system (X43)* in children aged 0–4 constituted only a small proportion of all cases due to poisoning by pharmaceuticals; 1% and 2%, respectively.

Table 2.4.4: Mechanism of poisoning by pharmaceuticals in children aged 0–4, Australia, 2007–08

ICD-10-AM Code	Accidental poisoning by and exposure to:	Age					
		< 1	1	2	3	4	Total
X40	Nonopioid analgesics, antipyretics and antirheumatics	17	51	78	45	13	204
X41	Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	8	95	229	102	29	463
X42	Narcotics and psychodysleptics [hallucinogens]	n.p.	20	32	13	n.p.	74
X43	Other drugs acting on the autonomic nervous system	n.p.	21	46	14	n.p.	100
X44	Other and unspecified drugs, medicaments and biological substances	29	151	229	104	45	558
Total		**70**	**338**	**614**	**278**	**99**	**1,399**
Per cent		**5.0**	**24.2**	**43.9**	**19.9**	**7.1**	**100**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

Length of stay

The majority (78%, *n* =5,077) of unintentional poisoning separations had a hospital stay of one day, although nine cases had a LOS greater than 50 days including two cases with a LOS over 100 days. Accordingly, the overall mean length of stay for poisoning by pharmaceuticals was 2.5 days. Mean LOS increased with age (Figure 2.4.2); for children aged 0–14 it was 1.1 days, 1.5 days for young people aged 15–24, 2.3 days for adults aged 25–44, 3.4 days for adults aged 45–64 and 5.1 days for older people aged 65+.

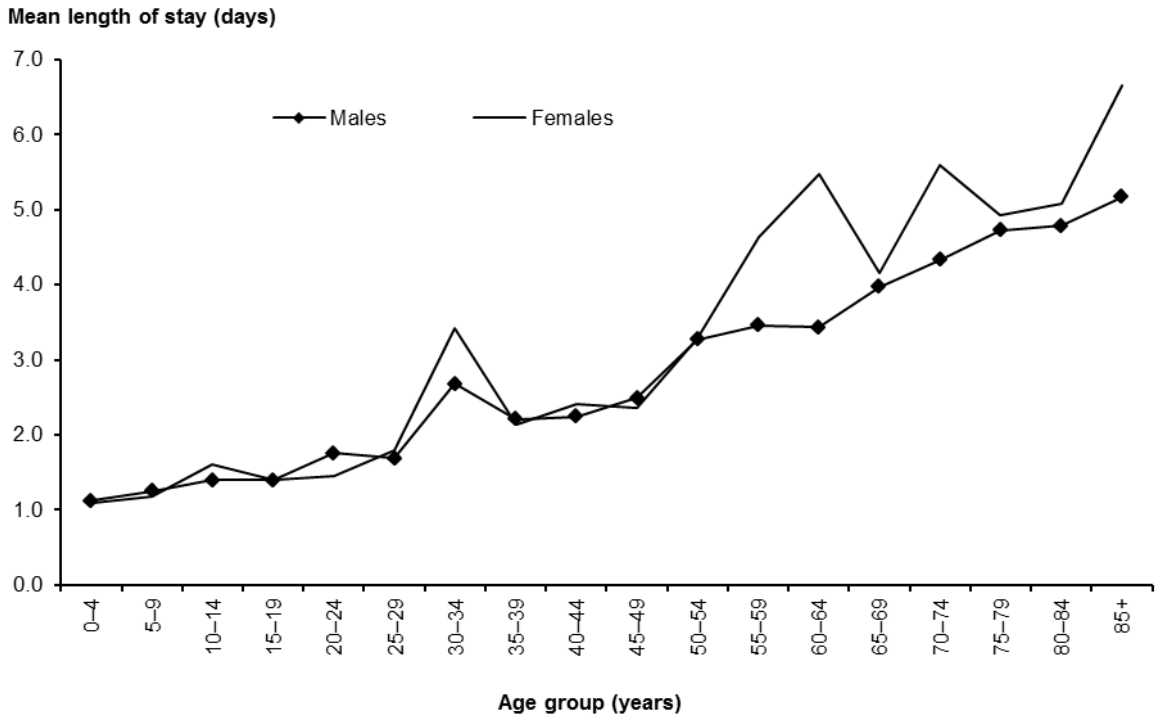


Figure 2.4.2: Length of stay per episode for poisoning by pharmaceuticals by age and sex, Australia, 2007–08

Place of occurrence

Location was not specified or reported for 28% of cases (unspecified; *n* = 1,742, not reported/not applicable; *n* = 5). The following observations are restricted to those cases in which the place of occurrence was specified. The majority of hospitalised cases due to poisoning by pharmaceuticals occurred in the home (77%; *n* = 3,710) (Table 2.4.5). Of the 166 cases that occurred in a residential institution, more than two-thirds occurred in aged care facilities (67% *n* = 111). Of the 121 cases that occurred in a trade and service area, 67% (*n* = 81) occurred in a café, hotel or restaurant (not shown in table). For children aged 0–4 for whom a place of occurrence was specified (*n* = 1,107), almost all poisoning by pharmaceuticals occurred in the home (93%; *n* = 1,032).

Table 2.4.5: Place of occurrence for cases of poisoning by pharmaceuticals, Australia, 2007–08

Place	Persons	Per cent
Home	3,710	77.2
Residential institution	166	3.5
School	21	0.4
Health Service area	657	13.7
Other specified institution and public administrative area	16	0.3
Sports and athletics area	n.p.	n.p.
Street and highway	32	0.7
Trade and service area	121	2.5
Industrial and construction area	10	0.2
Farm	n.p.	n.p.
Other specified place of occurrence	68	1.4
Total	**4,805**	**100.0**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

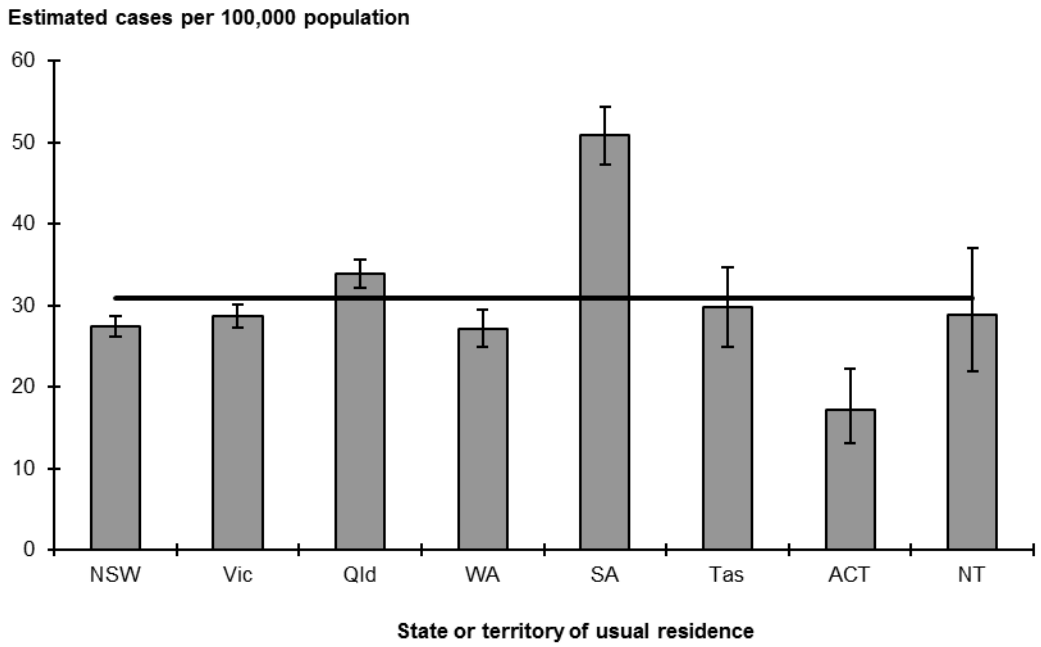
State and territory differences

Victoria, Queensland, Tasmania and the Northern Territory had rates of hospitalised poisoning by pharmaceuticals that were similar to the national rate (Table 2.4.6 and Figure 2.4.3). New South Wales, Western Australia and the Australian Capital Territory had rates that were lower than the national age-standardised rate. Higher rates were observed for Queensland and South Australia. As in previous reports South Australia recorded the highest age-standardised rate (46.1 per 100,000 population in 2005–06 and 51.3 per 100,000 population in 2006–07).

Table 2.4.6: Age-standardised estimated cases of poisoning by pharmaceuticals, states and territories, 2007–08

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI[(a)]
NSW	27.4	26.2–28.6
Vic	28.6	27.2–30.1
Qld	33.8	32.1–35.6
WA	27.2	24.9–29.4
SA	50.8	47.3–54.3
Tas	29.8	24.9–34.6
ACT	17.2	12.1–21.3
NT	28.8	20.5–35.6
Australia	**30.8**	**30.1–31.5**

(a) Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.



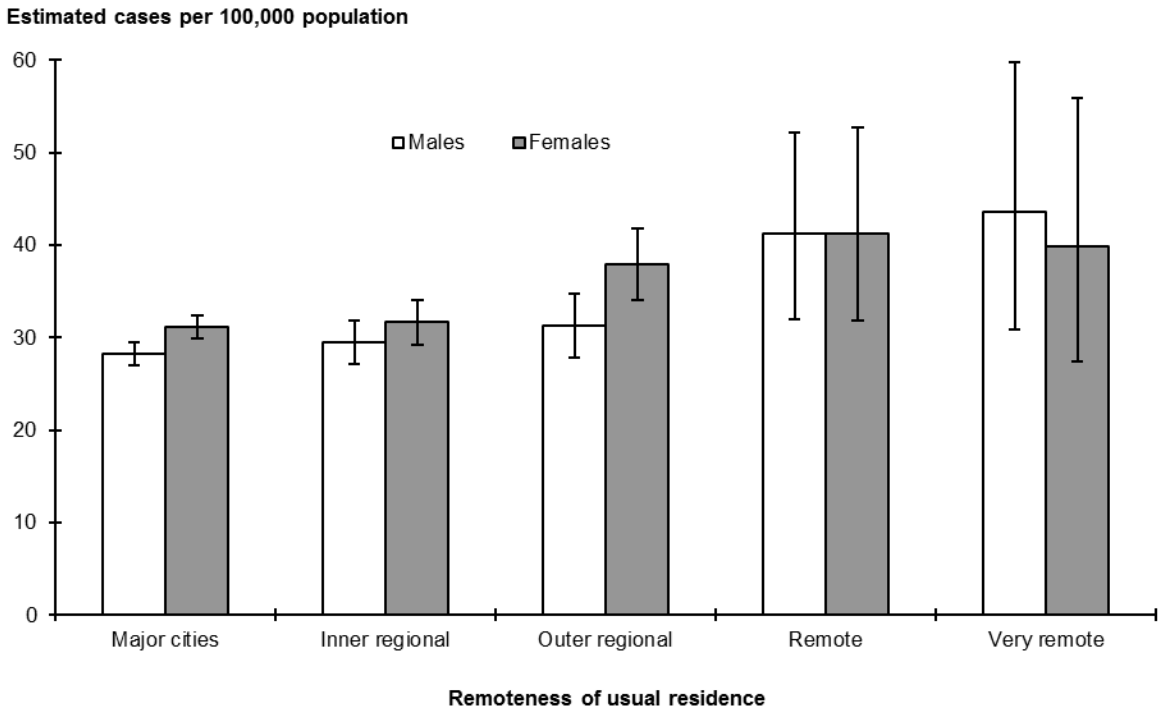
Notes

1. The thick horizontal line shows the rate for Australia.
2. Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.4.3: Age-standardised estimated cases of poisoning by pharmaceuticals, states and territories, 2007–08

Remoteness of usual residence

The age-standardised rate of hospitalised poisoning by pharmaceuticals in 2007–08 varied slightly according to remoteness of the person's place of usual residence; the lowest rate was observed for residents of Australia's *Major cities* (29.7 per 100,000 population) and the highest rate was observed for residents of Australia's *Very remote* areas (41.6 per 100,000). The pattern of cases differed depending on sex (Figure 2.4.4); rates were highest for males in *Very remote* areas whereas for females the highest rates were seen in *Remote* areas (43.6 and 41.3 per 100,000 population, respectively).



Note: Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.4.4: Age-standardised cases (± 95% CI) of poisoning by pharmaceuticals: males and females by remoteness of usual residence (ASGC regions), 2007–08

Time trends

Age-standardised rates for hospitalised unintentional poisoning by pharmaceuticals have decreased in recent years from 49.5 per 100,000 of the population in 1999–00 to 30.8 per 100,000 in 2007–08 (Figure 2.4.5). Age-standardised rates decreased for both males and females (males: from 49.7 per 100,000 in 1999–00 to 29.3 per 100,000 in 2007–08, females: from 49.4 per 100,000 in 1999–00 to 32.3 per 100,000 in 2007–08).

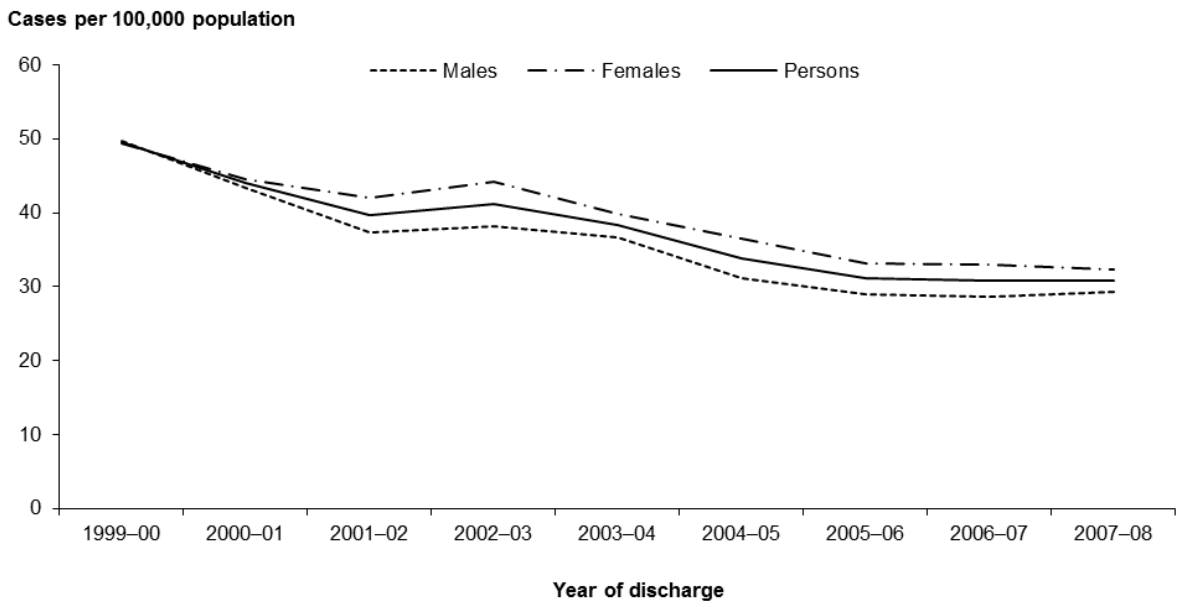


Figure 2.4.5: Age-standardised cases of poisoning by pharmaceuticals by sex, Australia, 1999–00 to 2007–08

2.5 Poisoning, other substances

ICD-10-AM case inclusion

Principal diagnosis: S00–T75, T79 and

First reported external cause: X45–X49

Table 2.5.1: Key indicators for poisoning by other substances cases, Australia, 2007–08

Indicator	Males	Females	Persons
Separations from hospital due to poisoning, other substances	1,467	921	2,388
Percentage of all community injury separations	0.6	0.5	0.6
Estimated cases[(a)]	1,377	884	2,261
Crude rate/100,000 population	13.0	8.3	10.6
Age-standardised rate/100,000 population[(b)]	13.0	8.3	10.6
Total patient days[(c)]	3,304	1,581	4,885
Mean length of stay (days)	2.4	1.8	2.2

(a) Excludes records with a mode of admission of 'transfer from another acute hospital'.

(b) Standardised to the Australian estimated resident population 30th June 2001.

(c) Includes records with a mode of admission of 'transfer from another acute hospital' as contributing to hospital burden due to injury.

This chapter includes hospitalisations arising from the toxic effects of accidental contact with substances which are chiefly non-medicinal. These accounted for less than 1 per cent of all community injury separations in the financial year 2007–08 (Table 2.5.1).

This chapter does not include unintentional poisoning by pharmaceuticals (*n* = 6,552; see Chapter 2.4), intentional self-poisoning by other substances (*n* = 19,601; see Chapter 2.9), assault by poisoning (*n* = 55; see Chapter 2.10), or poisoning of undetermined intent (*n* = 4,438; see Chapter 2.11).

Age and sex distribution

More males than females were hospitalised for accidental poisoning by other substances (based on age-standardised rates) with a M:F rate ratio of 1.6:1 (Figure 2.5.1). Rates of poisoning from non-medicinal sources were highest in children aged 0–4 (males: 29.9 per 100,000, females: 26.0 per 100,000) but were lowest in older children aged 5–14. Rates rose for youth and young people (15–24) and then declined gradually until the age of 75 when rates rose again for both sexes. Readers are cautioned that small numbers of separations occurring after about 85 of age make interpretation of rates after this point difficult.

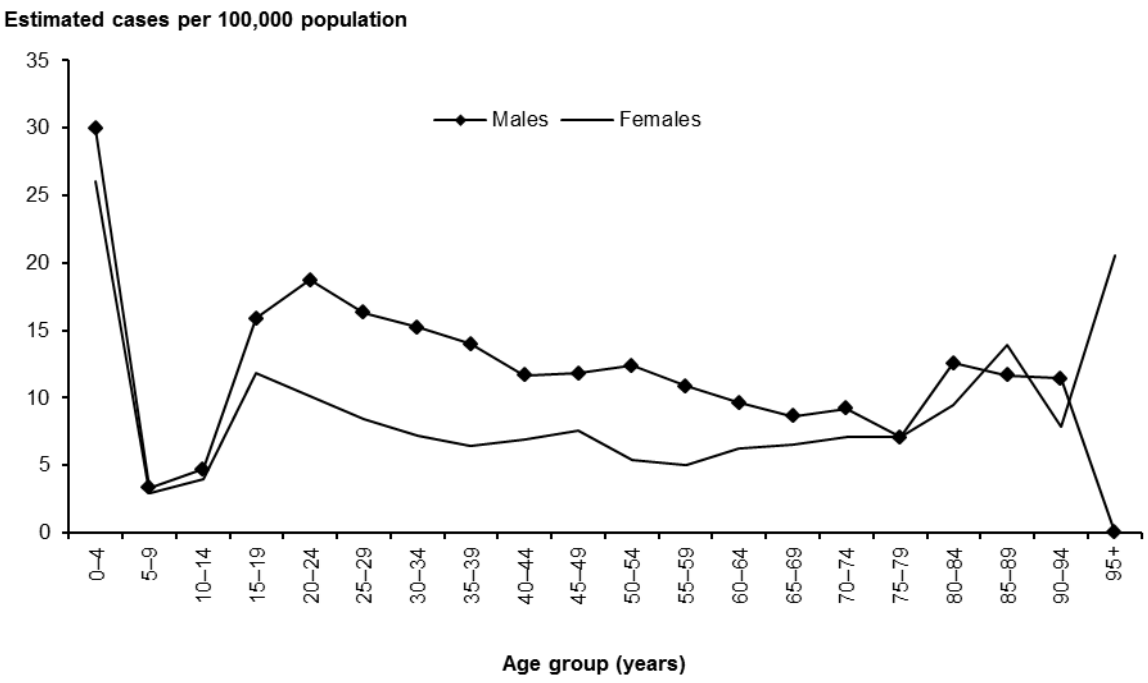


Figure 2.5.1: Age-specific hospitalisation rates for poisoning by other substances by sex, Australia, 2007–08

More than a quarter of poisonings by other substances occurred in adults aged 25–44 (Table 2.5.2).

Table 2.5.2: Cases of poisoning by other substances by age group, Australia, 2007–08

	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–4	209	15.2	172	19.5	381	16.9
5–14	57	4.1	46	5.2	103	4.6
15–24	264	19.2	159	18.0	423	18.7
25–44	432	31.4	219	24.8	651	28.8
45–64	298	21.6	163	18.4	461	20.4
65+	117	8.5	125	14.1	242	10.7
Total	**1,377**	**100.0**	**884**	**100.0**	**2,261**	**100.0**

Mechanism

Around two-thirds of cases of unintentional poisoning by other substances were as a result of *accidental poisoning by and exposure to other and unspecified chemicals and noxious substances X49* (*n* = 1,533). This is a diverse category that includes corrosive and caustic agents, glues and adhesives, paints, dyes, soaps and detergents, poisonous foodstuffs and poisonous plants, among others.

Eleven per cent of cases in this group were as a result of *accidental poisoning by and exposure to alcohol (X45)*. These cases due to alcohol poisoning are only a small proportion of hospitalised alcohol-related admissions (Indig et al. 2008; Roxburgh & Degenhardt 2008).

Ten per cent of cases were from *accidental poisoning by and exposure to other gases and vapours (X47)*. This category includes carbon monoxide, among various others.

Six per cent of cases were from *accidental poisoning by and exposure to organic solvents and halogenated hydrocarbons and their vapours (X46).*

Five per cent of cases were from *accidental poisoning by and exposure to pesticides (X48).*

Table 2.5.3 shows the distribution of cases of poisoning by other substances by gender and age group. Poisoning by *organic solvents and halogenated hydrocarbon and their vapours* and *poisoning by pesticides* was most common in children aged 0–14 (53%). *Alcohol* poisoning occurred mostly in youth and young people (15–24) and adults aged 25–44 (43% and 25%, respectively). Poisoning by *other and unspecified chemicals and noxious substances* was most common in adults aged 25–44 (29% of poisonings in this category).

Due to the variety of substances involved in the unintentional poisoning category, the types of injuries reported were varied. More than three-quarters of cases (78%, *n* = 1,763) reported toxic effects of substances non-medicinal while a further 18% (*n* = 398) reported burns.

Table 2.5.3: External causes of poisoning by other substances by age and sex, Australia, 2007–08

ICD-10-AM Code	Accidental poisoning by and exposure to:	0–14		15–24		25–44		45–64		65+		Total	
		Count	Per cent	Count	Per cent	Count	Per cent	Count	Per cent	Count	Per cent	Count	Per cent
Males													
X45	Alcohol	16	6.0	64	24.2	37	8.6	24	8.1	10	8.5	151	11.0
X46	Organic solvents and halogenated hydrocarbons and their vapours	48	18.0	15	5.7	21	4.9	n.p.	n.p.	n.p.	n.p.	98	7.1
X47	Other gases and vapours	15	5.6	24	9.1	72	16.7	42	14.1	n.p.	n.p.	162	11.8
X48	Pesticides	21	7.9	6	2.3	14	3.2	n.p.	n.p.	9	7.7	64	4.6
X49	Other and unspecified chemicals and noxious substances	166	62.4	155	58.7	288	66.7	207	69.5	86	73.5	902	65.5
Total		**266**	**100.0**	**264**	**100.0**	**432**	**100.0**	**298**	**100.0**	**117**	**100.0**	**1,377**	**100.0**
Females													
X45	Alcohol	16	7.3	45	28.3	26	11.9	13	8.0	5	4.0	105	11.9
X46	Organic solvents and halogenated hydrocarbons and their vapours	25	11.5	n.p.	n.p.	n.p.	n.p.	5	3.1	n.p.	n.p.	39	4.4
X47	Other gases and vapours	9	4.1	12	7.5	21	9.6	13	8.0	7	5.6	62	7.0
X48	Pesticides	28	12.8	n.p.	n.p.	n.p.	n.p.	5	3.1	n.p.	n.p.	47	5.3
X49	Other and unspecified chemicals and noxious substances	140	64.2	93	58.5	162	74.0	127	77.9	109	87.2	631	71.4
Total		**218**	**100.0**	**159**	**100.0**	**219**	**100.0**	**163**	**100.0**	**125**	**100.0**	**884**	**100.0**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

Young children aged 0–4

A considerable proportion of accidental poisonings from non-medicinal sources occurred in young children aged 0–4 (17%; *n* = 381), and most of these (81%) occurred before the third birthday (Table 2.5.4).

Accidental poisoning by and exposure to other and unspecified chemicals and noxious substances (X49) in children aged 0–4 of age accounted for 11% (*n* = 238) of all cases of poisoning due to other substances. This category included the toxic effects of corrosive substances (*n* = 65), tobacco and nicotine (*n* = 40), noxious substances eaten as food (*n* = 30), among others. *Organic solvents and halogenated hydrocarbons and their vapours (X46)* accounted for 3% (*n* = 67) of all cases of poisoning by other substances; most cases were other specified organic solvents (*n* = 26) and petroleum products (*n* = 26). *Accidental poisoning and exposure to pesticides* accounted for 2% (*n* = 40) of all cases of poisoning by other substances; most cases were halogenated insecticides (*n* = 7) and rodenticides (*n* = 7). *Accidental poisoning by and exposure to alcohol* and *other gases and vapours* in children aged 0–4 constituted only a small proportion of poisoning by other substances, 0.9% and 0.7%, respectively.

Table 2.5.4: Mechanism of poisoning by other substances in children aged 0–4, Australia, 2007–08

ICD-10-AM Code	Accidental poisoning by and exposure to:	Age					
		< 1	1	2	3	4	Total
X45	Alcohol	n.p.	8	n.p.	n.p.	n.p.	20
X46	Organic solvents and halogenated hydrocarbons and their vapours	n.p.	40	18	5	n.p.	67
X47	Other gases and vapours	n.p.	5	n.p.	n.p.	n.p.	16
X48	Pesticides	n.p.	17	9	9	n.p.	40
X49	Other and unspecified chemicals and noxious substances	27	111	59	14	27	238
Total		**34**	**181**	**94**	**33**	**39**	**381**
Per cent		**1.5**	**8.0**	**4.2**	**1.5**	**1.7**	**16.9**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

Length of stay

Mean length of stay for unintentional poisoning by other substances was short (2.2 days for persons, all ages). Males had a slightly longer mean length of stay (2.4 days) than females (1.8 days). Mean length of stay increased with age, though less than for most types of community injury (Figure 2.5.2). The mean length of stay was 1.6 days for children aged 0–14 and 1.5 days for young people aged 15–24, 2.5 days for adults aged 25–44, 2.6 days for adults aged 45–64 and 2.9 days for older people aged 65+.

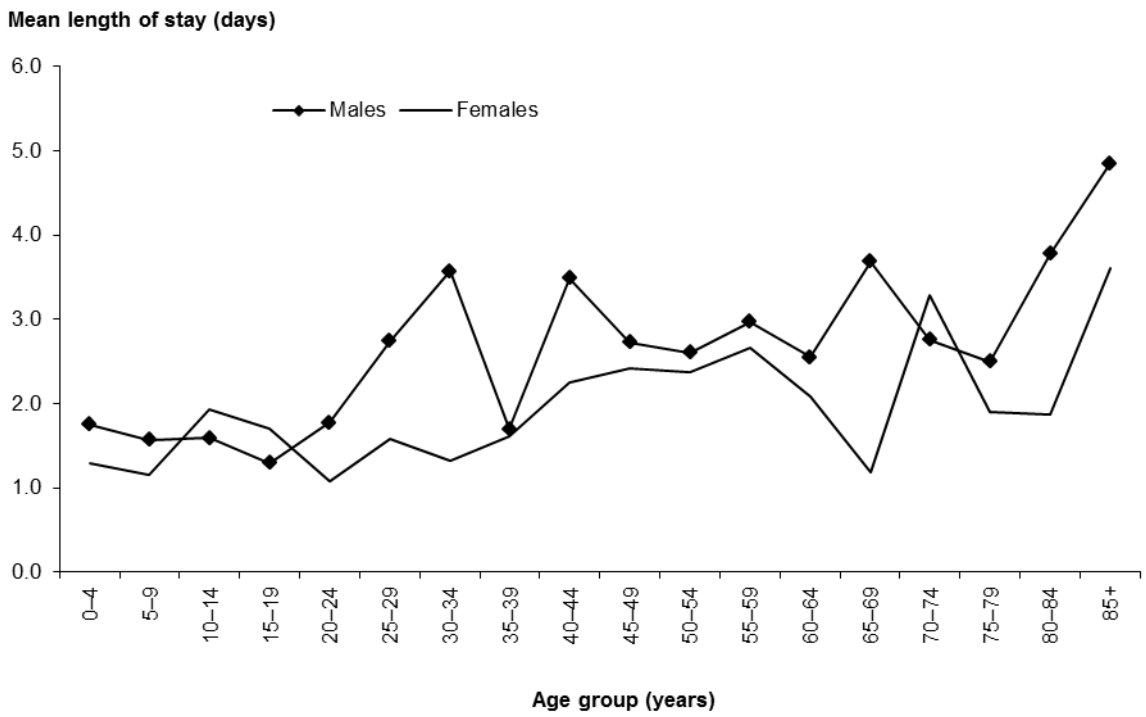


Figure 2.5.2: Length of stay per episode for poisoning by other substances by age and sex, Australia, 2007–08

Place of occurrence

Location was not specified or reported for 43% of cases (unspecified; *n* = 978, not reported; *n* = 1). The following observations are restricted to those cases in which the place of occurrence was specified. Sixty-one per cent of injuries from poisoning by other substances occurred in the home (*n* = 792) (Table 2.5.5).

For children aged 0–4 for whom a place of occurrence was specified (*n* = 287), almost all poisoning by other substances occurred in the home (93%; *n* = 267).

Table 2.5.5: Place of occurrence for cases of poisoning by other substances, Australia, 2007–08

Place	Persons	Per cent
Home	792	61.8
Residential institution	27	2.1
School	11	0.9
Health Service area	27	2.1
Other specified institution and public administrative area	n.p.	n.p.
Sports and athletics area	n.p.	n.p.
Street and highway	12	0.9
Trade and service area	186	14.5
Industrial and construction area	134	10.5
Farm	30	2.3
Other specified place of occurrence	50	3.9
Total	**1,282**	**100.0**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

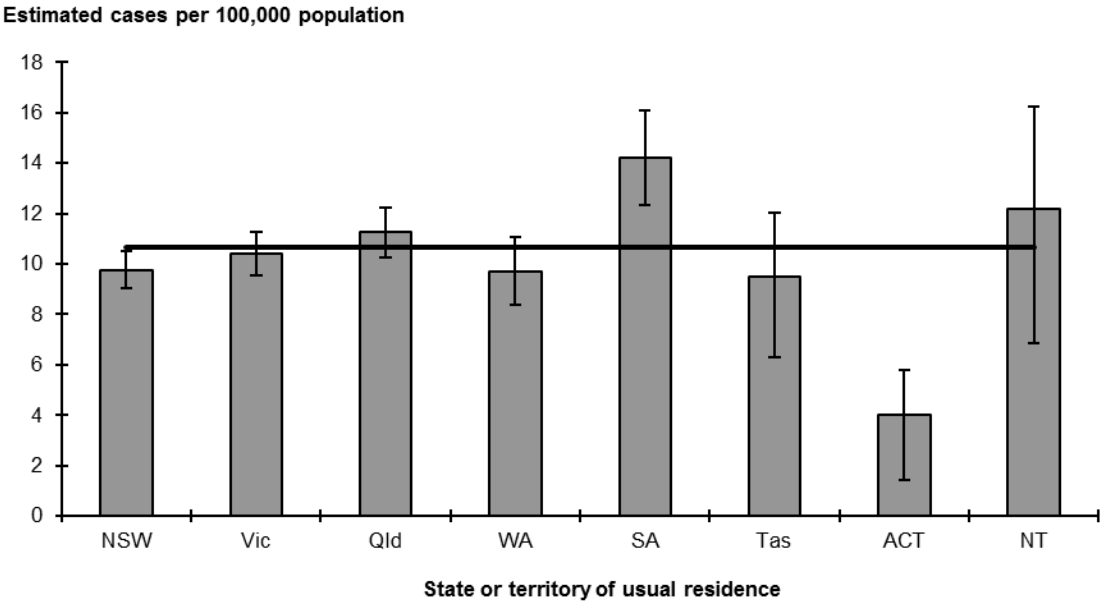
State and territory differences

All states, other than the Australian Capital Territory and South Australia had a rate of hospitalised poisoning by other substances that was similar to the national age-standardised rate. The lowest rate was observed for residents of the Australian Capital Territory (Table 2.5.6 and Figure 2.5.3). The highest rate was found in South Australia.

