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Hospital separations due to injury and poisoning, Australia

2009–10

Amanda Tovell, Keren McKenna, Clare Bradley and Sophie Pointer

Flinders UNIVERSITY

INJURY RESEARCH AND STATISTICS SERIES NO. 69

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Authoritative information and statistics to promote better health and wellbeing

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Contents

Abbreviations

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
ASGC	Australian Standard Geographical Classification
CI	Confidence Interval
ICD-10-AM	International Classification of Diseases, 10th revision, Australia Modification
ICISS	International Classification of Diseases-based Injury Severity Score
LOS	Length of stay
MLOS	Mean length of stay
NCCH	National Centre for Classification in Health
NHMD	National Hospital Morbidity Database
NISU	National Injury Surveillance Unit
NPHP	National Public Health Partnership

Symbols

n	number
n.p.	not published because of small numbers, confidentiality or other concerns about the quality of the data

Summary

This report, covering injuries resulting in admission to Australian hospitals in the financial year 2009–10, is the eighth in the series that started in 2001–02.

The focus of the report is community injury (that is, injuries typically sustained in places such as the home, workplace or street).

An estimated 421,065 community injury cases, of which 242,478 were males, required hospitalisation during 2009–10, with males outnumbering females at a ratio of about 1.5:1.0.

A total of 1,668,462 patient days were attributable to hospitalised community injury, with a mean length of stay of 4 days. About one in ten community injury cases (11%) were classified as high threat to life in 2009–10. Nearly all cases of drowning and near-drowning were considered high threat (83%). More than one in five transportation and falls-related injury cases were classified as high threat to life, and accounted for 81% of high threat to life community injury cases overall.

The leading cause of hospitalised community injury was falls (38%), followed by unintentional transport-related incidents (13%). The leading causes of hospitalised intentional injury were self-harm (6%) and assault (6%).

Causes of hospitalised community injury varied by age:

- For very young children (aged 0–4), the leading cause for injury hospitalisation was an unintentional fall (42%), while smoke, fire, heat and hot substances accounted for 8% and poisoning by pharmaceuticals accounted for 6%.
- 46% of injury hospitalisations for children aged 5–14 were the result of a fall and 16% were transport-related.
- The most common causes of injury hospitalisation for young adults aged 15–24 were transport-related injuries (19%), falls (14%), assault (11%) and intentional self-harm (10%).
- A similar pattern was seen in adults aged 25–44 where transport-related injury hospitalisation accounted for 17%, falls 14%, and 11% each for self-harm and assault.
- Falls (32%) were the leading cause of community injury hospitalisations for adults aged 45–64, and 14% were transport-related.
- More than three-quarters of injury hospitalisations for people aged 65 and over occurred as a result of a fall (76%).

Where information was available, 26% of all hospitalised community injuries occurred in the home. A higher proportion of female injuries occurred in the home compared with male injuries (35% versus 19%) or in a residential institution (9% versus 3%). Males were more likely than females to have been injured on a street or highway, as well as in sports and athletics, trade and service, and industrial and construction areas and farms.

Rates of community injury increased with geographical remoteness. The lowest rate of 1,728 cases per 100,000 population occurred in *Major cities* in Australia, while the highest (3,857 cases per 100,000 population) occurred in *Very remote* Australia.

The age-standardised rate of community injury was 1,724 cases per 100,000 population in 1999–00. In 2009–10 the age-standardised rate of community injury was 1,858.3 cases per 100,000 population, similar to that recorded in 2008–09 (1,865 cases).

1 Introduction

This report describes the occurrence of injuries requiring hospitalisation in Australia during 2009–10. It uses data for episodes of admitted inpatient care that ended between 1 July 2009 and 30 June 2010, and 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 the external causes of the injuries.

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 2008).

Diagnosis and external cause information for the hospital separations reported here were coded according to the 6th edition of the International Classification of Diseases, 10th Revision, Australia Modification (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 2009 to 30 June 2010 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. Information about the external causes of injury is also used for analysis focusing on causes and prevention of injury.

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: records have been omitted in which the mode of admission is recorded as being by transfer from another hospital. This is 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 that meet the project's selection criteria. Cases transferred from another hospital are included in estimates of patient length of stay.

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' and are 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'.

Since Australian hospital separations records should include a principal diagnosis code and, for 2008–09, 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. That is, care for rehabilitation and other sub-acute care is not generally included. Two changes have been made to the processing of external cause codes, in comparison with previous reports in this series. Together, the changes affect less than 1% of in-scope records. Firstly, the approximately 0.5 % of records in which the first external cause code is a supplementary factor (Y90–Y98), which were formerly not assigned to any of the major groups of external causes that are the subject of chapters in this report, are now assigned to a major group on the basis of a subsequent external cause code, if present. Secondly, the about 0.2% of cases in which the first external cause code is for a sequelae (or late effect) of an external cause (Y85–Y89) are now not assigned to any of the reported major group categories. Formerly, some were assigned to a specific major group, but, due to a limitation of the classification system, most were assigned to the other unintentional group. Neither of these changes affects estimates of the total number of admitted injury cases and patient days. See Appendix A: Data issues for further details.

Confidence intervals are provided in some figures and tables to show non-sampling variation, which is largest where case counts are small. Further information is provided in Data issues.

Profiles of priority injury areas

The National Injury Prevention and Safety Promotion Plan: 2004–2014 has identified seven national injury prevention areas for action (SIPP 2005); children (ages 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, and on rural and remote populations using the Australian Standard Geographical Classification (ASGC) remoteness structure. 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).

Injury hospitalisations 2009–10 overview

For public and private hospitals combined, episodes of care in hospital, between 1 July 2009 and 30 June 2010, attributed to *Injury and poisoning and certain other consequences of external causes* (S00–T98) ranked fifth in the total number of hospitalisations, according to *Australian hospital statistics 2009–10* (AIHW 2011).

More than half a million hospital separations were directly attributed to injury and poisoning in 2009–10 (Table 1.1). These separations accounted for 7% of all episodes of care in Australian hospitals. About 2.2 million hospital patient days were associated with injury separations in 2009–10.

Table 1.1: Injury hospitalisations overview: males, females and persons, Australia, 2009–10

	Males	Females	Persons[(a)]
Total number of hospital separations for any cause[(b)]	4,042,026	4,488,869	8,531,003
Total number of hospital patient days[(b)]	12,378,090	13,986,551	26,364,923
Separations due to injury and poisoning (S00–T98)[(c)]	313,906	243,552	557,459
Percentage of all separations	7.8	5.4	6.5
Patient days due to injury and poisoning	1,094,984	1,122,642	2,217,627
Percentage of all patient days	8.8	8.0	8.4
Community injury separations (S00–T75 or T79)[(c)]	260,668	192,632	453,301
Percentage of all injury separations	83.0	79.1	81.3
Patient days due to community injury	805,808	862,653	1,668,462
Percentage of injury patient days	73.6	76.8	75.2
Complications of surgical & medical care separations (T80–T88)[(c)]	50,006	47,366	97,372
Percentage of all injury separations	15.9	19.4	17.5
Patient days due to complications injury	284,851	255,279	540,130
Percentage of injury patient days	26.0	22.7	24.4
Residual injury separations (T78, T89 or T90–T98)[(c)]	3,232	3,554	6,786
Percentage of all injury separations	1.0	1.5	1.2
Patient days due to residual injury separations	4,325	4,710	9,035
Percentage of injury patient days	0.4	0.4	0.4

(a) Includes separations where sex was not reported.

(b) Source: Australian Hospital Statistics 2009–10 (AIHW 2011) Supplementary tables.

(c) Separations defined according to principal diagnosis.

Community injury separations (principal diagnosis S00–T75 or T79) accounted for four out of every five hospitalisation cases in 2009–10 (81%; *n* = 453,301). More community injury separations involved males than females (*n* = 260,668 versus *n* = 192,632), but more patient days were utilised by females (females *n* = 862,653 versus males *n* = 805,808).

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

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 community injury cases, Australia, 2009–10

Indicator	Males	Females	Persons[(a)]
Total number of hospital separations due to injury and poisoning	313,906	243,552	557,459
Separations from hospital due to community injury	260,668	192,632	453,301
Percentage of all separations due to injury and poisoning	83.0	79.1	81.3
Estimated community injury cases[(b)]	242,478	178,586	421,065
Crude rate/100,000 population	2,198.4	1,605.7	1,900.8
Age-standardised rate/100,000 population[(c)]	2,208.6	1,475.7	1,858.6
Total patient days[(d)]	805,808	862,653	1,668,462
Mean length of stay (days)	3.3	4.8	4.0
Estimated cases with a high threat to life	31,838	31,739	63,577
Percentage of cases with a high threat to life	13.1	17.8	15.1

(a) Includes 1 separation where 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 30 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

Community injury accounted for 453,301 hospital separations or 81% of a total of 557,459 hospital separations due to injury and poisoning for public and private hospitals in Australia during the financial year 2009–10 (Table 2.1.1). Excluding inward transfers, there were an estimated 421,065 discrete community injury cases. Hospitalisations for community injury accounted for more than 1.6 million patient days, with an average stay of 4 days per episode.

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

- falls (38%)
- transportation (13%)
- intentional self-harm (6%)
- assault (6%)
- poisoning, pharmaceuticals (2%)
- smoke, fire, heat and hot substances (1%).

The male to female ratio (M:F rate ratio), based on age-standardised rates, was 1.5:1.0, 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. These cases meet the principal diagnosis definition of community injury but lack a meaningful external cause. They are included in the 'other/missing' category in analyses of external causes.

Age and sex distribution

The age and sex profile of community injury in 2009–10 (Figure 2.1.1) has followed a characteristic pattern for the past several years (Berry & Harrison 2006; Berry & Harrison 2007; Bradley & Harrison 2008; Kreisfeld & Harrison 2010; McKenna & Harrison 2012; Norton & Harrison 2012). The rates of injury are much higher in the older age ranges from about 65 years.

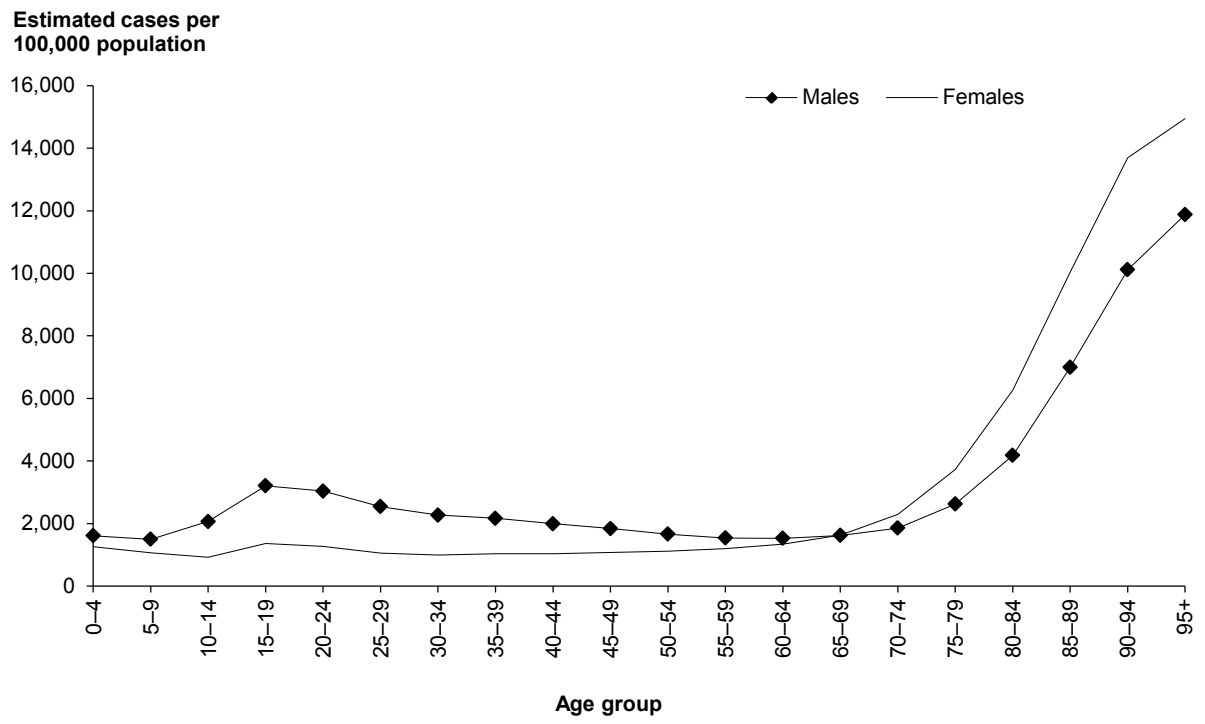


Figure 2.1.1: Age-specific rates of community injury, by sex, Australia, 2009–10

The percentage of community injury hospitalisations attributed to the four age groups identified in the National Injury Prevention and Safety Promotion Plan: 2004–2014 (SIPP 2005) were 14% for children aged 0–14 (n = 59,432), 17% for youth and young adults aged 15–24 (n = 70,306), 43% for adults aged 25–64 (n = 181,689), and 26% for older people aged 65 and over (n = 109,638).

External cause

Falls constituted the largest proportion of community injury hospitalisations for the financial year 2009–10 (38%; *n* = 161,147), and were the leading external cause for most age groups (Table 2.1.2 and Figure 2.1.2). Transportation was the second most common specified cause of community injury (13%; *n* = 54,110) and was the leading cause of injury for young people aged 15–24 and adults aged 25–44. Intentional injuries, including self-harm and assault, accounted for 13% (*n* = 55,201) of community injury hospitalisations.

Table 2.1.2: Major external cause groups for community injury cases, by age, Australia, 2009–10

	Age group						
External cause	**0–4**	**5–14**	**15–24**	**25–44**	**45–64**	**65+**	**All ages**
Unintentional injuries							
Transportation	843	6,193	13,271	17,314	10,979	5,510	54,110
Drowning & near drowning	233	56	66	82	62	41	540
Poisoning, pharmaceuticals	1,322	197	1,041	1,817	1,144	1,083	6,604
Poisoning, other substances	391	117	404	714	463	318	2,407
Falls	8,626	17,748	10,057	16,023	24,925	83,768	161,147
Smoke, fire, heat & hot substances	1,605	615	884	1,393	946	490	5,933
Other unintentional injuries	7,319	12,448	27,738	41,113	28,864	15,583	133,065
Intentional injuries							
Intentional self -harm	n.p.	n.p.	7,301	11,562	5,795	1,067	26,331
Assault	199	476	7,863	10,956	3,192	476	23,162
Undetermined intent	153	215	1,540	2,275	1,086	439	5,708
Other or missing	n.p.	n.p.	141	329	655	863	2,058
Total community injury cases	**20,719**	**38,713**	**70,306**	**103,578**	**78,111**	**109,638**	**421,065**

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

The pattern of injury hospitalisations by age groups is shown in Figure 2.1.2. Transport-related injuries were highest among adults aged 25–44, as were injuries related to intentional self-harm and assault. For young children aged 0–4, two out of every five hospitalisations were the result of a fall (42%), while smoke, fire, heat and hot substances accounted for 8% (*n* = 1,605) of injuries. Six per cent of hospitalisations for ages 0–4 were a result of poisoning by pharmaceuticals (*n* = 1,322).

The community injury category with the largest number of cases after falls was 'other unintentional injuries' (32%; *n* = 133,065). This is a mixed category; it contained a large proportion of work- and sports-related injuries that are the subjects of separate short Chapters 3 and 4.

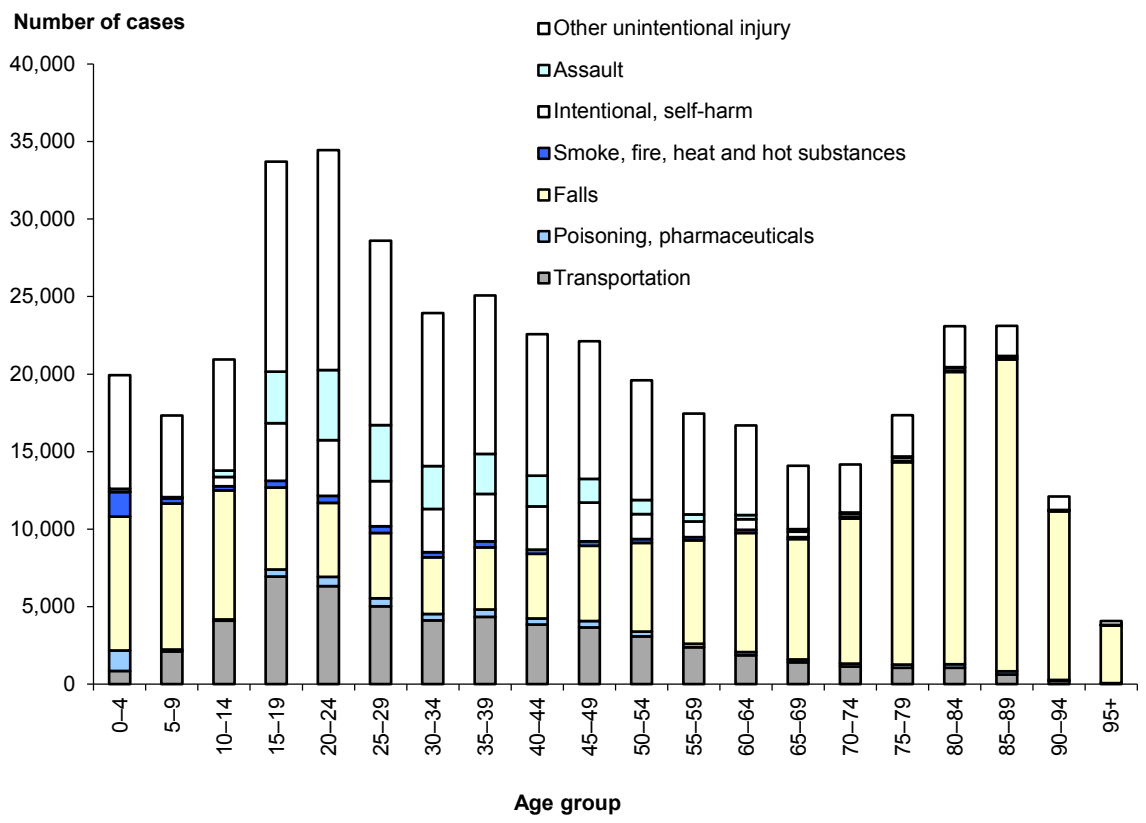


Figure 2.1.2: Age distribution of cases for selected major external causes of injury, Australia, 2009–10

Place and activity

Place was recorded as *Other specified place of occurrence* or *Unspecified place of occurrence* for 45% of cases. Where place of occurrence has been specified, about one-quarter of community injuries occurred in the home (n = 109,371) (Table 2.1.3). Ten per cent occurred on a street or highway (n = 40,968), 6% occurred in a sports or athletics area, and 5% occurred in a residential institution. Males were more likely to be injured in a sports and athletics area, and in a trade and service area, whereas females were more likely to be injured in a residential institution, and in a health service area.