Table 2.5.6: Age-standardised estimated cases of poisoning by other substances, states and territories, 2007–08

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI[(a)]
NSW	9.8	9.0–10.5
Vic	10.4	9.5–11.3
Qld	11.2	10.2–12.3
WA	9.7	8.4–11.0
SA	14.2	12.3–16.1
Tas	9.5	6.9–12.7
ACT	4.0	2.3–6.6
NT	12.2	8.2–17.5
Australia	**10.6**	**10.2–11.1**

(a) Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.



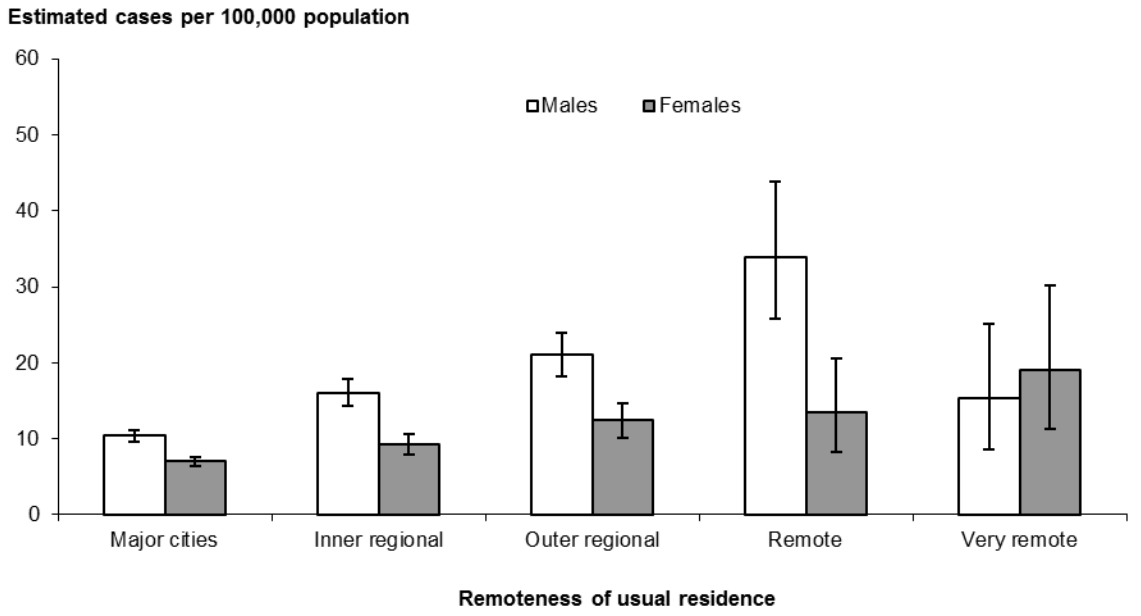
Notes

1. The thick horizontal line shows the rate for Australia.
2. Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.5.3: Age-standardised estimated cases of poisoning by other substances, states and territories, 2007–08

Remoteness of usual residence

The age-standardised rate of poisoning by other substances in 2007–08 varied according to remoteness of the person's place of usual residence; the lowest rate was observed for residents of Australia's *Major cities* (8.7 per 100,000 population) and the highest rate was observed for residents of Australia's *Remote* regions (24.2 per 100,000). Figure 2.5.4 illustrates the significant gender differences in rates for *Major cities*, inner- and outer-regional and *Remote* areas. For males rates were highest for residents in *Remote* areas (33.9 per 100,000 population), while for females rates in *Very remote* areas were highest (19.1 per 100,000 population).



Note: Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.5.4: Age-standardised cases (± 95% CI) of poisoning by other substances: males and females by remoteness of usual residence (ASGC regions), 2007–08

Time trends

Age-standardised rates for poisoning by other substances have declined since 1999–00 from 15.0 per 100,000 of the population to 10.6 per 100,000 in 2007–08 (Figure 2.5.5). Male rates declined from 18.6 per 100,000 in 1999–00 to 13.0 per 100,000 in 2007–08 and were consistently higher than female rates, 11.4 per 100,000 in 1999–00 and 8.3 per 100,000 in 2007–08.

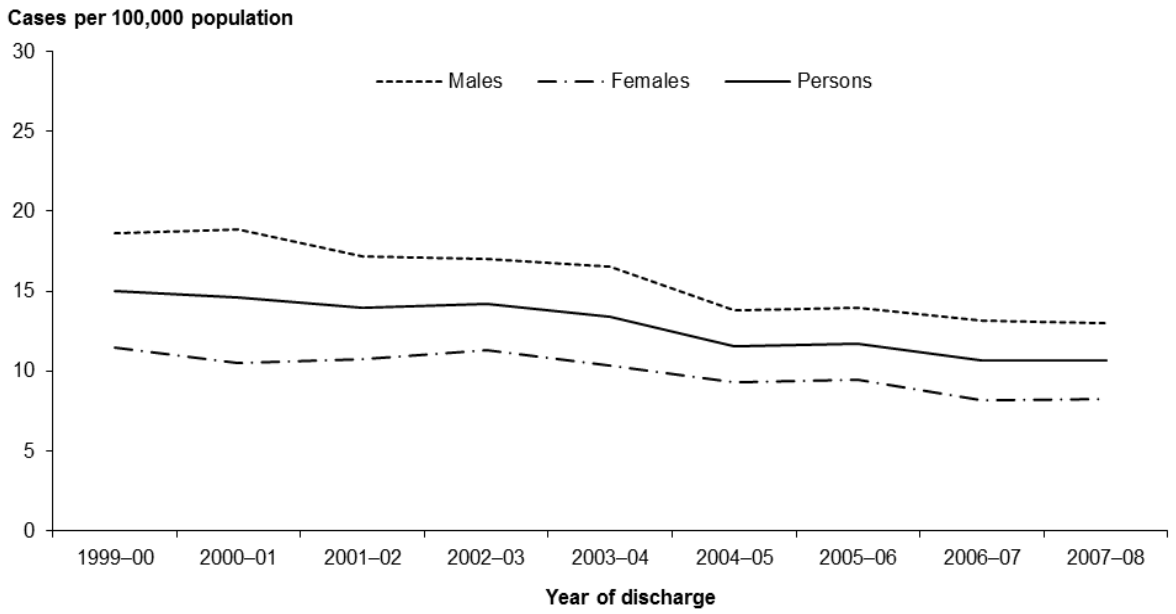


Figure 2.5.5: Age-standardised cases of poisoning by other substances, Australia, 1999–00 to 2007–08

2.6 Falls

ICD-10-AM case inclusion

Principal diagnosis: S00–T75, T79 and

First reported external cause: W00–W19

Table 2.6.1: Key indicators for fall cases, Australia, 2007–08

Indicator	Males	Females	Persons
Separations from hospital due to falls[(a)]	70,267	90,000	160,268
Percentage of all community injury separations	28.3	50.7	37.6
Estimated cases[(b)]	64,283	81,392	145,675
Crude rate/100,000 population	608.7	762.2	685.9
Age-standardised rate/100,000 population[(c)]	628.3	650.5	652.3
Total patient days[(d)]	319,204	573,310	892,519
Mean length of stay (days)	5.0	7.0	6.1

(a) Includes separations for which no sex was reported.

(b) Excludes records with a mode of admission of 'transfer from another acute hospital'.

(c) Standardised to the Australian estimated resident population 30th June 2001.

(d) Includes records with a mode of admission of 'transfer from another acute hospital' as contributing to hospital burden due to injury.

This chapter covers hospitalised injury due to unintentional falls. Further statistical information on hospitalised fall injuries is available in reports focussed on this topic, which are available from the AIHW website. Falls were responsible for 41% of all community injury hospitalisations in the financial year 2007–08 (Table 2.6.1).

This chapter does not include falls due to intentional self-harm (X80, X81; *n* = 182), assault (Y01, Y02; *n* = 34) or falls of undetermined intent (Y30, Y31; *n* = 19). Likewise transport related fall injuries have been included in Chapter 2.2. Exposure to uncontrolled fire in a building or structure, which may include some fall cases, is included in Chapter 2.7 (*n* = 148), and drowning and submersion following a fall into a bathtub (*n* = 2), swimming pool (*n* = 65), or natural water (*n* = 47) are included in Chapter 2.3.

Age and sex distribution

Age-standardised rates of hospitalised fall cases were lower for males than for females (628.3 versus 650.5 per 100,000 population, respectively) with a M:F rate ratio of 0.97:1.

The age-specific rates for males and females were similar until age 65 after which female rates exceeded male rates (Figure 2.6.1). For both sexes, rates increased in an exponential pattern from 65.

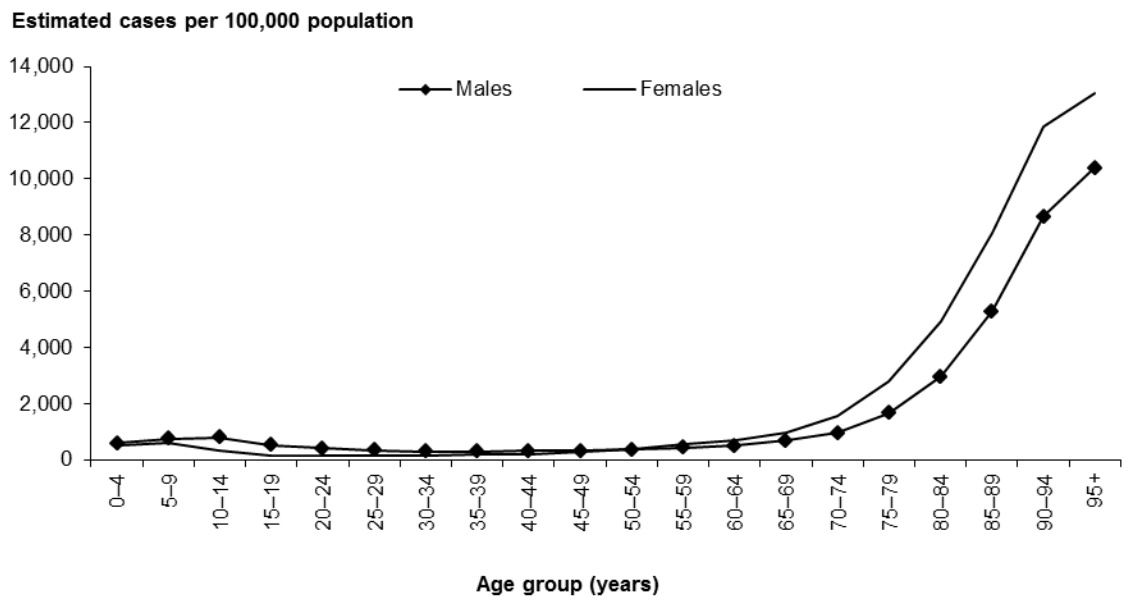


Figure 2.6.1: Age-specific estimated cases of falls by sex, Australia, 2007–08

Slightly more than half of all fall injuries occurred in adults aged 65+ and 17% occurred in children aged 0–14 (Table 2.6.2). More than twice as many females aged 65+ sustained a fall injury compared with males aged 65+.

Table 2.6.2: Fall cases by age group, Australia, 2007–08

	Males		Females		Persons	
Age group	Count	Per cent	Count	Per cent	Count	Per cent
0–14	15,082	23.5	9,417	11.6	24,499	16.8
15–24	6,930	10.8	2,341	2.9	9,271	6.4
25–44	9,347	14.5	5,496	6.8	14,843	10.2
45–64	10,465	16.3	12,183	15.0	22,648	15.5
65+	22,459	34.9	51,955	63.8	74,414	51.1
Total	**64,283**	**100.0**	**81,392**	**100.0**	**145,675**	**100.0**

Mechanism

Falls on the same level from slipping, tripping and stumbling accounted for more than a quarter of all hospitalised accidental fall injuries (*n* = 38,077) (Table 2.6.3). Most were recorded as *fall on the same level from tripping* (15% of all fall injuries, *n* = 22,193). While *fall from slipping* and *fall from stumbling* accounted for 8% (*n* = 12,200) and 3% (*n* = 3,684) of cases, respectively.

Almost two-thirds of *falls on the same level from slipping, tripping and stumbling* involved older people aged 65+ (65% of falls from slipping, tripping and stumbling, *n* = 24,550), of which 15,324 cases were *fall on the same level from tripping* (males *n* = 3,980; females *n* = 11,344); 6,518 cases (males *n* = 1,781; females *n* = 4,737) were *fall on the same level from slipping* and 2,708 cases were *fall on the same level from stumbling* (males *n* = 814; females *n* = 1,894).

Overall, females outnumbered males 1.3:1 however, in the 65+ age category females outnumbered males almost 3:1 (males *n* = 6,575; females *n* = 17,975).

Other fall on same level accounted for 17% of all hospitalised accidental fall injuries (*n* = 24,621), this category included fall from bumping against object (*n* = 1,552); fall from or off toilet (*n* = 788); fall in or into bathtub or shower (*n* = 412); other specified fall on same level (*n* = 5,780) and unspecified fall on same level (*n* = 16,089).

Seven per cent of fall injuries (*n* = 10,137) were a *fall on and from stairs and steps* and 44% of such cases occurred in older people aged 65+ (males *n* = 1,413; females *n* = 3,045).

Falls involving furniture (beds, chairs and other furniture, W06–W08) were reported in 7% of cases. As with other external cause categories, the proportion of cases was highest in people > 65 (57%, *n* = 5,672), however, those aged 0–14 also accounted for 28% of cases (*n* = 2,792).

A *fall involving playground equipment* accounted for only 4% of all fall injuries (*n* = 6,239), yet it was the most common mechanism of injury for children aged 0–14 (*n* = 5,992), with 25% of child fall injuries being from playground climbing equipment for example, the monkey bar or jungle gym (males *n* = 996; females *n* = 1,041) and trampolines (males *n* = 920; females *n* = 782).

Males outnumbered females 3:1 for *falls from a tree*, *falls from a cliff* and for *diving and jumping into water*. For fall injuries due to *fall on and from ladder*, and *fall from, out of or through building or structure* males outnumbered females by 4:1 while males had a 24 times greater rate of *fall on and from scaffolding*. Children aged 0–14 accounted for most of the hospitalised falls involving non-powered scooters (91%, *n* = 592). Conversely, people aged 65+ accounted for more than half of hospitalised fall cases involving powered scooters (*n* = 235, 55%).

Table 2.6.3: External causes of fall injury by sex, Australia, 2007–08

ICD-10-AM Code	External cause	Males		Females		Persons	
		Count	Per cent	Count	Per cent	Count	Per cent
W00	Fall on same level involving ice and snow	22	0.0	35	0.0	57	0.0
W01.0	Fall on same level from slipping	4,046	6.3	8,154	10.0	12,200	8.4
W01.1	Fall on same level from tripping	6,932	10.8	15,261	18.8	22,193	15.2
W01.2	Fall on same level from stumbling	1,318	2.1	2,366	2.9	3,684	2.5
W01	*All fall on same level from slipping, tripping and stumbling*	*12,296*	*19.1*	*25,781*	*31.7*	*38,077*	*26.1*
W02.0	Fall involving roller skates	133	0.2	175	0.2	308	0.2
W02.1	Fall involving skateboard	1,424	2.2	164	0.2	1,588	1.1
W02.2	Fall involving water ski	86	0.1	25	0.0	111	0.1
W02.3	Fall involving snow ski	127	0.2	93	0.1	220	0.2
W02.4	Fall involving snow board	142	0.2	43	0.1	185	0.1
W02.5	Fall involving ice skates	62	0.1	75	0.1	137	0.1
W02.6	Fall involving non-powered scooter	434	0.7	218	0.3	652	0.4
W02.7 and W02.8	Fall involving baby carriage (W02.7) or baby walker (W02.8)	48	0.1	66	0.1	114	0.1
W02.9	Fall involving other and unspecified public conveyance (including powered scooter)	240	0.4	190	0.2	430	0.3
W02	*All fall involving ice-skates, skis, roller-skates, skateboards, scooters and other public conveyances*	*2,696*	*4.2*	*1,049*	*1.3*	*3,745*	*2.6*
W03	Other fall on same level due to collision with, or pushing by, another person	3,376	5.3	610	0.7	3,986	2.7
W04	Fall while being carried or supported by other persons	256	0.4	259	0.3	515	0.4
W05	Fall involving wheelchair	350	0.5	430	0.5	780	0.5
W06	Fall involving bed	1,721	2.7	3,006	3.7	4,727	3.2
W07	Fall involving chair	1,627	2.5	2,660	3.3	4,287	2.9
W08	Fall involving other furniture	484	0.8	428	0.5	912	0.6
W09.0	Fall involving tree house	41	0.1	25	0.0	66	0.0
W09.1	Fall involving flying fox	192	0.3	144	0.2	336	0.2
W09.2	Fall involving playground climbing apparatus	1,001	1.6	1,049	1.3	2,050	1.4
W09.3	Fall involving slide	352	0.5	203	0.2	555	0.4
W09.4	Fall involving swing	313	0.5	226	0.3	539	0.4
W09.5	Fall involving seesaw	17	0.0	23	0.0	40	0.0
W09.6	Fall involving trampoline	1,000	1.6	813	1.0	1,813	1.2
W09.8	Fall involving other specified playground equipment	210	0.3	159	0.2	369	0.3
W09.9	Fall involving unspecified playground equipment	292	0.5	179	0.2	471	0.3
W09	*All fall involving playground equipment*	*3,418*	*5.3*	*2,821*	*3.5*	*6,239*	*4.3*

(continued)

Table 2.6.3 (continued): External causes of fall injury by sex, Australia, 2007–08

ICD-10-AM Code	External cause	Males		Females		Persons	
		Count	Per cent	Count	Per cent	Count	Per cent
W10	Fall on and from stairs and steps	3,984	6.2	6,153	7.6	10,137	7.0
W11	Fall on and from ladder	3,368	5.2	759	0.9	4,127	2.8
W12	Fall on and from scaffolding	282	0.4	12	0.0	294	0.2
W13	Fall from, out of or through building or structure	3,171	4.9	823	1.0	3,994	2.7
W14	Fall from tree	801	1.2	251	0.3	1,052	0.7
W15	Fall from cliff	283	0.4	105	0.1	388	0.3
W16	Diving or jumping into water causing injury other than drowning or submersion	371	0.6	118	0.1	489	0.3
W17	Other fall from one level to another	3,505	5.5	1,738	2.1	5,243	3.6
W18	Other fall on same level	10,130	15.8	14,491	17.8	24,621	16.9
W19	Unspecified fall	12,142	18.9	19,863	24.4	32,005	22.0
Total		**64,283**	**100.0**	**81,392**	**100.0**	**145,675**	**100.0**

Figure 2.6.2 depicts male and female age-specific rates for fall injuries for selected categories of external cause. The vertical axis in both figures has been cut off at 700 for clarity.

At ages 0–9, playground equipment was the most common cause of hospitalised fall cases for both males and females. The age-specific rate for those aged 5–9 was more than four times higher than the next most common cause of fall injuries, that is, falls on the same level from slipping, tripping and stumbling (278.1 versus 62.2 per 100,000 population, respectively). The rate of playground equipment related falls was slightly higher for males than females (288.3 per 100,000 versus 267.3 per 100,000, respectively).

For males aged 10–14, the most frequent cause of fall related injury involved pedestrian conveyances (for example, ice-skates, skis, roller-skates or skateboards) (135.3 per 100,000). This was followed by falls on the same level due to collision with, or pushing by, another person (131.4 per 100,000). For females in this age group the most frequent cause of injury was from falls on the same level from slipping, tripping and stumbling (55.3 per 100,000) followed by falls involving playground equipment (54.7 per 100,000).

While the rates for injuries associated with falls due to collision with, or pushing by, another person were highest in those aged 10–14 this was also the most common cause of fall injuries for males in the 15–19, 20–24 and 25–29 age groups (122.6, 61.0 and 44.1 per 100,000, respectively). Slips, trips and stumbles were the predominant cause of fall injury in older age groups, incrementally increasing up to 1,835.9 per 100,000 in males aged 85+. The second most frequent cause of fall related injury, for males aged between 40 and 74, involved a fall from a ladder (with age-specific rates ranging from 32.2 per 100,000 in the 40–44 age group to a high of 87.8 per 100,000 in the 70–74 age group).

The most common cause of injury in females aged 15–19 was slipping, tripping and stumbling (31.4 per 100,000 population). This remained the predominant cause of injury for females increasing in an exponential pattern, particularly across the older ages, to a peak of 2,907.0 per 100,000 in the 85+ age group.

Falls from a bed or a chair were associated with non-trivial rates of injuries in young children aged 0–4 (54.1 and 58.6 per 100,000 population, respectively). Rates were low between the ages of 10 and 64, followed by a marked increase in both from 65+. Age-specific rates for falls involving a bed were highest for females aged 85+ (541.1 per 100,000) compared with males aged 85+ (341.3 per 100,000). Similarly, age-specific rates for falls involving a chair were highest for females (311.9 per 100,000) compared with males (194.1 per 100,000)

As can be seen in Figure 2.6.2 a similar pattern was observed for falls from stairs. Rates rose sharply for males from 70+ and for females from 65+. Rates peaked for both sexes in the 85+ age group with 285.1 per 100,000 for males and 305.1 per 100,000 for females.

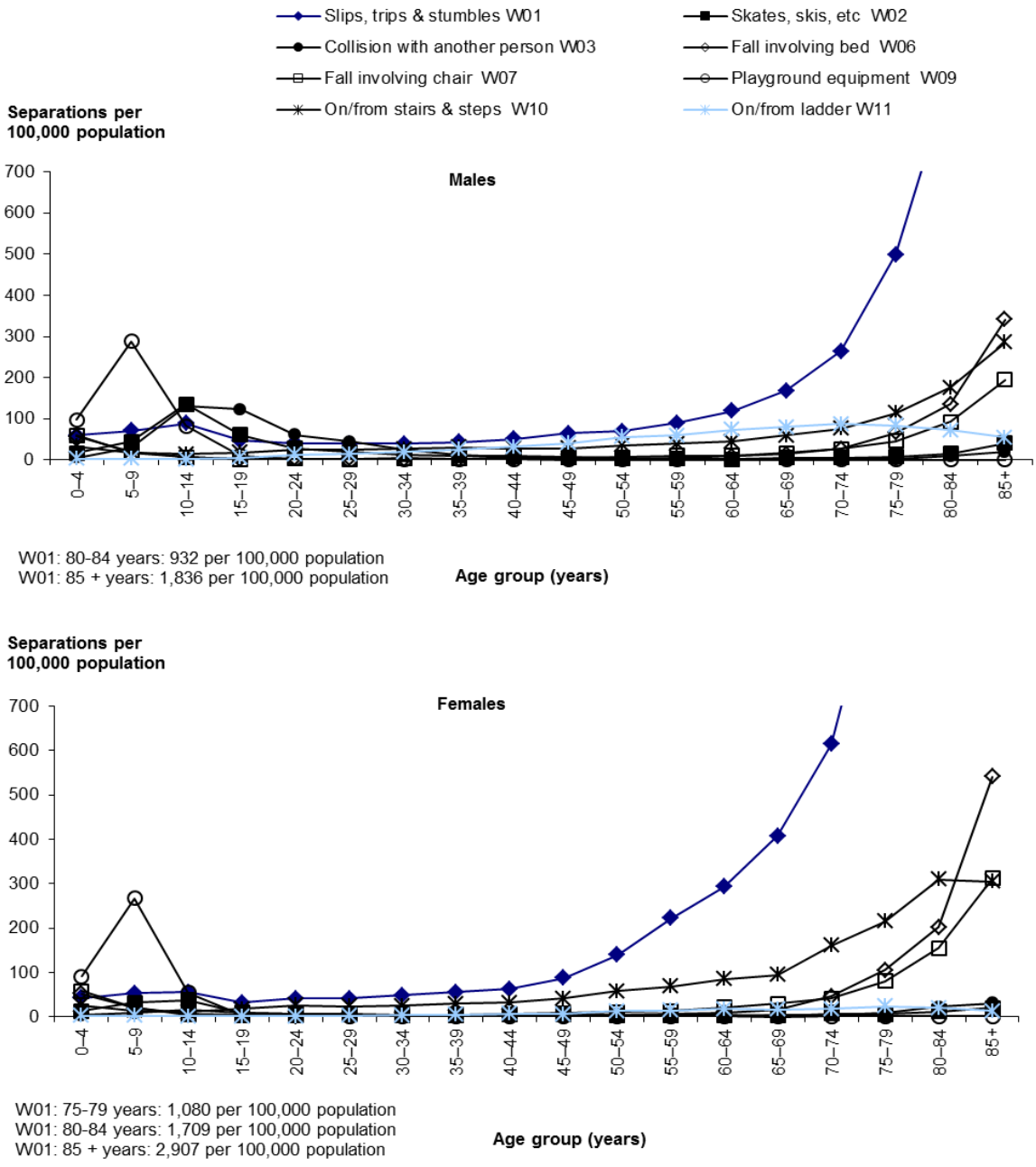


Figure 2.6.2: Age-specific estimated cases of fall injury by sex, Australia, 2007–08

Principal diagnosis and body part injured

Injuries to the hip and lower limb were the most commonly reported body region associated with hospitalised falls (33% of cases) (Table 2.6.4). More than half of these, were injuries to the hip and thigh (53%, *n* = 25,649). Another 31% of fall related injuries involved the shoulder and upper limb more than half of which were injuries to the elbow and forearm 57% (*n* = 26,168). Head injuries were the third most commonly reported principal diagnosis (20%, *n*= 29,029) in hospitalised injury due to falls.

Injuries to the hip and lower limb (37%) were the most commonly reported body region in females; of these, 58% (*n* = 17,685) involved the hip and thigh. For males, the shoulder and upper limb accounted for 33% of injuries, and these were predominantly to the elbow and forearm (*n* = 11,777).

Table 2.6.4: Principal diagnosis by body region for fall injury, Australia, 2007–08

	Males		Females		Persons	
Principal diagnosis by body region	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Head	15,098	23.5	13,931	17.1	29,029	19.9
Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis)	9,249	14.4	11,804	14.5	21,053	14.5
Shoulder and upper limb	21,139	32.9	24,655	30.3	45,794	31.4
Hip and lower limb	18,218	28.3	30,376	37.3	48,594	33.4
Other injuries not specified by body region	579	0.9	626	0.8	1,205	0.8
All body regions	**64,283**	**100.0**	**81,392**	**100.0**	**145,675**	**100.0**

Fractures were the most commonly reported injury type due to a fall overall (61%, *n* = 88,732) and in every age group and for both males and females. The highest proportion was seen among children aged 0–14 (65% of injuries in this age group, *n* = 15,944). The most common fracture site for children was the forearm (*n* = 10,102), followed by the shoulder and upper arm (*n* = 2,880) and the lower leg (*n* = 1,309).

Among youth and young people aged 15–24 injured in a fall, 55% (*n* = 5,072) were fractures. The most common injury being fracture of forearm (*n* = 1,565), followed by fracture of lower leg, including ankle (*n* = 1,436) and fracture at wrist and hand level (*n* = 676).

For adults aged 25–44 of age, 57% of fall injuries were fractures (*n* = 8,416), fracture of lower leg, including ankle (*n* = 2,706), fracture of forearm (*n* = 2,280) and fracture at wrist and hand level (*n* = 776) were the most common.

Among adults aged 45–64 64% (*n* = 14,382) reported fractures, the most common fall related fractures were fracture of forearm (*n* = 4,118), fracture of lower leg, including ankle (*n* = 4,061), fracture of femur (*n* = 1,468) and fracture of shoulder and upper arm (*n* = 1,434).

For older people aged 65+ 60% of fall injuries were fracture related (*n* = 44,918). Fracture of femur (*n* = 18,399) was the most common injury site, followed by fracture of forearm (*n* = 5,878), fracture of lumbar spine and pelvis (*n* = 5,770) and fracture of shoulder and upper arm (*n* = 4,935). Eighty-nine per cent of femur fractures occurred in those aged 65+ and of these 73% were females.

Table 2.6.5: Top 7 specific injuries for falls, Australia, 2007–08

	Males		Females		Persons	
Principal diagnosis	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Fracture of forearm	10,560	16.4	13,383	16.4	23,943	16.4
Fracture of femur	6,115	9.5	14,614	18.0	20,729	14.2
Fracture of lower leg, including ankle	5,763	9.0	7,524	9.2	13,287	9.1
Open wound of head	5,355	8.3	5,001	6.1	10,356	7.1
Fracture of shoulder and upper arm	3,904	6.1	6,311	7.8	10,215	7.0
Fracture of lumbar spine and pelvis	4,255	6.6	2,878	3.5	7,133	4.9
Intracranial injury	2,067	3.2	4,817	5.9	6,884	4.7
Sub-total of top 7 specific injuries	**38,019**	**59.1**	**54,528**	**67.0**	**92,547**	**63.5**

Seven types of injuries were seen in nearly two-thirds (*n* = 92,547) of all fall injuries (Table 2.6.5).

Fracture of forearm was the most common injury (16%) and the lower end of the radius was most frequently broken (62%; *n* = 14,810).

For the second most common fall injury—fracture of femur (14%), 89% were neck of femur fractures (neck of femur *n* = 9,769; pertrochanteric fracture *n* = 7,646; subtrochanteric *n* = 934). More than twice as many females as males incurred a fracture of femur (18% vs. 10%).

Injuries classified as fracture of lower leg, including ankle commonly involved multiple fractures of the lower leg and ankle (S82.50–S82.88) (*n* = 7,028).

More than three-quarters of shoulder and upper arm fractures involved the upper- and lower-end of the humerus (*n* = 4,378 and *n* = 3,409, respectively).

For fracture of lumbar spine and pelvis, 52% were fracture of pubis (*n* = 3,565) and 26% (*n* = 1,806) were fracture of lumbar vertebra.

The most common diagnosis reported for intracranial injury reported was loss of consciousness (33%, *n* = 2,371), of these, three quarters were loss of consciousness for less than 30 minutes (*n* = 1,789). Concussion accounted for a further 16 per cent of intracranial injury (*n* = 1,139). One quarter of intracranial injury cases were traumatic subdural haemorrhage (*n* = 1,862).

Length of stay

Mean length of stay (all ages) was longer for unintentional falls than for any of the other types of community injury that are the topics of chapters in this report, an average of 6.1 days. This reflects the long mean length of stay for falls cases at older ages (Figure 2.6.3). The mean length of stay for fall injury cases rose with age ranging from 1.5 days for children aged 0–14, 2.2 days for young people aged 15–24, 3.0 days for adults aged 25–44, 4.5 days for adults aged 45–64 and 9.2 days for older people aged 65+.

Overall, the mean length of stay for males was 2 days shorter than for females (5.0 days versus 7.0 days, respectively).

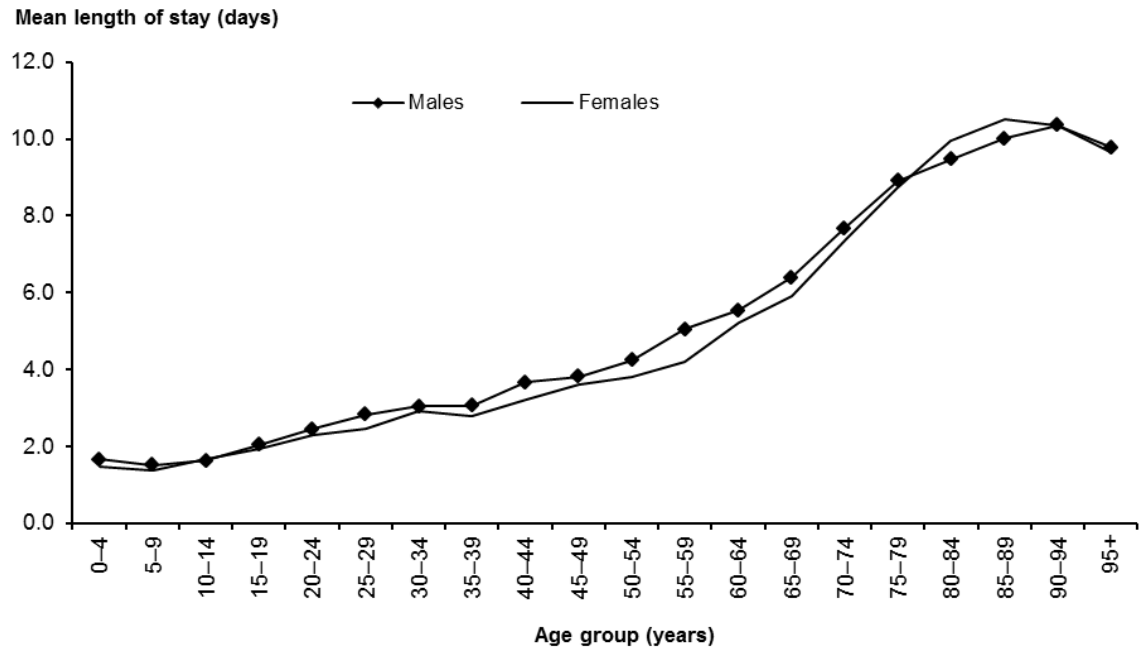


Figure 2.6.3: Length of stay per episode for fall injury by age and sex, Australia, 2007–08

Place of occurrence

Most cases of hospitalised fall injury had a place of injury occurrence documented although 29% (*n* = 41,653) were unspecified or not reported. The following observations are restricted to those cases in which the place of occurrence was specified (Table 2.6.6). The most commonly reported place of occurrence for hospitalised fall injuries was in or around the home for both males (32%) and females (43%). Residential institutions were the next most frequently documented place of occurrence with 12% of all fall injuries (*n* = 17,336). Ninety-seven per cent of falls in residential institutions occurred in aged care facilities (*n* = 16,784) and, not surprisingly, most of these falls were among those aged 65+ (*n* = 16,468) with females outnumbering males by 3.1:1. Falls that occurred in sports and athletics areas accounted for 5% of hospitalised cases, with males outnumbering females 3:1.

Children aged 0–14 were most likely to sustain fall injuries in the home (males: 24%, females: 28%), followed by at school (males: 17%, females: 17%), and in sports and athletic areas (males: 11%, females: 5%).

Young men (15–24) sustained fall injuries most often in sports and athletic areas (27%), followed by home (8%), whereas the location for females of the same age was most commonly at home (21%), followed by sports and athletic areas (12%).

Males aged 25–44 were most commonly injured in the home (18%), followed by sports and athletic areas (12%) and trade and service areas (5%). Just over 30% of females aged 25–44 were injured in the home, followed by trade and service areas (7%) and sports and athletic areas (6%).

Males and females aged 45–64 were most commonly injured in the home (33% and 40%, respectively). For males, this was followed by a trade and service area (5%) and a street or highway and (5%). For females, the most common places of occurrence after the home were a trade and service area (6%) then a street or highway (5%).

Older males and females aged 65+ were most commonly injured in the home (49%) followed by residential institutions (18% and 24% respectively). Most fall injuries in residential institutions were in aged care facilities for those aged 65+ (males *n* = 4,017, females *n* = 12,451).

About 65% of fall injuries on a street or highway occurred on the footpath or sidewalk (males *n* = 1,439, females *n* = 2,155). A considerable proportion of fall injuries that occurred in a trade and service area were in a shop or store (males *n* = 743, females *n* = 1,596) or cafés, hotel and restaurants (males *n* = 1,061, females *n* = 933).

Table 2.6.6: Place of occurrence of fall injury cases by age and sex, Australia, 2007–08

Place	0–14	Per cent	15–24	Per cent	25–44	Per cent	45–64	Per cent	65+	Per cent	Total	Per cent
Males												
Home	3,563	23.6	573	8.3	1,724	18.4	3,464	33.1	11,026	49.1	20,350	31.7
Residential institution	14	0.1	30	0.4	90	1.0	217	2.1	4,099	18.3	4,450	6.9
School	2,614	17.3	263	3.8	22	0.2	28	0.3	5	0.0	2,932	4.6
Health Service area	23	0.2	10	0.1	41	0.4	92	0.9	422	1.9	588	0.9
Other specified institution	98	0.6	25	0.4	35	0.4	52	0.5	103	0.5	313	0.5
Sports and athletics area	1,649	10.9	1,890	27.3	1,127	12.1	212	2.0	152	0.7	5,030	7.8
Street and highway	173	1.1	221	3.2	348	3.7	505	4.8	1,136	5.1	2,383	3.7
Trade and service area	211	1.4	283	4.1	481	5.1	545	5.2	779	3.5	2,299	3.6
Industrial and construction area	12	0.1	133	1.9	356	3.8	342	3.3	41	0.2	884	1.4
Farm	31	0.2	11	0.2	47	0.5	86	0.8	65	0.3	240	0.4
Other specified places	791	5.2	552	8.0	698	7.5	547	5.2	429	1.9	3,017	4.7
Total	**9,179**	**100.0**	**3,991**	**100.0**	**4,969**	**100.0**	**6,090**	**100.0**	**18,257**	**100.0**	**42,486**	**100.0**
Females												
Home	2,610	27.7	497	21.2	1,668	30.3	4,813	39.5	25,519	49.1	35,107	43.1
Residential institution	6	0.1	11	0.5	39	0.7	214	1.8	12,616	24.3	12,886	15.8
School	1,555	16.5	58	2.5	38	0.7	89	0.7	27	0.1	1,767	2.2
Health Service area	33	0.4	11	0.5	54	1.0	151	1.2	835	1.6	1,084	1.3
Other specified institution	72	0.8	14	0.6	29	0.5	87	0.7	282	0.5	484	0.6
Sports and athletics area	513	5.4	284	12.1	337	6.1	254	2.1	196	0.4	1,584	1.9
Street and highway	73	0.8	98	4.2	225	4.1	657	5.4	2,072	4.0	3,125	3.8
Trade and service area	150	1.6	176	7.5	376	6.8	690	5.7	1,570	3.0	2,962	3.6
Industrial and construction area	8	0.1	7	0.3	24	0.4	48	0.4	11	0.0	98	0.1
Farm	7	0.1	9	0.4	18	0.3	51	0.4	32	0.1	117	0.1
Other specified places	456	4.8	167	7.1	315	5.7	597	4.9	763	1.5	2,298	2.8
Total	**5,483**	**100**	**1,332**	**100**	**3,123**	**100**	**7,651**	**100**	**43,923**	**100**	**61,512**	**100**

Note: Cases are restricted to those where place of occurrence is specified.

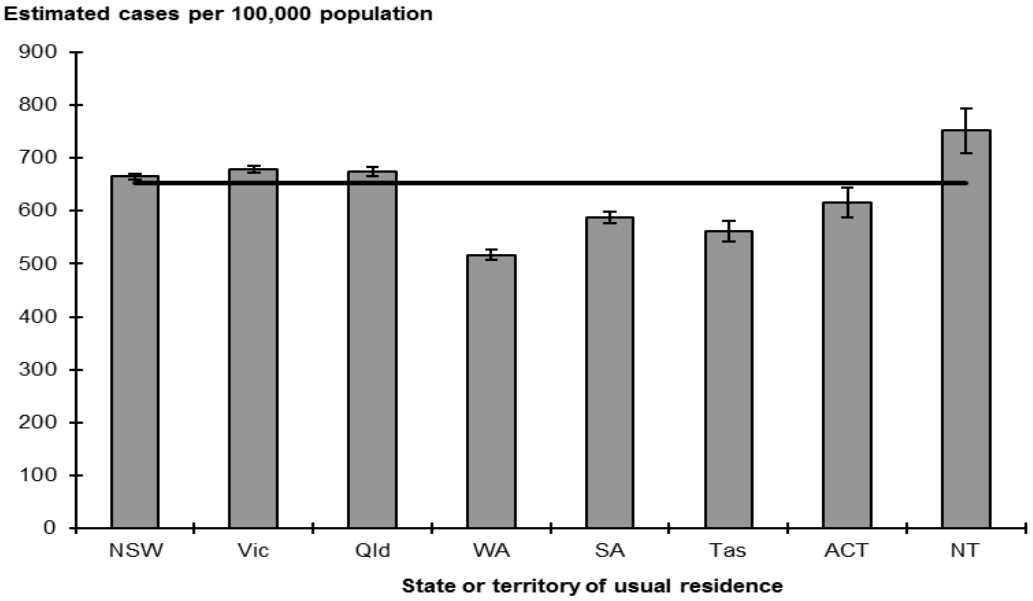
State and territory differences

New South Wales, Victoria, Queensland and the Northern Territory had rates of hospitalised fall injury that were above the national rate (Table 2.6.7 and Figure 2.6.3). The Australian Capital Territory had a rate that was similar to the national rate (615.2 per 100,000 population). The lowest rates of fall injury were found in Western Australia, South Australia and Tasmania.

Table 2.6.7: Age-standardised estimated cases of fall injury, states and territories, 2007–08

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI[(a)]
NSW	664.8	658.9–670.6
Vic	678.1	671.3–684.9
Qld	674.2	666.4–681.9
WA	516.8	507.1–526.5
SA	587.2	576.2–598.3
Tas	561.4	541.5–581.3
ACT	615.2	587.5–642.9
NT	751.4	709.8–792.9
Australia	**652.3**	**648.9–655.6**

(a) Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.



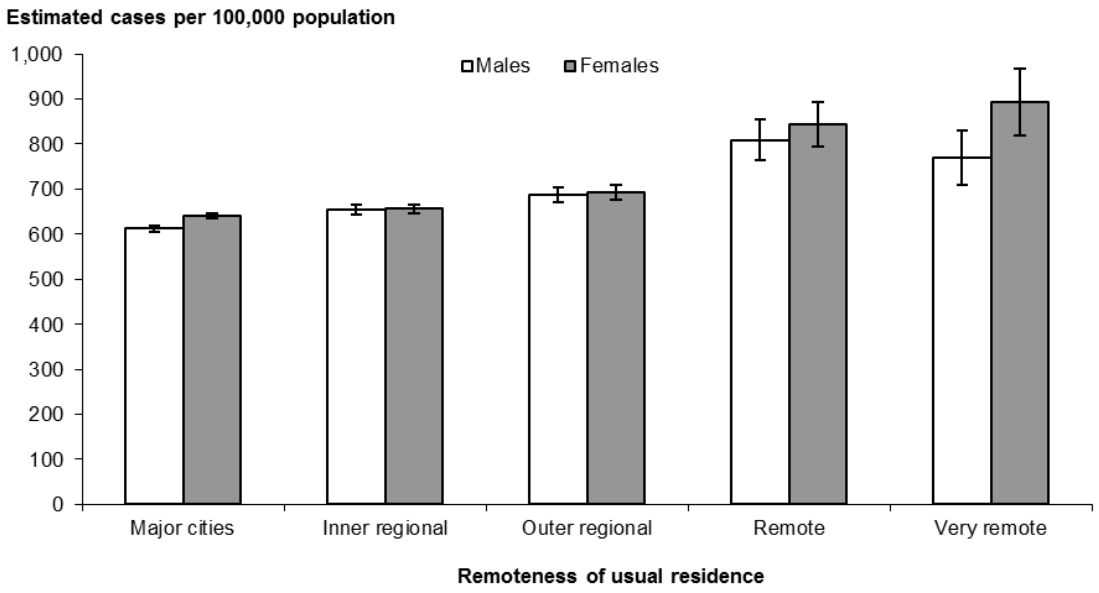
Notes

1. The thick horizontal line shows the rate for Australia.
2. Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.6.3: Age-standardised estimated cases of fall injury, states and territories, 2007–08

Remoteness of usual residence

Rates of hospitalised fall injury increased gradually and consistently across remoteness regions for females (Figure 2.6.4). However, the rise of rates with increasing remoteness is less marked for falls than for most other external causes reported here. For males hospitalised fall injury rates were highest in *Remote* regions. For persons overall, the lowest rate was found for residents of *Major cities* (640.7 per 100,000 population) while the highest rate was for residents in *Very remote* Australia (829.4 per 100,000 population).



Note: Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.6.4: Age-standardised cases (± 95% CI) of fall injury: males and females by remoteness of usual residence (ASGC regions), 2007–08

Time trends

Age-standardised rates of hospitalised fall injury increased slightly over recent; rates for Australia were about 600 per 100,000 of the population in 1999–00 to 2002–03 and then rose to 652 per 100,000 in 2007–08 (Figure 2.6.5). Age-standardised rates were lower for males than for females at all time periods.

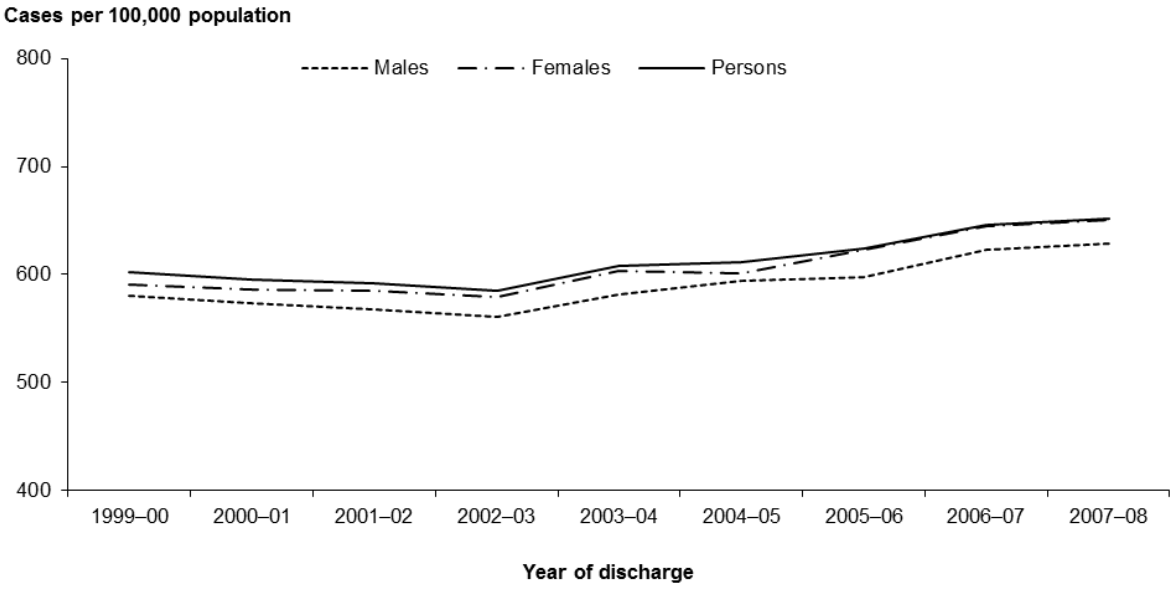


Figure 2.6.5: Age-standardised cases of fall injury, Australia, 1999–00 to 2007–08

2.7 Smoke, fire, heat and hot substances

ICD-10-AM case inclusion

Principal diagnosis: S00–T75, T79 and

First reported external cause: X00–X19

Table 2.7.1: Key indicators for smoke, fire, heat and hot substances cases, Australia, 2007–08

Indicator	Males	Females	Persons[a]
Separations from hospital due to smoke, fire, heat and hot substances	4,332	2,309	6,642
Percentage of all community injury separations	1.7	1.3	1.6
Estimated cases[b]	3,741	2,069	5,811
Crude rate/100,000 population	35.4	19.4	27.4
Age-standardised rate/100,000 population[c]	35.4	19.7	27.7
Total patient days[d]	21,015	10,648	31,668
Mean length of stay (days)	5.6	5.1	5.4

(a) Persons includes separations and cases for which sex was not recorded.

(b) Excludes records with a mode of admission of 'transfer from another acute hospital'.

(c) Standardised to the Australian estimated resident population 30th June 2001.

(d) Includes records with a mode of admission of 'transfer from another acute hospital' as contributing to hospital burden due to injury.

This chapter includes community injury cases in which the first reported external cause is unintentional *exposure to smoke, fire and flames* (ICD-10-AM X00–X09) or *contact with heat and hot substances* (X10–X19). These include most, but not all, injuries due to thermal and related external causes. Smoke, fire, heat and hot substances injury accounted for less than 2% of all community injury hospitalisations in the financial year 2006–07 (Table 2.7.1).

This chapter does not include injuries due to explosion and rupture of boilers (*n* = 5), explosion and rupture of gas cylinder (*n* = 123), discharge of fireworks (*n* = 67), explosion of other materials (for example, munitions, blasting material) (*n* = 204), exposure to electric current (*n* = 627), exposure to extreme heat of man-made origin, natural heat or volcanic eruption (*n* = 317), sunlight (*n* = 20), or lightning (*n* = 26), all of which are covered by Chapter 2.8. Injuries attributable to intentional self-harm by explosive material (*n* = 1), smoke, fire and flames (*n* = 69) or steam, hot vapours and hot objects (*n* = 17) are covered by Chapter 2.9. Injuries resulting from assault by means of explosive material (*n* = 2), smoke, fire and flames (*n* = 31) or steam, hot vapours and hot objects (*n* = 31) are covered by Chapter 2.10. Events of undetermined intent—exposure to smoke, fire and flames (*n* = 76) and steam, hot vapours and hot objects (*n* = 16) are included in Chapter 2.11.

Age and sex distribution

Males show a higher rate of injury for smoke, fire, heat and hot substances (based on age-standardised rates) with a ratio of males to females of 1.8:1 (Figure 2.7.1). Rates were highest for young children aged 0–4 (males: 132.8 per 100,000, females: 94.0 per 100,000). A small rise in rates can be seen after about age 85 for both males and females although readers are cautioned about the small number of separations in these age groups.

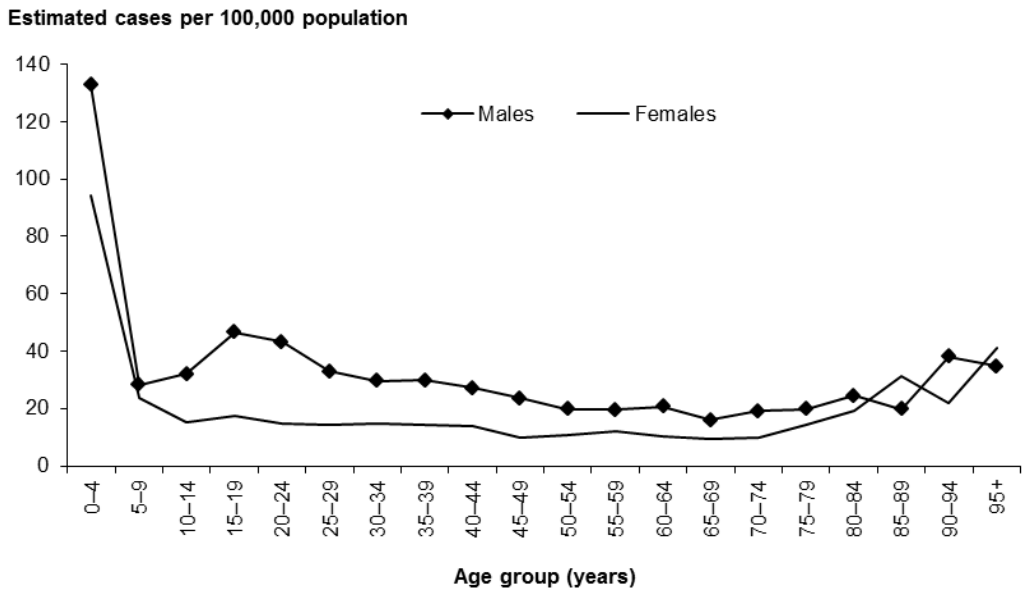


Figure 2.7.1: Age-specific estimated cases of smoke, fire, heat and hot substances injury by sex, Australia, 2007–08

More than one-third of those injured were children aged 0–14; young children aged 0–4 comprised a quarter of injury cases due to smoke, fire, heat and hot substances. Slightly less than a quarter of cases were adults aged 25–44, whereas less than 10% of those injured were older people aged 65+ (Table 2.7.2).

Table 2.7.2: Smoke, fire, heat and hot substances cases by age group, Australia, 2007–08

	Males		Females		Persons[(a)]	
Age group	Count	Per cent	Count	Per cent	Count	Per cent
0–4	927	24.8	622	30.1	1,549	26.7
5–14	425	11.4	259	12.5	684	11.8
15–24	683	18.3	233	11.3	917	15.8
25–44	904	24.2	435	21.0	1,339	23.0
45–64	555	14.8	289	14.0	844	14.5
65+	247	6.6	231	11.2	478	8.2
Total	**3,741**	**100.0**	**2,069**	**100.0**	**5,811**	**100.0**

(a) Persons includes cases for which sex was not recorded.

External cause

For all ages, *contact with hot drinks, foods, fats and cooking oils* (22%) was the leading cause of hospitalised heat and host substances injuries, followed by *contact with other hot fluids* for example, water heated on a stove (13%) and *exposure to ignition of highly flammable material* for example, gasoline, kerosene, petrol (13%) (Table 2.7.3). There were some differences by gender; although the most common cause of hospitalisation for both sexes was *contact with hot drinks, food, fats and cooking oils* (17% for males and 30% for females), the second most common cause of hospitalisation for males was *exposure to ignition of highly flammable materials* (17%) whereas for females it was *contact with other hot fluids* (18%).

Table 2.7.3: External causes of smoke, fire, heat and hot substances injury by sex, Australia, 2007–08

ICD-10-AM Code	External cause	Males		Females		Persons[(a)]	
		Count	Per cent	Count	Per cent	Count	Per cent
X00	Exposure to uncontrolled fire in building or structure	92	2.5	56	2.7	148	2.5
X01	Exposure to uncontrolled fire, not in building or structure (for example, forest fire)	54	1.4	8	0.4	62	1.1
X02	Exposure to controlled fire in building or structure (for example, fireplace, stove)	92	2.5	40	1.9	132	2.3
X03	Exposure to controlled fire, not in building or structure (for example, camp-fire)	248	6.6	52	2.5	300	5.2
X04	Exposure to ignition of highly flammable material (for example, gasoline, kerosene, petrol)	634	16.9	95	4.6	729	12.5
X05	Exposure to ignition or melting of nightwear	n.p.	n.p.	n.p.	n.p.	19	0.3
X06	Exposure to ignition or melting of other clothing and apparel	55	1.5	32	1.5	87	1.5
X08	Exposure to other specified smoke, fire and flames	118	3.2	47	2.3	165	2.8
X09	Exposure to unspecified smoke, fire and flames	295	7.9	128	6.2	424	7.3
X10	Contact with hot drinks, food, fats and cooking oils	646	17.3	611	29.5	1,257	21.6
X11	Contact with hot tap-water	216	5.8	194	9.4	410	7.1
X12	Contact with other hot fluids (for example, water heated on stove)	401	10.7	374	18.1	775	13.3
X13	Contact with steam and hot vapours	132	3.5	35	1.7	167	2.9
X14	Contact with hot air and gases	n.p.	n.p.	n.p.	n.p.	14	0.2
X15	Contact with hot household appliances	215	5.7	147	7.1	362	6.2
X16	Contact with hot heating appliances, radiators and pipes	167	4.5	73	3.5	240	4.1
X17	Contact with hot engines, machinery and tools	115	3.1	54	2.6	169	2.9
X18	Contact with other hot metals	61	1.6	7	0.3	68	1.2
X19	Contact with other and unspecified heat and hot substances	181	4.8	102	4.9	283	4.9
Total		**3,741**	**100.0**	**2,069**	**100.0**	**5,811**	**100.0**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

(a) Persons includes separations and cases for which sex was not recorded.

Admission to hospital due to *exposure to ignition of highly flammable material* was the most common cause of smoke, fire, heat and hot substances injury in those aged 15–24 and 25–44 (*n* = 225 and *n* = 238, respectively).

The main causes of smoke, fire, heat and hot substances injury in older people aged 65+ were *contact with hot drinks, food, fats and cooking oils* (*n* = 70; 1% of all smoke, fire, heat and hot substances cases), *contact with hot tap water* (*n* = 70; 1% of all cases), and *contact with other hot fluids* (*n* = 62; 1% of all cases).

There were nineteen cases of *exposure to ignition or melting of nightwear*, ten were in young people aged less than 19 with 9 cases in adults aged over 55.

Young children aged 0–4

One quarter of smoke, fire, heat and hot substances injury occurred in young children aged 0–4 (*n* = 1,549), and most of these (84%) occurred before the third birthday (Table 2.7.4). Thirty-five per cent of injuries were from *contact with hot drinks, foods, fats and cooking oils* (*n* = 549), while more than one-quarter were from *contact with hot tap-water* and *contact with other hot fluids.* The number of injuries was highest at one year and declined after two years of age. The other leading causes of smoke, fire, heat and hot substances injury for young children were *contact with hot household appliances* such as hotplates, stoves and toasters (14% of all smoke, fire, heat and hot substances cases in children aged 0–4) and *contact with hot heating appliances* such as radiators and pipes (5% of all cases in children aged 0–4).

Table 2.7.4: Top 6 mechanisms of smoke, fire, heat and hot substances for young children aged 0–4, Australia, 2007–08

ICD-10-AM Code	External cause	Age						
		< 1	1	2	3	4	Total	Per cent
X10	Contact with hot drinks, food, fats and cooking oils	97	319	73	26	34	549	35.4
X12	Contact with other hot fluids (for example, water heated on stove)	53	148	35	31	18	285	18.4
X15	Contact with hot household appliances	55	89	40	18	11	213	13.8
X11	Contact with hot tap-water	45	62	34	10	7	158	10.2
X16	Contact with hot heating appliances, radiators and pipes	n.p.	26	12	n.p.	n.p.	73	4.7
X19	Contact with other and unspecified heat and hot substances	n.p.	24	11	n.p.	n.p.	58	3.7
	Sub-total	*278*	*668*	*205*	*102*	*83*	*1,336*	*86.2*
X00–X09, X13, X17–X18	Other	18	65	59	36	35	213	13.8
Total		**296**	**733**	**264**	**138**	**118**	**1,549**	**100.0**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

Principal diagnosis and body part injured

The majority of smoke, fire, heat and hot substances injuries were ascribed to the six specific sites shown in Table 2.7.5 (93%, *n* = 5,393). The most common site of burns injury for males was the wrist and hand (21%) and for females it was the hip and lower limb (20%). For males, injuries to the head and neck followed (18% of cases) while for females injuries to the trunk accounted for 18% of cases. A small number of cases had a principal diagnosis describing *toxic effects of substances chiefly non-medicinal as to source* (*n* = 227); these were primarily gases and vapours such as carbon monoxide (T59.8 and T58).

Table 2.7.5: Top 6 specific injuries for smoke, fire, heat and hot substances, Australia, 2007–08

	Males		Females		Persons[a]	
Principal diagnosis	**Count**	**Per cent[b]**	**Count**	**Per cent[b]**	**Count**	**Per cent[b]**
Burn of wrist and hand	786	21.0	369	17.8	1,155	19.9*
Burn of hip and lower limb, except ankle and foot	620	16.6	423	20.4	1,043	17.9
Burn of head and neck	687	18.4	283	13.7	970	16.7
Burn of trunk	485	13.0	381	18.4	866	14.9
Burn of shoulder and upper limb, except wrist and hand	440	11.8	261	12.6	701	12.1
Burn of ankle and foot	465	12.4	193	9.3	658	11.3
Sub-total of top 6 diagnoses	**3,483**	**93.1**	**1,910**	**92.3**	**5,393**	**92.8**

(a) Includes separations for which sex was not reported.

(b) Per cent of total diagnoses.

Length of stay

More than two-thirds of all smoke, fire, heat and hot substances separations had a length of stay of one day (69%, *n* = 4,004), this includes same-day separations (*n* = 2,322). However, a small proportion of prolonged admissions of more than 100 days were also reported (0.2%, *n* = 11). The average length of stay for smoke, fire, heat and hot substances injury was 5.4 days (5.6 days for males and 5.1 days for females). This is the second longest overall length of stay for a community injury category in this report after falls.

Length of stay increased with age as shown in Figure 2.7.2. The mean length of stay was shortest, at 3.3 days, for children aged 0–4 and longest at 16.6 days for older people aged 75–79.

Figure 2.7.2: Length of stay per case for smoke, fire, heat and hot substances injury by age and sex, Australia, 2007–08

Place of occurrence

Location was not specified or reported for 36% of cases (unspecified; *n* = 2,062). The following observations are restricted to those cases in which the place of occurrence was specified. More than three-quarters of cases resulted from injuries that occurred in the home (78%; *n* = 2,935) (Table 2.7.6). For children aged 0–4 for whom a place of occurrence was specified (*n* = 1,214), almost all smoke, fire, heat and hot substances injuries occurred in the home (92%; *n* = 1,114).

Of the 190 cases that occurred in a trade and service area, 115 (61%) occurred in a café, hotel or restaurant. Of the 128 cases that occurred in an industrial or construction area, 72 occurred in a factory or plant. Of the 46 cases that occurred in a residential institution, 23 occurred in aged care facilities (not shown in table).

Table 2.7.6: Place of occurrence for cases of smoke, fire, heat and hot substances, Australia, 2007–08

Place	Count	Per cent
Home	2,935	78.3
Residential institution	37	1.0
School	26	0.7
Health service area	27	0.7
Other specified institution and public administrative area	9	0.2
Sports and athletics area	16	0.4
Street and highway	69	1.8
Trade and service area	190	5.1
Industrial and construction area	128	3.4
Farm	52	1.4
Other specified places	260	6.9
Total	**3,749**	**100.0**

Note: Cases are restricted to those where place of occurrence is specified.