The majority of injuries that occurred in a residential institution took place in an aged care facility (93%; n = 20,031) (not shown in table). The most frequently cited locations for injuries in a trade or service area were cafés, hotels and restaurants (43%) and shops and stores (32%). Among *Other specified places of occurrence*, the most frequent were the beach (15%; n = 2,391), a large area of water, including a bay, lake, ocean, or sea but excluding a shore or bank (13%; n = 2,066) or a forest (8%; n = 1,354).

Table 2.1.3: Place of occurrence for community injury, case counts, Australia, 2009–10

Place of occurrence	Males	Percentage of male cases	Females	Percentage of female cases	Persons[(a)]	Percentage of all cases
Home	46,727	19.3	62,644	35.1	109,371	26.0
Residential institution	6,151	2.5	15,504	8.7	21,655	5.1
School	4,626	1.9	2,491	1.4	7,117	1.7
Health service area	2,580	1.1	3,762	2.1	6,342	1.5
Other specified institution and public administrative area	662	0.3	667	0.4	1,329	0.3
Sports and athletics area	18,469	7.6	4,561	2.6	23,030	5.5
Street and highway	25,490	10.5	15,478	8.7	40,968	9.7
Trade and service area	7,493	3.1	5,012	2.8	12,505	3.0
Industrial and construction area	5,471	2.3	282	0.2	5,753	1.4
Farm	3,233	1.3	944	0.5	4,177	1.0
Other specified place of occurrence	11,100	4.6	5,405	3.0	16,505	3.9
Unspecified place of occurrence	110,303	45.5	61,756	34.6	172,060	40.9
Place not reported/not applicable	173	0.1	80	0.0	253	0.1
Total	**242,478**	**100.0**	**178,586**	**100.0**	**421,065**	**100.0**

(a) Includes 1 separation where sex was not reported.

In more than two-thirds of all cases (71%) the type of activity being undertaken at the time of injury was *Unspecified* (n = 249,885) or recorded as *Other specified activity* (n = 47,756). Overall, where the type of activity was specified, the highest proportion of injury cases occurred while engaged in a sporting activity (10%; n = 43,513), followed by working for income (6%; n = 25,157) (Table 2.1.4). There were considerable differences between the sexes; males were more likely to be injured while engaged in sports than females (14% versus 6%). Likewise, males were more likely to be injured while working for income than females (9%versus 2%). Females were more likely to be injured while resting, sleeping, eating or engaging in other vital activities (8%; n = 13,484) compared with males (4%; n = 8,840).

Football codes were the most frequently reported sporting activity involving injury (35%; n = 15,164) (not included in table). For cases where the type of football code was specified (n = 9,004), the most common were Australian Rules football (44%) and soccer (42%). Among cases that occurred while the person was working for income, the most commonly specified industries were construction (12%) and agriculture, forestry and fishing (9%).

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 over 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 community injury, case counts, Australia, 2009–10

Activity	Males	Percentage of male cases	Females	Percentage of female cases	Persons[(a)]	Percentage of all cases
While engaged in sports	33,612	13.9	9,901	5.5	43,513	10.3
While engaged in leisure	8,371	3.5	5,260	2.9	13,631	3.2
While working for income	21,560	8.9	3,597	2.0	25,157	6.0
While engaged in other types of work	9,619	4.0	7,137	4.0	16,756	4.0
While resting, sleeping, eating, etc.	8,840	3.6	13,484	7.6	22,324	5.3
Other specified activity	22,404	9.2	25,352	14.2	47,756	11.3
Unspecified activity	136,930	56.5	112,954	63.2	249,885	59.3
Activity not reported/not applicable	1,142	0.5	901	0.5	2,043	0.5
Total	**242,478**	**100.0**	**178,586**	**100.0**	**421,065**	**100.0**

(a) Includes 1 separation where 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.

As shown in Table 2.1.5, *Injuries to the head* were the commonly reported principal diagnosis for persons admitted to Australian hospitals in the financial year 2009–10 for community injury (18%; n = 76,538). *Injuries to the wrist and hand* and *Injuries to the knee and lower leg* were the second and third most commonly reported principal diagnoses (14% and 12% respectively). *Poisoning by drugs, medicaments and biological substances* accounted for 7% of all community injury cases.

There were differences between males and females with respect to body part injured (Figure 2.1.3). Overall, males were most likely to be hospitalised following an injury to the shoulder and upper limb (35%; n = 85,025), whereas females were equally likely to be hospitalised for either an injury to the hip and lower limb (27%) or shoulder and upper limb (26%).

Table 2.1.5: Principal diagnosis groups for community injury cases, by age, Australia, 2009–10

	0–4	5–14	15–24	25–44	45–64	65+	All ages
Injuries to the head	8,183	7,494	14,580	17,224	10,055	19,002	76,538
Injuries to the neck	115	717	1,945	2,712	1,789	1,804	9,082
Injuries to the thorax	67	309	1,692	3,665	4,439	7,610	17,782
Injuries to the abdomen, lower back, lumbar spine & pelvis	244	1,297	3,260	5,205	3,979	11,126	25,111
Injuries to the shoulder & upper arm	1,089	3,000	3,920	5,815	6,328	9,136	29,288
Injuries to the elbow & forearm	1,785	12,128	5,782	7,895	8,003	9,497	45,090
Injuries to the wrist & hand	1,850	4,229	14,496	20,473	12,172	4,584	57,804
Injuries to the hip & thigh	503	962	1,363	2,169	3,771	26,267	35,035
Injuries to the knee & lower leg	574	3,489	8,607	14,129	11,411	11,035	49,245
Injuries to the ankle & foot	716	1,700	3,034	4,790	3,510	2,240	15,990
Injuries involving multiple body regions	n.p.	n.p.	n.p.	91	n.p.	n.p.	276
Injuries to unspecified parts of trunk, limb or body region	89	166	363	604	485	1,025	2,732
Effects of foreign body entering through natural orifice	1,530	1,006	566	1,209	1,667	1,444	7,422
Burns	1,766	810	1,260	1,962	1,266	615	7,679
Frostbite	n.p.	n.p.	n.p.	19	n.p.	n.p.	23
Poisoning by drugs, medicaments & biological substances	1,350	733	7,609	12,270	6,673	2,265	30,900
Toxic effects of non-medical substances	498	454	1,104	2,079	1,574	703	6,412
Other & unspecified effects of external causes	337	140	477	871	658	791	3,274
Certain early complications of trauma	21	62	199	396	291	413	1,382
Total	**20,719**	**38,713**	**70,306**	**103,578**	**78,111**	**109,638**	**421,065**

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

The distribution of body region injured was similar for males and females across most age categories (Figure 2.1.3). *Injuries to the head* were most prevalent in ages 0–4 (boys n = 4,720; girls n = 3,463). For ages 5–14 and ages 45–64, it was *Injuries to the shoulder and upper limbs* (males n = 12,685 and 16,086; females n = 6,672 and 10,417, respectively). For those aged 65 and older, *Injuries to the hip and lower limbs* were the most common (men n = 11,876; women n = 27,665). Males aged 15–24 and 25–44 were most likely to experience a hospitalisation following an injury to the shoulder or upper limbs (n = 19,948 and 26,182) whereas females in these age groups were more likely to be hospitalised for *Other injuries not specified by body region* (n = 6,742 and 9,364). This group includes *Poisoning by drugs, medicaments and biological substances* and *Toxic effects of substances chiefly nonmedicinal as to source*, and is indicative of the higher proportion of females who are hospitalised for unintentional injury due to poisoning by pharmaceuticals or intentional self-poisoning.

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

Figure 2.1.3: Body region affected by principal diagnosis for community injury cases, by age and sex, Australia, 2009–10

High threat to life

Hospitalised injuries with an International Classification of Diseases-based Injury Severity Score (ICISS) of less than 0.941 are considered to present a high threat to life (Stephenson et al. 2004).

About 1 in 10 community injury cases (11%; *n* = 63,577) were classified as high threat to life in 2009–10 (Table 2.1.6). There were 31,838 high threat to life cases reported for males; however, as more males were hospitalised for community injury overall, this represented a smaller proportion of male community injury cases (10%) compared with 12% high threat to life cases for females.

Nearly all cases of drowning and near-drowning were considered high threat (83%). More than 1 in 5 transportation and falls-related injury cases were classified as high threat to life, and accounted for 81% of high threat to life community injury cases overall (*n* = 51,603). Almost 1 in 5 cases of intentional injuries inflicted by another were considered to be high threat, with male cases accounting for the larger proportion (20% versus 13%) (M:F ratio 4.7:1.0). Similarly, more male than female cases of intentional self-harm were considered high threat to life (7% versus 3%) (M:F ratio 1.7:1.0).

Table 2.1.6: Major external cause groups for high threat to life[(a)] community injury cases: males, females and persons, Australia, 2009–10

External cause	Males		Females		Persons	
	Count	Per cent of type	Count	Per cent of type	Count	Per cent of type
Unintentional injuries						
Transportation	9,337	25.2	3,765	22.1	13,102	24.2
Drowning & near-drowning	286	79.9	160	87.9	446	82.6
Poisoning, pharmaceuticals	37	1.1	40	1.2	77	1.2
Poisoning, other substances	81	5.5	38	4.1	119	4.9
Falls	14,228	20.0	24,273	26.9	38,501	23.9
Smoke, fire, heat & hot substances	524	13.6	265	12.8	789	13.3
Other unintentional injuries	3,019	3.2	1,878	4.8	4,897	3.7
Total unintentional injuries	*27,512*	*13.0*	*30,419*	*19.9*	*57,931*	*15.9*
Intentional injuries						
Intentional, self-inflicted	696	7.1	419	2.5	1,115	4.2
Intentional, inflicted by another	3,393	19.6	728	12.5	4,121	17.8
Undetermined intent	129	4.2	64	2.4	193	3.4
Total intentional injuries	*4,218*	*9.1*	*1,211*	*15.0*	*5,429*	*11.2*
Other and/or missing	108	13.1	109	11.6	217	15.1
Total community injury cases	**31,838**	**9.7**	**31,739**	**11.6**	**63,577**	**10.5**

(a) High threat to life cases defined as ICISS < 0.941 (Stephenson et al. 2004).

Length of stay

Patient days are the number of full and partial days a patient was in hospital during the reporting period, and are summed for all separated hospital patients to give an aggregate of the length of stay (LOS). Re-admissions, inward transfers and newly admitted cases are included in the calculation of LOS, but inwards transfers are excluded in the estimation of case counts. One patient day is counted for same day patients (admitted and discharged from hospital on the same day).

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. Length of stay provides an approximate indication of case severity, that is, severe injuries are more likely to result in longer episodes of care than minor injuries.

The MLOS for all community injury was similar for males and females, and generally rose with age (Figure 2.1.4). The average stay was shortest for children aged 0–14 at 1.7 days, and rose to 2.2 days for youth and young people aged 15–24, 2.6 days for adults aged 25–44 and 3.5 days for adults aged 45–64. The MLOS was highest for older people aged 65+ (8.0 days).

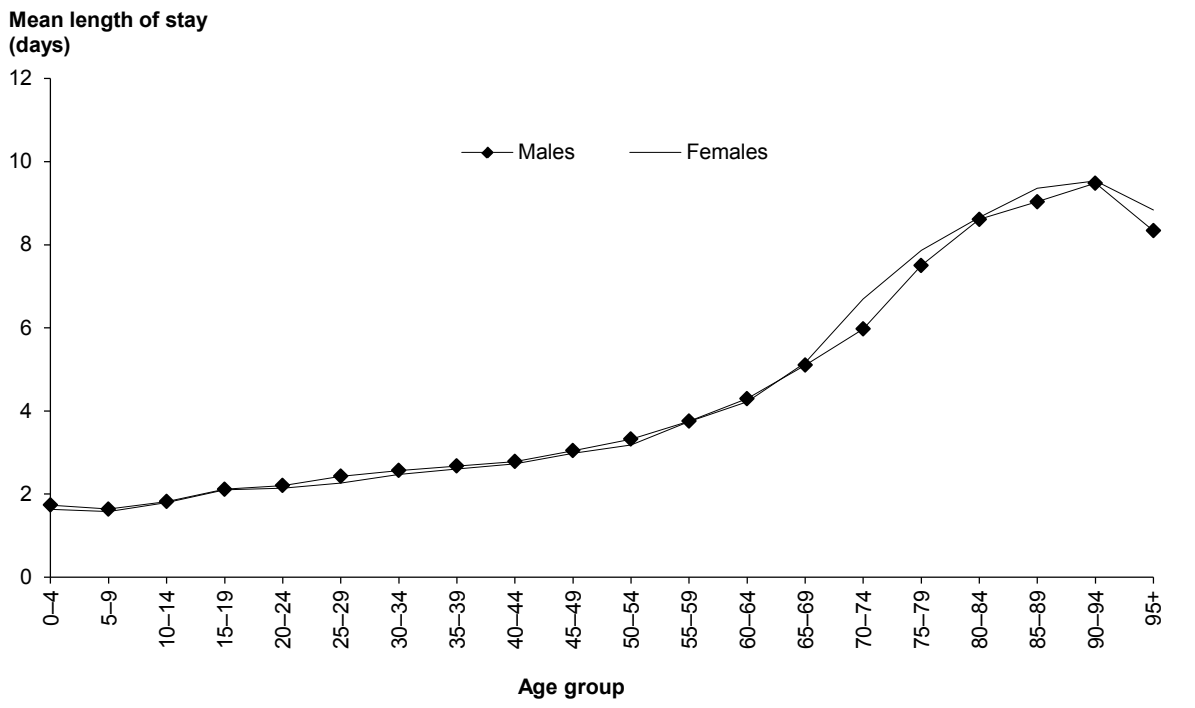


Figure 2.1.4: Mean length of stay for community injury, by age and sex, Australia, 2009–10

Table 2.1.7 presents an aggregate estimate of LOS and MLOS. In 2009–10, the overall MLOS for community injury was 4 days (more than 1.6 million days for 421,065 cases). Mean length of stay was shorter for males than females (3.3 days compared with 4.8 days). Discharge occurred on the same day of admission for one-third of all community injury cases (34%; *n* = 152,082).

More than half of all community injury patient days were a result of falls (56%; *n* = 940,884 days), followed by other unintentional injuries (17%) and transport (14%). Injuries due to falls had the longest MLOS for persons overall (5.8 days) followed by injuries due to smoke, fire, heat and hot substances (5.2 days). For males, injuries caused by smoke, fire, heat and hot substances resulted in the longest average hospitalisations (5.3 days), while injuries due falls were responsible for the longest average stays for females (6.6 days).

Table 2.1.7: Length of stay for community injury: case counts, length of stay, percentage of total patient days for acute care of injury and mean length of stay, Australia, 2009–10

	Males				Females				Persons[(a)]			
External cause	Count	LOS	Per cent	MLOS	Count	LOS	Per cent	MLOS	Count	LOS	Per cent	MLOS
Unintentional												
Transport	37,068	159,455	19.8	4.3	17,042	70,908	8.2	4.2	54,110	230,363	13.8	4.3
Drowning & near-drowning	358	1,095	0.1	3.1	182	416	0.0	2.3	540	1,511	0.1	2.8
Poisoning, pharmaceuticals	3,242	7,698	1.0	2.4	3,362	8,299	1.0	2.5	6,604	15,997	1.0	2.4
Poisoning, other substances	1,483	3,221	0.4	2.2	924	1,946	0.2	2.1	2,407	5,167	0.3	2.1
Falls	70,998	345,335	42.9	4.9	90,149	595,549	69.0	6.6	161,147	940,884	56.4	5.8
Smoke, fire, heat & hot substances	3,867	20,370	2.5	5.3	2,066	10,663	1.2	5.2	5,933	31,033	1.9	5.2
Other unintentional injuries	94,082	179,915	22.3	1.9	38,982	100,436	11.6	2.6	133,065	280,352	16.8	2.1
Intentional												
Intentional self-harm	9,849	37,483	4.7	3.8	16,482	51,612	6.0	3.1	26,331	89,095	5.3	3.4
Assault	17,353	38,498	4.8	2.2	5,809	12,086	1.4	2.1	23,162	50,584	3.0	2.2
Undetermined intent	3,062	7,166	0.9	2.3	2,646	5,765	0.7	2.2	5,708	12,931	0.8	2.3
Other/missing	1,116	5,572	0.7	5.0	942	4,973	0.6	5.3	2,058	10,545	0.6	5.1
Total	**242,478**	**805,808**	**100.0**	**3.3**	**178,586**	**862,653**	**100.0**	**4.8**	**421,065**	**1,668,462**	**100.0**	**4.0**

(a) Includes 1 separation where sex was not reported.

State and territory differences

Standard practice for these reports is to analyse rates of hospitalised community injury cases according to the state of usual residence of the patient. It is recognised that this may not reflect the state that the injury occurred in or the state in which the patient was hospitalised. However, this is seen to be the best measure of the distribution of hospitalised injury cases across Australia.

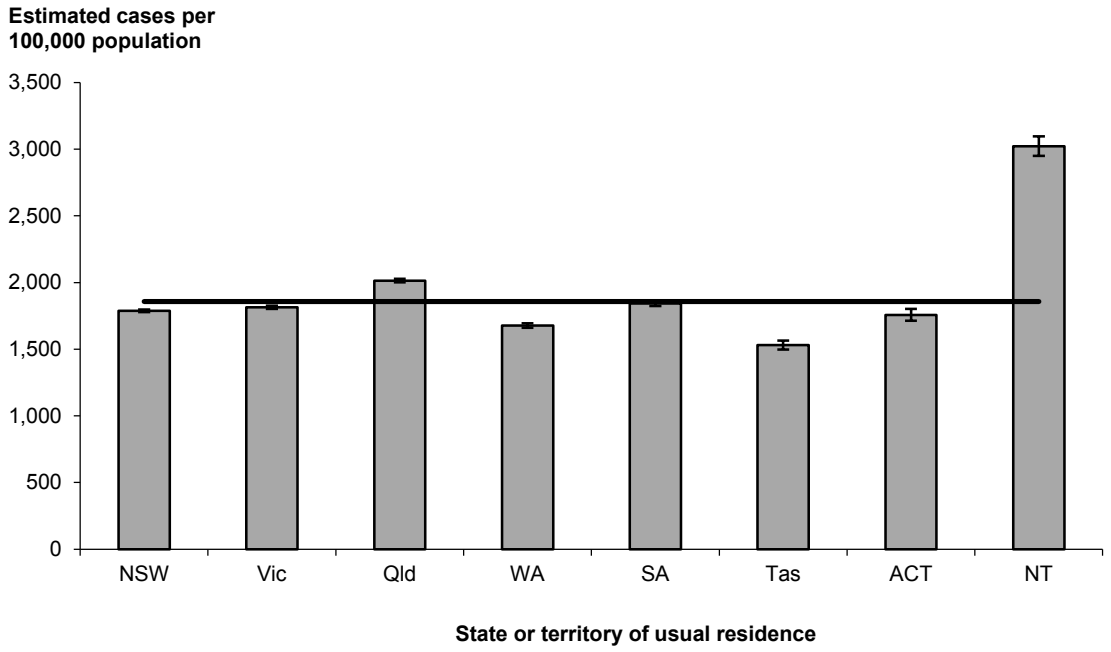
As in previous years, the Northern Territory and Queensland had the highest rates of hospitalised community injury cases (Table 2.1.8 and Figure 2.1.5). The lowest rate was observed in Tasmania (1,531.5 cases per 100,000 population). Less than 1% of all cases did not have a state of usual residence reported (0.88%; n = 3,718) or were from other Australian territories (0.05%; n = 225). The 'other territories' consist of the Cocos and Keeling Islands, Christmas Island and Jervis Bay.

Table 2.1.8: Age-standardised rates of community injury, states and territories, 2009–10

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI[(a)]
NSW	1,789	1,779–1,798
Vic	1,814	1,803–1,825
Qld	2,014	2,001–2,027
WA	1,677	1,660–1,693
SA	1,844	1,823–1,864
Tas	1,532	1,498–1,565
ACT	1,758	1,714–1,802
NT	3,023	2,951–3,095
Australia[(b)]	**1,859**	**1,853–1,864**

(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

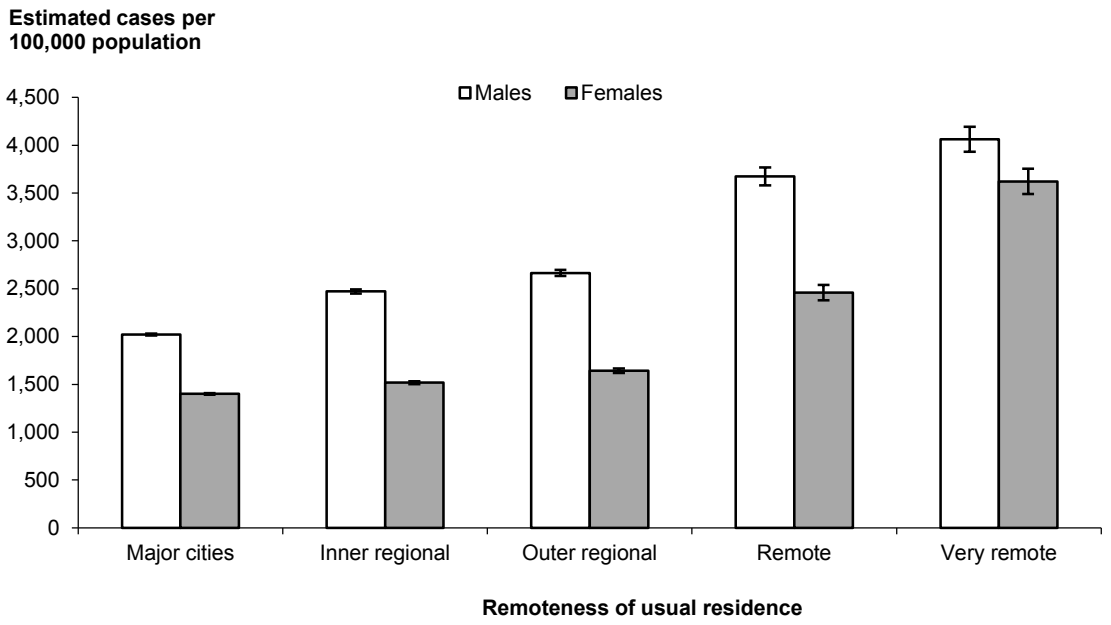
1. The thick horizontal line shows the rate for Australia.
2. Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.1.5: Age-standardised rates of community injury, states and territories, 2009–10

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 that share common characteristics into broad geographical regions called Remoteness Areas (RAs). The ASGC Remoteness Structure is more fully described in the Data issues section.

The age-standardised rate of hospitalised community injury cases in 2009–10 rose in line with remoteness of the person's place of usual residence (Figure 2.1.6). The lowest rate was observed for residents of Australia's *Major cities* (1,728 cases per 100,000 population) and it was 3,856.6 cases per 100,000 population for those residing in *Very remote* regions. This same pattern applied to both males and females; males residing in Australia's *Major cities* experienced rates of 2,021.4 cases per 100,000 population, compared with 4,062.6 cases for males residing in *Very remote* regions. The rates for females were 1,401.2 and 3,620.5 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 2.1.6: Age-standardised rates for community injury cases: males and females, by remoteness of usual residence (ASGC regions), 2009–10

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, 2009–10

Indicator	Males	Females	Persons
Separations from hospital due to transport-related injury	40,672	18,393	59,065
Percentage of all community injury separations	15.6	9.5	13.0
Estimated cases[(a)]	37,068	17,042	54,110
Crude rate/100,000 population	336.1	153.2	244.3
Age-standardised rate/100,000 population[(b)]	336.3	152.6	245.1
Total patient days[(c)]	159,455	70,908	230,363
Mean length of stay (days)	4.3	4.2	4.3
Estimated cases with a high threat to life	9,337	3,765	13,102
Percentage of cases with a high threat to life	17.3	7.0	24.2

(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 hospitalisations due to unintentional transport-related injuries, including cases occurring in railway, water, land and air transport. Transportation accidents were responsible for 13% of all injury hospitalisations in the financial year 2009–10 (Table 2.2.1).

This chapter excludes transport-related injury cases that were registered as *Intentional self-harm by crashing of motor vehicle* (n = 62), *Intentional self-harm by jumping or lying before a moving object* (n = 34), *Assault by pushing or placing victim before moving object* (n = 7) and *Assault by crashing of motor vehicle* (n = 23), *Falling, lying or running before or into moving object, undetermined intent* (n = 32) and *Crashing of motor vehicle, undetermined intent* (n = suppressed) and *Sequelae of transport accidents* (n = 72).

Of the 54,110 transport injury cases, a small proportion consisted of *Water transport accidents* (2%; male n = 810, female n = 266), *Air and space transport accidents* (0.3%; male n = 124, female n = 36) and *Other and unspecified transport accidents* (1%; male n = 296, female n = 105).

Age and sex distribution

More than twice as many males as females were hospitalised for a transport injury in the 2009–10 financial year, with a M:F ratio of 2.2:1.0. Males had a higher rate of transport injury across all age categories (Figure 2.2.1). The rate for males was highest at age 15–19 (650.3 per 100,000 population), and similarly for females (264.3 per 100,000 population). Fifty-seven per cent of all transport injuries occurred to people aged 15–44 (Table 2.2.2).

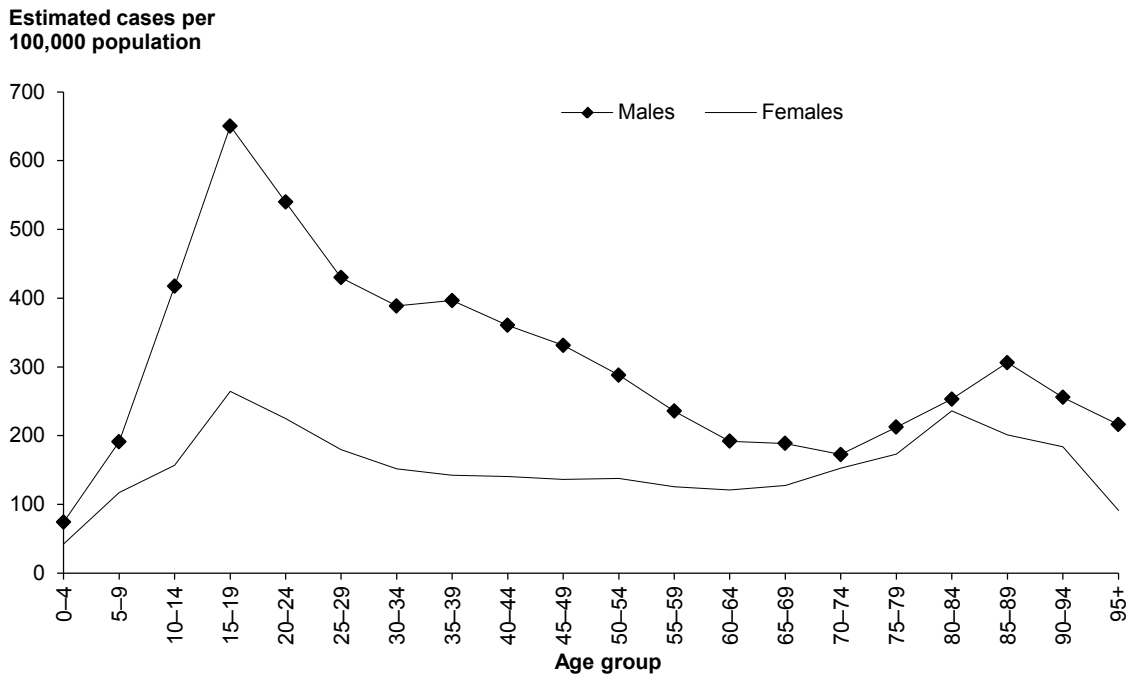


Figure 2.2.1: Age-specific rates of transport injury, by sex, Australia, 2009–10

Table 2.2.2: Transportation cases, by age group and sex, Australia, 2009–10

	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–4	547	1.5	296	1.7	843	1.6
5–14	4,342	11.7	1,851	10.9	6,193	11.4
15–24	9,570	25.8	3,701	21.7	13,271	24.5
25–44	12,467	33.6	4,847	28.4	17,314	32.0
45–64	7,330	19.8	3,649	21.4	10,979	20.3
65+	2,812	7.6	2,698	15.8	5,510	10.2
Total	**37,068**	**100.0**	**17,042**	**100.0**	**54,110**	**100.0**

Injured person's vehicle

Table 2.2.3 shows age and sex difference for injuries by mode of transport. Overall *Car occupant injured in transport accident* (V40–V49) was the most common type of external cause for transport-related injury cases (32%, *n* = 17,448). For males, the most common type was *Motorcycle rider injured in transport accident* (34%) and for females was *Car occupant injured in transport accident* (50%). The highest proportion of both male and female car occupants who were injured were men and women aged 25–44 (followed by young men and young women aged 15–24).

Males were almost ten times as likely to be hospitalised as a result of a motorcycle accident as females (male *n* = 12,729; female *n* = 1,374). The highest proportion of motorcycle injuries occurred in adults aged 25–44 for both men and women.

Males were than four times as likely to be hospitalised as a result of a pedal cycle accident as females (males *n* = 7,733; females *n* = 1,891). The highest proportion of pedal cycle injuries requiring hospitalisation occurred in women aged 25–44 (30%) followed by boys and girls aged 0–14 (29% respectively).

More male pedestrians (*n* = 2,359) were hospitalised for injuries than female pedestrians (*n* = 1,666). Almost one-third (32%) of female pedestrian accidents occurred in women aged 65 and over, compared with less than one-fifth of their male peers (17%). The highest proportion of male pedestrian injuries occurred in men aged 25–44 (26%).

More than double the number of females were injured in a bus accident than males (males *n* = 172; female *n* = 355. The highest proportion of those injured in bus accidents were older men and women aged 65+ (38% and 54% respectively).

Almost twice the number of females experienced an injury as an animal rider or occupant of an animal-drive vehicle than males (male *n* = 1,092; female *n* = 2,061). 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 (34% and 32% respectively).

Table 2.2.3: Injured person's mode of transport, by age group, Australia, 2009–10

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	410	17.4	504	21.4	620	26.3	417	17.7	408	17.3	2,359	6.4
Pedal cycle	2,219	28.7	1,630	21.1	2,062	26.7	1,466	19.0	356	4.6	7,733	20.9
Motorcycle	1,299	10.2	3,853	30.3	5,008	39.3	2,321	18.2	248	1.9	12,729	34.3
Car	482	5.4	2,627	29.6	2,895	32.6	1,619	18.2	1,266	14.2	8,889	24.0
Pick-up truck or van	21	6.3	84	25.1	125	37.4	80	24.0	24	7.2	334	0.9
Heavy transport	9	1.4	46	7.2	275	43.2	271	42.5	36	5.7	637	1.7
Bus	16	9.3	11	6.4	31	18.0	48	27.9	66	38.4	172	0.5
Animal or animal-driven	93	8.5	212	19.4	374	34.2	302	27.7	111	10.2	1,092	2.9
Special all-terrain or off-road	169	19.4	213	24.5	261	30.0	178	20.4	50	5.7	871	2.3
Other land transport	65	6.4	165	16.2	351	34.4	293	28.7	147	14.4	1021	2.8
Water transport	60	7.4	149	18.4	311	38.4	240	29.6	50	6.2	810	2.2
Other and unspecified	45	15.2	54	18.2	95	32.1	61	20.6	41	13.9	296	0.8
Total[(a)]	**4,889**	**13.2**	**9,570**	**25.8**	**12,467**	**33.6**	**7,330**	**19.8**	**2,812**	**7.6**	**37,068**	**100.0**

(continued)

Table 2.2.3 (continued): Injured person's mode of transport, by age group, Australia, 2009–10

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	215	12.9	224	13.4	365	21.9	335	20.1	527	31.6	1,666	9.8
Pedal cycle	549	29	209	11.1	564	29.8	463	24.5	106	5.6	1,891	11.1
Motorcycle	259	18.9	357	26.0	438	31.9	281	20.5	39	2.8	1,374	8.1
Car	424	5.0	2,172	25.4	2,509	29.3	1,857	21.7	1,597	18.7	8,559	50.2
Pick-up truck or van	9	13.0	11	15.9	22	31.9	16	23.2	11	15.9	69	0.4
Heavy transport	n.p.	n.p.	n.p.	n.p.	10	21.3	13	27.7	10	21.3	47	0.3
Bus	n.p.	n.p.	n.p.	n.p.	28	7.9	83	23.4	192	54.1	355	2.1
Animal or animal-driven	492	23.9	493	23.9	660	32.0	392	19.0	24	1.2	2,061	12.1
Special all-terrain or off-road	71	34.6	44	21.5	49	23.9	29	14.1	12	5.9	205	1.2
Other land transport	43	10.6	70	17.2	90	22.1	93	22.9	111	27.3	407	2.4
Water transport	31	11.7	63	23.7	74	27.8	62	23.3	36	13.5	266	1.6
Other and unspecified	23	21.9	18	17.1	22	21.0	16	15.2	26	24.8	105	0.6
Total[(a)]	**2,147**	**12.6**	**3,701**	**21.7**	**4,847**	**28.4**	**3,649**	**21.4**	**2,698**	**15.8**	**17,042**	**100.0**

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

(a) Includes 160 cases (*n* = 124 male, *n* = 36 female) of air and space transport accidents.

Body region injured

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

Table 2.2.4: Hospitalised transport injury, by body region and sex, Australia, 2009–10

	Males		Females		Persons	
Body region	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Head	7,422	20.0	3,353	19.7	10,775	19.9
Trunk[(a)]	9,474	25.6	6,433	37.7	15,907	29.4
Shoulder and upper limb	10,837	29.2	3,736	21.9	14,573	26.9
Hip and lower limb	8,629	23.3	3,219	18.9	11,848	21.9
Other injuries not specified by body region	706	1.9	301	1.8	1,007	1.9
All body regions	**37,068**	**100.0**	**17,042**	**100.0**	**54,110**	**100.0**

(a) Trunk includes: neck, thorax, abdomen, lower back, lumbar spine and pelvis.

Length of stay

Mean length of stay for transportation accidents generally increased with age for both males and females (Figure 2.2.2). Mean length of stay for males ranged from 2.6 days for boys aged 10–14 to 12.2 days for men aged 95 and over. The MLOS for females ranged from 2.3 days for girls aged 5–9 to 9.7 days for women aged 85–89.