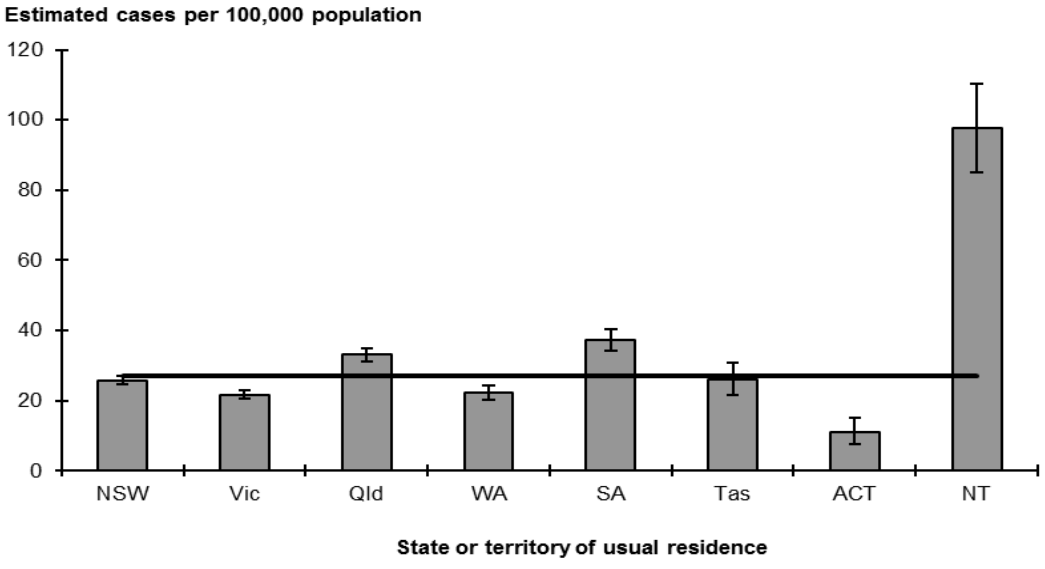
State and territory differences

Victoria, Western Australia and the Australian Capital Territory had rates of injury from smoke, fire, heat and hot substances that were below the national rate (Table 2.7.7 and Figure 2.7.3). New South Wales and Tasmania had rates that were similar to the national rate. Rates that were above the national rate were found in Queensland, South Australia and the Northern Territory. Aboriginal and Torres Strait Islander persons accounted for more than half of the hospitalised cases recorded in the Northern Territory (132 of 231 cases, 57%).

Table 2.7.7: Age-standardised estimated cases of smoke, fire, heat and hot substances, states and territories, 2007–08

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI[(a)]
NSW	25.8	24.6–27.1
Vic	21.8	20.5–23.0
Qld	33.0	31.3–34.8
WA	22.4	20.4–24.4
SA	37.4	34.3–40.4
Tas	26.2	21.6–30.8
ACT	11.0	6.8–14.2
NT	97.8	85.2–110.4
Australia	**27.7**	**27.0–28.4**

(a) Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.



Notes

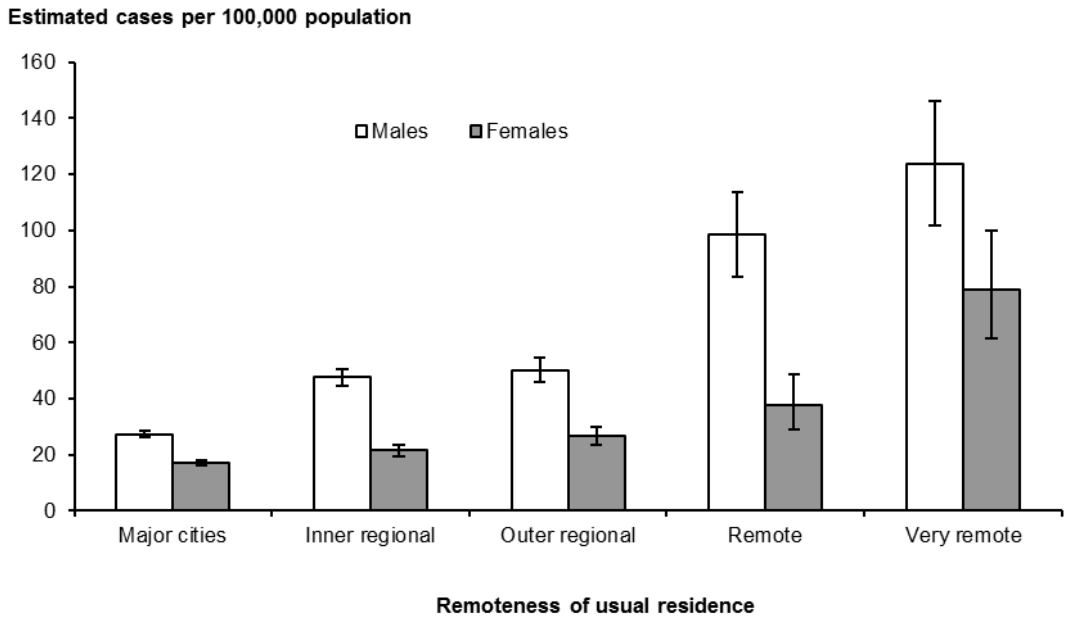
1. The thick horizontal line shows the rate for Australia.
2. Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.7.3: Age-standardised estimated cases of smoke, fire, heat and hot substances injury, states and territories, Australia, 2007–08

Remoteness of usual residence

Rates of hospitalised smoke, fire, heat and hot substances injury increased markedly across remoteness regions for both sexes (Figure 2.7.4). For persons overall, the lowest rate was found for residents of *Major cities* (22.3 per 100,000 population) while the highest rate was for residents in *Very remote* Australia (103.2 per 100,000 population). Rates for males were significantly higher than the rates for females in every regional and remoteness category. Close to half of hospitalised smoke, fire, heat and hot substances injury attributed to *Very remote* regions were for residents of the Northern Territory (45%).

Previous work has shown high rates of hospitalised burn injury among Aboriginal and Torres Strait Islander people living in the *Remote* and *Very remote* zones (Helps & Harrison 2006).



Note: Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.7.4: Age-standardised cases (± 95% CI) of smoke, fire, heat and hot substances injury: males and females by remoteness of usual residence (ASGC regions), 2007–08

Time trends

Overall there were slight fluctuations in the age-standardised rates for smoke, fire, heat and hot substances, but no definite trend. The lowest rate was 25.8 per 100,000 population in 2003–04 and the highest rate was 27.7 per 100,000 population in 2007–08.

Age-standardised rates for males were consistently higher than females, with the highest rate for males being 37.5 per 100,000 population in 1999–00, and the highest rate for females, 19.7 per 100,000 population in 2007–08. The lowest rate for males was seen in 2007–08 with 35.4 per 100,000 population, for females, the lowest rate was 17.5 per 100,000 population in 1999–00.

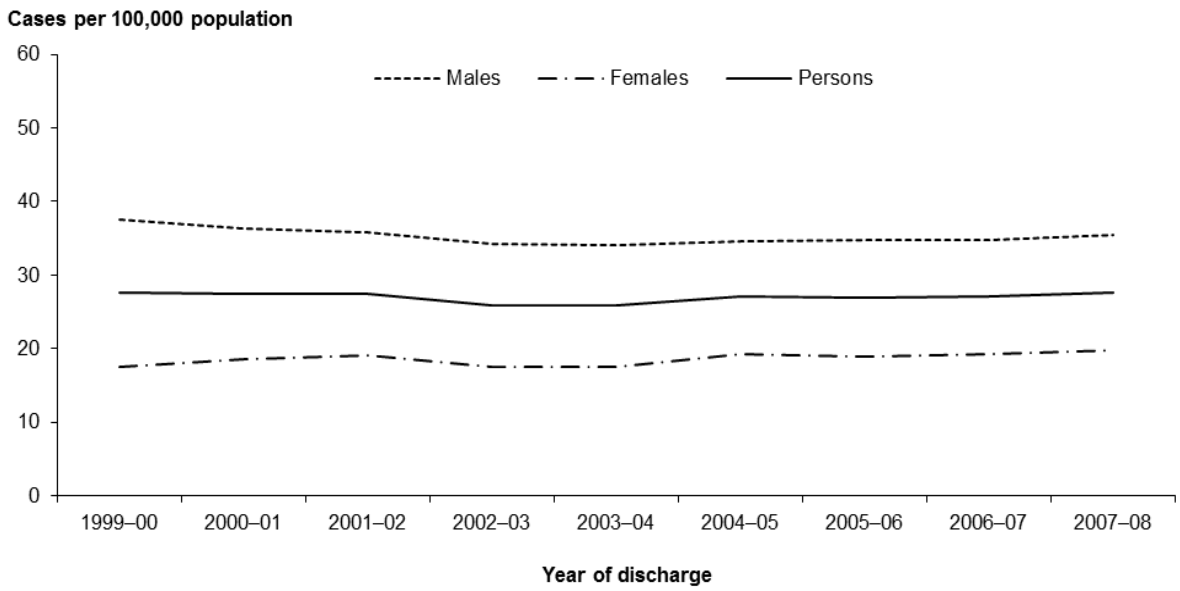


Figure 2.7.5: Age-standardised cases of smoke, fire, heat and hot substances injury, Australia, 1999–00 to 2007–08

2.8 Other unintentional injuries

ICD-10-AM case inclusion

Principal diagnosis: S00–T75, T79 and

First reported external cause: W20–W64, W75–W99, X20–X39, X50–X59

Table 2.8.1: Key indicators for other unintentional injury cases, Australia, 2007–08

Indicator	Males	Females	Persons
Separations from hospital due to other unintentional injuries	95,219	37,753	132,972
Percentage of all community injury separations	38.3	21.3	31.2
Estimated cases[(a)]	89,715	35,751	125,466
Crude rate/100,000 population	849.6	334.8	590.8
Age-standardised rate/100,000 population[(b)]	847.0	328.9	590.5
Total patient days[(c)]	174,432	96,179	270,611
Mean length of stay (days)	1.9	2.7	2.2

(a) Excludes records with a mode of admission of 'transfer from another acute hospital'.

(b) Standardised to the Australian estimated resident population 30th June 2001.

(c) Includes records with a mode of admission of 'transfer from another acute hospital' as contributing to hospital burden due to injury.

This category includes all injury hospitalisation recorded as unintentional and not included in Chapters 2.2 to 2.7. Other unintentional injuries accounted for 31% of all injury hospitalisations in the financial year 2007–08 (Table 2.8.1). A summary of the key components of other unintentional injury cases is provided in Table 2.8.2. A complete listing of the first reported external cause codes for other unintentional injuries is provided in Table 2.8.5.

Table 2.8.2: Summary of key components of other unintentional injury cases, Australia, 2007–08

External cause	Persons	Per cent
Exposure to inanimate mechanical forces (W20–W49)	56,529	45.1
Exposure to animate mechanical forces (W50–W64)	13,610	10.8
Other accidental threats to breathing (W75–W84)	790	0.6
Exposure to electric current, radiation and extreme ambient air temperature and pressure (W85–W99)	978	0.8
Contact with venomous animals and plants (X20–W29)	2,976	2.4
Exposure to forces of nature (X30–X39)	650	0.5
Overexertion, travel and privation (X50–X57)	10,206	8.1
Accidental exposure to other and unspecified factors (X58–X59)	39,727	31.7
Total	**125,466**	**100.0**

This chapter contains more than two-thirds of hospitalised work-related injuries (Table 3.1.2) and nearly one-half of hospitalised sports injuries (Table 4.1.2). Injuries occurring during these two types of activity account for 70,218 (53%) of the Other unintentional cases.

Age and sex distribution

More males than females were injured by other unintentional injuries (based on age-standardised rates) by 2.6:1 (Figure 2.8.1). Male rates were lower in childhood and then peaked in youth and young men aged 15–24 and then steadily declined with age. Female rates were constant between the ages of 10–74 after which they increased steadily.

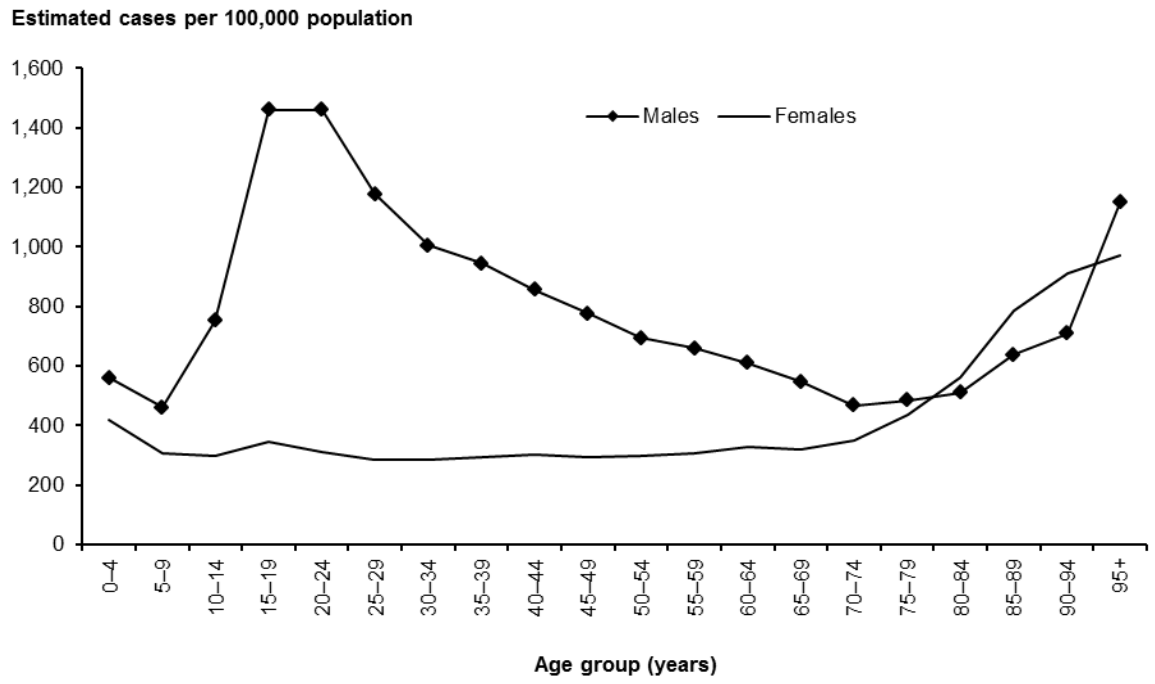


Figure 2.8.1: Age-specific estimated cases of other unintentional injury by sex, Australia, 2007–08

Much of the excess in male rates, especially between the ages of 15–59, is associated with injuries that occur at work or during sport. Nearly three-quarters of those injured were male (72%) (Table 2.8.3).

Table 2.8.3: Other unintentional injury cases by age group, Australia, 2007–08

	Males		Females		Persons	
Age group	Count	Per cent	Count	Per cent	Count	Per cent
0–14	12,508	13.9	6,837	19.1	19,345	15.4
15–24	22,235	24.8	4,769	13.3	27,004	21.5
25–44	30,075	33.5	8,859	24.8	38,934	31.0
45–64	18,268	20.4	8,159	22.8	26,427	21.1
65+	6,629	7.4	7,127	19.9	13,756	11.0
Total	**89,715**	**100.0**	**35,751**	**100.0**	**125,466**	**100.0**

Principal diagnosis and body part injured

The shoulder and upper limb was the most commonly injured body region for other unintentional injuries (45%) this was followed by the hip and lower limb (26%) (Table 2.8.4).

Table 2.8.4: Principal diagnosis by body region for other unintentional injury, Australia, 2007–08

	Males		Females		Persons	
Principal diagnosis by body region	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Head	11,184	12.5	4,137	11.6	15,321	12.2
Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis)	4,777	5.3	2,654	7.4	7,431	5.9
Shoulder and upper limb	44,169	49.2	12,490	34.9	56,659	45.2
Hip and lower limb	21,059	23.5	11,654	32.6	32,713	26.1
Other injuries not specified by body region	8,526	9.5	4,816	13.5	13,342	10.6
All body regions	**89,715**	**100.0**	**35,751**	**100.0**	**125,466**	**100.0**

Length of stay

Mean length of stay for other unintentional injuries rose with age (Figure 2.8.2) and overall, was shorter for males (1.9 days) than for females (2.7 days), this can be attributed to the longer hospitalisations for females in the older age groups. The mean length of stay was 1.5 days for children aged 0–14, 1.6 days for young people aged 15–24, 1.8 days for adults aged 25–44, 2.2 days for adults aged 45–64 and 5.2 days for older people aged 65+.

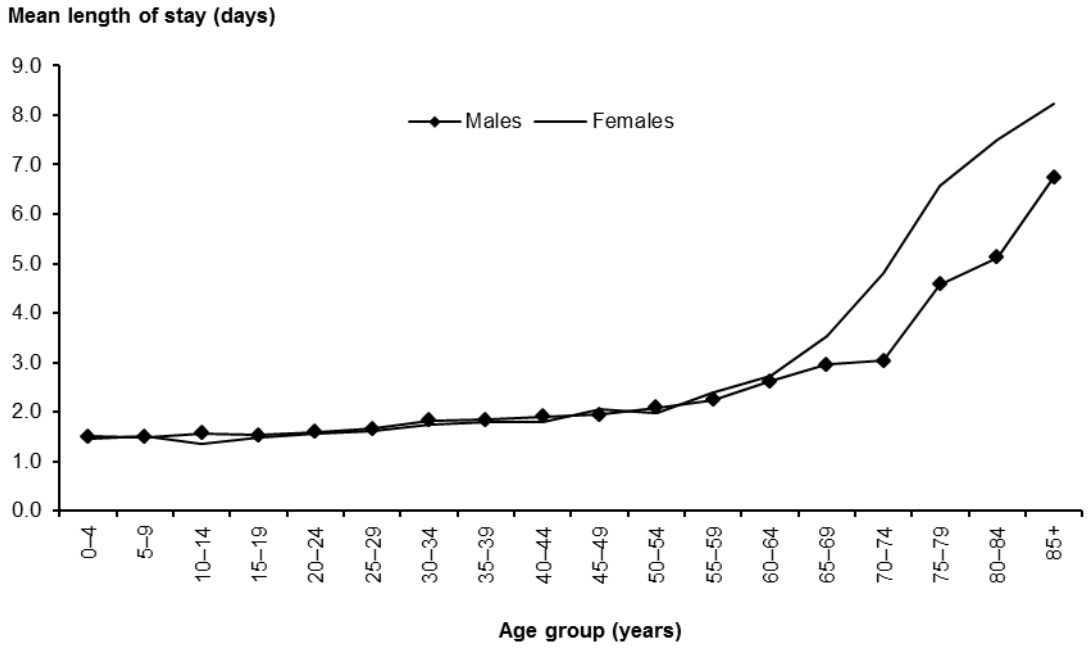


Figure 2.8.2: Length of stay per episode for other unintentional injury by age and sex, Australia, 2007–08

Table 2.8.5: External causes of other unintentional injury cases, Australia, 2007–08

ICD-10-AM Code	External cause	Frequency	Per cent
W20	Struck by thrown, projected or falling object	5,117	4.1
W21	Striking against or struck by sports equipment	2,520	2.0
W22	Striking against or struck by other objects	7,783	6.2
W23	Caught, crushed, jammed or pinched in or between objects	5,929	4.7
W24	Contact with lifting and transmission devices, not elsewhere classified	593	0.5
W25	Contact with sharp glass	5,872	4.7
W26	Contact with knife, sword or dagger	3,587	2.9
W27	Contact with non-powered hand tool	1,787	1.4
W28	Contact with powered lawnmower	595	0.5
W29	Contact with other powered hand tools and household machinery	2,761	2.2
W30	Contact with agricultural machinery	317	0.3
W31	Contact with other and unspecified machinery	5,435	4.3
W32	Handgun discharge	11	0.0
W34	Discharge from other and unspecified firearms	119	0.1
W35	Explosion and rupture of boiler	5	0.0
W36	Explosion and rupture of gas cylinder	123	0.1
W37	Explosion and rupture of pressurised tyre, pipe or hose	36	0.0
W38	Explosion and rupture of other specified pressurised devices	10	0.0
W39	Discharge of firework	67	0.1
W40	Explosion of other materials	204	0.2
W41	Exposure to high-pressure jet	30	0.0
W43	Exposure to vibration	n.p.	n.p.
W44	Foreign body entering into or through eye or natural orifice	6,427	5.1
W45	Foreign body or object entering through skin	5,031	4.0
W46	Contact with hypodermic needle	78	0.1
W49	Exposure to other and unspecified inanimate mechanical forces	2,091	1.7
W50	Hit, struck, kicked, twisted, bitten or scratched by another person	4,142	3.3
W51	Striking against or bumped into by another person	2,964	2.4
W52	Crushed, pushed or stepped on by crowd or human stampede	94	0.1
W53	Bitten by a rat	6	0.0
W54	Bitten or struck by dog	2,159	1.7
W55	Bitten or struck by other mammals	2,018	1.6
W56	Contact with marine animal	132	0.1
W57	Bitten or stung by nonvenomous insect and other nonvenomous arthropods	512	0.4
W58	Bitten or struck by crocodile or alligator	6	0.0
W59	Bitten or crushed by other reptiles	1,152	0.9
W60	Contact with plant thorns and spines and sharp leaves	262	0.2
W64	Exposure to other and unspecified animate mechanical forces	163	0.1
W75	Accidental suffocation and strangulation in bed	n.p.	n.p.
W76	Other accidental hanging and strangulation	17	0.0
W77	Threat to breathing due to cave-in, falling earth and other substances	n.p.	n.p.
W78	Inhalation of gastric contents	32	0.0
W79	Inhalation and ingestion of food causing obstruction of respiratory tract	510	0.4
W80	Inhalation and ingestion of other objects causing obstruction of respiratory tract	160	0.1
W81	Confined to or trapped in a low-oxygen environment	7	0.0
W83	Other specified threats to breathing	n.p.	n.p.
W84	Unspecified threat to breathing	58	0.0

(continued)

Table 2.8.5 (continued): External causes of other unintentional injury cases, Australia, 2007–08

ICD-10-AM Code	External cause of morbidity and mortality	Frequency	Per cent
W85	Exposure to electric transmission lines	61	0.0
W86	Exposure to other specified electric current	370	0.3
W87	Exposure to unspecified electric current	196	0.2
W88	Exposure to ionising radiation	n.p.	n.p.
W89	Exposure to man-made visible and ultraviolet light	n.p.	n.p.
W90	Exposure to other non-ionising radiation	n.p.	n.p.
W91	Exposure to unspecified type of radiation	n.p.	n.p.
W92	Exposure to excessive heat of man-made origin	6	0.0
W93	Exposure to excessive cold of man-made origin	9	0.0
W94	Exposure to high and low air pressure and changes in air pressure	329	0.3
W99	Exposure to other and unspecified man-made environmental factors	n.p.	n.p.
X20	Contact with venomous snakes and lizards	504	0.4
X21	Contact with venomous spiders	933	0.7
X22	Contact with scorpions	n.p.	n.p.
X23	Contact with hornets, wasps and bees	863	0.7
X24	Contact with centipedes and venomous millipedes (tropical)	14	0.0
X25	Contact with other specified venomous arthropods	354	0.3
X26	Contact with venomous marine animals and plants	264	0.2
X27	Contact with other specified venomous animals	n.p.	n.p.
X28	Contact with other specified venomous plants	n.p.	n.p.
X29	Contact with unspecified venomous animal or plant	36	0.0
X30	Exposure to excessive natural heat	311	0.2
X31	Exposure to excessive natural cold	229	0.2
X32	Exposure to sunlight	20	0.0
X33	Victim of lightning	26	0.0
X34	Victim of earthquake	n.p.	n.p.
X36	Victim of avalanche, landslide and other earth movements	12	0.0
X37	Victim of cataclysmic storm	n.p.	n.p.
X38	Victim of flood	n.p.	n.p.
X39	Exposure to other and unspecified forces of nature	43	0.0
X50	Overexertion and strenuous or repetitive movements	10,176	8.1
X51	Travel and motion	23	0.0
X53	Lack of food	5	0.0
X54	Lack of water	n.p.	n.p.
X58	Exposure to other specified factors	1,823	1.5
X59	Exposure to unspecified factor	37,904	30.2
Total		**125,466**	**100.0**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

External cause

The majority (88%) of the unintentional hospitalised injury cases included in this section could be classified into three broad external cause categories. The most common category of external causes was *exposure to inanimate mechanical forces* (*n* = 56,529, 45%). This group includes W22, 'striking against or struck by other object' (*n* = 7,783), W44, 'foreign body entering into or through eye or natural orifice' (*n* = 6,427) and W25, 'contact with sharp glass' (*n* = 5,872). For W22 the highest age-specific rate occurred in those aged 85 and older (92.8 per 100,000 population); this probably reflects an age-related decrease in balance and stability that is also reflected in the high rates for falls in the elderly. The highest age-specific rates for foreign bodies were seen among the youngest age groups (91.0 and 49.3 per 100,000 in those aged 0–4 and 5–9, respectively).

The second most common category, *accidental exposure to other and unspecified factors (X59)*, accounted for 32% (*n* = 39,727) of other unintentional hospitalised injury cases. Nearly all of these were attributed to unspecified factors (95%, *n* = 37,904).

The third most common type of external cause, for cases coded as other unintentional injury, described *exposure to animate mechanical forces* (W50–W64). Just over a quarter of these were coded as being 'hit, struck, kicked, twisted, bitten or scratched by another person' (30%, *n* = 4,142), a further 22% were classified as 'striking against or bumped into by another person'. This category also includes being 'bitten or struck by animals'. Dog bites accounted for 14% of hospitalised injuries ascribed to animate mechanical forces (*n* = 1,962), followed by injuries related to being bitten or crushed by other reptiles (*n* = 1,140) specifically non-venomous snakes (*n* = 362) and snakes which were not identified as being either venomous or non-venomous (*n* = 778). There were 504 cases of hospitalised injury with a first external cause code recorded as contact with a venomous snake (X20), more than half of these (52%) involved snakes of the brown snake immunotype. A detailed analysis of hospitalised separations attributed to venomous animals and plants (Bradley 2008) is available at the AIHW website <www.aihw.gov.au> and the Research Centre for Injury Studies website <www.nisu.flinders.edu.au>.

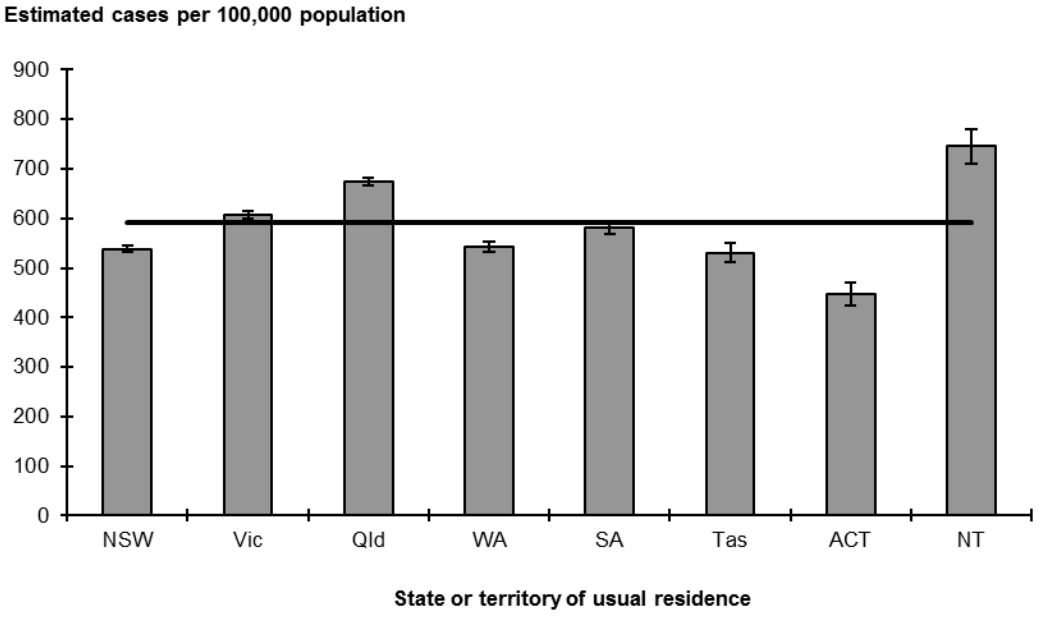
State and territory differences

New South Wales, Western Australia, Tasmania and the Australian Capital Territory had rates of other unintentional injury that were lower than the national (Table 2.8.6 and Figure 2.8.3). South Australia had a similar rate of hospitalised other unintentional injury separations than the national rate. While higher rates were found in Victoria, Queensland and the Northern Territory.

Table 2.8.6: Age-standardised estimated cases of other unintentional injury, states and territories, 2007–08

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI[(a)]
NSW	538.7	533.3–544.2
Vic	607.0	600.3–613.6
Qld	673.3	665.5–681.1
WA	542.0	532.1–551.8
SA	580.3	568.4–592.1
Tas	530.9	510.4–551.5
ACT	447.4	425.2–469.5
NT	745.1	709.2–781.0
Australia	**590.5**	**587.3–593.8**

(a) Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.



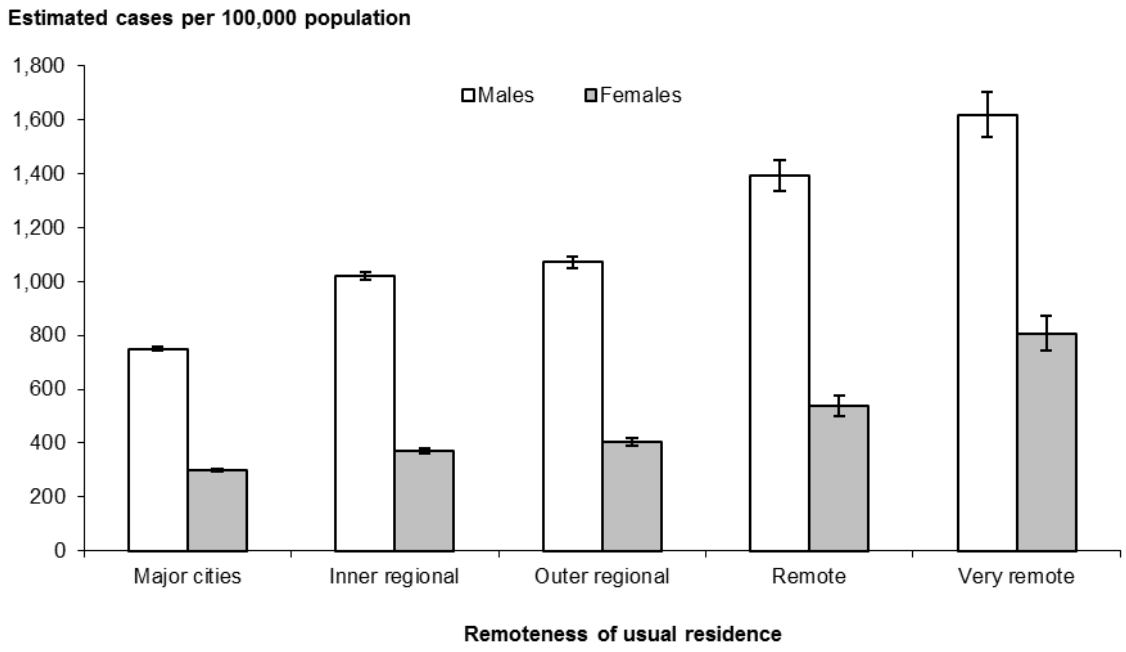
Notes

1. The thick horizontal line shows the rate for Australia.
2. Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.8.3: Age-standardised estimated cases of other unintentional injury, states and territories, 2007–08

Remoteness of usual residence

Rates of hospitalised unintentional injury increased across remoteness regions for both males and females (Figure 2.8.4). As with previous chapters, overall the lowest injury rate was found for residents of *Major cities* (525.6 per 100,000 population) while the highest rate was for residents in *Very remote* Australia (1,238.0 per 100,000 population). Rates for males were significantly higher than the rates for females in each remoteness category.