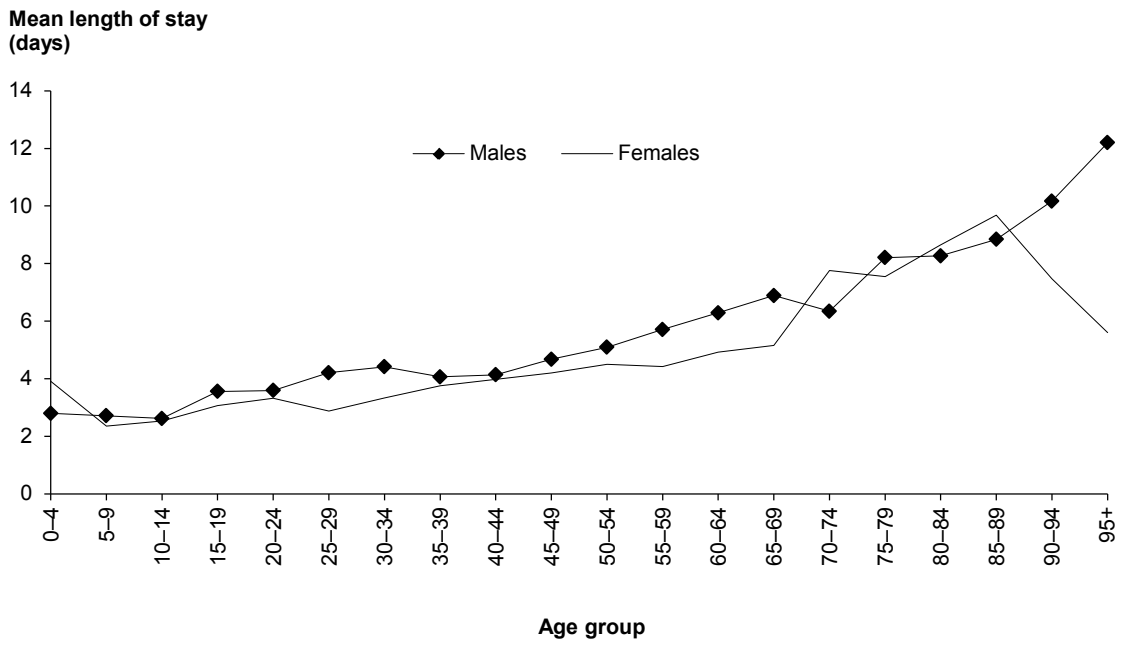


Figure 2.2.2: Mean length of stay for transport injury, by age and sex, Australia, 2009–10

State and territory differences

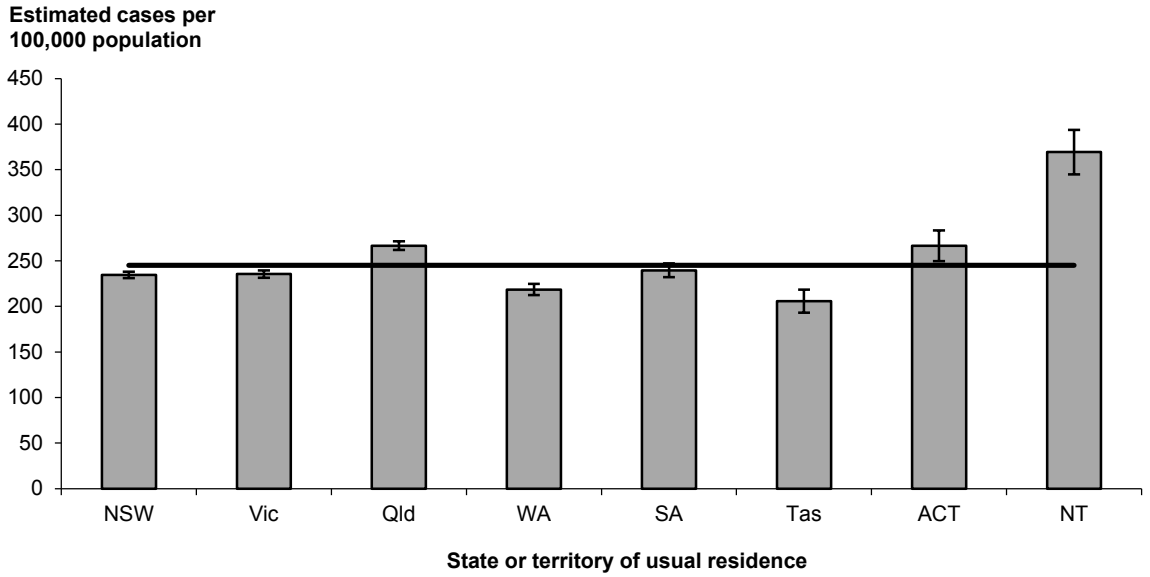
New South Wales, Victoria, Western Australia and Tasmania had lower rates than the national age-standardised rate of injury (245.1 per 100,000 population) for transport accidents (Table 2.2.5 and Figure 2.2.3). The Northern Territory had the highest rate of transport accidents in Australia (369.4 per 100,000 population).

Table 2.2.5: Age-standardised rates of transport injury, states and territories, 2009–10

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI[(a)]
NSW	235	231–238
Vic	236	231–240
Qld	267	262–271
WA	219	212–225
SA	240	232–247
Tas	206	193–219
ACT	266	250–283
NT	369	345–394
Australia[(b)]	**245**	**243–247**

(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.



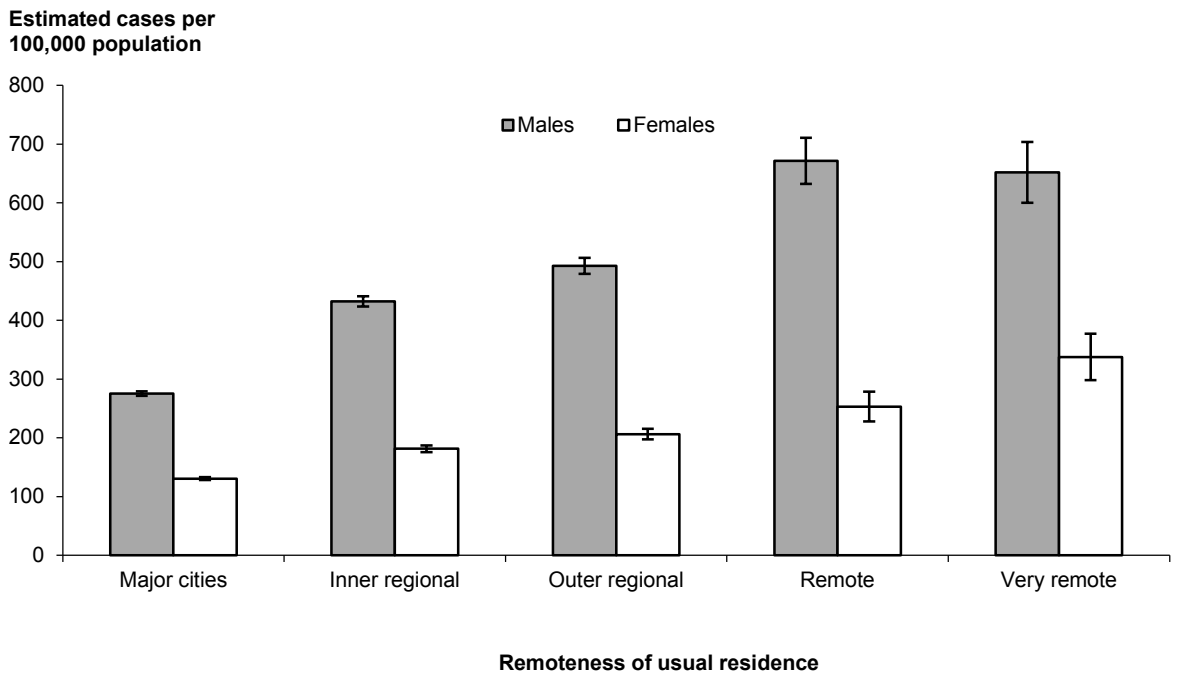
Notes

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 2.2.3: Age-standardised rates of transport injury, states and territories, 2009–10

Remoteness of usual residence

Overall, the age-standardised rates of transport injury increased according to remoteness of usual residence. The rate for persons residing in *Major cities* was 203.3 per 100,000 population, *Inner regional* 307.6, *Outer regional* 353.8, *Remote* 473.3, and *Very remote* 504.2 respectively. The highest rates of transport injury cases for males was observed in *Remote* regions (671.3 per 100,000), and for females, in *Very remote* regions (337.8) (Figure 2.2.4).



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 rates for transport injury cases: males and females by remoteness of usual residence (ASGC regions), 2009–10

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* = 51,727). Thirty-four per cent of people hospitalised due to land transport accidents were car occupants (*n* = 17,448); 27% (*n* = 14,103) were motorcyclists; 19% (*n* = 9,624) were pedal cyclists; and 8% (*n* = 4,025) were pedestrians (Table 2.2.6).

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 the injured person's mode of transport for both traffic and non-traffic cases. For traffic accident cases (*n* = 32,699), the most frequent mode of transport of the injured person was a car (48%; *n* = 15,601) followed by a motorcycle (24%; *n* = 7,777). There were gender differences; 70% of females injured in traffic accidents were car occupants (*n* = 7,704) and 12% were pedestrians (*n* = 1,189), whereas 37% of males were car occupants (*n* = 7,897) and 32% were on a motorcycle (*n* = 6,988).

For non-traffic accidents (*n* = 13,942), the most frequent mode of transport was a motorcycle (44%; *n* = 6,072) followed by a pedal cycle (30%; *n* = 4,107). There were gender differences; the most common mode of transport for females injured in non-traffic accidents were pedal cycles (30%; *n* = 735) followed by motor cycles (23%; *n* = 547), whereas the most common for males were motorcycles (48%; *n* = 5,525) followed by pedal cycles (29%; *n* = 3,372).

Of accidents designated unspecified as to whether they occurred in traffic or non-traffic, more than 60% involved an animal rider or occupant of an animal-drawn vehicle.

Male case numbers exceeded females in most instances; exceptions were bus occupant injuries and injuries to animal riders or occupants of an animal-driven vehicle.

Table 2.2.6: Mode of transport for land transport injury cases, Australia, 2009–10

Injured person's mode of transport	Non-traffic accident	Traffic accident	Unspecified	Total
Males				
Car	729	7,897	263	8,889
Motorcycle	5,525	6,988	216	12,729
Pedal cycle	3,372	4,215	146	7,733
Pedestrian	477	1,705	177	2,359
Animal or animal-drawn vehicle	n.p.	n.p.	n.p.	1,092
Heavy transport vehicle	123	435	79	637
Pick-up truck or van	86	223	25	334
Bus	19	87	66	172
Three-wheeled motor vehicle	n.p.	n.p.	n.p.	49
Other land transport	1,161	53	120	1,334
Total	**11,523**	**21,620**	**2,185**	**35,328**
Females				
Car	493	7,704	362	8,559
Motorcycle	547	789	38	1,374
Pedal cycle	735	1,125	31	1,891
Pedestrian	352	1,189	125	1,666
Animal or animal-drawn vehicle	n.p.	n.p.	n.p.	2,061
Heavy transport vehicle	6	22	19	47
Pick-up truck or van	11	51	7	69
Bus	28	182	145	355
Three-wheeled motor vehicle	n.p.	n.p.	n.p.	13
Other land transport	238	14	112	364
Total	**2,419**	**11,079**	**2,901**	**16,399**
Persons				
Car	1,222	15,601	625	17,448
Motorcycle	6,072	7,777	254	14,103
Pedal cycle	4,107	5,340	177	9,624
Pedestrian	829	2,894	302	4,025
Animal or animal-drawn vehicle	n.p.	n.p.	n.p.	3,153
Heavy transport vehicle	129	457	98	684
Pick-up truck or van	97	274	32	403
Bus	47	269	211	527
Three-wheeled motor vehicle	n.p.	n.p.	n.p.	62
Other land transport	1,399	67	232	1,698
Total	**13,942**	**32,699**	**5,086**	**51,727**

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

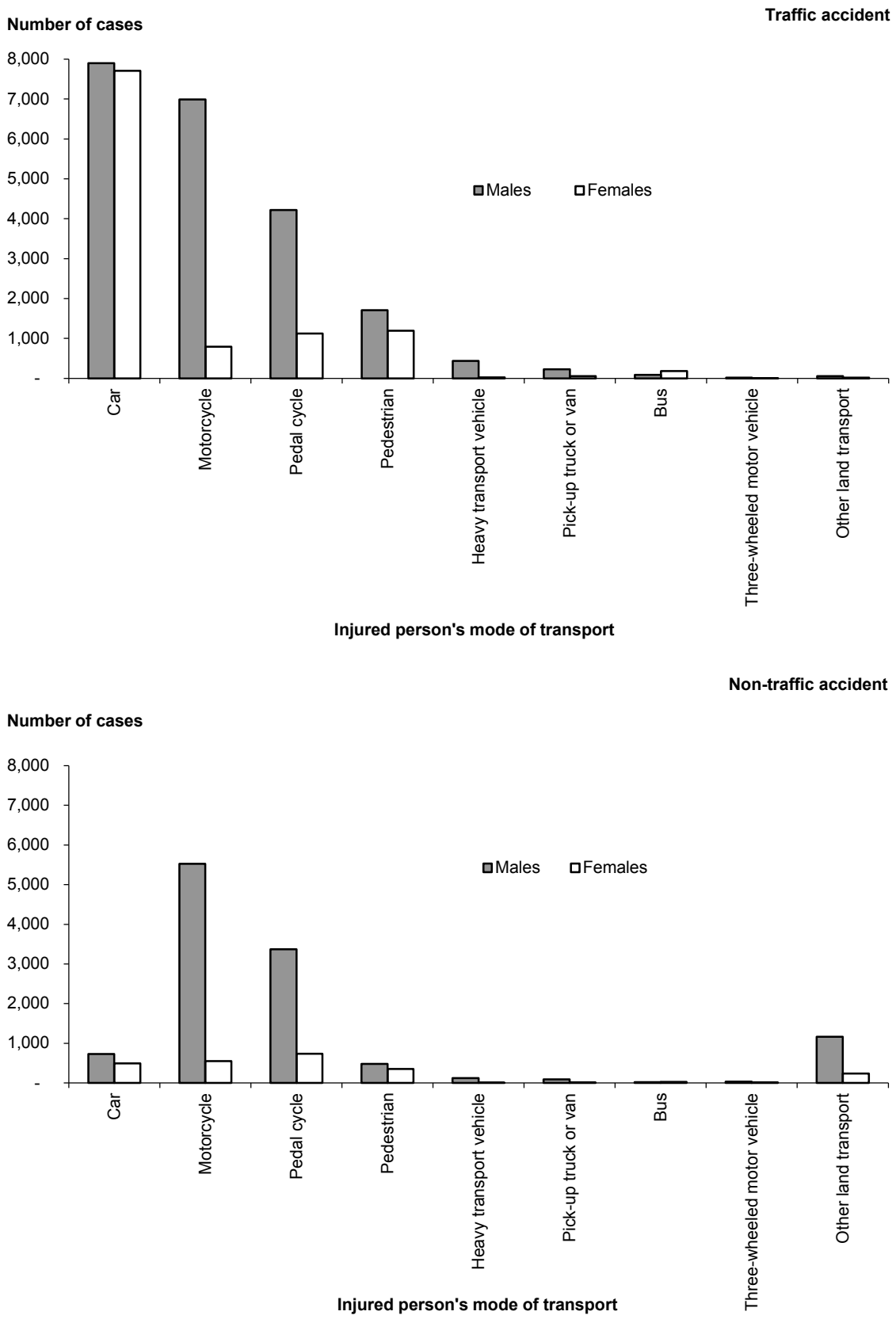


Figure 2.2.5: Mode of transport for land transport injury cases, Australia, 2009–10

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. Some injuries result from non-collision events, such as car roll-over.

Table 2.2.7 summarises the common mechanisms of injury in land transport accidents. The common mechanisms of injury in land transport crashes were 1) a motorcycle in a non-collision transport accident, 2) a collision of a car with either a car, pick-up truck or van, 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, 43% were involved in a collision with a car, pick-up truck or van, 25% were involved in a collision with a fixed or stationary object and 21% were involved in a non-collision transport accident.

More than half (55%) of injured motorcyclists were involved in a non-collision transport accident, 12% were hit by a car, pick-up truck or van and 11% collided with a fixed or stationary object.

Fifty-nine per cent of injured pedal cyclists were involved in a non-collision transport accident and 13% were hit by a car, pick-up truck or van.

Of pedestrians injured, 79% were hit by a car, pick-up truck or van.

For injured animal riders or occupants of an animal-driven vehicle, the majority (88%) were injured in a non-collision accident. (These cases would include falling from, or being thrown from, a horse.)

For injured heavy transport vehicle occupants, 64% were involved in a non-collision transport accident, 12% collided with another heavy transport vehicle or bus, 10% collided with a fixed or stationary object and 7% hit a car, pick-up truck or van.

For injured pick-up truck or van occupants, 49% were involved in a non-collision transport accident, 19% hit a car, pick-up truck or van and 17% collided with a fixed or stationary object.

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

More than half (57%) of three-wheeled motor vehicle injuries involved a non-collision transport accident.

Table 2.2.7: Mechanism of injury for land transport injury cases[(a)], Australia, 2009–10

	Counterpart in collision									
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	143	n.p.	29	7,470	589	11	29	4,406	3,691	1,077
Motorcyclist	212	13	388	1,749	64	n.p.	15	1,562	7,772	2,323
Pedal cyclist	72	498	12	1,267	68	n.p.	15	502	5,664	1,523
Pedestrian	100	112	104	3,183	201	37	43	n.p.	n.p.	245
Animal rider or occupant of animal-driven vehicle	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	8	13	2,762	369
Occupant of heavy transport vehicle	n.p.	n.p.	n.p.	45	82	n.p.	n.p.	66	437	47
Occupant of pick-up truck or van	n.p.	n.p.	n.p.	78	22	n.p.	n.p.	70	197	34
Bus occupant	n.p.	n.p.	n.p.	45	34	n.p.	n.p.	25	359	62
Three-wheeled motor vehicle	n.p.	n.p.	n.p.	8	n.p.	n.p.	n.p.	6	35	n.p.
Total (*n* = 51,727)	**537**	**627**	**540**	**13,845**	**1,060**	**57**	**112**	**6,650**	**20,921**	**7,378**

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

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

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 in traffic or non-traffic.

Excluding the other and unspecified road user group, 70% of motor vehicle occupants injured in a traffic accident were drivers. Sixty-three per cent of all car occupants involved in a traffic accident were recorded as the driver. Of motorcycle traffic accidents, only 1% of those injured were recorded as a passenger after excluding 29% of cases with no road user type specified.

Again excluding the other and unspecified road user group, 84% of motor vehicle occupants injured in a non-traffic accident were drivers. More than half (56%) of car occupants involved in a non-traffic accident were drivers, while 46% of heavy vehicle transport non-traffic accidents involved a person on the outside of vehicle. Three per cent of those injured in a non-traffic accident involving a motorcycle were passengers.