Note: Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.8.4: Age-standardised cases (± 95% CI) of unintentional injury: males and females by remoteness of usual residence (ASGC regions), 2007–08

Time trends

There was a slight increase in age-standardised rates for other unintentional injuries in recent years from 544 per 100,000 of the population in 1999–00 to 591 per 100,000 in 2007–08 (Figure 2.8.5).

Male rates increased in more recent years, from 778 per 100,000 in 1999–00 to 847 per 100,000 in 2007–08. Age-standardised rates for females were lower than males and remained fairly consistent, with the lowest rate being 305 per 100,000 in 1999–00 to 329 per 100,000 in 2007–08.

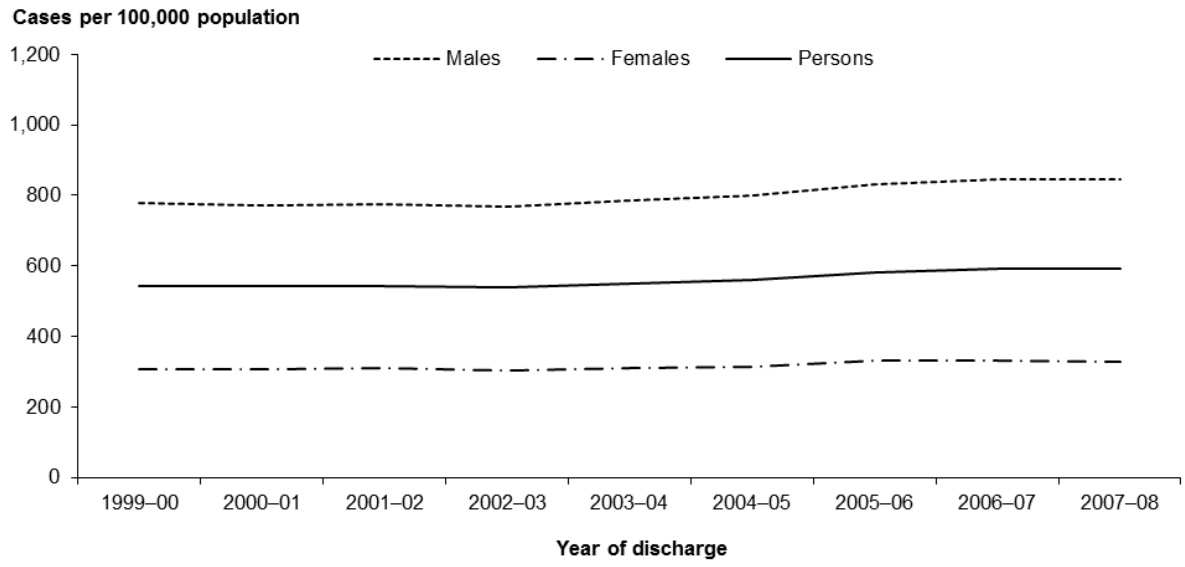


Figure 2.8.5: Age-standardised cases of other unintentional injury, Australia, 1999–00 to 2007–08

Part B: Intentional injuries

2.9 Intentional self-harm

ICD-10-AM case inclusion

Principal diagnosis: S00–T75, T79 and

First reported external cause: X60–X84

Table 2.9.1: Key indicators for intentional self-harm cases, Australia, 2007–08

Indicator	Males	Females	Persons[a]
Separations from hospital due to intentional self-harm	9,564	15,461	25,028
Percentage of all community injury separations	3.8	8.7	6.3
Estimated cases[b]	9,089	14,778	23,870
Crude rate/100,000 population	86.1	138.4	112.4
Age-standardised rate/100,000 population[c]	86.2	140.9	113.2
Total patient days[d]	31,496	42,364	73,865
Mean length of stay (days)	3.5	2.9	3.1

(a) Includes separations and cases for which sex was not reported.

(b) Excludes records with a mode of admission of 'transfer from another acute hospital'.

(c) Standardised to the Australian estimated resident population 30th June 2001.

(d) Includes records with a mode of admission of 'transfer from another acute hospital' as contributing to hospital burden due to injury.

Intentional self-harm accounted for 6% of all injury hospitalisations in the financial year 2007–08 (Table 2.9.1). It includes suicide and attempts of suicide, as well as cases where people have intentionally hurt themselves, but not necessarily with the intention to kill for example, self-mutilation. This chapter does not include cases where the intent was unspecified, unstated or could not be determined (see Chapter 2.11).

Age and sex distribution

Females had higher rates of hospitalised intentional self-harm than males up to the age of 80 (Figure 2.9.1 and Table 2.9.2). This is the only major type of external cause for which female cases outnumber male cases in youth and middle age. More females than males were hospitalised for intentional self-harm (140.9 per 100,000 population vs. 86.2 per 100,000 population, based on age-standardised rates) with a M:F ratio of 0.6:1. The highest age-specific rate for cases of hospitalised self-harm was for females aged 15–19 (353.7 per 100,000 population). For males, rates of hospitalised self-harm were highest in those aged 20–24 (161.0 per 100,000 population).

Due to the small number of cases of intentional self-harm coded to the 0–4 age group, these numbers have been supressed in the figure (Figure 2.9.1) but are included as a part of the 0–14 group in Table 2.9.2 (see data issues). Cases of intentional self-harm in the 0–9 age group can be subject to misinterpretation given the difficulties in assigning intent to the action of small children. Intentional self-harm in the context of this section may not necessarily reflect suicidal intent among children.

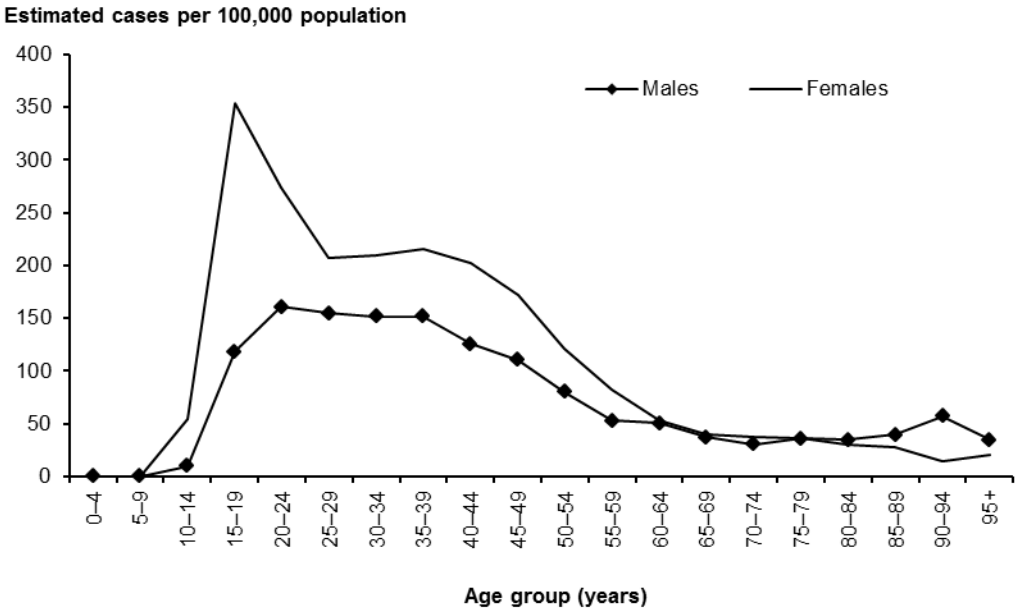


Figure 2.9.1: Age-specific estimated cases of intentional self-harm by sex, Australia, 2007–08

Table 2.9.2: Intentional self-harm cases by age group, Australia, 2007–08

	Males		Females		Persons[(a)]	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–14	75	0.8	376	2.5	451	1.9
15–24	2,133	23.5	4,533	30.7	6,666	27.9
25–44	4,414	48.6	6,333	42.9	10,750	45.0
45–64	2,016	22.2	3,009	20.4	5,025	21.1
65+	451	5.0	527	3.6	978	4.1
Total	**9,089**	**100.0**	**14,778**	**100.0**	**23,870**	**100.0**

(a) Includes cases for which sex was not reported.

Principal diagnosis and body part injured

The majority of admitted injury cases due to intentional self-harm did not specify a particular body region that was injured (Table 2.9.3). This reflects the fact that the mechanism in most cases was poisoning. Of the intentional self-harm cases involving the shoulder and upper limb 93% (*n* = 2,265) had an external cause related to self-harm by a

sharp object. Similarly, 73% of injuries to the trunk had an external cause related to self-harm by a sharp object (*n* = 564).

Table 2.9.3: Principal diagnosis by body region and sex for intentional self-harm cases, Australia, 2007–08

	Males		Females		Persons[(a)]	
Principal diagnosis by body region	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Head	147	1.6	74	0.5	221	0.9
Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis)	507	5.6	270	1.8	777	3.3
Shoulder and upper limb	1,116	12.3	1,310	8.9	2,426	10.2
Hip and lower limb	86	0.9	128	0.9	214	0.9
Other injuries not specified by body region	7,233	79.6	12,996	87.9	20,232	84.8
All body regions	**9,089**	**100.0**	**14,778**	**100.0**	**23,870**	**100.0**

(a) Includes cases for which no sex was reported.

Mechanism

There were 23,870 cases of hospitalised intentional self-harm in the financial year 2007–08 (Table 2.9.4). The majority of cases (82%) of self-harm were intentional self-poisoning and almost twice as many females as males used this method. Intentional self-harm by a sharp object accounted for 13% of cases of self-harm and slightly more females than males used this method. Hanging, strangulation and suffocation accounted for 2% of self-harm cases (of which 69% were males) and shooting by handgun or firearm was even less common (0.1%—all were males).

Forty-six per cent of all cases of intentional self-harm were poisoning with antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs (*n* = 11,012). This category includes benzodiazepines, other and unspecified antidepressants—likely to be selective serotonin reuptake inhibitors, other and unspecified antipsychotics and neuroleptics, other antiepileptic and sedative-hypnotic drugs, tricyclic and tetracyclic antidepressants, phenothiazene antipsychotics and neuroleptics and psychostimulants with potential for use disorder.

The second most frequent category of self-poisoning was poisoning with nonopioid analgesics, antipyretics and antirheumatics (*n* = 4,420; 19% of all cases of intentional self-harm). This category includes paracetamol, nonsteroidal anti-inflammatory drugs and salicylates such as aspirin.

Poisoning by other gases and vapours accounted for 1% of self-harm cases (*n* = 297). More than three-quarters of these cases were males (76%). This category includes the toxic effects of carbon monoxide.

The profile of mechanisms reported here partly reflects the profile of mechanisms used in episodes of intentional self-harm, but it also reflects the fact that some means of self-harm are more likely than others to result in an injury in which the person attends hospital and is admitted.

Table 2.9.4: External cause of intentional self-harm injury cases, Australia, 2007–08

ICD-10-AM Code	External cause	Males		Females		Persons[(a)]	
		Count	Per cent	Count	Per cent	Count	Per cent
	Intentional self-poisoning by and exposure to:	6,878	75.7	12,720	86.1	19,601	82.1
X60	Nonopioid analgesics, antipyretics and antirheumatics	1,123	12.4	3,295	22.3	4,420	18.5
X61	Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	3,833	42.2	7,178	48.6	11,012	46.1
X62	Narcotics and psychodysleptics [hallucinogens]	629	6.9	709	4.8	1,338	5.6
X63	Other drugs acting on the autonomic nervous system	94	1.0	118	0.8	212	0.9
X64	Other and unspecified drugs, medicaments and biological substances	595	6.5	908	6.1	1,503	6.3
X65	Alcohol	152	1.7	197	1.3	349	1.5
X66	Organic solvents and their halogenated hydrocarbons and their vapours	28	0.3	19	0.1	47	0.2
X67	Other gases and vapours (for example, carbon monoxide)	226	2.5	71	0.5	297	1.2
X68	Pesticides	80	0.9	50	0.3	130	0.5
X69	Other and unspecified chemicals and noxious substances	118	1.3	175	1.2	293	1.2
X70	Intentional self-harm by hanging, strangulation and suffocation	316	3.5	145	1.0	461	1.9
X71	Intentional self-harm by drowning and submersion	11	0.1	10	0.1	21	0.1
X72	Intentional self-harm by handgun discharge	5	0.1	0	0.0	5	0.0
X74	Intentional self-harm by other and unspecified firearm discharge	18	0.2	0	0.0	18	0.1
X75	Intentional self-harm by explosive material	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
X76	Intentional self-harm by smoke, fire and flames	32	0.4	37	0.3	69	0.3
X77	Intentional self-harm by steam, hot vapours and hot objects	n.p.	n.p.	n.p.	n.p.	17	0.1
X78	Intentional self-harm by sharp object	1,518	16.7	1,639	11.1	3,157	13.2
X79	Intentional self-harm by blunt object	34	0.4	16	0.1	50	0.2
X80	Intentional self-harm by jumping from a high place	63	0.7	59	0.4	122	0.5
X81	Intentional self-harm by jumping or lying before moving object	42	0.5	18	0.1	60	0.3
X82	Intentional self-harm by crashing of motor vehicle	43	0.5	33	0.2	76	0.3
X83	Intentional self-harm by other specified means	104	1.1	51	0.3	155	0.6
X84	Intentional self-harm by unspecified means	21	0.2	36	0.2	57	0.2
Total		**9,089**	**100.0**	**14,778**	**100.0**	**23,870**	**100.0**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

(a) Includes cases for which sex was not reported.

Length of stay

The mean length of stay for intentional self-harm cases was 3.1 days and was greater for males than females (3.5 days vs. 2.9 days). MLOS rose with age with the longest average hospital stay in persons aged 80–84 (10.0 days). Thereafter, MLOS fell slightly but still remained higher than at younger age groups (Figure 2.9.2). The mean length of stay was 2.4 days for children aged 10–14, 2.2 days for young people aged 15–24, 2.9 days for adults aged 25–44, 3.9 days for adults aged 45–64 and 7.7 days for older people aged 65+.

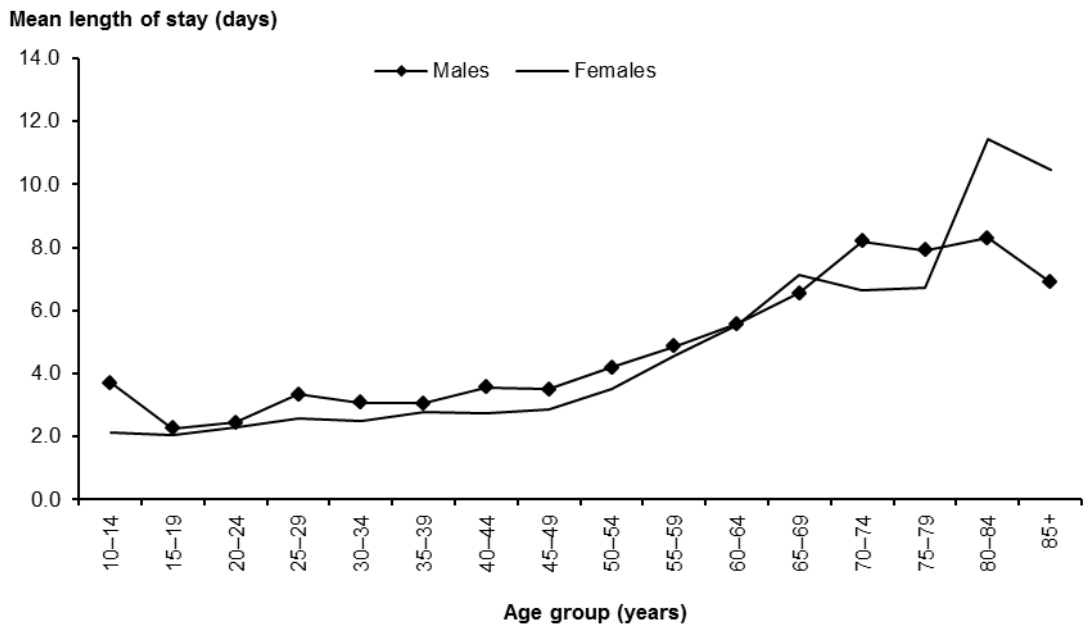


Figure 2.9.2: Length of stay per episode for intentional self-harm by age and sex, Australia, 2007–08

Place of occurrence

For almost a third of records, place of occurrence was unspecified (30%; *n* = 7,217) or not reported (0.1%; *n* = 27). The following observations are restricted to those records in which the place of occurrence was specified (Table 2.9.5). The majority of the intentional self-harm injury hospitalisations occurred in the home (85%; *n* = 14,142). A small proportion also occurred in a health service area (6%).

Table 2.9.5: Place of occurrence for cases of intentional self-harm, Australia, 2007–08

Place	Persons	Per cent
Home	14,142	85.0
Residential institution	332	2.0
School	58	0.3
Health service area	939	5.6
Other specified institution and public administrative area	42	0.3
Sports and athletics area	9	0.1
Street and highway	313	1.9
Trade and service area	294	1.8
Industrial and construction area	18	0.1
Farm	9	0.1
Other specified places	472	2.8
Total	**16,628**	**100.0**

Note: Cases are restricted to those where place of occurrence is specified.

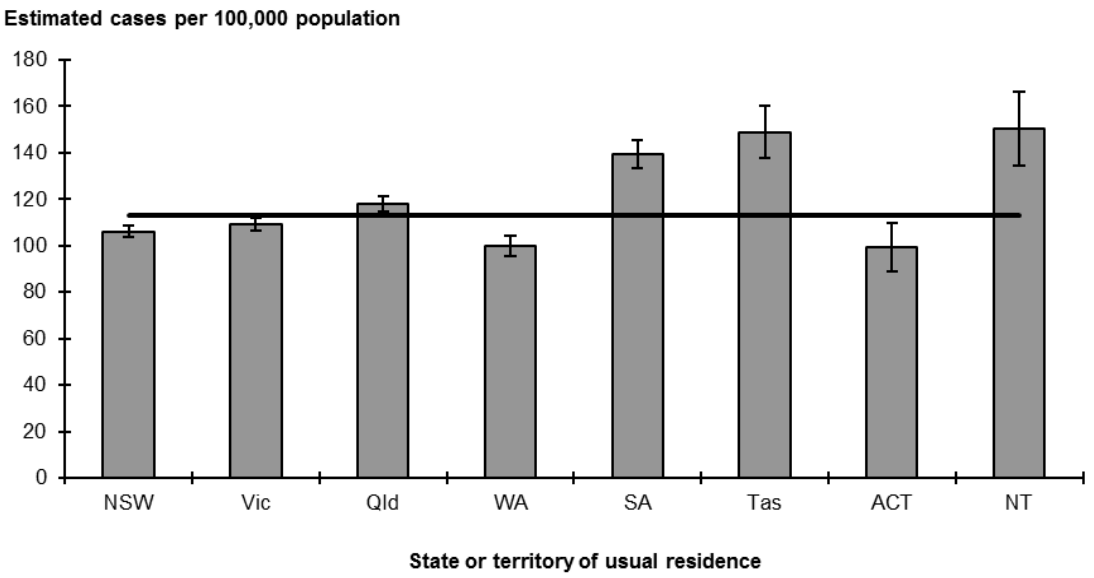
State and territory differences

Similar rates of intentional self-harm to the national age-standardised rate were found in Victoria and Queensland (Table 2.9.6 and Figure 2.9.3). New South Wales, Western Australia and the Australian Capital Territory had rates that were lower than the national rate. South Australia, Tasmania and the Northern Territory had rates that were above the national rate.

Table 2.9.6: Age-standardised estimated cases of intentional self-harm, states and territories, 2007–08

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI[(a)]
NSW	106.1	103.6–108.5
Vic	109.3	106.5–112.1
Qld	117.9	114.7–121.2
WA	99.8	95.6–104.0
SA	139.5	133.6–145.4
Tas	148.9	137.8–160.0
ACT	99.4	89.1–109.6
NT	150.4	134.7–166.1
Australia	**113.2**	**111.8–114.6**

(a) Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.



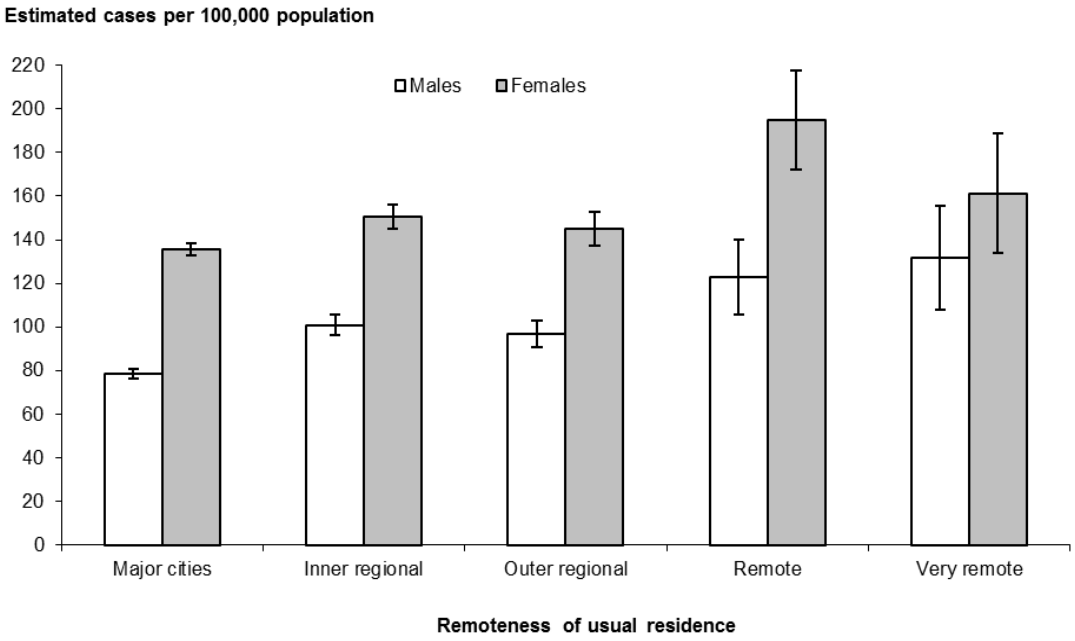
Notes

1. The thick horizontal line shows the rate for Australia.
2. Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.9.3: Age-standardised estimated cases of intentional self-harm, states and territories, 2007–08

Remoteness of usual residence

Rates of hospitalised intentional self-harm injury followed a similar pattern for both sexes (Figure 2.9.4). For persons overall, the lowest rate was found for residents of *Major cities* (106.9 per 100,000 population) while the highest rate was for residents in *Remote* Australia (1,576.9 per 100,000 population). Rates for males were significantly lower than the rates for females in most regions. In *Very remote* regions rates for males were lower than for females however they were not significantly different.



Note: Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.9.4: Age-standardised cases (± 95% CI) of intentional self-harm: males and females by remoteness of usual residence (ASGC regions), 2007–08

Time trends

Age-standardised rates for intentional self-harm increased over the period reported, from 105 per 100,000 of the population in 1999–00 to 113 per 100,000 in 2007–08. The increase in intentional self-harm was mainly attributable to an increase in female cases (124 per 100,000 in 1999–00 to 141 per 100,000 in 2007–08), whereas male cases stayed relatively constant (87 per 100,000 in 1999–00 and 87 per 100,000 in 2007–08) (Figure 2.9.5).

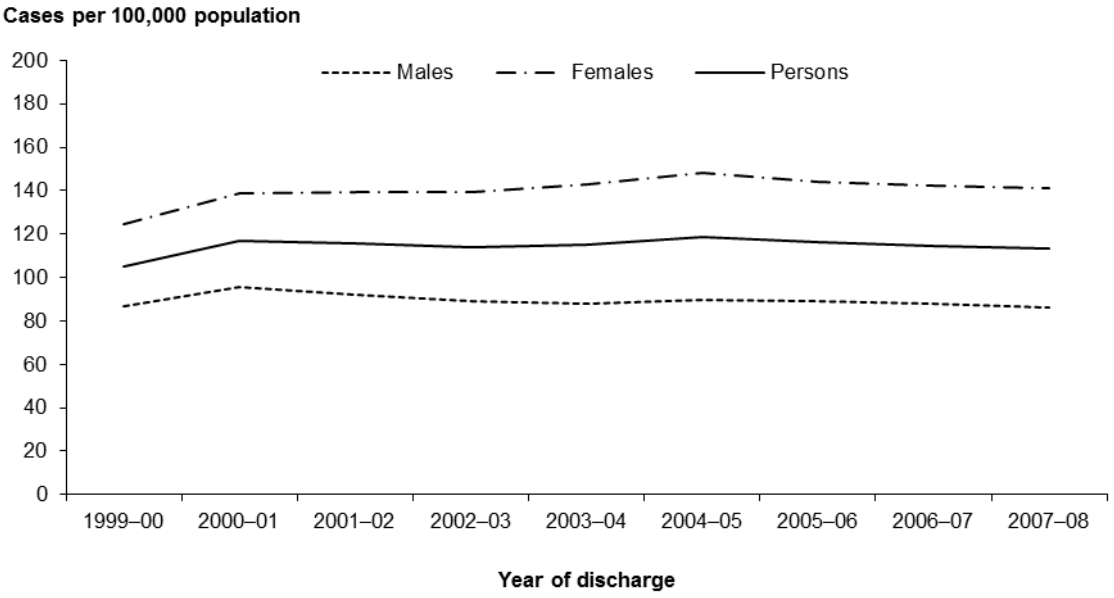


Figure 2.9.5: Age-standardised cases of intentional self-harm, Australia, 1999–00 to 2007–08

Ascertainment of intentional self-harm

According to inclusion notes in ICD-10-AM, cases should be assigned codes in the range X60–X84 if they are purposely self-inflicted poisoning or injury, suicide, or attempted suicide (NCCH 2006). Determining whether an injury is due to intentional self-harm is not always straightforward. Intent is a complex concept and not easily defined. Cases may appear to be intentional self-harm, but inconclusiveness of available information may preclude them being coded as such. In this situation the case can be coded to an "undetermined intent" category (for example, Y30 *Falling, jumping or pushed from a high place, undetermined intent* or Y32 *Crashing of motor vehicle, undetermined intent*).

It is possible that through the coding process, some types of injury may be more readily attributed to intentional self-harm than others. The intent for many injuries is difficult to determine for example, near-drowning by falling overboard on a water-craft (V92), falling from a building structure (for example, W13, out of a window, bridge or roof), or a cliff (W15), other specified threats to breathing (for example, W83, suffocation by plastic bag), and exposure to electric current (W85–W87). Some cases coded as transport accidents could be intentional self-harm for example, when a pedestrian is injured in a collision with a car, pick-up truck or van, or heavy transport vehicle or railway train (for example, V03, V04, V05), or a small vehicle (for example, car, motorcycle) collides with a heavy transport vehicle or train (for example, V24, V25, V44, V45) or a fixed or stationary object (for example, V27, V47). Some patients may choose not to disclose that their injuries resulted from intentional self-harm, or may be unable to do so due to the nature of the injuries, or because their motives were ambiguous. Such sources of uncertainty about the assignment of intent limit the certainty of estimates of intentional self-harm based on routine hospital data. Coding categories provided for use when intent is recognised to be undetermined are a partial solution to this (see Chapter 2.11).

2.10 Assault

ICD-10-AM case inclusion

Principal diagnosis: S00–T75, T79 and

First reported external cause: X85–Y09, Y35–Y36

Table 2.10.1: Key indicators for assault cases, Australia, 2007–08

Indicator	Males	Females	Persons[a]
Separations from hospital due to assault	18,975	5,751	24,727
Percentage of all community injury separations	7.6	3.2	5.8
Estimated cases[b]	17,841	5,473	23,315
Crude rate/100,000 population	169.0	51.3	109.8
Age-standardised rate/100,000 population[c]	168.5	52.6	111.1
Total patient days[d]	40,630	12,158	52,789
Mean length of stay (days)	2.3	2.2	2.3

(a) Includes separations and cases for which sex was not reported.

(b) Excludes records with a mode of admission of 'transfer from another acute hospital'.

(c) Standardised to the Australian estimated resident population 30th June 2001.

(d) Includes records with a mode of admission of 'transfer from another acute hospital' as contributing to hospital burden due to injury.

An estimated 6% of all injury hospitalisations in 2007–08 were due to assault (Table 2.10.1). As defined here, this category includes all cases in which a person, or more than one person, intentionally injured another person. This chapter does not include cases where the intent was unspecified, unstated or cannot be determined (see Chapter 2.11).

Age and sex distribution

Three times as many males as females were hospitalised for injury resulting from assault with a M: F ratio of 3.2:1 (based on age-standardised rates) (Table 2.10.2). Age-specific rates for males were significantly higher than for females for almost all age groups (Figure 2.10.1). Male rates peaked in the 20–24 age group with an age-specific rate of 486.1 hospitalisations for assault per 100,000 compared with 109.0 per 100,000 for females in the same age range. From 25 onwards, age-specific rates of assault declined with age for both sexes. A second elevation of age-specific rates for males appears in the 95+ age category (121.9 per 100,000 population). This is as a result of the small number of cases of hospitalised injury from assaults (n = 7) in the small population of males over the age of 95.

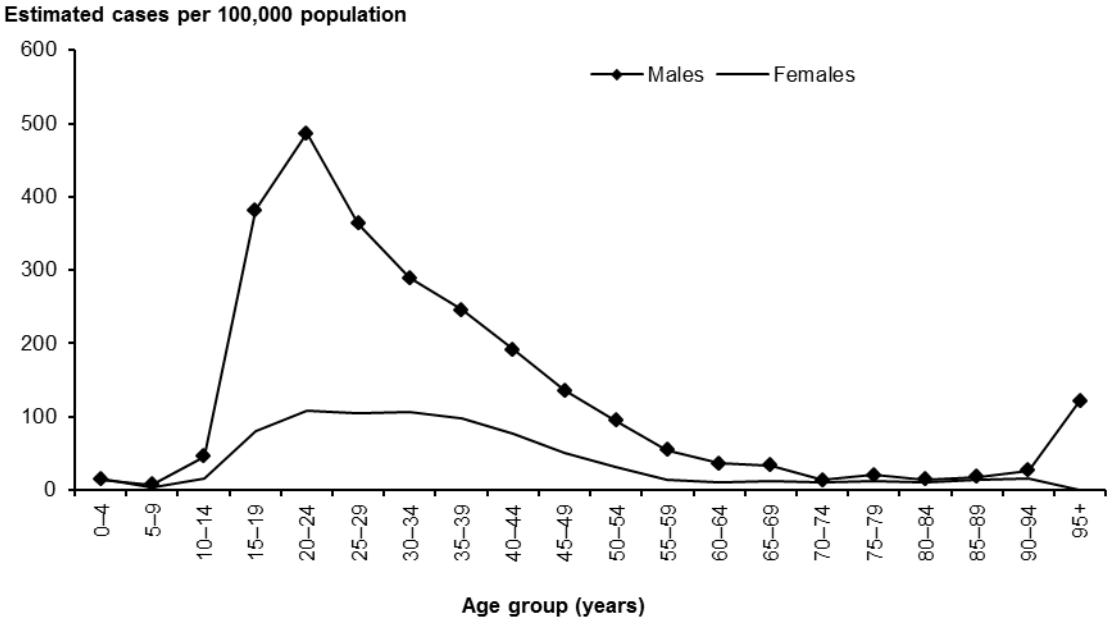


Figure 2.10.1: Age-specific estimated cases of assault by sex, Australia, 2007–08

More than one-third of male assault cases occurred in youth and young people aged 15–24 and 48% were in adults aged 25–44 (Table 2.10.2). One-quarter of female assault cases were in youth and young people aged 15–24 and more than half involved adults aged 25–44. Only 3% involved children aged 0–14.

Table 2.10.2: Assault cases by age group, Australia, 2007–08

	Males		Females		Persons[(a)]	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–14	482	2.7	247	4.5	729	3.1
15–24	6,621	37.1	1,376	25.1	7,997	34.3
25–44	8,221	46.1	2,925	53.4	11,147	47.8
45–64	2,230	12.5	747	13.6	2,977	12.8
65+	287	1.6	178	3.3	465	2.0
Total	**17,841**	**100.0**	**5,473**	**100.0**	**23,315**	**100.0**

(a) Includes cases for which sex was not reported.

Principal diagnosis and body part injured

Nearly two-thirds of all hospitalised cases due to assault involved injuries to the head (Table 2.10.3). This was the most common principal diagnosis associated with assault cases for every age group. Injuries to the wrist and hand were the second most common diagnosis associated with assault cases.

Table 2.10.3: Principal diagnosis by body region for assault cases, Australia, 2007–08

	Males		Females		Persons[(a)]	
Principal diagnosis by body region	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Head	12,312	69.0	2,991	54.7	15,304	65.6
Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis)	1,925	10.8	882	16.1	2,807	12.0
Shoulder and upper limb	2,610	14.6	868	15.9	3,478	14.9
Hip and lower limb	747	4.2	351	6.4	1,098	4.7
Other injuries not specified by body region	247	1.4	381	7.0	628	2.7
All body regions	**17,841**	**100.0**	**5,473**	**100.0**	**23,315**	**100.0**

(a) Includes cases for which sex was not reported.

Mechanism

The most common mechanism by which injury occurred was *Assault by bodily force*, 58% of cases (*n* = 13,533). The second most common mechanism of injury was *Assault by blunt object,* (14%, *n* = 3,164). A higher proportion of cases involving females were attributed to assault by blunt object (16% of female injuries vs. 13% of male injuries). *Assault by sharp object* was documented in 13% (*n* = 3,018) of hospitalised assault cases with a higher proportion of males injured in this way (14%, *n* = 2,412) compared with females (11%, *n* = 606). *Assault by unspecified means* accounted for 11% of cases (*n* = 2,451) (Table 2.10.4).

Forty-nine per cent of assault cases in children aged 0–14 (*n* = 359) were due to *Assault by bodily force* (males *n* = 279; females *n* = 80), *Other maltreatment syndromes* (males *n* = 54; females *n* = 69) and *Assault by blunt object* (males *n* = 43; females *n* = 15).

Sixty-two per cent of assault cases in youth and young people aged 15–24 (*n* = 7,997) were due to *Assault by bodily force* (males *n* = 4,174; females *n* = 779), *Assault by sharp object* (males *n* = 928; females *n* = 144), and *Assault by blunt object* (males *n* = 702; females *n* = 189).

Fifty-six per cent of assault cases in adults aged 25–44 (*n* = 11,147) were due to *Assault by bodily force* (males *n* = 4,719; females *n* = 1,506), *Assault by sharp object* (males *n* = 1,180; females *n* = 371), and *Assault by blunt object* (males *n* = 1,130; females *n* = 559).

Fifty-eight per cent of assault cases in adults aged 45–64 (*n* = 2,977) were due to *Assault by bodily force* (males *n* = 1,279; females *n* = 435), *Assault by blunt object* (males *n* = 344; females *n* = 146) and *Assault by unspecified means* (males *n* = 279; females *n* = 72).

Sixty-one per cent of assault cases in older people aged 65+ (*n* = 465) were due to *Assault by bodily force* (males *n* = 165; females *n* = 129), *Assault by blunt object* (males *n* = 50; females *n* = 15) and *Assault by unspecified means* (males *n* = 36; females *n* = 14).

Table 2.10.4: External cause of assault cases, Australia, 2007–08

ICD-10-AM Code	External cause	Males		Females		Persons[(a)]	
		Count	Per cent	Count	Per cent	Count	Per cent
X85	Assault by drugs, medicaments and biological substances	19	0.1	36	0.7	55	0.2
X86–X90	Assault by corrosive substances, pesticides, gases and vapours, other specified or unspecified chemicals and noxious substances	14	0.1	9	0.2	23	0.1
X91	Assault by hanging, strangulation and suffocation	6	0.0	24	0.4	30	0.1
X92	Assault by drowning and submersion	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
X93	Assault by handgun discharge	n.p.	n.p.	n.p.	n.p.	37	0.2
X95	Assault by other and unspecified firearm discharge	n.p.	n.p.	n.p.	n.p.	60	0.3
X96	Assault by explosive material	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
X97	Assault by smoke, fire and flames	13	0.1	18	0.3	31	0.1
X98	Assault by steam, hot vapours and hot objects	17	0.1	14	0.3	31	0.1
X99	Assault by sharp object	2,412	13.5	606	11.1	3,018	12.9
Y00	Assault by blunt object	2,269	12.7	894	16.3	3,164	13.6
Y01	Assault by pushing from a high place	13	0.1	13	0.2	26	0.1
Y02	Assault by pushing or placing victim before moving object	n.p.	n.p.	n.p.	n.p.	8	0.0
Y03	Assault by crashing of motor vehicle	15	0.1	9	0.2	24	0.1
Y04	Assault by bodily force	10,604	59.4	2,929	53.5	13,533	58.0
Y05	Sexual assault by bodily force	20	0.1	112	2.0	132	0.6
Y06	Neglect and abandonment	34	0.2	41	0.7	75	0.3
Y07	Other maltreatment syndromes	62	0.3	158	2.9	220	0.9
Y08	Assault by other specified means	251	1.4	80	1.5	331	1.4
Y09	Assault by unspecified means	1,934	10.8	517	9.4	2,451	10.5
Y35	Legal intervention	n.p.	n.p.	n.p.	n.p.	54	0.2
Y36	Operations of war	n.p.	n.p.	n.p.	n.p.	9	0.0
Total		**17,841**	**100.0**	**5,473**	**100.0**	**23,315**	**100.0**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

(a) Includes separations for which no sex was reported.

Perpetrator

Codes describing the relationship of the victim of assault to the perpetrator are applicable within the range of external cause categories X85–Y09. According to this criterion, 23,252 cases were eligible to receive a perpetrator code. A perpetrator was specified for only 42% (*n* = 9,727) of eligible cases and varied by age and gender (for example, the perpetrator was an *unspecified person* in 66% of male cases and 33% of female cases). The large number of separations lacking detail on the perpetrator code limits meaningful interpretation of these counts. The following observations are restricted to those records in which the perpetrator was specified (Table 2.10.5).

For males, the perpetrator was most commonly unknown to the victim (48%, *n* = 2,936). For females, a spouse or partner was the most commonly reported perpetrator (58%, *n* = 2,123).

Table 2.10.5: Relationship of the perpetrator to the victim of assault, Australia, 2007–08

	Males		Females		Persons	
Perpetrator	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Spouse or domestic partner	453	7.5	2,123	58.0	2,576	26.5
Parent	151	2.5	159	4.3	310	3.2
Other family member	747	12.3	509	13.9	1,256	12.9
Carer	13	0.2	13	0.4	26	0.3
Acquaintance or friend	966	15.9	331	9.0	1,297	13.3
Official authorities	132	2.2	10	0.3	142	1.5
Person unknown to the victim	1,373	22.6	161	4.4	1,534	15.8
Multiple persons unknown to the victim	1,563	25.8	122	3.3	1,685	17.3
Other specified person	670	11.0	231	6.3	901	9.3
Total of cases where perpetrator is specified	**6,068**	**100.0**	**3,659**	**100.0**	**9,727**	**100.0**

Length of stay

Mean length of stay for assault was higher in young children aged 0–4 than for other age groups (below 75). The mean length of stay was 2.8 days for children aged 0–14, 1.8 days for young people aged 15–24, 2.2 days for adults aged 25–44, 2.8 days for adults aged 45–64 and 6.0 days for older people aged 65+ (Figure 2.10.2).

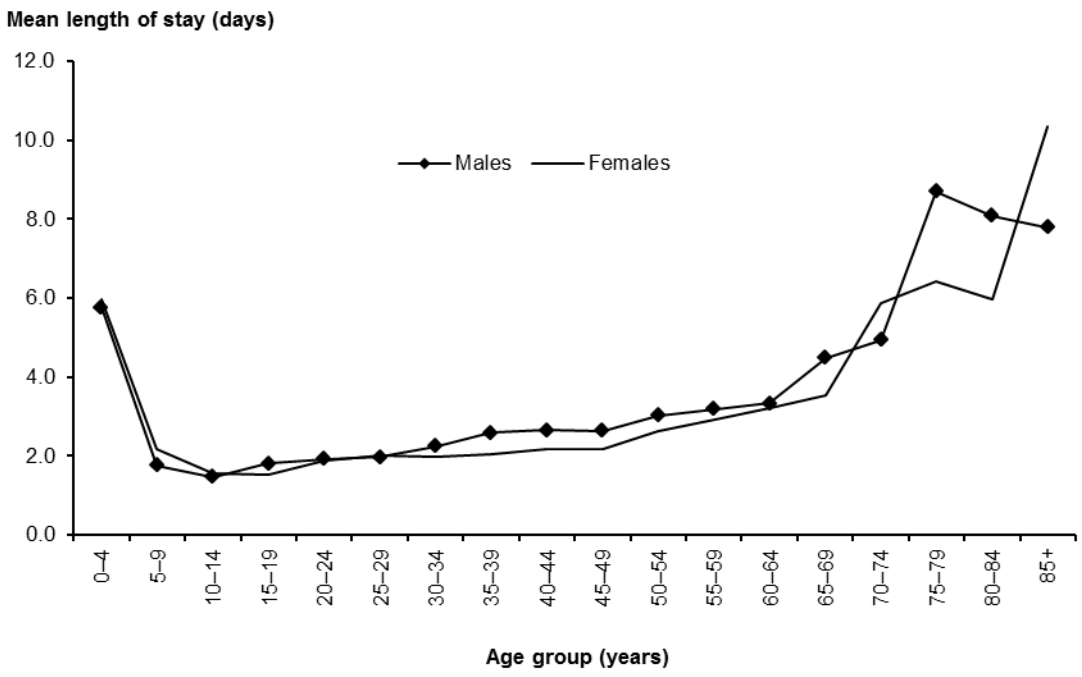


Figure 2.10.2: Length of stay per episode for assault by age and sex, Australia, 2007–08

Place of occurrence

The hospitalisations from assault injury occurred in diverse locations. Many were unspecified (58%; *n* = 13,577) or not reported (0.04%; *n* = 9).

The following observations are restricted to those cases in which the place of occurrence was specified. Overall, the most common place for an assault injury to occur was in the home (36% of cases) followed by a trade or service area (29% of cases) (Table 2.10.6). However, there were large differences between the sexes with assaults in the home the most common place for females in each age category (69%, *n* = 1,581). Trade and service areas and a street or highway were the second (12%) and third (8%) most common places of injury for women.

For males aged 0–14 school was the most common place of assaults (41% of assaults in that age category). Trade and service areas (which include hotels and many other entertainment venues) were the most common place of assaults in males aged 15–24 and 25–44.

Table 2.10.6: Place of occurrence for assault cases by age and sex, Australia, 2007–08

Place	0–14	Per cent	15–24	Per cent	25–44	Per cent	45–64	Per cent	65+	Per cent	Total	Per cent
Males												
Home	103	35.6	399	15.6	868	25.7	422	40.7	105	58.0	1,897	25.5
Residential institution	0	0.0	47	1.8	107	3.2	28	2.7	15	8.3	197	2.6
School	117	40.5	65	2.5	n.p.	n.p.	n.p.	n.p.	0	0.0	187	2.5
Health service area	n.p.	n.p.	7	0.3	11	0.3	11	1.1	n.p.	n.p.	36	0.5
Other specified institution	n.p.	n.p.	36	1.4	39	1.2	12	1.2	n.p.	n.p.	92	1.2
Sports and athletics area	14	4.8	58	2.3	24	0.7	15	1.4	0	0.0	111	1.5
Street and highway	14	4.8	604	23.6	769	22.7	192	18.5	25	13.8	1,604	21.5
Trade and service area	18	6.2	1,027	40.2	1,231	36.4	262	25.3	23	12.7	2,561	34.4
Industrial and construction area	0	0.0	n.p.	n.p.	12	0.4	8	0.8	n.p.	n.p.	22	0.3
Farm	0	0.0	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	0	0.0	6	0.1
Other specified places	17	5.9	313	12.2	316	9.3	81	7.8	6	3.3	733	9.8
Total	**289**	**100.0**	**2,557**	**100.0**	**3,382**	**100.0**	**1,037**	**100.0**	**181**	**100.0**	**7,446**	**100.0**
Females												
Home	116	73.0	291	56.3	804	72.6	270	75.4	100	70.4	1,581	69.3
Residential institution	n.p.	n.p.	n.p.	n.p.	16	1.4	7	2.0	21	14.8	51	2.2
School	17	10.7	7	1.4	n.p.	n.p.	0	0.0	0	0.0	25	1.1
Health service area	n.p.	n.p.	9	1.7	13	1.2	8	2.2	n.p.	n.p.	31	1.4
Other specified institution	0	0.0	n.p.	n.p.	5	0.5	n.p.	n.p.	n.p.	n.p.	12	0.5
Sports and athletics area	0	0.0	n.p.	n.p.	5	0.5	n.p.	n.p.	0	0.0	9	0.4
Street and highway	n.p.	n.p.	56	10.8	83	7.5	22	6.1	n.p.	n.p.	172	7.5
Trade and service area	10	6.3	105	20.3	109	9.8	33	9.2	5	3.5	262	11.5
Industrial and construction area	0	0.0	n.p.	n.p.	n.p.	n.p.	0	0.0	0	0.0	n.p.	n.p.
Farm	0	0.0	0	0.0	n.p.	n.p.	n.p.	n.p.	0	0.0	n.p.	n.p.
Other specified places	10	6.3	36	7.0	69	6.2	14	3.9	7	4.9	136	6.0
Total	**159**	**100.0**	**517**	**100.0**	**1,107**	**100.0**	**358**	**100.0**	**142**	**100.0**	**2,283**	**100.0**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

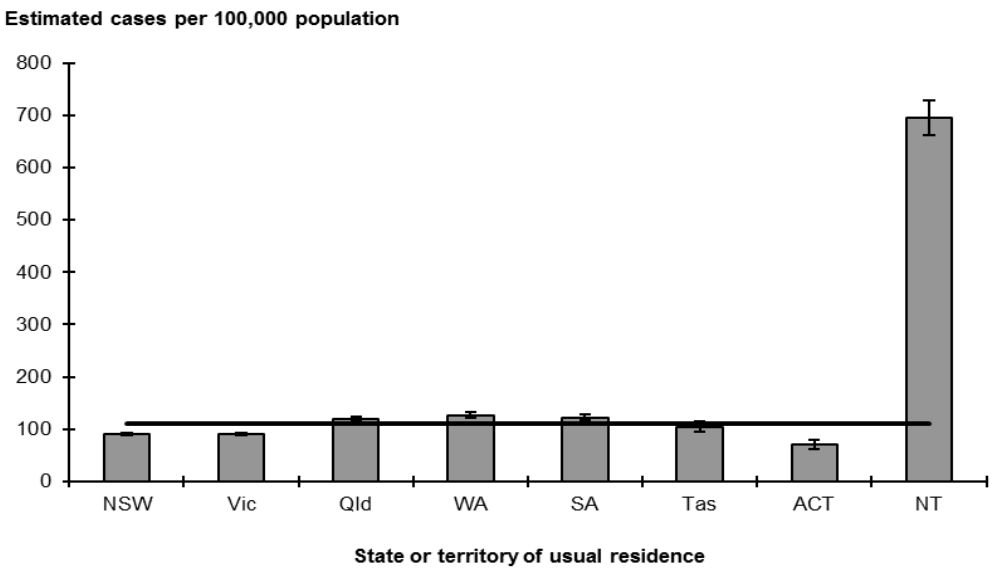
State and territory differences

The rates of hospitalisation due to assault in New South Wales, Victoria and the Australian Capital Territory were below the national rate (Table 2.10.7 and Figure 2.10.3). Queensland, Western Australia, South Australia and the Northern Territory had rates of hospitalisation due to assault that were above the national rate. The rate for residents of the Northern Territory was almost seven times higher than the national rate. Of the 1,636 cases of residents in the Northern Territory, 85% (n = 1,382) were recorded as being Aboriginal and Torres Strait Islander persons.

Table 2.10.7: Age-standardised estimated cases of assault, states and territories, 2007–08

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI[(a)]
NSW	90.2	87.9–92.4
Vic	91.5	88.9–94.1
Qld	119.9	116.6–123.2
WA	127.3	122.5–132.1
SA	122.3	116.7–127.9
Tas	105.2	95.7–114.6
ACT	71.5	63.0–80.1
NT	695.0	661.4–728.7
Australia	**111.1**	**109.7–112.5**

(a) Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.



Notes

1. The thick horizontal line shows the rate for Australia.
2. Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

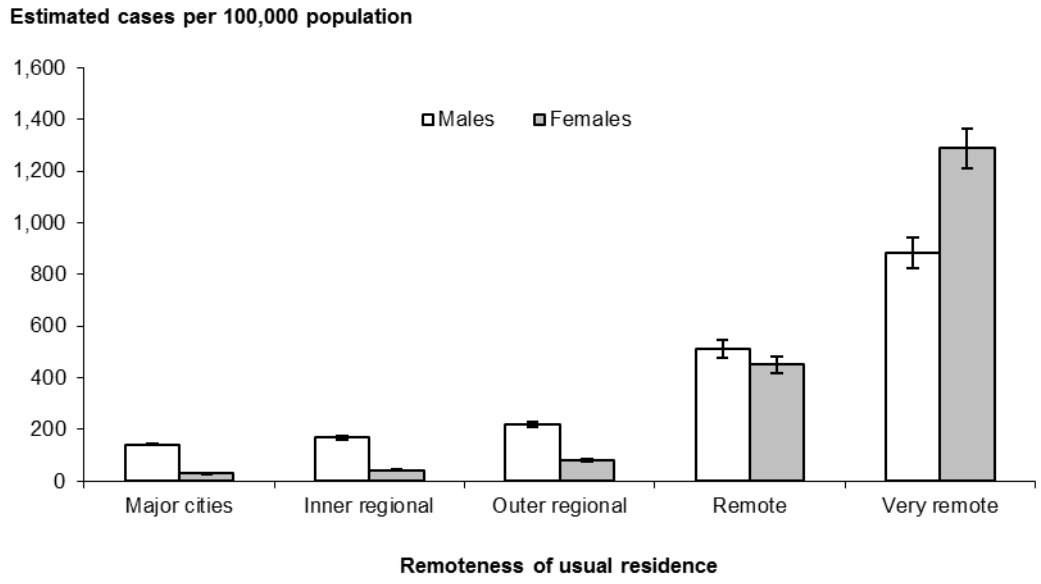
Figure 2.10.3: Age-standardised estimated cases of assault, states and territories, 2007–08

Remoteness of usual residence

Rates of hospitalised assault injuries increased significantly with remoteness (Figure 2.10.4). As with many of the previous injury categories, the lowest rate of hospitalised assaults for both males and females was for residents of *Major cities* (142.4 per 100,000 population for males, 29.3 per 100,000 population for females). The highest rate was among residents of *Very remote* areas.

Rates for males were significantly higher than for females in *Major cities* (nearly five times greater), *Inner regional* (four times greater) and *Outer regional* areas (nearly three times the rate for females). In *Remote* areas the rate for males and females was similar. This changed in *Very remote* areas with the rate for females (1,287.9 per 100,000 population) significantly exceeding that for males (882.5 per 100,000 population).

Berry et al (2009) and Helps et al (2006) have shown, for earlier years, that the high rates of hospitalised injury due to assault in *Remote* and *Very remote* zones, and the high rates for females in these zones, reflect very high rates among Aboriginal and Torres Strait Islander residents.



Note: Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.10.4: Age-standardised cases (± 95% CI) of assault: males and females by remoteness of usual residence (ASGC regions), 2007–08

Time trends

Age-standardised rates for assault were 98 per 100,000 of the population in 1999–00 and have increased in the intervening years to 111 per 100,000 in 2007–08. For each year, age-standardised rates for males were approximately three times higher than for females (Figure 2.10.5).

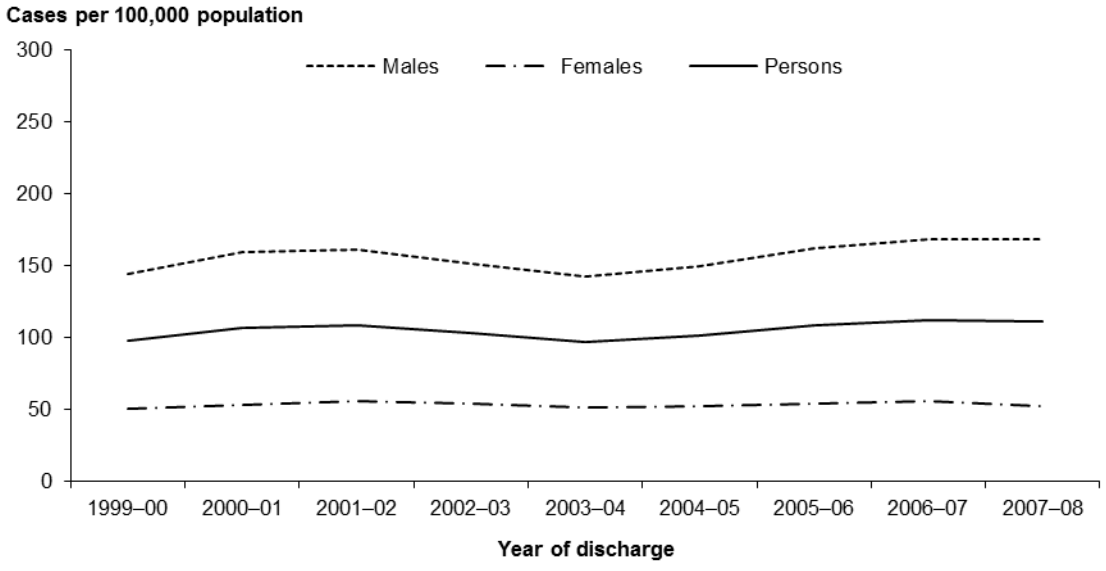


Figure 2.10.5: Age-standardised cases of assault, Australia, 1999–00 to 2007–08

Ascertainment of assault

As for intentional self-harm, there are reasons to think that the identification of admitted injury cases as being due to inter-personal violence is not entirely complete. Feelings of shame or embarrassment may underlie reticence to admit to both types of intentional injury. In addition, most injury due to inter-personal violence has potential legal implications. Pressures or incentives not to reveal assault are particularly likely in circumstances such as injury of a child or other dependent person by a care-giver, and injury of one spouse by the other. Cases recognised as possibly being due to assault, but where doubt remains, can be coded as undetermined intent (see Chapter 2.11).

2.11 Undetermined intent

ICD-10-AM case inclusion

Principal diagnosis: S00–T75, T79 and

First reported external cause: Y10–Y34

Table 2.11.1: Key indicators for undetermined intent cases, Australia, 2007–08

Indicator	Males	Females	Persons
Separations from hospital due to undetermined intent	2,572	2,673	5,245
Percentage of all community injury separations	1.0	1.5	1.2
Estimated cases[(a)]	2,491	2,611	5,102
Crude rate/100,000 population	23.6	24.5	24.0
Age-standardised rate/100,000 population[(b)]	23.7	24.8	24.2
Total patient days[(c)]	5,596	5,414	11,010
Mean length of stay (days)	2.2	2.1	2.2

(a) Excludes records with a mode of admission of 'transfer from another acute hospital'.

(b) Standardised to the Australian estimated resident population 30th June 2001.

(c) Includes records with a mode of admission of 'transfer from another acute hospital' as contributing to hospital burden due to injury.

Injuries where the intent is undetermined accounted for 1% of all injury hospitalisations in the financial year 2007–08 (Table 2.11.1). The coding of the external cause of injury is based on a review of the patients' discharge summary and hospital record by medical coders. The external cause codes Y10–Y34, undetermined intent, "are designed for use when the intent is unspecified, unstated or cannot be determined. That is, the injuries are not specified as accidental (unintentional), self-inflicted with intent to self-harm, or assault" (NCCH 2006). This is different to the use of external cause codes in mortality data where undetermined intent is used only when it has been explicitly stated on a death certificate or following formal investigation. If a death has not been specified as being due to intentional self-harm or assault, nor specified as being of undetermined intent, then the usual approach has been to code it as unintentional, even if there are reasons to think that it might have been intentional. In hospital data, such doubtful cases can be coded to undetermined intent.

While cases that are suggestive of being due to assault can be assigned to this category certain characteristics of the data suggest that most are possible self-harm. In particular, like self-harm cases, (and unlike assault cases) the great majority of undetermined intent cases involve poisoning by and exposure to pharmaceutical drugs.

Age and sex distribution

Slightly more females than males were hospitalised for injuries of undetermined intent. Rates were lowest for children (0–14), highest in youth and young people aged 15–29, and declined with age up to about age 85 (Figure 2.11.1). For females the rate of hospitalised injuries of undetermined intent rose up to age 95+, a similar rise was not seen for older males. Forty-six per cent of injuries of undetermined intent occurred in adults aged 25–44 (Table 2.11.2).

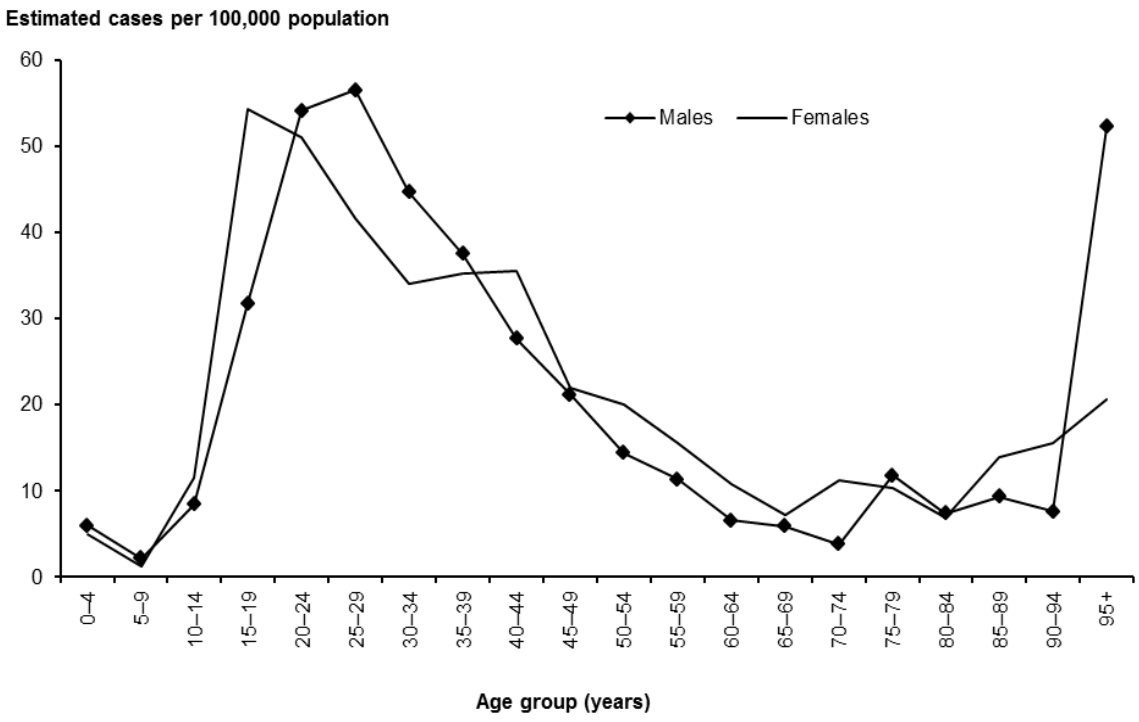


Figure 2.11.1: Age-specific estimated cases of injuries of undetermined intent by sex, Australia, 2007–08

Table 2.11.2: Injuries of undetermined intent by age group, Australia, 2007–08

	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–14	118	4.7	120	4.6	238	4.7
15–24	657	26.4	762	29.2	1,419	27.8
25–44	1,255	50.4	1,108	42.4	2,363	46.3
45–64	369	14.8	470	18.0	839	16.4
65+	92	3.7	151	5.8	243	4.8
Total	**2,491**	**100.0**	**2,611**	**100.0**	**5,102**	**100.0**

Length of stay

The overall mean length of stay for injuries of undetermined intent was 2.2 days and was slightly longer for males (2.2 days) than for females (2.1 days). The general trend was for an increasing length of stay with age. Small case numbers in some age groups appear as large fluctuations in the average length of stay, particularly in the older age groups (Figure 2.11.2).

The mean length of stay was 2.0 days for children aged 0–14, 1.7 days for young people aged 15–24, 2.0 days for adults aged 25–44, 2.4 days for adults aged 45–64 and 5.8 days for older people aged 65+.

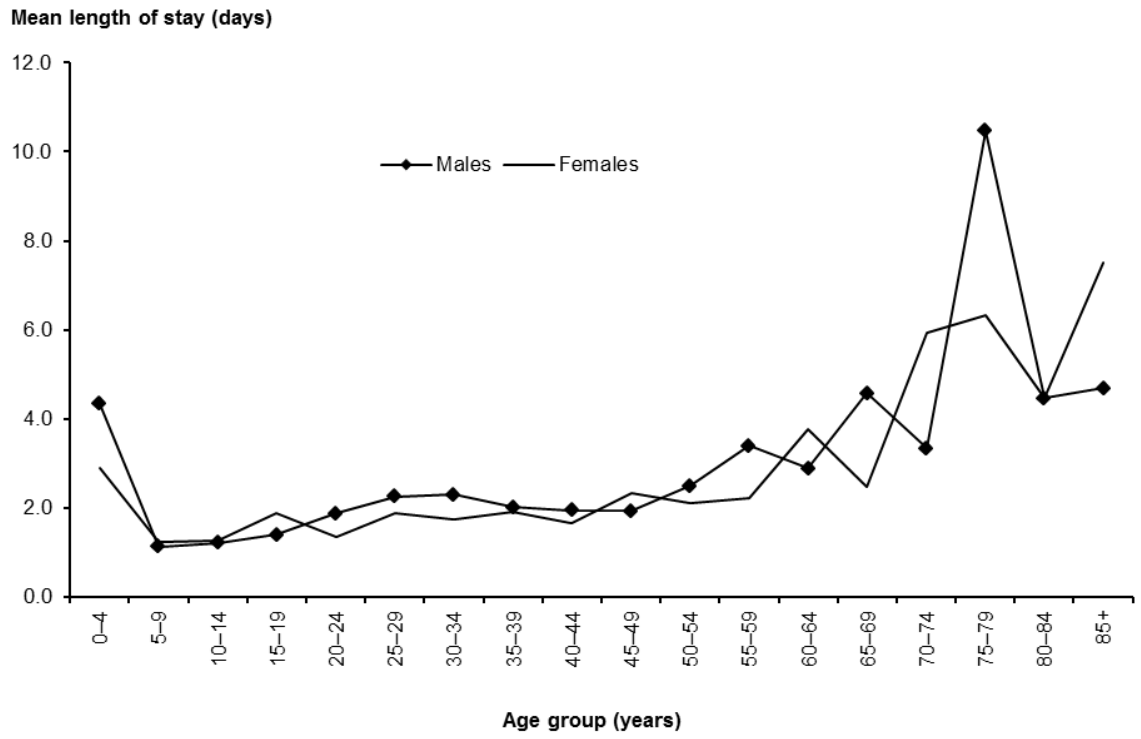


Figure 2.11.2: Length of stay per case for injuries of undetermined intent by age and sex, Australia, 2007–08

Principal diagnosis and body part injured

The majority of admitted injury cases due to undetermined intent did not specify a particular body region that was injured (Table 2.11.3). This reflects the fact that the mechanism in most cases was poisoning.