In cases where the accident status was unspecified as to whether in traffic or non-traffic, 62% of injuries involved an animal rider or occupant of an animal-driven vehicle (Table 2.2.10). A further 10% of injuries were sustained when people were boarding or alighting from a car.

Table 2.2.8: Mode of transport and road user group for traffic land transport injury cases, Australia, 2009–10

Injured person's mode of transport	Pedestrian	Driver	Passenger	Person on outside of vehicle	Other and unspecified	Total
Pedestrian	2,894	0	0	0	0	2,894
Pedal cycle	0	3,469	35	0	1,836	5,340
Motorcycle	0	5,315	219	0	2,243	7,777
Car	0	9,896	4,687	81	937	15,601
Pick-up truck or van	0	161	74	20	19	274
Heavy transport vehicle	0	366	46	22	23	457
Bus	0	28	212	n.p.	n.p.	269
Three-wheeled motor vehicle	0	14	n.p.	n.p.	n.p.	20
Other land transport	0	44	16	n.p.	n.p.	67
Total	**2,894**	**19,293**	**5,290**	**131**	**5,091**	**32,699**

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

Table 2.2.9: Mode of transport and road user group for non-traffic land transport injury cases, Australia, 2009–10

Injured person's mode of transport	Pedestrian	Driver	Passenger	Person on outside of vehicle	Other and unspecified	Total
Pedestrian	829	0	0	0	0	829
Pedal cycle	0	3,128	48	0	931	4,107
Motorcycle	0	5,253	157	0	662	6,072
Car	0	688	352	113	69	1,222
Pick-up truck or van	0	23	15	51	8	97
Heavy transport vehicle	0	46	n.p.	59	n.p.	129
Bus	0	n.p.	35	0	n.p.	47
Three-wheeled motor vehicle	0	n.p.	n.p.	0	n.p.	40
Other land transport	0	998	114	123	164	1,399
Total	**829**	**10,175**	**729**	**346**	**1,863**	**13,942**

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

Table 2.2.10: Mode of transport and road user group for land transport injury cases unspecified as to whether traffic or non-traffic, Australia, 2009–10

Injured person's vehicle	Pedestrian	Passenger	Animal-rider or occupant of animal-drawn vehicle	Person boarding or alighting	Person on outside of vehicle	Other and unspecified	Total
Pedestrian	302	0	0	0	0	0	302
Pedal cycle	0	0	0	24	0	153	177
Motorcycle	0	0	0	57	0	197	254
Car	0	0	0	499	0	126	625
Pick-up truck or van	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Heavy transport vehicle	0	0	0	76	0	22	98
Bus	0	0	0	182	0	29	211
Animal or animal-driven vehicle	0	0	3,153	0	0	0	3,153
Three wheeled motor vehicle	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Other land transport	0	74	0	129	29	0	232
Total	**302**	**74**	**3,153**	**989**	**29**	**539**	**5,086**

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

Age and sex distribution by traffic status

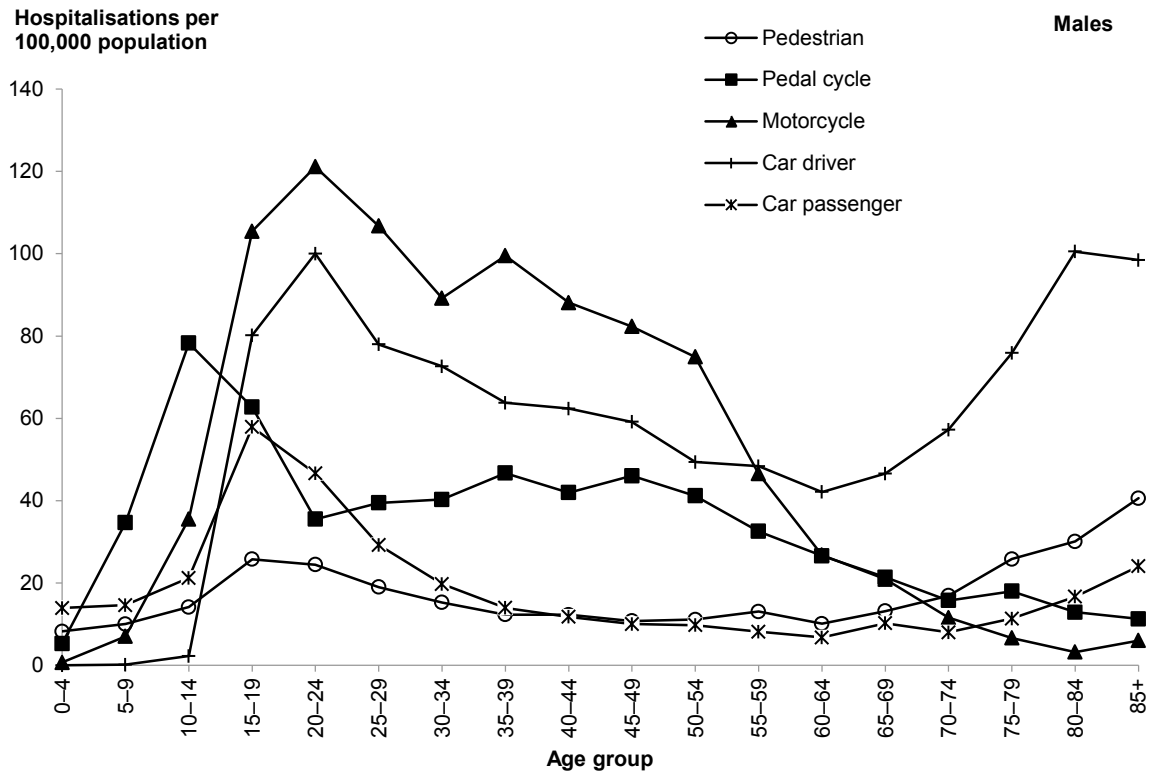
Traffic

For land transport traffic accidents, the hospitalised injury rate for males was highest at 20–24 years (Figure 2.2.6). Rates of injury for motorcyclists and car drivers in this age group were higher (121.1 and 100.0 per 100, 000 population respectively). For females, rates for car drivers was highest at age 20–24 (75.6) and car passengers at age 15–19 (71.7).

Non-traffic

For land transport non-traffic accidents, the hospitalised injury rates for males peaked at age 15–19 as a result of motor cycle accidents (142.0 per 100,000 population (Figure 2.2.7)). In comparison, the female rate peaked for girls aged 5–9, at a rate of 23.7 per 100,000 population for pedal cycle accidents. For car drivers, the injury rates were high for both males and females aged 15–19 (21.2 for males and 8.0 for females). However, the rate for female car drivers hospitalised for non-traffic accident peaked for women aged 80–84 (8.4).

Pedestrian injury rates in non-traffic were highest for men aged 85 and over (14.3 per 100,000 population) and for women aged 80–84 (16.1).



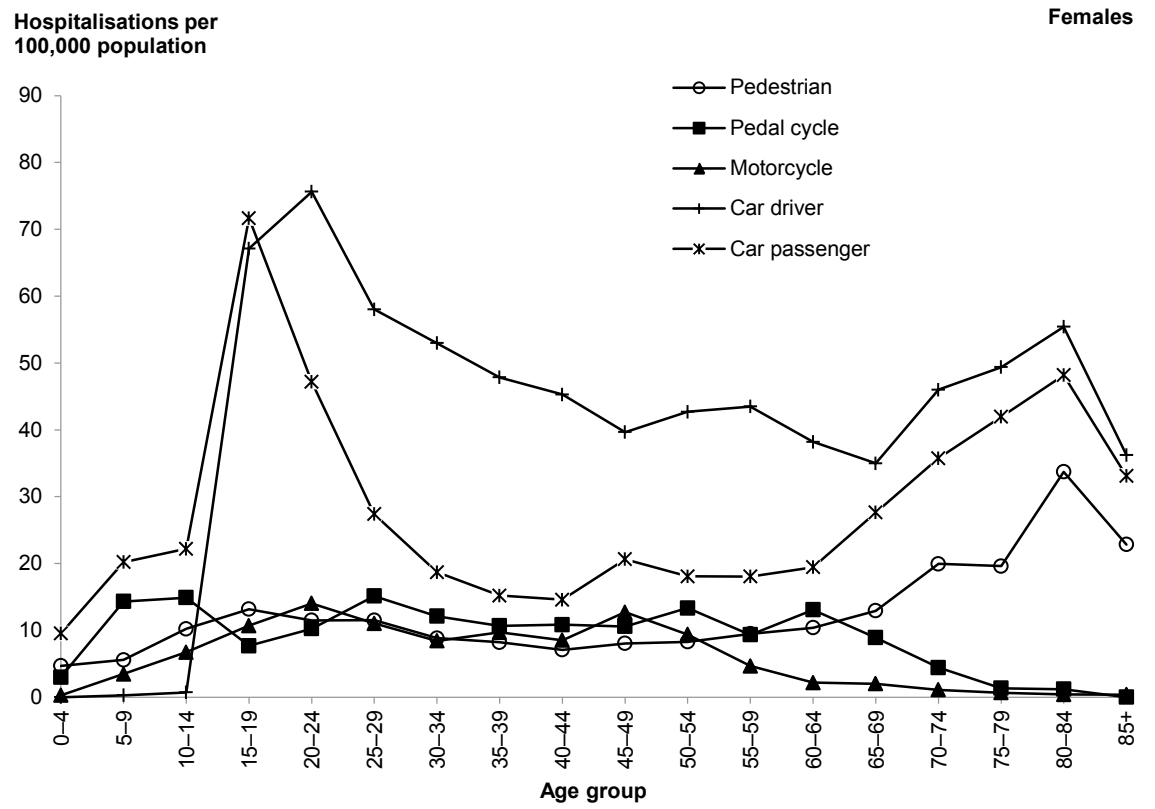


Figure 2.2.6: Traffic accidents—age-specific rates, by sex, Australia, 2009–10

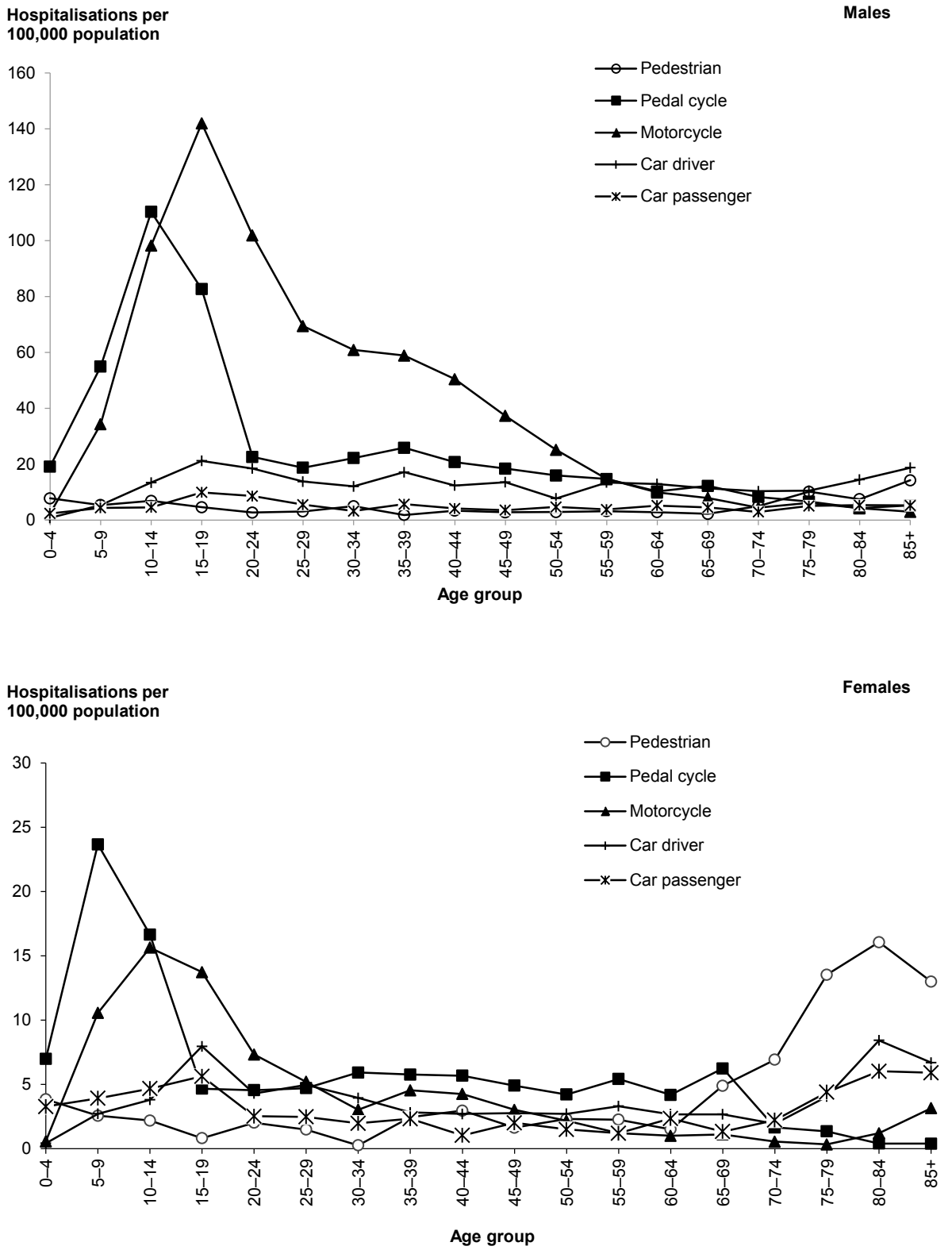


Figure 2.2.7: Non-traffic accidents—age-specific rates, by sex, Australia, 2009–10

2.3 Drowning and near-drowning

ICD-10-AM case inclusion

Principal diagnosis: S00–T75, T79 and

First reported external cause: W65–W74

Additional drowning and near-drowning (as shown in Table 2.3.2)

Principal diagnosis: T75.1 and

First reported external cause: is not W65–W74

Table 2.3.1: Key indicators for drowning and near-drowning cases, Australia, 2009–10

Indicator	Males	Females	Persons
Separations from hospital due to drowning and near-drowning	396	199	595
Percentage of all community injury separations	0.15	0.10	0.13
Estimated cases[(a)]	358	182	540
Crude rate/100,000 population	3.2	1.6	2.4
Age-standardised rate/100,000 population[(b)]	3.2	1.7	2.5
Total patient days[(c)]	396	199	595
Mean length of stay (days)	1.1	1.1	1.1
Estimated cases with a high threat to life	286	160	446
Percentage of cases with a high threat to life	79.9	87.9	82.6

(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.

Drowning and near-drowning cases accounted for less than 1% of all injury hospitalisations in the financial year 2009–10 (Table 2.3.1). Twice as many males (n = 396) as females (n = 199) were hospitalised for drowning and near-drowning. The age-standardised rate for males was 3.2 per 100,000 population and for females 1.7.

This chapter predominately focuses on estimated cases of *Accidental drowning and submersion* that have an external cause in the ICD-10-AM range W65–W74 (n = 540). However, there were 122 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 2009–10 are summarised in Table 2.3.2. Most cases (n = 540) were within the ICD-10-AM first reported external cause range W65–W74 *Accidental drowning and submersion*. There was a small number reported with another external cause related 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' analyses. In addition there are a number of 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 refer to drowning'.

Table 2.3.2: All identifiable drowning and near-drowning cases, Australia, 2009–10

Count	Per cent of all drowning cases	ICD-10-AM Code	Description	Coverage in this report
540	81.6	W65–W74	Accidental drowning and submersion	Drowning & near-drowning
8	1.2	V90	Accident to water craft causing drowning and submersion	Other transport
12	1.8	V92	Water transport-related drowning and submersion without accident to water craft	Other transport
28	4.2	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
64	9.7		Various external cause codes that do not refer to drowning (for example, fall)	Various chapters
662	**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 community injuries with a first reported external cause code in the range W65–W74 plus 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 = 540). More than two-fifths of all drowning and near-drowning injury cases involved young children aged 0–4 (Table 2.3.3) and of these, 56% were boys.

Table 2.3.3: Drowning and near-drowning cases, by age group, Australia, 2009–10

	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–4	130	36.3	103	56.6	233	43.1
5–14	34	9.5	22	12.1	56	10.4
15–24	57	15.9	9	4.9	66	12.2
25–44	63	17.6	19	10.4	82	15.2
45–64	44	12.3	18	9.9	62	11.5
65+	30	8.4	11	6.0	41	7.6
Total	**358**	**100.0**	**182**	**100.0**	**540**	**100.0**

The highest age-specific rates were in children aged 0–4, with boys experiencing a rate of 17.6 per 100,000 population and girls 14.7 (Figure 2.3.1). Rates were much lower at older ages. Caution should be exercised in interpreting rates over the age of about 75 due to small numbers of separations.