Table 2.11.3: Principal diagnosis by body region for injuries of undetermined intent, Australia, 2007–08

Principal diagnosis by body region	Males		Females		Persons	
	Count	Per cent	Count	Per cent	Count	Per cent
Head	65	2.6	25	1.0	90	1.8
Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis)	49	2.0	23	0.9	72	1.4
Shoulder and upper limb	183	7.3	95	3.6	278	5.4
Hip and lower limb	62	2.5	32	1.2	94	1.8
Other injuries not specified by body region	2,132	85.6	2,436	93.3	4,568	89.5
All body regions	**2,491**	**100.0**	**2,611**	**100.0**	**5,102**	**100.0**

Mechanism

Overall, 87% of injuries of undetermined intent resulted from poisoning. A higher proportion of cases involving females were coded as poisoning (92%) than cases involving males (82%). The second most common mechanism of injury for both males and females was *contact with sharp object* (8% and 4%, respectively) (Table 2.11.4).

Table 2.11.4: External cause of injuries of undetermined intent, Australia, 2007–08

ICD-10-AM Code	External cause	Males		Females		Persons	
		Count	Per cent	Count	Per cent	Count	Per cent
	Poisoning by and exposure to:	2,049	82.3	2,389	91.5	4,438	87.0
Y10	Nonopioid analgesics, antipyretics and antirheumatics	131	5.3	403	15.4	534	10.5
Y11	Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	837	33.6	1,099	42.1	1,936	37.9
Y12	Narcotics and psychodysleptics [hallucinogens]	438	17.6	294	11.3	732	14.3
Y13	Other drugs acting on the autonomic nervous system	21	0.8	24	0.9	45	0.9
Y14	Other and unspecified drugs, medicaments and biological substances	340	13.6	353	13.5	693	13.6
Y15	Alcohol	155	6.2	147	5.6	302	5.9
Y16	Organic solvents and their halogenated hydrocarbons and their vapours	19	0.8	5	0.2	24	0.5
Y17	Other gases and vapours (for example, Carbon monoxide)	21	0.8	7	0.3	28	0.5
Y18	Pesticides	34	1.4	11	0.4	45	0.9
Y19	Other and unspecified chemicals and noxious substances	53	2.1	46	1.8	99	1.9
Y20	Hanging, strangulation and suffocation	15	0.6	10	0.4	25	0.5
Y21	Drowning and submersion	n.p.	n.p.	n.p.	n.p.	6	0.1

(continued)

Table 2.11.4 (continued): External cause of injuries of undetermined intent, Australia, 2007–08

ICD-10-AM Code	External cause	Males		Females		Persons	
		Count	Per cent	Count	Per cent	Count	Per cent
Y22	Handgun discharge	n.p.	n.p.	n.p.	n.p.	4	0.1
Y24	Other and unspecified firearm discharge	24	1.0	4	0.2	28	0.5
Y26	Exposure to smoke, fire and flames	47	1.9	29	1.1	76	1.5
Y27	Contact with steam, hot vapours and hot objects	9	0.4	7	0.3	16	0.3
Y28	Contact with sharp object	192	7.7	114	4.4	306	6.0
Y29	Contact with blunt object	53	2.1	16	0.6	69	1.4
Y30	Falling, jumping or pushed from a high place	17	0.7	8	0.3	25	0.5
Y31	Falling, lying or running before or into moving object	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Y32	Crashing of motor vehicle	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Y33	Other specified events	22	0.9	12	0.5	34	0.7
Y34	Unspecified event	51	2.0	21	0.8	72	1.4
Total		**2,491**	**100.0**	**2,611**	**100.0**	**5,102**	**100.0**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

Poisoning by antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs comprised 38% (n = 1,936) of injuries of undetermined intent. Fourteen per cent (n = 732) of injuries of undetermined intent were from narcotics and hallucinogens. A further 11% (n = 534) of injuries of undetermined intent were poisoning by nonopioid analgesics, antipyretics and antirheumatics.

Place of occurrence

Location was not specified or reported for 50% of cases (unspecified; *n* = 2,529, not reported/not applicable; *n* = 5). The following observations are restricted to those cases in which the place of occurrence was specified. The majority of cases resulted from injuries that occurred in the home (71%; *n* = 1,821) (Table 2.11.5).

Table 2.11.5: Place of occurrence for injury cases of undetermined intent, Australia, 2007–08

Place	Persons	Per cent
Home	1,821	70.9
Residential institution	85	3.3
School	38	1.5
Health service area	235	9.2
Other specified institution and public administrative area	6	0.2
Sports and athletics area	10	0.4
Street and highway	64	2.5
Trade and service area	178	6.9
Industrial and construction area	13	0.5
Farm	6	0.2
Other specified places	112	4.4
Total specified	**2,568**	**100.0**

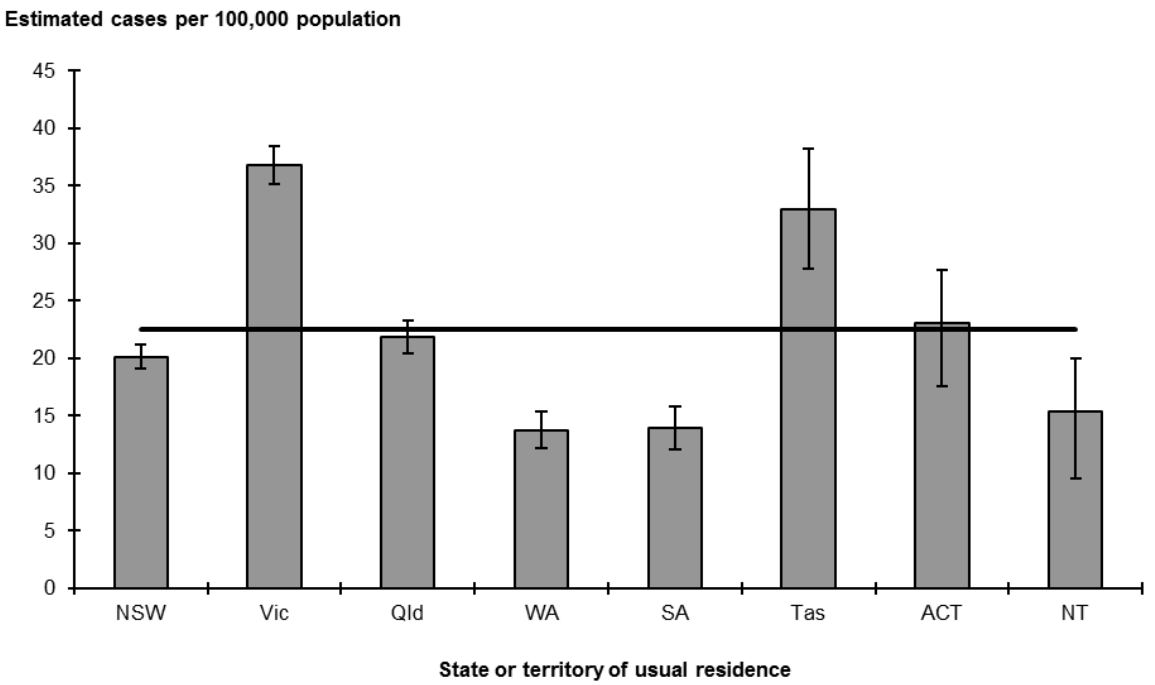
State and territory differences

Rates of injures of undetermined intent that were below the national rate of 24.2 per 100,000 population were found in New South Wales, Western Australia, South Australia and the Northern Territory (Table 2.11.6 and Figure 2.11.3). The rate for residents of Queensland and the Australian Capital Territory was similar to the all-Australia rate. Victoria and Tasmania had rates that were above the national rate.

Table 2.11.6: Age-standardised estimated cases of injuries of undetermined intent, states and territories, 2007–08

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI[(a)]
NSW	20.1	19.1–21.2
Vic	36.8	35.1–38.4
Qld	21.8	20.4–23.3
WA	13.8	12.2–15.3
SA	13.9	12.0–15.8
Tas	33.0	27.8–38.2
ACT	23.0	18.3–28.5
NT	15.4	10.8–21.2
Australia	**24.2**	**23.6–24.9**

(a) Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.



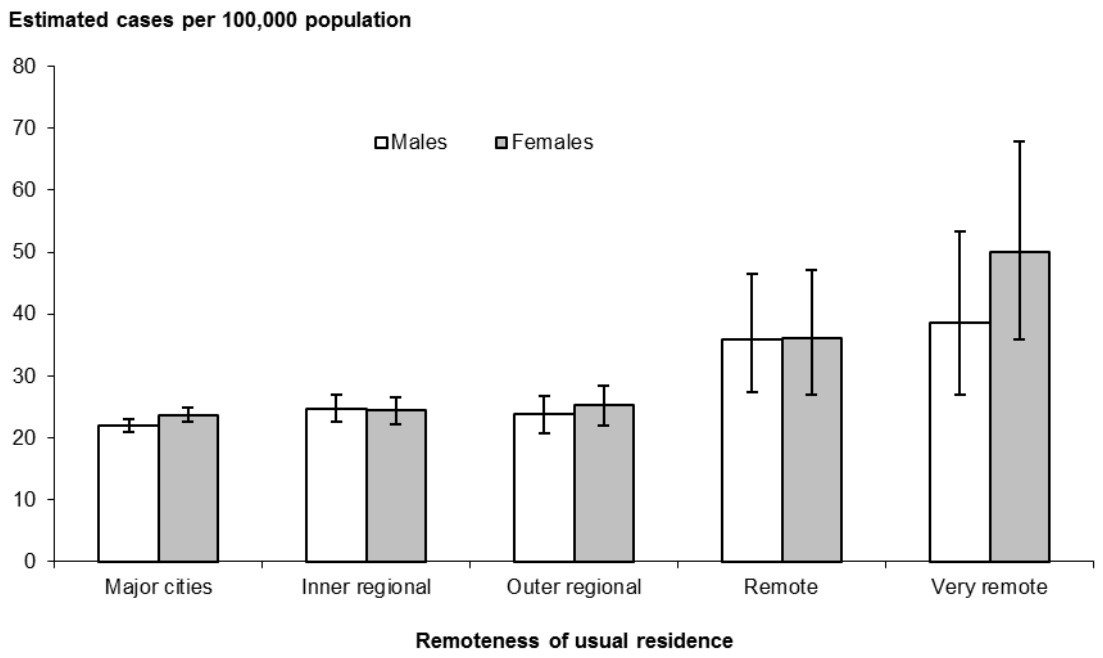
Notes

1. The thick horizontal line shows the rate for Australia.
2. Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.11.3: Age-standardised estimated cases of injuries of undetermined intent, states and territories, 2007–08

Remoteness of usual residence

The regional rates of hospitalised cases of injuries of undetermined intent were similar for both males and females (Figure 2.11.4). The lowest rates were found in *Major cities* for both males (21.9 per 100,000 population) and for females (23.7 per 100,000 population). The highest rates were in *Very remote* regions (males 50.0 per 100,000 population, females 44.1 per 100,000 population).



Note: Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.11.4: Age-standardised cases (± 95% CI) of undetermined intent: males and females by remoteness of usual residence (ASGC regions), 2007–08

Time trends

Age-standardised annual rates for injuries of undetermined intent showed a slightly downward trend between 1999–00 and 2002–03. Rates rose from 12.2 per 100,000 of the population in 2002–03 to 24.2 per 100,000 in 2007–08 (Figure 2.11.5). Increases in the number of cases in all jurisdictions, with the exception of the Northern Territory, contributed to the increase in rates.

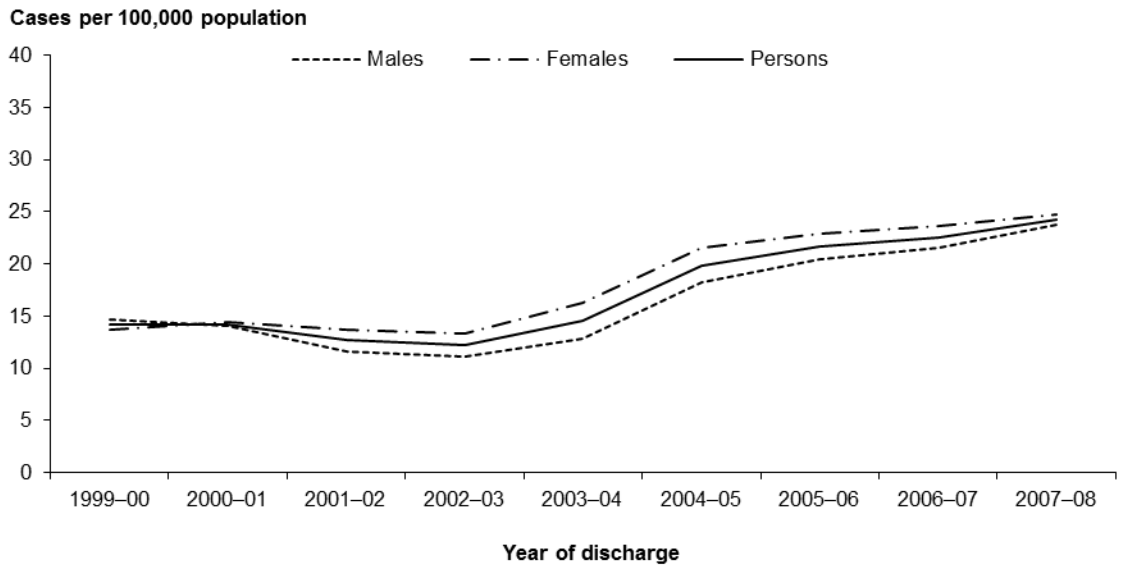


Figure 2.11.5: Age-standardised cases of injuries of undetermined intent, Australia, 1999–00 to 2007–08

3 Work-related community injury

ICD-10-AM case inclusion

Principal diagnosis: S00–T75, T79 and

First reported external cause: V01–Y34 and

Activity code: U73.0

Table 3.1.1: Key indicators for hospitalised work-related injury: males, females and persons, Australia 2007–08

Key indicators	Males	Females	Persons
Separations from hospital due to work-related injury	23,591	3,866	27,457
Percentage of all community injury separations	10.2	2.4	7.0
Estimated cases[(a)]	22,001	3,659	25,660
Crude rate/100,000 population	208.3	34.3	120.8
Age-standardised rate/100,000 population[(b)]	206.4	34.0	120.3
Total patient days[(c)]	60,215	11,346	71,561
Mean length of stay (days)	2.7	3.1	2.8

(a) Excludes records with a mode of admission of 'transfer from another acute hospital'.

(b) Standardised to the Australian estimated resident population 30th June 2001.

(c) Includes records with a mode of admission of 'transfer from another acute hospital' as contributing to hospital burden due to injury.

This chapter includes those cases with a first external cause code in the range V01–Y34 and an activity code U73.0 *while working for income*. Three-quarters of injury cases in this category had a non-specific activity code (that is, coded as *other specified, unspecified,* and *not reported/not applicable*) which constrains meaningful interpretation of work-relatedness.

An estimated 27,457 community injury cases in 2007–08 were sustained while working for income (Table 3.1.1). The age-standardised rate of hospitalised work-related injuries was 120.3 per 100,000 population.

Most work-related community injuries involved males (86%, *n* = 22,001). Accordingly, the age-standardised rate of hospitalised injuries due to work-related injury was much higher for males (206.4 per 100,000 population) than for females (34.0 per 100,000).

The majority of cases were classified as 'other unintentional injuries' while falls were the second most common type of injury sustained while working for income (Table 3.1.2).

The top five causes of work-related injury in the other unintentional injuries category were *exposure to unspecified factor* X59 (males *n* = 2,565, females *n* = 496), W31, *contact with other and unspecified machinery* (males *n* = 2,762, females *n* = 147), W20, *struck by thrown, projected or falling object* (males *n* = 1,532, females *n* = 103), W23, *caught, crushed, jammed or pinched in or between objects* (males *n* = 1,468, females *n* = 113) , and X50, *overexertion and strenuous or repetitive movement* (males *n* = 972, females *n* = 281).

For falls injuries the most common causes of work-related injury were *fall on the same level from slipping, tripping and stumbling* W01, (males *n* = 576, females *n* = 535), W11, *fall on and from ladder* (males *n* = 599, females *n* = 41), W 17, *Other fall from one level to another* (males *n* = 567, females *n* = 52), W19, *unspecified fall* (males *n* = 354, females *n* = 197), and W13, *fall from, out or through building or structure*, (males *n* = 431, females *n* = 8).

For transportation injuries the most common cause of work-related injuries were V80, *animal-rider or occupant of animal-driven vehicle injured in transport accident* (males *n* = 188, females *n* = 103), V68, *occupant of heavy transport vehicle injured in non-collision transport accident* (males *n* = 277, females *n* = 74 and V43, *car occupant injured in collision with car, pick-up truck or van* (males *n* = 111, females *n* = 55).

More detailed information on work-related injury hospitalisation can be found in the edition of this series reporting on cases in 2004–05 (Bradley & Harrison 2008) and in the report focussed on work-related injury hospitalisations (Harrison et al. 2007).

Table 3.1.2: Major external cause groups for work-related injury cases: males, females and persons, Australia 2007–08

	Males		Females		Persons	
External cause	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Transportation	2,103	9.6	407	11.1	2,510	9.8
Drowning	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Poisoning, pharmaceuticals	18	0.1	11	0.3	29	0.1
Poisoning, other substances	302	1.4	60	1.6	362	1.4
Falls	3,137	14.3	1,167	31.9	4,304	16.8
Smoke, fire, heat and hot substances	383	1.7	93	2.5	476	1.9
Other unintentional injuries	15,657	71.2	1,847	50.5	17,504	68.2
Intentional, self-inflicted (self-harm)	11	0.0	11	0.3	22	0.1
Intentional, inflicted by another (assault)	357	1.6	50	1.4	407	1.6
Undetermined intent	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Total	**22,001**	**100.0**	**3,659**	**100.0**	**25,660**	**100.0**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

4 Sport-related community injury

ICD-10-AM case inclusion

Principal diagnosis S00–T75 or T79, and

Activity code U50–U71, and

Table 4.1.1: Key indicators for hospitalised sport-related injury: males, females and persons, Australia 2007–08

Key indicators	Males	Females	Persons
Separations from hospital due to sport-related injury	33,423	9,338	42,761
Percentage of all community injury separations	14.5	5.7	10.8
Estimated cases[(a)]	31,335	8,787	40,122
Crude rate/100,000 population	296.7	82.3	188.9
Age-standardised rate/100,000 population[(b)]	297.4	85.3	193.0
Total patient-days[(c)]	67,713	19,142	86,855
Mean length of stay	2.2	2.2	2.2

(a) Excludes records with a mode of admission of 'transfer from another acute hospital'.

(b) Standardised to the Australian estimated resident population 30th June 2001.

(c) Includes records with a mode of admission of 'transfer from another acute hospital' as contributing to hospital burden due to injury.

This chapter covers all hospitalised injury cases recorded as occurring while engaged in sports, that is with an activity code in the range U50–U71.

An estimated 42,761 hospitalised community injury cases in 2007–08 were due to injuries sustained while engaged in sport (Table 4.1.1). The age-standardised rate of these sport-related injury cases was 193.0 per 100,000 population. This is similar to the rate reported by Norton and Harrison for the year 2006–07 (2012).

Most sports-related injury hospitalisations involved males (78%; *n* = 31,335) (Table 4.1.1). Accordingly the age-standardised rate of sport-related injuries was much higher for males (297.4 per 100,000 population) than for females (85.3 per 100,000 population). The highest rates of hospitalised sport-related injury were for males aged 15–19 (12,140.7 per 100,000) and for females aged 10–14 (3,174.5 per 100,000 population).

The majority (99%) of sport-related injury cases hospitalised during 2007–08 could be classified into three broad external cause groups, 'other unintentional', falls and transportation (Table 4.1.2). Almost half of the sport-related community injury cases were attributed to other unintentional external causes (46%; *n* = 18,513). The top five other unintentional causes of sports-related injury were X59, *exposure to unspecified factor* (males *n* = 4,427; females *n* = 1,163), X50, *overexertion and strenuous or repetitive movement* (males *n* = 2,405; females *n* = 982), W50, *hit, struck, kicked, twisted, bitten or scratched by another person* (males *n* = 2,506; females *n* = 238), W21, *striking against or struck by sports equipment* (males *n* = 1,644; females *n* = 356), and W51, *striking against or bumped into by another person* (males *n* = 1,754; females *n* = 163).

Falls were the second most common cause of sport-related injuries accounting for 32% of all cases (*n* = 12,693). The most common causes of sport-related falls injury were W03, *other fall on same level due to collision with, or pushing by, another person* (males *n* = 2,860; females *n* = 215), W18, *other fall on same level* (males *n* = 2,090; females *n* = 881), W02, *fall involving ice-skates, skis, roller-skates or skateboards* (males *n* = 1,713; females *n* = 532), and W01, *fall on the same level from slipping, tripping and stumbling* (males *n* = 827; females *n* = 714).

Transportation injuries accounted for 21% of all sport-related injuries (*n* = 8,572). The most common causes of sport-related transport injuries were V28, *Motorcycle rider injured in non-collision transport accident* (males *n* = 1,764; females *n* = 100), V18, *Pedal cyclist injured in non-collision transport accident* (males *n* = 1,474; females *n* = 318), V80, *animal-rider or occupant of animal-drawn vehicle injured in transport accident* (males *n* = 369; females *n* = 913), and V19, *Pedal cyclist injured in other and unspecified transport accidents* (males *n* = 664; females *n* = 138).

Table 4.1.2: Case counts and proportions by sex for sports injury cases, Australia, 2007–08

	Males		Females		Persons	
Major group of injury	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Coverage in this report						
Transportation	6,718	21.4	1,854	21.1	8,572	21.4
Drowning	117	0.4	44	0.5	161	0.4
Poisoning, pharmaceuticals	n.p.	n.p.	0	0.0	n.p.	n.p.
Poisoning, other substances	8	0.0	0	0.0	8	0.0
Falls	9,318	29.7	3,375	38.4	12,693	31.6
Smoke, fire, heat and hot substances	23	0.1	6	0.1	29	0.1
Other unintentional	15,027	48.0	3,486	39.7	18,513	46.1
Intentional, self-inflicted	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Intentional, inflicted by another	71	0.2	7	0.1	78	0.2
Undetermined intent	n.p.	n.p.	n.p.	n.p.	13	0.0
Other	41	0.1	9	0.1	50	0.1
Total	**31,335**	**100.0**	**8,787**	**100.0**	**40,122**	**100.0**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

The total number of patient-days attributed to hospitalised sports injuries in 2007–08 was 86,855, giving a mean length of stay of 2.2 days per case. Under a fifth of sport-related injury separations were discharged from hospital on the same day as admitted (18%, *n* = 15,352) and including these, 35% of sport-related injury separations had a length of stay of only one day (*n* = 30,318).

A detailed analysis of hospitalised sports injury in 2002–03 has been reported by Flood and Harrison (2006).

5 Complications of surgical and medical care

ICD-10-AM case inclusion

Principal diagnosis: T80–T88

Table 5.1.1: Key indicators for cases due to complications of surgical and medical care, Australia, 2007–08

Indicator	Males	Females	Persons[(a)]
All hospital separations[(a)]	3,724,423	4,149,381	7,873,946
Separations from hospital due to complications of surgical and medical care	44,751	41,760	86,512
Percentage of all separations	1.2	1.0	1.1
Crude rate/100,000 population	393.0	365.1	379.0
Age-standardised rate/100,000 population[(b)]	393.3	344.8	365.3
Total patient days[(c)]	259,459	239,252	498,713
Mean length of stay (days)	6.3	6.1	6.2

(a) Includes separations and cases for which sex was not reported.

(b) Standardised to the Australian estimated resident population 30th June 2001.

(c) Includes records with a mode of admission of 'transfer from another acute hospital' as contributing to hospital burden due to injury.

Overview

Hospital separations with a principal diagnosis of T80–T88 *Complications of surgical and medical care, not elsewhere classified* can provide a rudimentary measure of the frequency of occurrence of adverse events related to medical care. The words "not elsewhere classified" in the title indicate that some complications of care can be coded to other categories in ICD-10-AM, including codes outside the injury chapter, which is the subject of this report. The method used in this chapter uses different specifications to those used in the Australian Hospital Statistics 2007–08, which results in lower estimates here than in that publication (AIHW 2009).

The method used here should include cases in which complications of surgical or medical care occurred:

- in the course of the episode of admitted patient care during which the care giving rise to the complication was provided or
- because of care delivered during a previous episode of admitted care, or in another context (for example, outpatient care), complications of which caused or contributed to the current episode of admitted patient care.

Inclusion of a case in the data available for analysis here depends on conditions having been recognised, recorded and coded as complications of care. Sometimes a complication of care is the chief reason for an episode of admitted care (in which case it should have been coded as the principal diagnosis), or it may be an additional condition that affects patient management (that is, an additional diagnosis). The focus of this chapter is cases where a complication was coded as the principal diagnosis, but it should be noted that a

slightly larger number of records included complications of care as additional diagnoses (see Table A1).

If a complication of care resulted in more than one episode of admitted care then it might have been counted more than once. The nature of the data available to us did not permit precise accounting for this. Cases admitted after transfer from another hospital are likely to result in multiple counting, though whether this occurred for a particular case depends on how it was coded at the referring hospital. In keeping with other sections of this report, inward transfers were omitted from the estimate of case numbers. No allowance could be made for multiple counting due to readmissions.

The condition onset flag is a means of differentiating those conditions which arise during, or arose before, an admitted patient episode of care. The item became part of the National Minimum Data Set (NMDS) for admitted patient care on 1 July 2008. It is anticipated that when condition onset flag data suitable for reporting become available the item will be used to extend the analysis in this section.

Caution is needed when interpreting the data in this section due to uncertainty about the completeness of coding, difficulties in identifying some complications as well as limitations of the classification and data systems.

In 2007–08, *Complications of surgical and medical care, not elsewhere classified* was the principal diagnosis assigned to 86,512 separate episodes of hospital patient care (Table 5.1.1). An estimated 80,494 separations were incident injury cases. The male to female rate ratio (M:F rate ratio), based on age-standardised rates was 1.1:1.0, indicating slightly more males than females were hospitalised for complications of surgical and medical care.

Major types of injury

Table 5.1.2: Major types of injury for complications of surgical and medical care, Australia, 2007–08

	Males		Females		Persons[(a)]	
Principal diagnosis	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Complications following infusion, transfusion and therapeutic injection	411	1.0	335	0.9	746	0.9
Complications of procedures, not elsewhere classified	17,157	41.3	15,743	40.4	32,900	40.9
Complications of cardiac and vascular prosthetic devices, implants and grafts	5,597	13.5	3,846	9.9	9,443	11.7
Complications of genitourinary prosthetic devices, implants and grafts	2,860	6.9	1,679	4.3	4,539	5.6
Complications of internal orthopaedic prosthetic devices, implants and grafts	7,959	19.2	7,219	18.5	15,178	18.9
Complications of other internal prosthetic devices, implants and grafts	4,130	10.0	7,783	20.0	11,914	14.8
Failure and rejection of transplanted organs and tissues	1,997	4.8	1,094	2.8	3,091	3.8
Complications peculiar to reattachment and amputation	663	1.6	300	0.8	963	1.2
Other complications of surgical and medical care, not elsewhere classified	731	1.8	989	2.5	1,720	2.1
Total	**41,505**	**100.0**	**38,988**	**100.0**	**80,494**	**100.0**

(a) Includes cases for which sex was not reported.

The major types of injury related to complications of surgical and medical care are shown in Table 5.1.2. *Complications of procedures, not elsewhere classified* (ICD-10-AM principal diagnosis code T81*)* accounted for 41% of injury cases in 2007–08. This category included T81.4, *Infection following a procedure, not elsewhere classified* (*n* = 15,872; 20% of all adverse events). And most of these were coded as T81.41 *Wound infection following a procedure* (*n* = 15,161, 29% of all adverse events). Overall, the second most common specific adverse event was also in the T81 category, T81.0, *Haemorrhage and haematoma complicating a procedure, not elsewhere classified* (*n* = 10,209; 13% of all adverse events).

Complications of internal orthopaedic prosthetic devices, implants and grafts (T84) accounted for 19% of adverse events (*n* = 15,178). More than one-third of this category was coded as T84.0 *Mechanical complication of internal joint prosthesis* (*n* = 4,818; 6% of all adverse events).

Complications of other internal prosthetic devices, implants and grafts (T85) accounted for 15% of all *Complications of surgical and medical care* (*n* = 11,914) and *Complications of cardiac and vascular prosthetic devices, implants and grafts* (T82) a further 12% (*n* = 9,443*)*.

Most of these common adverse events were assigned an external cause code of Y83 (*n* = 67,443, 87%), indicating a surgical operation and other surgical procedure was the cause of the abnormal reaction of the patient, or of later complication, without mention of misadventure at the time of the procedure or Y84 (*n* = 9,982, 13%), other medical procedures as the cause of the abnormal reaction of the patient, or of later complication, without mention of misadventure at the time of the procedure.

Age and sex distribution

Rates of hospitalised injury were similar for males and females at ages up to 30 (Figure 5.1.1). Female rates exceeded male rates at ages 30–59. At ages 60 and older, male rates exceeded those for females.

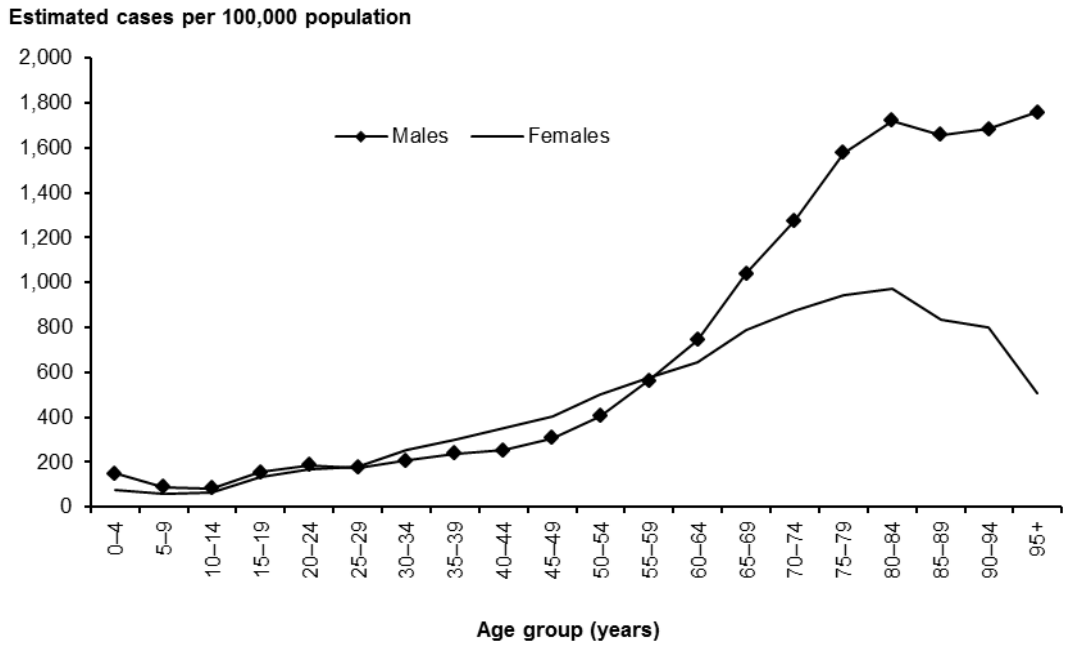


Figure 5.1.1: Age-specific estimated cases of complications of surgical and medical care by sex, Australia, 2007–08

Length of stay

In general, mean length of stay due to *Complications of surgical and medical care* increased with age (Figure 5.1.2).

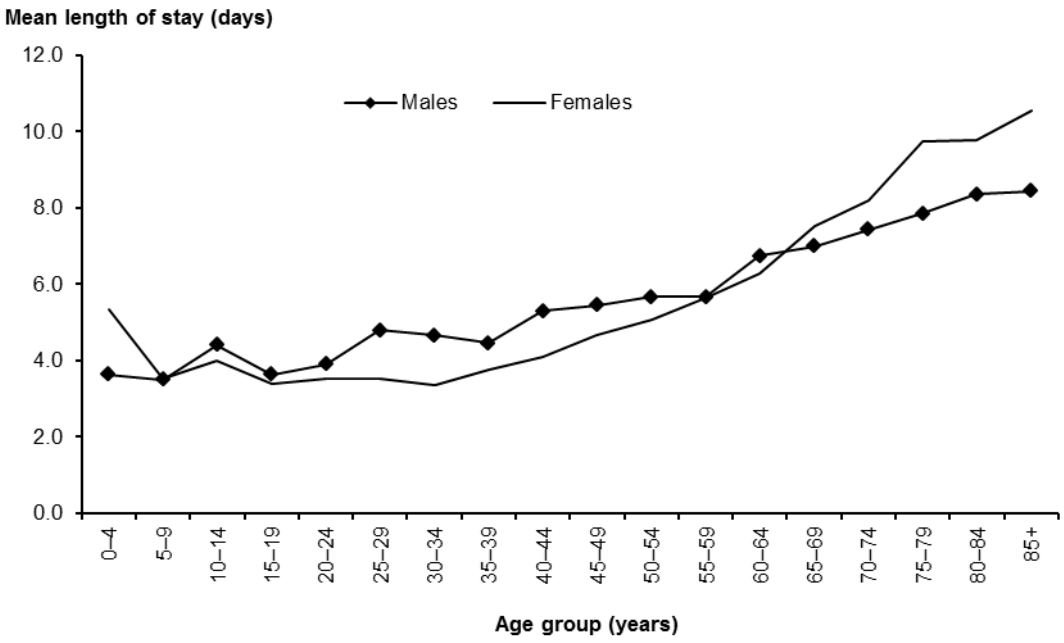


Figure 5.1.2: Length of stay per episode for complications of surgical and medical care by age and sex, Australia, 2007–08

Place of occurrence

The majority of cases where a place of occurrence was recorded (*n* = 79,656) occurred in a health service area (99%; *n* = 79,001). The remaining 1% occurred in the home, a residential institution or in another location. It may be that these cases refer to the place where the complication became apparent, or to complications of care delivered at home or in another location, for example, a residential institution.

Time trends

Age-standardised rates for *Complications of surgical and medical care* showed a small and gradual increase over time from 329 per 100,000 of the population in 1999–00 to 365 per 100,000 in 2007–08. Age-standardised rates are higher for males than females (Figure 5.1.3).

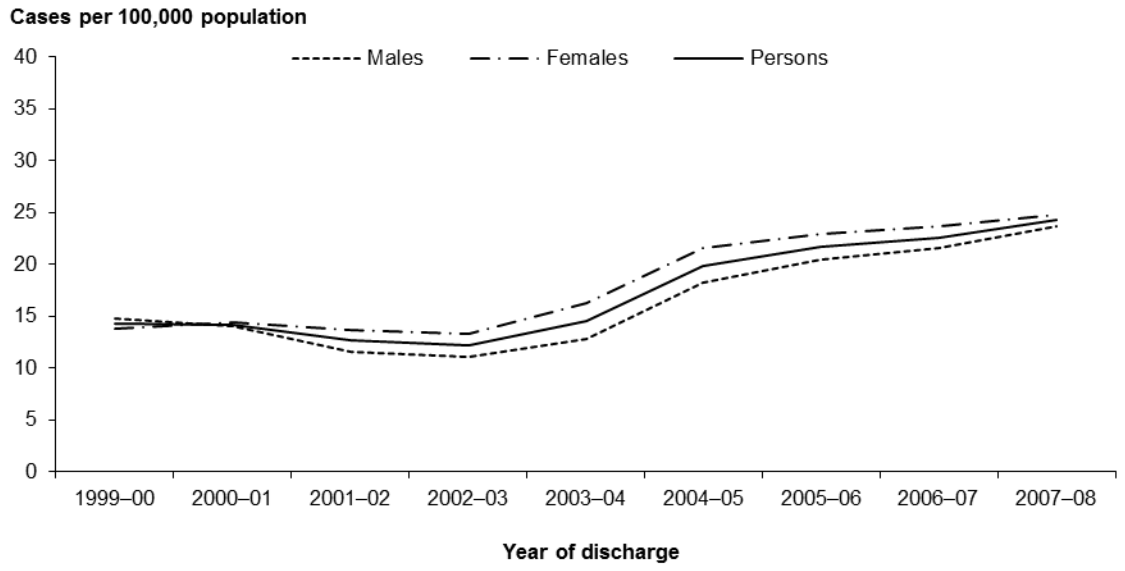


Figure 5.1.3: Age-standardised cases of complications of surgical and medical care, Australia, 1999–00 to 2007–08

6 Residual groups

ICD-10-AM case inclusion

Principal diagnosis: T78, T89 or T90–T98

This chapter includes hospital separations where the principal diagnosis was in the ICD-10-AM Chapter XIX *Injury, poisoning and certain other consequences of external causes* but was not classified as *Community injury* or *Complications of surgical and medical care.* Principal diagnoses coded to T78, T89 or T90–T98 accounted for 6,025 hospital separations. When inward transfers from another acute care hospital were excluded there remained 5,922 estimated cases. Most of these 5,922 cases were coded T78 *Adverse effects, not elsewhere classified* (*n* = 5,765) (Table 6.1.1). The remainder were T89, *Other specified complications of trauma* (*n* = 153) or T90–T98, *Sequelae of injuries, of poisoning and of other consequences of external causes* (*n* = 4).

Table 6.1.1: Case counts for ICD-10-AM principal diagnosis T78, T89 or T90–T98, Australia, 2007–08

	Males		Females		Persons	
Principal diagnosis	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Anaphylactic shock due to adverse food reaction (T78.0)	591	21.6	626	19.6	1,217	20.6
Other adverse food reactions, not elsewhere classified (T78.1)	464	17.0	519	16.3	983	16.6
Anaphylactic shock, unspecified (T78.2)	428	15.7	521	16.3	949	16.0
Angioneurotic oedema (T78.3)	657	24.0	797	25.0	1,454	24.6
Allergy, unspecified (T78.4)	484	17.7	659	20.7	1,143	19.3
Other adverse effects, not elsewhere classified or unspecified (T78.8)	5	0.2	11	0.3	16	0.3
Adverse effect, unspecified (T78.9)	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
All adverse effects not elsewhere classified (T78)	*2,631*	*96.2*	*3,134*	*98.3*	*5,765*	*97.3*
Complications of open wound, unspecified (T89.00)	0	0.0	n.p.	n.p.	n.p.	n.p.
Open wound with foreign body (T89.01)	45	1.6	17	0.5	62	1.0
Open wound with infection (T89.02)	51	1.9	29	0.9	80	1.4
Other complications of open wound (T89.03)	6	0.2	4	0.1	10	0.2
All complications of open wound (T89)	*102*	*3.7*	*51*	*1.6*	*153*	*2.6*
Sequelae (T90–T98)	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Total	**2,734**	**100.0**	**3,188**	**100.0**	**5,922**	**100.0**

n.p. = Not published. Small cell counts have been suppressed to prevent patient identification.

Appendix A: Data issues

Data sources

The data on hospital separations were provided by the Australian Institute of Health and Welfare (AIHW), from the National Hospital Morbidity Database (NHMD).

Crude and age-specific rates were calculated using as population data the final estimate of the estimated resident population as at 31 December 2007, obtained from the AIHW.

Selection criteria

This report is intended to describe the population incidence of injuries newly occurring in Australia and resulting in admission to a hospital. This section describes the criteria that were used to select cases to achieve this purpose.

Period

This report is restricted to inpatient episodes that ended in the period 1 July 2007 to 30 June 2008.

For purposes of injury prevention, it would be preferable to specify cases in terms of date of injury occurrence. Date of injury occurrence is not available in the NHMD (though it is available in equivalent data in New Zealand).

Most hospital episodes due to injury are brief (mean duration of 3.8 days for *Community injury*) and hospital admission (if it occurs at all) usually follows soon after occurrence of an injury. Hence injury data reported—as here—in terms of date of separation should not, overall, differ greatly from reporting in terms of date of occurrence, though caution should be taken in making this assumption for some types of case (for example, spinal cord injuries, for which mean length of stay is several months (Cripps 2009)).

Scope

We included data from all hospitals that contributed to the NHMD in 2007–08. This includes nearly all public and private hospitals in Australia that provide acute care services. Further information on inclusion scope can be found in Australian Hospital Statistics 2007–08 (AIHW 2009).

Injury

The operational definition of injury used in this report is NHMD records that were assigned, as the principal diagnosis, an ICD-10-AM code in particular ranges. The code range S00–T75 and T79 has been used to designate *Community injury* and the range T80–T88 designates *Complications of surgical and medical care*.

About 99% of all NHMD records in the period of interest that have any code from ICD-10-AM Chapter XIX (*Injury, poisoning and certain other consequences of external causes S00–T98*) as their principal diagnosis fall into one of these two groups (Table A1).

Table A1: Selection criteria for cases due to injury and poisoning, Australia, 2007–08

Selection criteria	Males	Females	Persons[(a)]
Community injury (ICD-10-AM principal diagnosis range S00–T75, T79), and			
• lack any external cause code	297	176	473
• have a first reported external cause code of Complications of surgical and medical care*	857	663	1,521
• have a first reported external cause code in the range V01–Y36, Y85–Y87, Y89	229,245	162,839	392,089
Total case numbers for community injury	**230,399**	**163,678**	**394,083**
Do not have a principal diagnosis of community injury, but additional diagnosis codes are in range (ICD-10-AM range S00–T75, T79)	41,245	45,467	86,712
Total case numbers where there is a code for community injury in the principal or additional diagnosis fields	**231,332**	**164,546**	**395,885**
Complications of surgical and medical care (ICD-10-AM principal diagnosis range T80–T88), and			
• lack any external cause code	67	54	121
• have a first reported external cause code of community injury	141	117	258
• have a first reported external cause in the range Y40–T84, Y88	41,297	38,817	80,115
Total case numbers for *Complications of surgical and medical care*	41,505	38,988	80,494
Do not have a principal diagnosis of *Complications of surgical and medical care*, but additional diagnosis codes are in range (ICD-10-AM range T80–T88)	**85,276**	**52,999**	**138,279**
Total case numbers where there is a code for *Complications of surgical and medical care* in the principal or additional diagnosis fields	**126,781**	**91,987**	**218,773**
Case numbers where principal diagnosis is in ICD-10-AM Chapter XIX *Injury and poisoning* but is not classified as community injury or *Complications of surgical and medical care*			
• Adverse effects, not elsewhere classified (ICD-10-AM principal diagnosis T78)—includes adverse food reactions for example, anaphylactic shock.	2,631	3,134	5,765
• Other complications of trauma not elsewhere classified (ICD-10-AM principal diagnosis T89)	102	51	153
• Sequelae of injuries, of poisoning and of other consequences of external causes (ICD-10-AM principal diagnosis T90–T98)	1	3	4
All cases with principal diagnosis in the ICD-10-AM range S00–T98	**274,915**	**205,999**	**480,921**

(a) Includes separations for which sex was not reported.

Note: To correct for double-counting, 31,444 separations were omitted from the estimate of incident cases as they were inward transfers from another acute care hospital. Without this exclusion, the separations from hospital according to principal diagnosis were 425,949 for community injury, 86,512 for Complications of surgical and medical care and 6,025 for the remainder of separations in the Chapter XIX Injury and poisoning chapter.

The distinction between these two groups reflects contemporary injury prevention practice. For example, the current National Injury Prevention and Safety Promotion Plan, in common with previous Australian injury prevention policies and plans, has a scope corresponding to community injury (NPHP 2005).

Community injury generally occurs outside the context of medical care, but (if serious) prompts one or more episodes of care, sometimes including admission to a hospital. A *Complication of surgical and medical care* always occurs within the context of medical care and often arises in a hospital, although the concept can include complications of surgical and medical care in other settings.

There is some potential overlap between these types of injury. For example, an injurious fall sustained by a hospital inpatient can be seen as part of the community injury issue of falls, and also as a *Complication of surgical and medical care*. In this document, such cases have been assigned on the basis of principal diagnosis.

A small proportion of records were ambiguous as to whether they should be treated as community injury or *Complications of surgical and medical care*. These records have a principal diagnosis in the community injury range and a first reported external cause code meaning *Complications of surgical and medical care* (n = 1,521) or a principal diagnosis in the *Complications of surgical and medical care* range and a first reported external cause code indicating community injury (n = 258). These records were included in the analysis according to their principal diagnosis.

Residual groups

Hospital separations coded to T78, T89 or T90–T98 have been included in a separate section for this report (p125). These codes fall in the ICD-10-AM chapter XIX *Injury, poisoning and certain other consequences of external causes* but are not classified as either community injury or *Complications of surgical and medical care*. They describe 'adverse effects, not elsewhere classified' (T78); 'other specified complications of trauma' (T89) and 'sequelae of injuries, of poisoning and of other consequences of external causes' (T90–T98). This group accounted for 6,025 injury separations in 2007–08 and 98% (n = 5,922) were determined to be injury cases.

Injury solely as additional diagnosis (excluded)

Records in the NHMD for 2007–08 can report up to 49 additional diagnosis codes as well as a principal diagnosis code. Hence, records can occur that have a principal diagnosis code outside the range designating community injury, but have one or more additional diagnosis codes within that range. The same is true for *complications of surgical and medical care*. The numbers of records of these types are shown in Table A1.

Records in which injury codes appear only as Additional Diagnoses have not been used in the analysis presented in this report, mainly because injury was not recorded as being the chief reason for these episodes in hospital. Principal diagnosis means 'The diagnosis established after study to be chiefly responsible for occasioning an episode of admitted patient care…' (AIHW 2009). Hence, while many or all of the people represented by these records will, at some time, have sustained an injury as defined above, that injury was not recorded as being the main reason for their current episode in hospital.

Many of these records with an additional diagnosis of injury will have been counted in incidence estimates on the basis of a previous episode in hospital for acute care, the current episode being for rehabilitation. In some other instances, the additional diagnosis injury referred to in the record may have been incidental to the reason for admission and

would not, on its own, have prompted admission. Availability of person-linked hospital morbidity data would do much to enable appropriate assignment of this group of records.

External cause codes

According to Australian Coding Standards (NCCH 2006) all records in the NHMD that meet either of the injury definitions stated above should include one or more ICD-10-AM external cause codes. In practice, only 1% of NHMD records that met all other selection criteria had no external cause code. Since the main focus of this report is to describe injury cases in terms of the external causes that brought them about, injury cases without an external cause code are only included in the community injury and *Complications of surgical and medical care* chapters.

Records that have a principal diagnosis within a specified injury range, but no accompanying external cause code, numbered 473 (0.1%) of the community injury subset, and 121 (0.1%) of the *Complications of surgical and medical care* subset (see Table A1).

Estimating incident cases

Each record in the NHMD refers to a single episode of care in a hospital. Some injuries result in more than one episode in hospital and, hence, more than one NHMD record. This can occur in two main ways:

- a person is admitted to one hospital, then transferred to another; and
- a person has an episode of care in hospital, is discharged home (or to another place of residence) and is then admitted for further treatment due to the same injury, to the same hospital or another one.

Patients can also be discharged from a hospital and then immediately be readmitted with a different status ("Type change").

The NHMD does not include information designed to enable the set of records belonging to an injury case to be recognised as such. Hence, there is potential for some incident injury cases to be counted more than once. This potential exists when a single incident injury case results in two or more NHMD records, all of which satisfy the selection criteria being used.

Information in the NHMD enables this problem to be reduced, though not eliminated. The approach used for this report makes use of the Mode of Admission variable, which indicates whether the current episode commenced with inward transfer from another acute care hospital. Episodes of this type with injury as the principal diagnosis are likely to have been preceded by another episode, also meeting the case selection criteria for injury. Hence, these records (n = 31,444) were omitted from the estimates of incident cases that are shown in Table A1 and elsewhere in this report.

This procedure should correct for over-estimation of cases that is due to transfers, but will not correct for over-estimation that is due to readmissions or type changes.

The patient days reported during the episodes omitted to reduce overestimation of incident cases are part of the burden of acute hospital care provided to the incident cases. Hence, these patient days were retained when calculating mean and total length of stay. Note that this method does not include all patient days potentially attributable to injury. In particular, it does not include days for most aspects of injury rehabilitation, which are difficult to assign correctly without information enabling identification of all inpatient episodes associated with an injury case.

Rates for Australia include all cases meeting the selection criteria described above. Rates for Australian states and territories and for remoteness zones are based on place of usual residence (as are the population data used as denominators). Some cases lack data on place of residence (because it is missing or because the person was not a resident of Australia), or specify residence in one of the 'Other Australian territories' (that is, Jervis Bay Territory; Cocos (Keeling) Islands; Christmas Island). These cases are included in rates for Australia but not in the sub-national rates.

Quantifying variability in the counts presented in this report

The data presented in this report are subject to two types of statistical error, non-random and random. (A third type of statistical error, sampling error, does not apply here because none of the data sources used involved probability sampling.)

Non-random error: Some amount of non-random error is to be expected in administrative data collections such as the hospital inpatient data on which this report relies. For example, non-random error could occur if the approach to assigning cause codes to cases were to differ systematically between jurisdictions or over time. Systems are in place to encourage uniform data collection and coding and scrutiny of data during analysis includes checking for patterns that might reflect non-random error. Nevertheless, some non-random error is likely to remain. Identified or suspected non-random errors large enough to materially affect findings are mentioned in reports.

Random error: The values presented in the report are subject to random error, or variation. Variation is relatively large when the case count is small (especially if less than about 10) and small enough to be unimportant in most circumstances when the case count is larger (that is, more than a few tens of cases).

Some of the topics for which results are reported compare groups that vary widely in case count, largely due to differences in population size (for example, the population of NSW is more than 30 times as large as the NT population and the Major City zone population is nearly 90 times as large as that of the *Very remote* zone). In this situation, year-to-year changes in counts or rates for the smaller-population groups may be subject to large random variation. There is potential to misinterpret such fluctuations as meaningful rises or falls in occurrence.

In this situation, and similar ones, guidance is provided to readers concerning how much variation of values can be expected due to random variation of small counts. Confidence intervals (CIs) are calculated for this purpose.

Confidence intervals

Nearly all injury/poisoning cases are thought to be included in the data reported, representing minimal risk of sampling error. Data are based on the financial year of separation, but choice of this time period is arbitrary. Use of calendar year would result in different rates, particularly where case numbers are small. Confidence intervals (95%; based on a Poisson distribution) were calculated using the method described by (Anderson & Rosenburg 1998). Asymmetrical confidence intervals were calculated for case numbers up to 100. Symmetrical intervals, based on a normal approximation, were calculated where case numbers exceed 100.

The AIHW is currently undertaking a review to assess the provision of confidence intervals and statistical tests when data arise from sources that provide information on all subjects, rather than from a sample survey. This review will include analysis of the methods used to calculate confidence intervals, as well as the appropriateness of reporting confidence intervals and undertaking statistical testing for such data. This review aims to ensure that statistical methods used in AIHW reports remain robust and appropriately inform understanding and decision making. As a consequence, the type of information reported in future editions of this publication may change.

Age adjustment

Most all-ages rates have been adjusted for age to allow comparison of injury risk free from the distortion introduced by one population having a different age distribution to another. Direct standardisation was employed, using as the standard the Australian population at 30 June 2001 grouped into five-year age bands to 85 and older (ABS 2003) (Table B1).

Where crude rates or age-specific rates are reported, this is noted. Age-specific rates by sex and five-year age groups to 90 to 94, then 95 and older, are presented in the first figure of each main section of the report. Elsewhere, age groups have been selected based on the purpose of the table or figure and case numbers.

Suppression of small cell counts in data tables

Cell counts in tables that have 4 cases or fewer have been suppressed, 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 4 or less, counts of one or more other cells in the same row or column have generally also been suppressed.

Errors, inconsistencies and uncertainties

Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

NHMD data are generally abstracted from records, entered and coded in hospitals, passed to state and territory health departments, then to the AIHW before being provided to NISU. Processing occurs at each of these steps. Errors and inconsistencies can arise due to the large number of people and processes involved in providing the data. Some variations occur in reporting and coding although Coding Standards, National Minimum Data Sets and other mechanisms have reduced this.

Appendix B: Additional tables

Table B1: Age-specific rates and age-standardised estimated cases of separations due to external causes in males, Australia, 2007–08

	Age group (years)																	All ages (crude)	Age Std
ICD-10-AM E-code	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+	
Major groups	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate
Unintentional																				
Transportation	79.1	203.7	502.1	717.1	614.4	487.3	418.7	401.4	355.2	303.9	263.4	227.5	187.7	165.0	180.7	195.9	215.1	288.5	353.4	353.7
Drowning and near-drowning	18.8	3.2	2.1	2.5	2.5	3.2	1.6	1.9	2.3	1.8	0.4	0.9	1.3	0.7	1.3	1.2	1.1	0.9	3.0	3.0
Poisoning, pharmaceuticals	104.7	10.0	6.4	21.6	34.5	40.8	30.8	28.6	20.3	19.3	19.6	16.8	17.3	15.3	28.5	24.4	52.5	80.0	29.1	29.3
Poisoning, other substances	29.9	3.3	4.7	15.9	18.7	16.3	15.2	14.0	11.7	11.8	12.4	10.9	9.7	8.6	9.2	7.1	12.6	11.1	13.0	13.0
Falls	599.7	755.3	791.1	511.6	399.9	347.9	288.4	293.6	307.2	322.2	367.2	421.3	508.4	669.6	942.7	1,651.8	2,961.5	6,284.6	608.7	628.3
Smoke, fire, heat and hot substances	132.8	28.2	32.1	46.6	43.2	32.9	29.7	29.9	27.2	23.7	19.8	19.5	20.8	16.0	19.0	19.7	24.5	24.7	35.4	35.4
Other unintentional injuries	561.3	461.4	752.0	1,459.8	1,459.2	1,177.7	1,004.2	945.4	855.5	776.3	695.2	660.2	609.5	547.7	468.5	485.6	511.7	679.2	849.6	847.0
Intentional																				
Intentional self-harm	0.4	0.3	9.7	118.3	161.0	154.8	151.7	151.9	125.6	110.7	80.5	53.2	50.7	37.2	30.4	36.3	34.8	43.4	86.1	86.2
Assault	14.3	7.4	46.0	381.4	486.1	363.4	288.9	245.7	192.0	135.4	94.3	54.6	36.3	33.7	13.9	20.5	14.3	24.7	169.0	168.5
Undetermined intent	6.0	2.2	8.5	31.8	54.1	56.5	44.6	37.5	27.7	21.2	14.4	11.3	6.6	5.9	3.8	11.8	7.4	11.1	23.6	23.7
Community injury	**1,550.1**	**1,478.9**	**2,158.8**	**3,315.6**	**3,283.3**	**2,690.4**	**2,282.2**	**2,162.1**	**1,931.7**	**1,736.8**	**1,574.9**	**1,492.1**	**1,469.4**	**1,531.1**	**1,717.1**	**2,536.3**	**3,914.3**	**7,486.4**	**2,184.5**	**2,201.8**
Complications of surgical and medical care	149.3	88.7	82.3	155.8	186.2	175.5	207.8	239.7	253.8	306.9	403.7	562.6	743.6	1,039.8	1,276.2	1,576.9	1,718.9	1,668.2	393.0	393.3

Note: Rates per 100,000 population.

Table B2: Age-specific rates and age-standardised estimated cases of separations due to external causes in females, Australia, 2007–08

ICD-10-AM E-code	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+		
Major groups	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate
Unintentional																				
Transportation	49.6	109.5	175.5	280.8	229.2	192.3	145.7	140.4	135.0	125.0	129.0	112.8	124.9	124.4	141.4	176.8	202.7	171.3	152.3	152.2
Drowning and near-drowning	9.7	2.0	0.4	1.1	0.9	0.8	0.4	0.3	0.5	0.8	0.6	0.5	0.5	0.0	0.0	1.0	0.8	0.9	1.2	1.3
Poisoning, pharmaceuticals	101.0	6.7	10.9	41.4	43.1	32.3	29.8	29.1	27.6	24.1	21.7	15.9	23.2	21.3	28.6	42.4	64.0	63.5	32.6	32.3
Poisoning, other substances	26.0	2.9	4.0	11.9	10.1	8.5	7.2	6.4	6.9	7.6	5.4	5.0	6.2	6.5	7.1	7.1	9.4	12.8	8.3	8.3
Falls	493.5	598.7	326.5	157.9	165.3	165.0	163.3	185.1	210.4	262.7	384.4	556.0	706.2	978.6	1,559.9	2,791.1	4,916.4	9,509.9	762.2	650.5
Smoke, fire, heat and hot substances	94.0	23.6	15.2	17.4	14.9	14.3	14.9	14.4	13.7	10.1	10.9	12.2	10.2	9.2	10.0	14.5	19.3	29.4	19.4	19.7
Other unintentional injuries	420.9	307.1	299.0	347.7	311.8	285.9	286.1	293.2	303.2	294.8	298.4	305.3	330.4	318.5	347.9	435.6	561.3	836.3	334.8	328.9
Intentional																				
Intentional self-harm	0.3	0.0	54.8	353.7	274.2	207.6	209.6	215.8	202.4	172.5	121.2	82.1	52.8	39.4	37.1	36.0	30.8	23.9	138.4	140.9
Assault	16.3	4.1	16.4	80.4	109.0	105.0	106.5	98.5	76.6	50.0	30.7	13.2	10.6	12.1	10.6	11.8	10.7	13.2	51.3	52.6
Undetermined intent	5.0	1.2	11.6	54.3	51.1	41.6	34.0	35.3	35.5	21.9	20.0	15.6	10.8	7.2	11.2	10.4	7.0	14.9	24.5	24.8
Community injury	**1,218.8**	**1,056.9**	**916.8**	**1,350.2**	**1,214.2**	**1,057.2**	**1,001.2**	**1,023.5**	**1,023.6**	**976.6**	**1,030.6**	**1,133.0**	**1,290.2**	**1,537.7**	**2,165.3**	**3,552.1**	**5,866.6**	**10,721.2**	**1,534.2**	**1,419.9**
Complications of surgical and medical care	73.5	61.3	66.6	133.4	170.8	180.3	251.4	300.1	350.4	401.8	500.5	578.7	646.3	788.5	877.3	941.5	974.0	799.3	365.1	344.7

Note: Rates per 100,000 population.

Table B3: Age-specific rates and age-standardised estimated cases of separations due to external causes in persons, Australia, 2007–08

ICD-10-AM E-code	Age group																	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+		
Major groups	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate
Unintentional																				
Transportation	64.7	157.8	343.2	505.2	426.1	341.3	282.0	270.0	244.4	213.6	195.6	169.9	156.3	144.5	160.3	185.6	207.9	210.4	252.3	253.6
Drowning and near-drowning	14.3	2.6	1.3	1.9	1.7	2.0	1.0	1.1	1.4	1.3	0.5	0.7	0.9	0.4	0.6	1.1	1.0	0.9	2.1	2.2
Poisoning, pharmaceuticals	102.9	8.4	8.6	31.2	38.7	36.6	30.3	28.9	24.0	21.7	20.7	16.4	20.2	18.3	28.6	34.1	59.2	69.0	30.9	30.8
Poisoning, other substances	28.0	3.1	4.4	13.9	14.5	12.4	11.2	10.2	9.3	9.7	8.9	7.9	7.9	7.6	8.1	7.1	10.7	12.2	10.6	10.6
Falls	548.0	678.9	565.0	339.8	285.2	257.4	225.7	239.0	258.5	292.2	375.9	489.0	607.2	825.6	1,262.6	2,266.7	4,098.7	8,434.0	685.9	652.3
Smoke, fire, heat and hot substances	113.9	25.9	23.9	32.4	29.4	23.7	22.3	22.1	20.4	16.8	15.3	15.8	15.5	12.6	14.4	16.9	21.5	27.8	27.4	27.7
Other unintentional injuries	493.0	386.2	531.5	919.8	898.2	736.5	644.5	617.1	577.6	533.2	495.2	481.9	470.1	432.0	406.0	458.6	540.6	783.9	590.8	590.5
Intentional																				
Intentional self-harm	0.4	0.1	31.7	232.7	216.3	181.0	180.7	184.1	164.3	141.9	101.0	67.7	51.7	38.3	33.9	36.1	32.5	30.4	112.4	113.2
Assault	15.3	5.8	31.6	235.3	301.7	235.5	197.5	171.6	133.9	92.3	62.2	33.8	23.4	22.8	12.2	15.8	12.2	17.0	109.8	111.1
Undetermined intent	5.5	1.7	10.0	42.7	52.6	49.2	39.3	36.4	31.6	21.5	17.2	13.5	8.7	6.6	7.6	11.1	7.2	13.6	24.0	24.2
Community injury	**1,388.9**	**1,273.2**	**1,554.4**	**2,361.2**	**2,271.7**	**1,882.4**	**1,640.4**	**1,588.9**	**1,474.9**	**1,353.0**	**1,300.6**	**1,311.7**	**1,379.9**	**1,534.4**	**1,949.4**	**3,084.6**	**5,049.9**	**9,642.1**	**1,857.6**	**1,827.1**
Complications of surgical and medical care	112.4	75.3	74.6	144.9	178.7	177.9	229.7	270.1	302.4	354.8	452.5	570.8	695.0	912.9	1,069.4	1,234.0	1,285.6	1,089.1	379.0	365.3

Note: Rates per 100,000 population.

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List of tables

List of figures

This report is the sixth in a series on hospitalisations due to injury and poisoning in Australia, and covers the financial year 2007–08. A total of 394,505 injury cases required hospitalisation in the 12 months (230,676 males and 163,823 females). Overall rates of injury were higher among people aged 65 and over, and lower in children aged 0–14. The leading causes of hospitalised injury were unintentional falls (37% of cases), followed by transport accidents (14%).

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