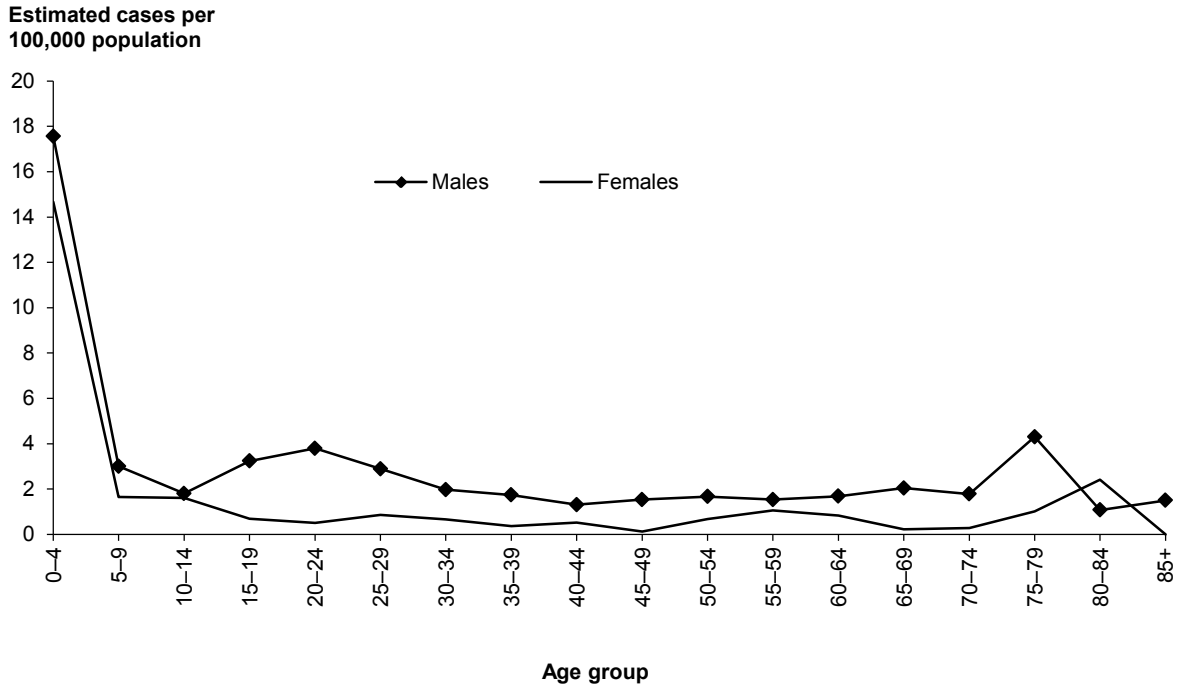


Figure 2.3.1: Age-specific rates of drowning and near-drowning, by sex, Australia, 2009–10

Place of occurrence

Place of occurrence information is contained within the drowning and submersion external cause categories, for example W65 *Drowning and submersion while in bath-tub*. Nearly one-third of all drowning-related cases in Australia in the 2009–10 financial year occurred in a swimming pool (29%, n = 157) (Table 2.3.4). Children under the age of 15 accounted for 82% of all swimming pool drowning–related cases; those aged 0–4 constituted 67% of these alone. Almost all cases of bathtub drowning-related injuries occurred in young children aged 0–4 (92%). The second most common setting for drowning and near-drowning cases overall was a body of natural water (including rivers, lakes and the ocean) (23%), and it was the principal setting for adults.

Table 2.3.4: Circumstances of accidental drowning and near-drowning cases, by age, Australia, 2009–10

Circumstances of drowning and near-drowning	Age group												All ages	
	0–4		5–14		15–24		25–44		45–64		65+			
	Count	Per cent	Count	Per cent	Count	Per cent	Count	Per cent	Count	Per cent	Count	Per cent	Total	Per cent
Swimming pool	105	45.1	24	42.9	8	12.1	7	8.5	6	9.7	7	17.1	157	29.1
Natural water	11	4.7	14	25.0	27	40.9	35	42.7	24	38.7	14	34.1	125	23.1
Bathtub	33	14.2	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	36	6.7
Other or unspecified	84	36.1	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	222	41.1
Group total	**233**	**100.0**	**56**	**100.0**	**66**	**100.0**	**82**	**100.0**	**62**	**100.0**	**41**	**100.0**	**540**	**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 2009–10 was 595. The mean length of stay for both sexes and age group was about one day (Figure 2.3.2).

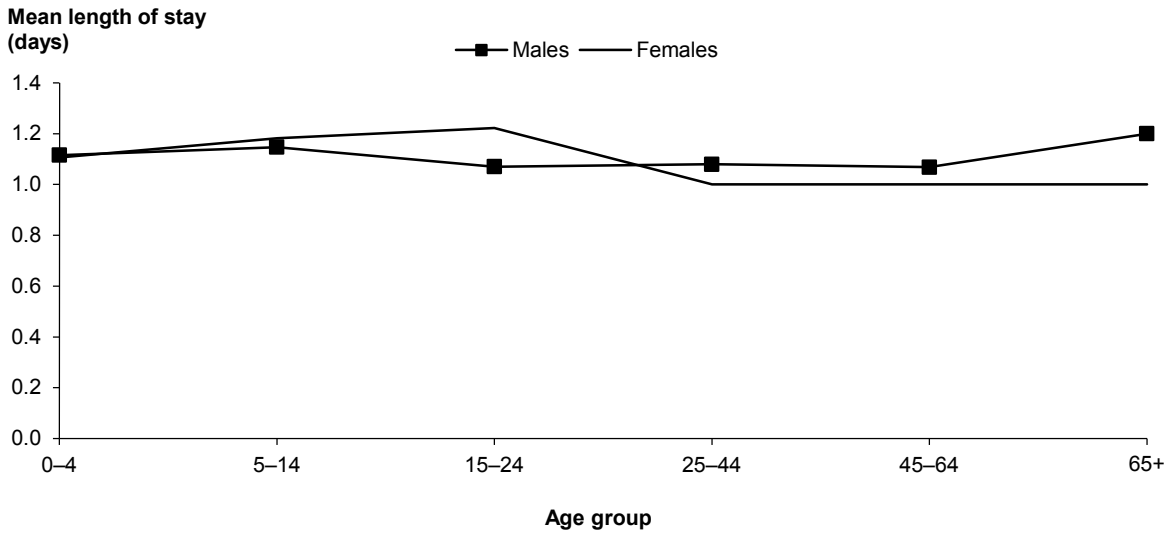


Figure 2.3.2: Mean length of stay for drowning and near-drowning injuries; males and females, by age, Australia, 2009–10

State and territory differences

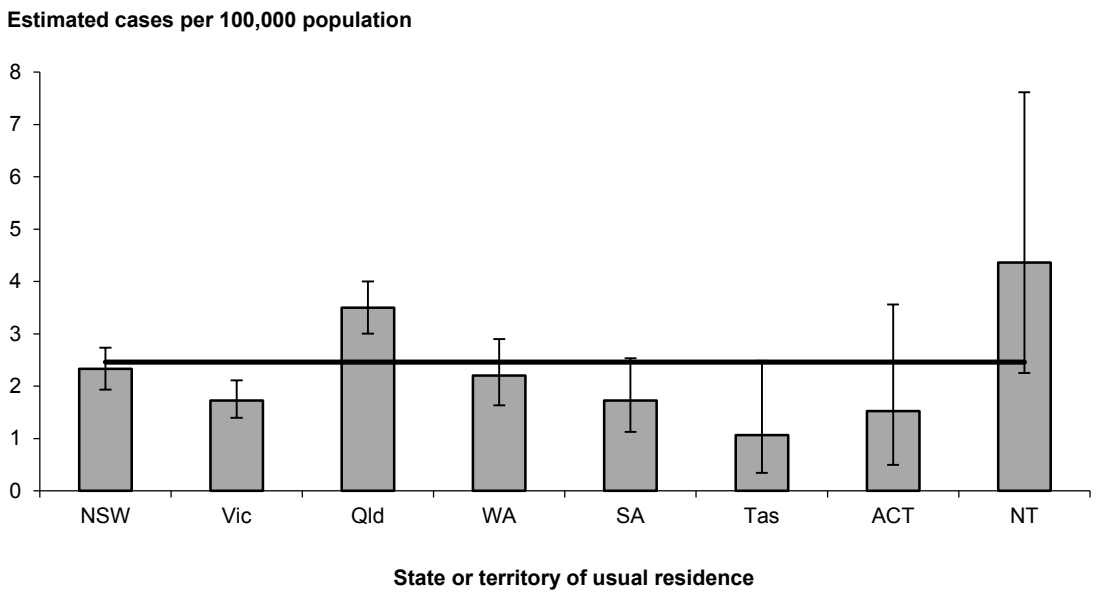
The age-standardised rates of hospitalised drowning and near-drowning for Queensland and the Northern Territory were higher than the national rate of 2.5 per 100,000 population (Table 2.3.5 and Figure 2.3.3). Tasmania had the lowest rate of 1.1 per 100,000 population.

Table 2.3.5: Age-standardised rates of drowning and near-drowning, states and territories, 2009–10

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI[(a)]
NSW	2.3	2.0–2.7
Vic	1.7	1.4–2.1
Qld	3.5	3.0–4.0
WA	2.2	1.6–2.9
SA	1.7	1.1–2.5
Tas	1.1	0.3–2.5
ACT	1.5	0.5–3.6
NT	4.4	2.3–7.6
Australia[(b)]	**2.5**	**2.3–2.7**

(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.



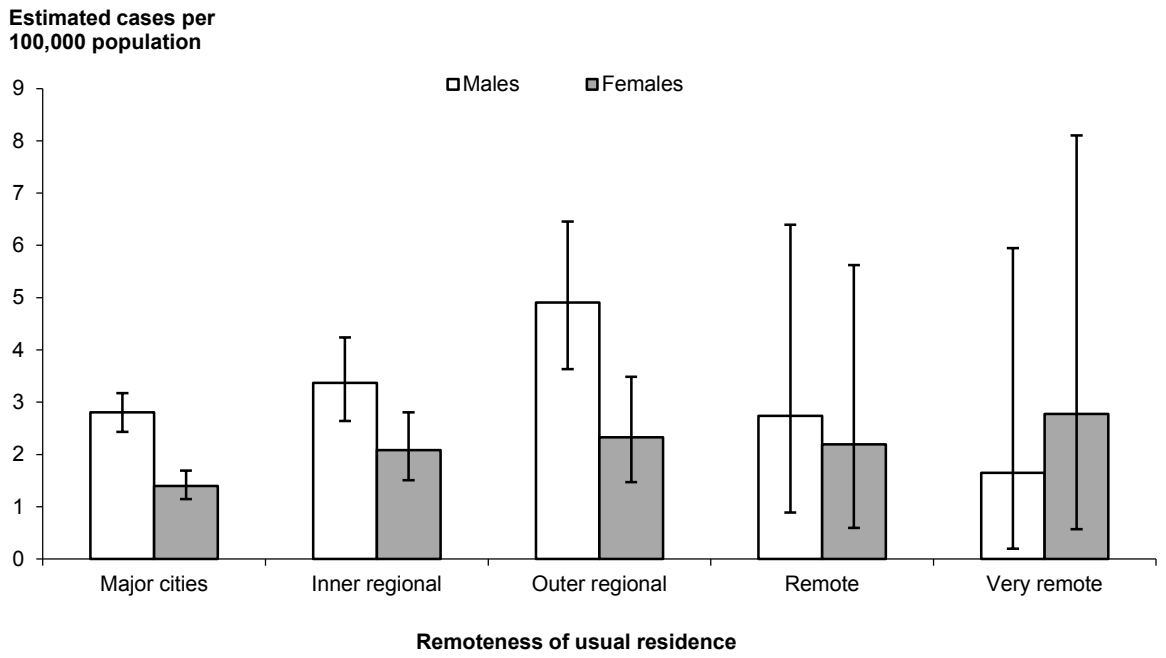
Notes

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 2.3.3: Age-standardised rates of drowning and near-drowning, states and territories, 2009–10

Remoteness of usual residence

The age-standardised rate of drowning and near-drowning cases in the 2009–10 financial year 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* (2.1 per 100,000 population). The wide asymmetrical confidence intervals observed in all regions except for *Major cities* reflect small case numbers of less than 100.



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 rates for drowning cases: males and females, by remoteness of usual residence (ASGC regions), 2009–10

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 poisoning by pharmaceutical cases, Australia, 2009–10

Indicator	Males	Females	Persons
Separations from hospital due to poisoning by pharmaceuticals	3,374	3,491	6,865
Percentage of all community injury separations	1.3	1.8	1.5
Estimated cases[(a)]	3,242	3,362	6,604
Crude rate/100,000 population	29.4	30.2	29.8
Age-standardised rate/100,000 population[(b)]	29.4	29.6	29.5
Total patient days[(c)]	7,698	8,299	15,997
Mean length of stay (days)	2.4	2.5	2.4
Estimated cases with a high threat to life	37	40	77
Percentage of cases with a high threat to life	1.1	1.2	1.2

(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 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. This chapter does not include poisoning from non-pharmaceutical substances (n = 2,523; see Chapter 2.5), intentional self-poisoning by drugs (n = 21,689; see Chapter 2.9), assault by drug-related poisoning (n = 52; see Chapter 2.10), or poisoning of undetermined intent (n = 4,158; see Chapter 2.11).

Poisoning by pharmaceuticals accounted for 1.5% of all community injury hospitalisations in the financial year 2009–10 (Table 2.4.1). Slightly more numbers of females than males were hospitalised (females n = 3,491, males n = 3,374) and the age-standardised rate of poisoning by pharmaceuticals was 29.6 per 100,000 population for females, and 29.4 for males.

Age and sex distribution

The highest age-specific rates for both males and females was observed in young children aged 0–4 (98.2 and 84.8 per 100,000 population respectively), while the lowest rate for males was among boys aged 10–14 (4.6) and girls aged 5–9 for females (5.6) (Figure 2.4.1). Caution should be applied to interpreting rates for those over age 85 due to small case numbers.

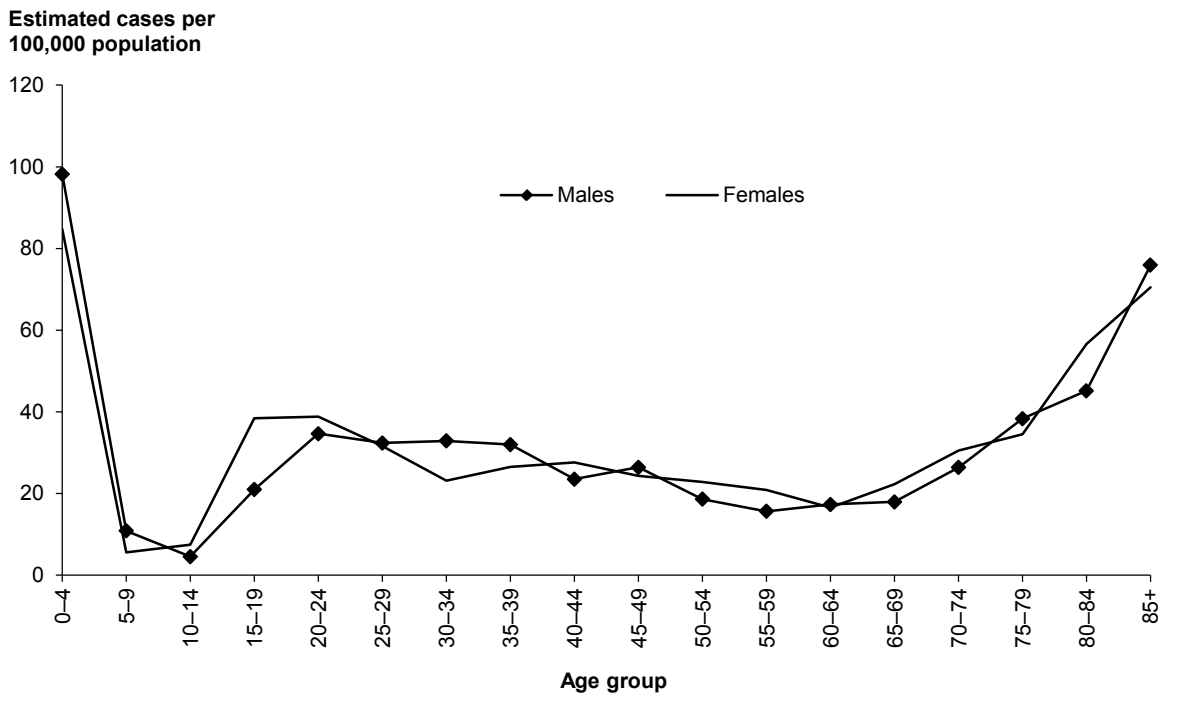


Figure 2.4.1: Age-specific rates of poisoning by pharmaceuticals, by sex, Australia, 2009–10

One-fifth of cases of poisoning by pharmaceuticals occurred in young children aged 0–4 (n = 1,322) and more than one-quarter occurred in adults aged 25–44 (n = 1,817) (Table 2.4.2).

Table 2.4.2: Cases of poisoning by pharmaceuticals, by age group and sex, Australia, 2009–10

	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–4	727	22.4	595	17.7	1,322	20.0
5–14	109	3.4	88	2.6	197	3.0
15–24	454	14.0	587	17.5	1,041	15.8
25–44	956	29.5	861	25.6	1,817	27.5
45–64	545	16.8	599	17.8	1,144	17.3
65+	451	13.9	632	18.8	1,083	16.4
Total	**3,242**	**100.0**	**3,362**	**100.0**	**6,604**	**100.0**

Mechanism

Almost all (99.5%; *n* = 6,568) accidental 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* = 2,592) of hospitalisation cases 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 poisoning cases; *n* = 1,042), other and unspecified antipsychotics and neuroleptics (5% of all cases; *n* = 322), psychostimulants with potential for use disorder (4% of all cases; *n* = 300), other and unspecified antidepressants (4% of all cases; *n* = 298), and tricyclic and tetracyclic antidepressants (2% of all cases; *n* = 125), among others.

One-quarter (*n* = 1,672) of cases were *Accidental poisoning by and exposure to other and unspecified drugs, medicaments, and biological substances*. This is a diverse group that includes a range of drugs including anticoagulants (2% of cases; *n* = 153), insulin and oral hypoglycaemic (antidiabetic) drugs (2% of cases; *n* = 146), other antihypertensive drugs not elsewhere classified (*n* = 128), and other and unspecified general anaesthetics (*n* = 119).

Eighteen per cent (*n* = 1,157) of cases were *Accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified*—of which 454 were other opioids such as codeine and morphine (7% of all pharmaceutical poisoning cases), 242 were heroin (4% of all poisoning cases) and 167 were other synthetic narcotics including pethidine (3% of all poisoning cases). Methadone and cannabis (or its derivatives) each accounted for 1% of pharmaceutical poisoning cases.

Fourteen per cent (*n* = 946) of cases were *Accidental poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics*—most of these cases involved 4-aminophenol derivatives such as paracetamol (11% of all pharmaceutical poisoning cases; *n* = 718) and other non-steroidal anti-inflammatory drugs (3% of all poisoning cases; *n* = 168).

Four per cent (*n* = 237) 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, 2009–10

ICD-10-AM Code	Accidental poisoning by and exposure to:	0–14	Per cent	15–24	Per cent	25–44	Per cent	45–64	Per cent	65+	Per cent	Total	Per cent
Males													
X40	Nonopioid analgesics, antipyretics and antirheumatics	113	13.5	80	17.6	115	12.0	57	10.5	35	7.8	400	12.3
X41	Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	303	36.2	196	43.2	397	41.5	206	37.8	87	19.3	1,189	36.7
X42	Narcotics and psychodysleptics [hallucinogens]	49	5.9	90	19.8	316	33.1	152	27.9	70	15.5	677	20.9
X43	Other drugs acting on the autonomic nervous system	48	5.7	5	1.1	16	1.7	16	2.9	31	6.9	116	3.6
X44	Other and unspecified drugs, medicaments and biological substances	323	38.6	83	18.3	112	11.7	114	20.9	228	50.6	860	26.5
Total		**836**	**100.0**	**454**	**100.0**	**956**	**100.0**	**545**	**100.0**	**451**	**100.0**	**3,242**	**100.0**
Females													
X40	Nonopioid analgesics, antipyretics and antirheumatics	94	13.8	184	31.3	165	19.2	69	11.5	34	5.4	546	16.2
X41	Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	277	40.6	256	43.6	435	50.5	285	47.6	150	23.7	1,403	41.7
X42	Narcotics and psychodysleptics [hallucinogens]	38	5.6	62	10.6	160	18.6	116	19.4	104	16.5	480	14.3
X43	Other drugs acting on the autonomic nervous system	40	5.9	6	1.0	11	1.3	17	2.8	47	7.4	121	3.6
X44	Other and unspecified drugs, medicaments and biological substances	234	34.3	79	13.5	90	10.5	112	18.7	297	47.0	812	24.2
Total		**683**	**100.0**	**587**	**100.0**	**861**	**100.0**	**599**	**100.0**	**632**	**100.0**	**3,362**	**100.0**

Young children aged 0–4

One in five cases of accidental pharmaceutical poisoning occurred in young children aged 0–4 (20%; *n* = 1,322) (Table 2.4.4). Most of these occurred in children aged between one and four, 4% (*n* = 52) occurred in infants aged less than one.

Accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs (X41) in children aged 0–4 (*n* = 511) accounted for 8% of all cases due to poisoning by pharmaceuticals. This category included benzodiazepines (*n* = 250), other and unspecified antidepressants (*n* = 82) and other and unspecified antipsycotics and neuroleptics (*n* = 47), among others.

Accidental poisoning by and exposure to other and unspecified drugs, medicaments, and biological substances (X44) accounted for 7% of all cases due to poisoning by pharmaceuticals in children aged 0–4 (*n* = 485). The drugs implicated were a diverse group, and included the broad categories of antiallergic and antiemetic drugs (*n* = 68), other antihypertensive drugs, not elsewhere classified (*n* = 53), dental drugs, topically applied (*n* = 53), and various others.

Accidental poisoning by and exposure to nonopioid analgesics, antipyretics, and antirheumatics (X40) in children aged 0–4 (*n* = 168) accounted for 3% of all cases due to poisoning by pharmaceuticals. Most were poisoning by 4-aminophenol derivatives such as paracetamol (*n* = 110) and other non-steroidal anti-inflammatory drugs (*n* = 41).

Accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified (X42) in children aged 0–4 (*n* = 77) accounted for 1.2% of all cases due to poisoning by pharmaceuticals. This category included other opioids such as codeine and morphine (*n* = 35) and other synthetic narcotics [pethidine] (*n* = 29).

Accidental poisoning by and exposure to other drugs acting on the autonomic nervous system (X43) in children aged 0–4 constituted a small proportion (1.2%; *n* = 73) of all cases due to poisoning by pharmaceuticals. Most poisoning cases were due to beta-Adrenoreceptor antagonists, not elsewhere classified and other parasympatholytics (anticholinergics and antimuscarinics) and spasmolytics, not elsewhere classified (*n* = 39, *n* = 32 respectively).

Table 2.4.4: Mechanism of poisoning by pharmaceuticals in children aged 0–4, Australia, 2009–10

ICD-10-AM Code	Accidental poisoning by and exposure to:	Age					
		< 1	1	2	3	4	Total
X40	Nonopioid analgesics, antipyretics and antirheumatics	7	33	80	36	12	**168**
X41	Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	7	108	249	108	39	**511**
X42	Narcotics and psychodysleptics [hallucinogens]	n.p.	28	25	17	n.p.	**79**
X43	Other drugs acting on the autonomic nervous system	n.p.	20	31	13	n.p.	**79**
X44	Other and unspecified drugs, medicaments and biological substances	30	137	203	76	39	**485**
Total		**52**	**326**	**588**	**250**	**106**	**1,322**
Per cent		**3.9**	**24.7**	**44.5**	**18.9**	**8.0**	**100.0**

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

Length of stay

Just over one-third of all poisoning by pharmaceutical separations (*n* = 2,383) had a hospital stay of one day. The overall mean length of stay was 2.4 days and generally increased with age for both sexes (Figure 2.4.2). The MLOS for children aged 0–14 was 1.2 days, 1.8 days for young people aged 15–24, 2.4 days for adults aged 25–44, 3.0 days for adults aged 45–64 and 4.3 days for older people aged 65+.

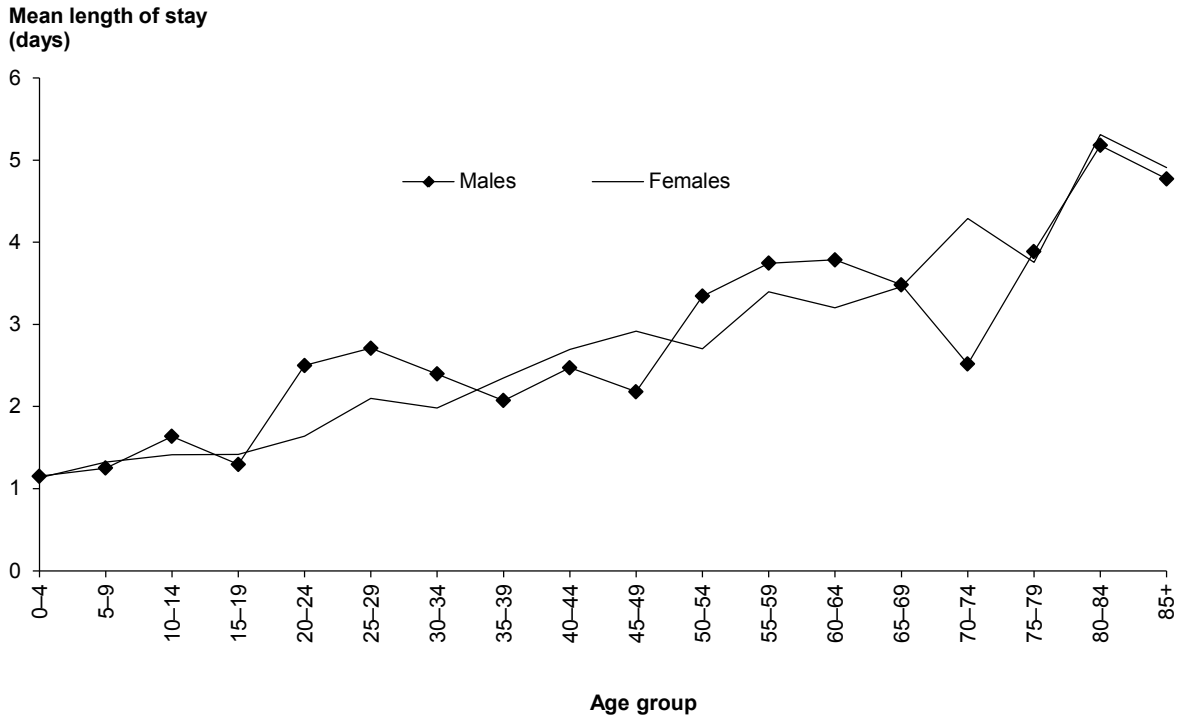


Figure 2.4.2: Mean length of stay for poisoning by pharmaceuticals, by age and sex, Australia, 2009–10

Place of occurrence

Location was not specified or reported for 30% of poisoning by pharmaceuticals cases (n = 1,948). The following observations are restricted to those cases on which the place of occurrence was specified. The majority of hospitalised cases due to poisoning by pharmaceuticals occurred in the home (73%; n = 3,382) (Table 2.4.5). Of the 159 cases that occurred in a residential institution, almost two-thirds occurred in an aged care facility (65%; n = 103). Of the 127 cases that occurred in a trade and service area, 64% occurred in a café, hotel or restaurant (n = 81). For children aged 0–4 for whom a place of occurrence was specified (n = 1,038), almost all poisonings by pharmaceuticals occurred in the home (91%; n = 949).

Table 2.4.5: Place of occurrence for cases of poisoning by pharmaceuticals, Australia, 2009–10

Place	Count	Per cent
Home	3,382	72.6
Residential institution	159	3.4
School	15	0.3
Health service area	824	17.7
Other specified institution and public administrative area	9	0.2
Sports and athletics area	n.p.	n.p.
Street and highway	41	0.9
Trade and service area	127	2.7
Industrial and construction area	7	0.2
Farm	n.p.	n.p.
Other specified place of occurrence	83	1.8
Total	**4,656**	**100.0**

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

State and territory differences

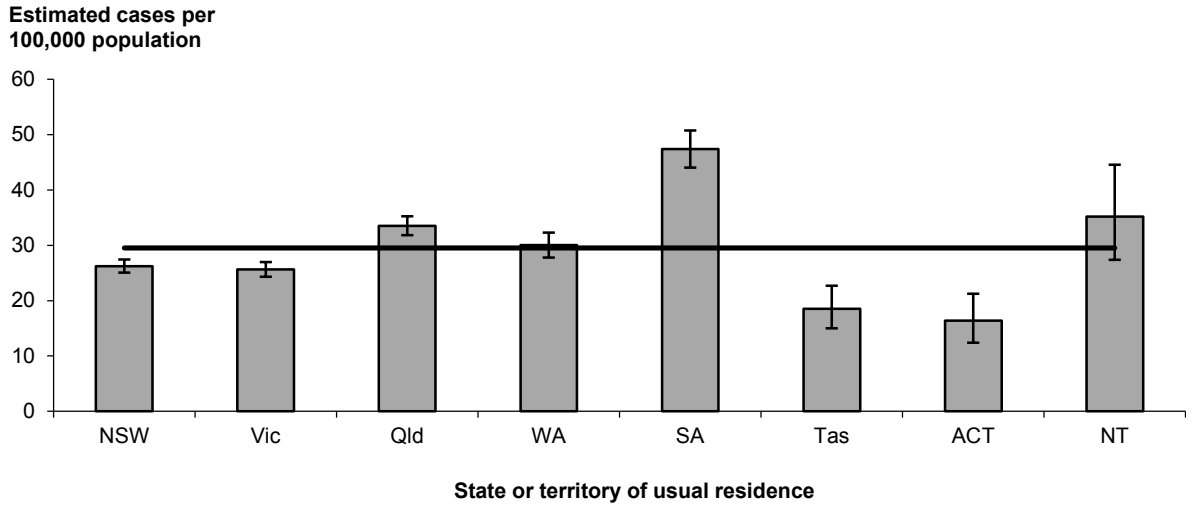
Hospitalisation rates for poisoning by pharmaceuticals were lower in New South Wales, Victoria, Tasmania and the Australian Capital Territory than the national age-standardised rate (29.5 per 100,000 population) (Table 2.4.6 and Figure 2.4.3). Western Australia was on par with the national rate. South Australia recorded the highest age-standardised rate for an Australian state and territory (47.4 per 100,000 population).

Table 2.4.6: Age-standardised rates of poisoning by pharmaceuticals, states and territories, 2009–10

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI[(a)]
NSW	26	25–27
Vic	26	24–27
Qld	34	32–35
WA	30	28–32
SA	47	44–51
Tas	19	15–23
ACT	16	12–21
NT	35	27–45
Australia[(b)]	**29.5**	**29–30**

(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.



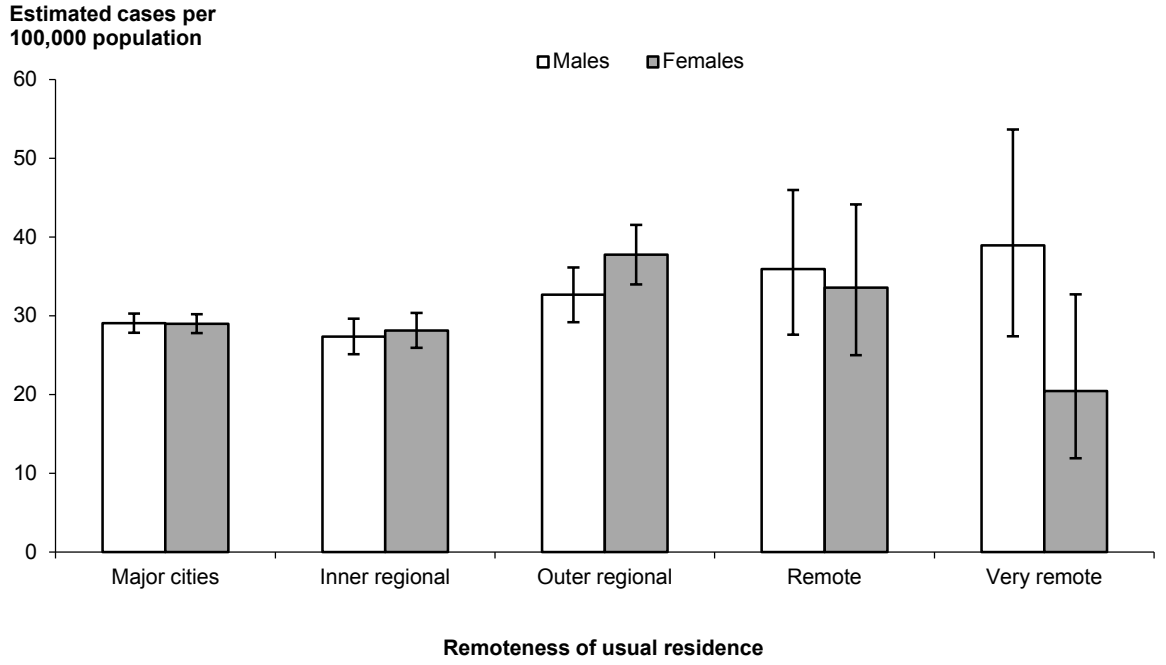
Notes

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 2.4.3: Age-standardised rates of poisoning by pharmaceuticals, states and territories, 2009–10

Remoteness of usual residence

The age-standardised rate of hospitalised poisoning by pharmaceuticals in 2009–10 varied slightly according to remoteness of the person's place of usual residence (Figure 2.4.4). The lowest population rate was observed for residents of Australia's *Inner regional* areas (27.8 per 100,000 population) and the highest population rate was observed for residents of *Remote* areas of Australia (35.2).



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 rates of poisoning by pharmaceuticals: males and females, by remoteness of usual residence (ASGC regions), 2009–10

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, 2009–10

Indicator	Males	Females	Persons
Separations from hospital due to poisoning, other substances	1,569	954	2,523
Percentage of all community injury separations	0.6	0.5	0.6
Estimated cases[(a)]	1,483	924	2,407
Crude rate/100,000 population	13.4	8.3	10.9
Age-standardised rate/100,000 population[(b)]	13.4	8.1	10.8
Total patient days[(c)]	3,221	1,946	5,167
Mean length of stay (days)	2.2	2.1	2.1
Estimated cases with a high threat to life	81	38	119
Percentage of cases with a high threat to life	5.5	4.1	4.9

(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 that are chiefly non-medicinal. These accounted for less than 1% of all community injury separations in the financial year 2009–10 (Table 2.5.1). More males than females were hospitalised for accidental poisoning by other substances (based on age-standardised rates) with a M:F rate ratio of 1.7:1.0.

This chapter does not include intentional self-poisoning by drugs (*n* = 21,689; see Chapter 2.9), assault by drug-related poisoning (*n* = 52; see Chapter 2.10), or poisoning of undetermined intent (*n* = 4,158; see Chapter 2.11).

Age and sex distribution

Rates for poisoning by other substances were generally higher for males than females (Figure 2.5.1). Caution should be exercised in interpreting rates over the age of about 85 due to smaller numbers of separations.

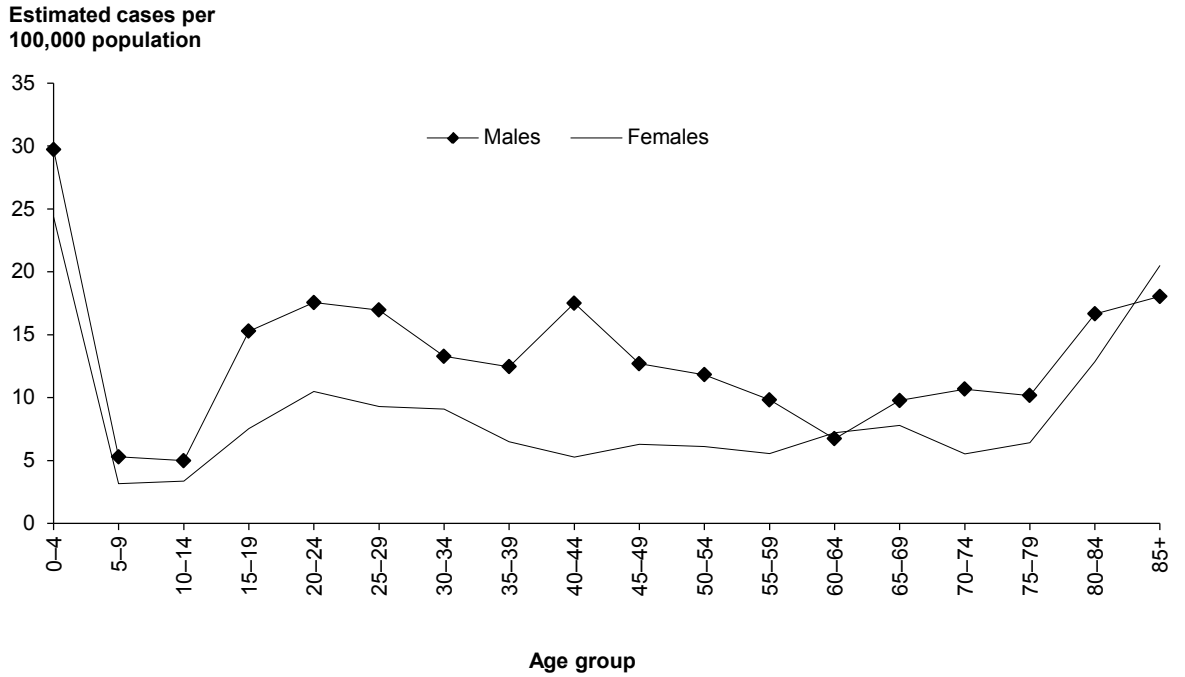


Figure 2.5.1: Age-specific rates of poisoning by other substances, by sex, Australia, 2009–10

Almost one-third of poisonings by other substances occurred in adults aged 25–44 (30%; *n* = 714) (Table 2.5.2).

Table 2.5.2: Cases of poisoning by other substances, by age group, Australia, 2009–10

	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–4	220	14.8	171	18.5	391	16.2
5–14	73	4.9	44	4.8	117	4.9
15–24	266	17.9	138	14.9	404	16.8
25–44	476	32.1	238	25.8	714	29.7
45–64	288	19.4	175	18.9	463	19.2
65+	160	10.8	158	17.1	318	13.2
Total	**1,483**	**100.0**	**924**	**100.0**	**2,407**	**100.0**

Mechanism

More than half of poisoning by other substances cases were as a result of *Accidental poisoning by and exposure to other and unspecified chemicals and noxious substances* (X49) (60%; *n* = 1,453). 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.

Nineteen per cent of cases were from *Accidental poisoning by and exposure to other gases and vapours* (X47) (*n* = 455). This category includes poisoning by carbon monoxide and liquefied petroleum gas (LPG).

Nine per cent of cases resulted from *Accidental poisoning by and exposure to alcohol* (X45) (*n* = 223).

Six per cent of cases were from *Accidental poisoning by and exposure to pesticides* (X48) (*n* = 143). Similarly, 6% of cases were from *Accidental poisoning by and exposure to organic solvents and halogenated hydrocarbons and their vapours* (X46) (*n* = 133).

Table 2.5.3 shows the distribution of cases of poisoning by other substances by gender and age group. *Poisoning by other and unspecified chemicals and noxious substances* was the leading cause of poisoning across all age groups; the highest amount of poisonings occurring in the 25–44 age group (*n* = 414) and in children aged 0–14 (*n* = 320).

Alcohol poisoning was most common among young people aged 15–24 and adults aged 25–44 (18% and 12% of their age groups, respectively). In older people aged 65+, *Accidental poisoning by and exposure to other gases and vapours* was relatively common (28% of poisonings in this age group, *n* = 88).

Due to the variety of substances involved in the poisoning by other substances category, the types of injuries reported were varied. The majority of cases (79%, *n* = 2,000) reported *Toxic effects of substances chiefly nonmedicinal as to source*, 18% (*n* = 458) reported *Burns* and less than 1% reported *Poisoning by drugs, medicaments and biological substances*.

Table 2.5.3: External causes of poisoning by other substances, by age and sex, Australia, 2009–10

		0–14		15–24		25–44		45–64		65+		Total	
ICD-10-AM Code	Accidental poisoning by and exposure to:	Count	Per cent	Count	Per cent	Count	Per cent	Count	Per cent	Count	Per cent	Count	Per cent
Males													
X45	Alcohol	12	4.1	51	19.2	49	10.3	n.p.	n.p.	n.p.	n.p.	138	9.3
X46	Organic solvents and halogenated hydrocarbons and their vapours	54	18.4	12	4.5	18	3.8	n.p.	n.p.	n.p.	n.p.	96	6.5
X47	Other gases and vapours	21	7.2	38	14.3	129	27.1	91	31.6	39	24.4	318	21.4
X48	Pesticides	30	10.2	7	2.6	24	5.0	13	4.5	13	8.1	87	5.9
X49	Other and unspecified chemicals and noxious substances	176	60.1	158	59.4	256	53.8	155	53.8	99	61.9	844	56.9
Total		**293**	**100.0**	**266**	**100.0**	**476**	**100.0**	**288**	**100.0**	**160**	**100.0**	**1,483**	**100.0**
Females													
X45	Alcohol	8	3.7	21	15.2	33	13.9	17	9.7	6	3.8	85	9.2
X46	Organic solvents and halogenated hydrocarbons and their vapours	25	11.6	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	37	4.0
X47	Other gases and vapours	8	3.7	18	13.0	33	13.9	29	16.6	49	31.0	137	14.8
X48	Pesticides	30	14.0	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	56	6.1
X49	Other and unspecified chemicals and noxious substances	144	67.0	94	68.1	158	66.4	118	67.4	95	60.1	609	65.9
Total		**215**	**100.0**	**138**	**100.0**	**238**	**100.0**	**175**	**100.0**	**158**	**100.0**	**924**	**100.0**

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

Young children aged 0–4

For young children aged 0–4, the majority of poisoning by other substances occurred at age one or two (Table 2.5.4).

Accidental poisoning by and exposure to other and unspecified chemicals and noxious substances (X49) in children aged 0–4 accounted for 10% (*n* = 238) of all cases of poisoning due to other substances. This category included the toxic effects of corrosive alkalis (*n* = 25), tobacco and nicotine (*n* = 18) and soaps and detergents (*n* = 16), among others. *Accidental poisoning by and exposure to organic solvents and halogenated hydrocarbons and their vapours* (X46) accounted for 3% (*n* = 7) of all cases of poisoning by other substances; most cases were other specified organic solvents (*n* = 38) and petroleum products (*n* = 28). *Accidental poisoning and exposure to pesticides* (X48) accounted for 2% (*n* = 57) of cases. This category included the toxic effects of organophosphate and carbamate insecticides (*n* = 26), halogenated insecticides (*n* = 11) and rodenticides (*n* = 8). *Accidental poisoning by and exposure to alcohol* (X45) and *Accidental poisoning by and exposure to other gases and vapours* (X47) in children aged 0–4 constituted a small proportion of poisoning by other substances, 0.5% each.

Table 2.5.4: Mechanism of poisoning by other substances in children aged 0–4, Australia, 2009–10

ICD-10-AM Code	Accidental poisoning by and exposure to:	Age					
		< 1	1	2	3	4	Total
X45	Alcohol	n.p.	n.p.	n.p.	n.p.	n.p.	13
X46	Organic solvents and halogenated hydrocarbons and their vapours	n.p.	44	15	7	n.p.	70
X47	Other gases and vapours	n.p.	n.p.	n.p.	n.p.	n.p.	13
X48	Pesticides	n.p.	21	27	n.p.	n.p.	57
X49	Other and unspecified chemicals and noxious substances	19	123	55	29	12	238
Total		**30**	**198**	**102**	**43**	**18**	**391**
Per cent		**7.7**	**50.6**	**26.1**	**11.0**	**4.6**	**100.0**

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

Length of stay

The overall mean length of stay for poisoning by other substances was 2.1 days (Figure 2.5.2). Males had a slightly higher MLOS (2.2 days) than females (2.1 days). The mean length of stay was 1.9 days for the three population groups under age 45 (that is, 0–14, 15–24 and 25–44), increasing to 2.3 days for adults aged 45–64 and 3.0 days for older people aged 65+. The increased MLOS for girls aged 5–9 and older men aged 90–94 should be interpreted cautiously due to low case numbers.

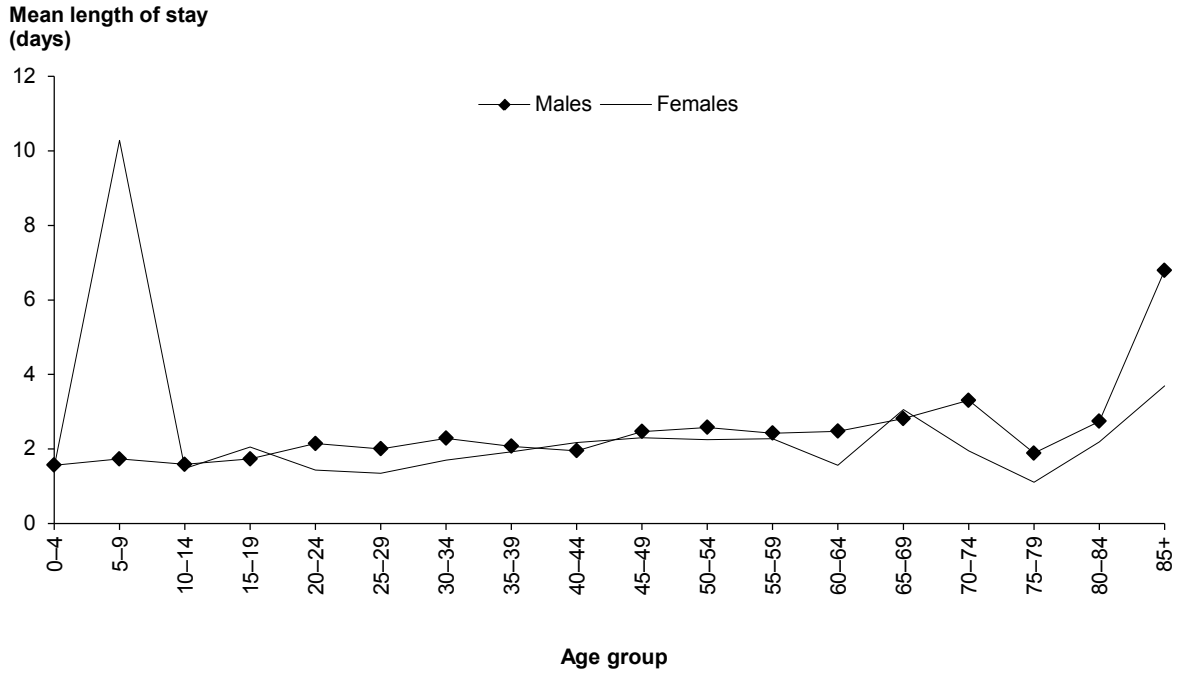


Figure 2.5.2: Mean length of stay for poisoning by other substances, by age and sex, Australia, 2009–10

Place of occurrence

Location was not specified or reported for 40% of cases for poisoning by other substances (n = 971). The following observations are restricted to those cases in which the place of occurrence was specified. Almost two-thirds of injuries from poisoning by other substances occurred in the home (63%; n = 898) (Table 2.5.5).

For children aged 0–4 for whom a place of occurrence was specified (n = 286), almost all poisoning by other substances occurred in the home (97%; n = 276).

Table 2.5.5: Place of occurrence for cases of poisoning by other substances, Australia, 2009–10

Place	Count	Per cent
Home	898	62.5
Residential institution	24	1.7
School	14	1.0
Health service area	26	1.8
Other specified institution and public administrative area	6	0.4
Sports and athletics area	7	0.5
Street and highway	16	1.1
Trade and service area	154	10.7
Industrial and construction area	164	11.4
Farm	43	3.0
Other specified place of occurrence	84	5.8
Total	**1,436**	**100.0**

State and territory differences

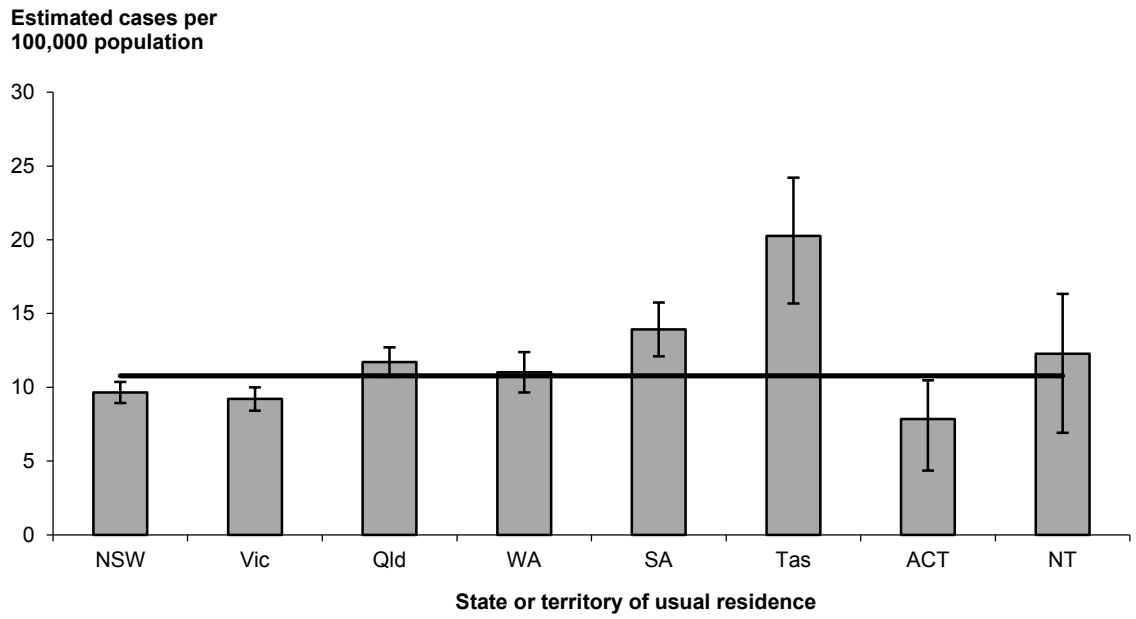
Queensland and New South Wales had rates lower than the national age-standardised rate of 10.8 per 100,000 population (Table 2.5.6 and Figure 2.5.3). Tasmania, the Australian Capital Territory and the Northern Territory each reported fewer than 100 cases, hence the asymmetrical confidence intervals.

Table 2.5.6: Age-standardised rates of poisoning by other substances, states and territories, 2009–10

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI[(a)]
NSW	10	9–10
Vic	9	8–10
Qld	12	11–13
WA	11	10–12
SA	14	12–16
Tas	20	16–25
ACT	8	5–11
NT	12	8–18
Australia[(b)]	**11**	**10–11**

(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.



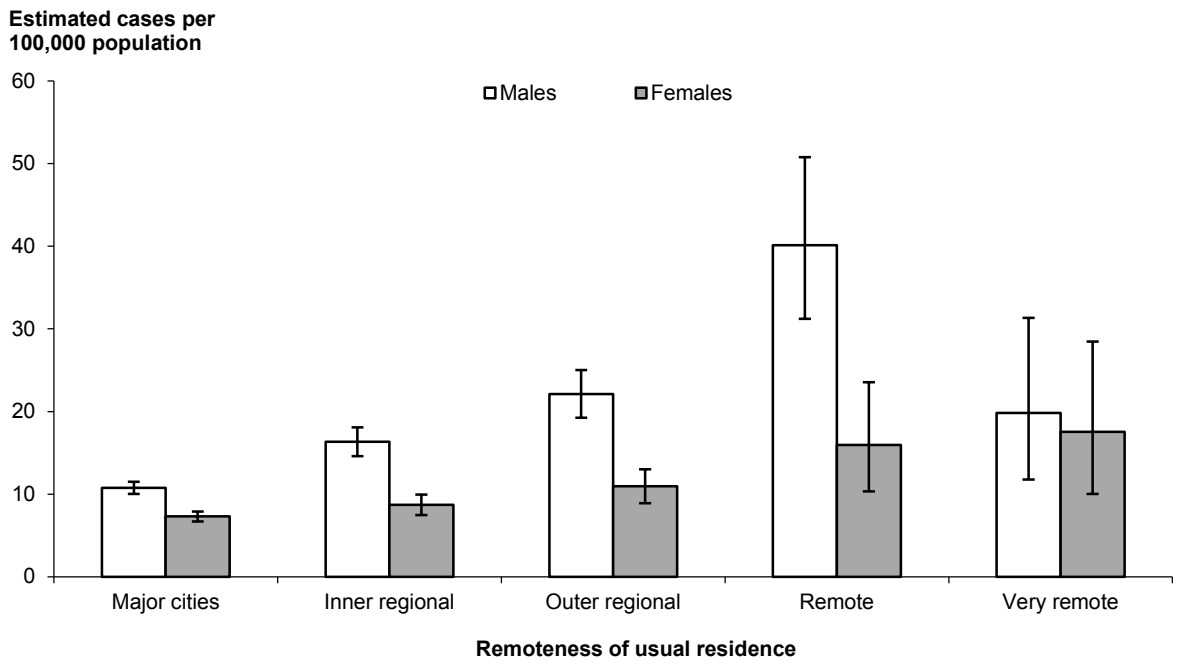
Notes

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 2.5.3: Age-standardised rates of poisoning by other substances, states and territories, 2009–10

Remoteness of usual residence

The age-standardised rate of poisoning by other substances in 2009–10 varied according to remoteness of the person's place of usual residence. The lowest rate was observed for residents of Australia's *Major cities* (9.0 per 100,000 population) and the highest rate was observed for residents of *Remote* regions (28.8). Differences between sexes were more significant in *Outer regional* and *Remote* regions (Figure 2.5.4). The highest rate for males was observed in *Remote* regions (40.1). The highest rate for females was observed in *Very remote* regions (17.5).



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 rates of poisoning by other substances: males and females, by remoteness of usual residence (ASGC regions), 2009–10

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 unintentional fall cases, Australia, 2009–10

Indicator	Males	Females	Persons
Separations from hospital due to falls	77,335	99,029	176,364
Percentage of all community injury separations	29.7	51.4	38.9
Estimated cases[(a)]	70,998	90,149	161,147
Crude rate/100,000 population	643.7	810.5	727.5
Age-standardised rate/100,000 population[(b)]	661.5	684.2	685.3
Total patient days[(c)]	345,335	595,549	940,884
Mean length of stay (days)	4.9	6.6	5.8
Estimated cases with a high threat to life	14,228	24,273	38,501
Percentage of cases with a high threat to life	20.0	26.9	23.9

(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 hospitalised injury due to falls. Further statistical information on hospitalised fall injuries is available in reports focused on this topic from the AIHW website. Falls were responsible for 39% of all community injury hospitalisations in the financial year 2009–10 (Table 2.6.1).

This chapter does not include falls due to intentional self-harm (X80, X81; n = 155), assault (Y01, Y02; n = 28) or falls of undetermined intent (Y30, Y31; n = 68). 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 = 115).

Age and sex distribution

More females than males were hospitalised for falls in the 2009–10 financial year. The age-standardised rate for males was 661.5 per 100,000 population and for females, 684.2. For both sexes, rates increased in an exponential pattern from age 65 (Figure 2.6.1).

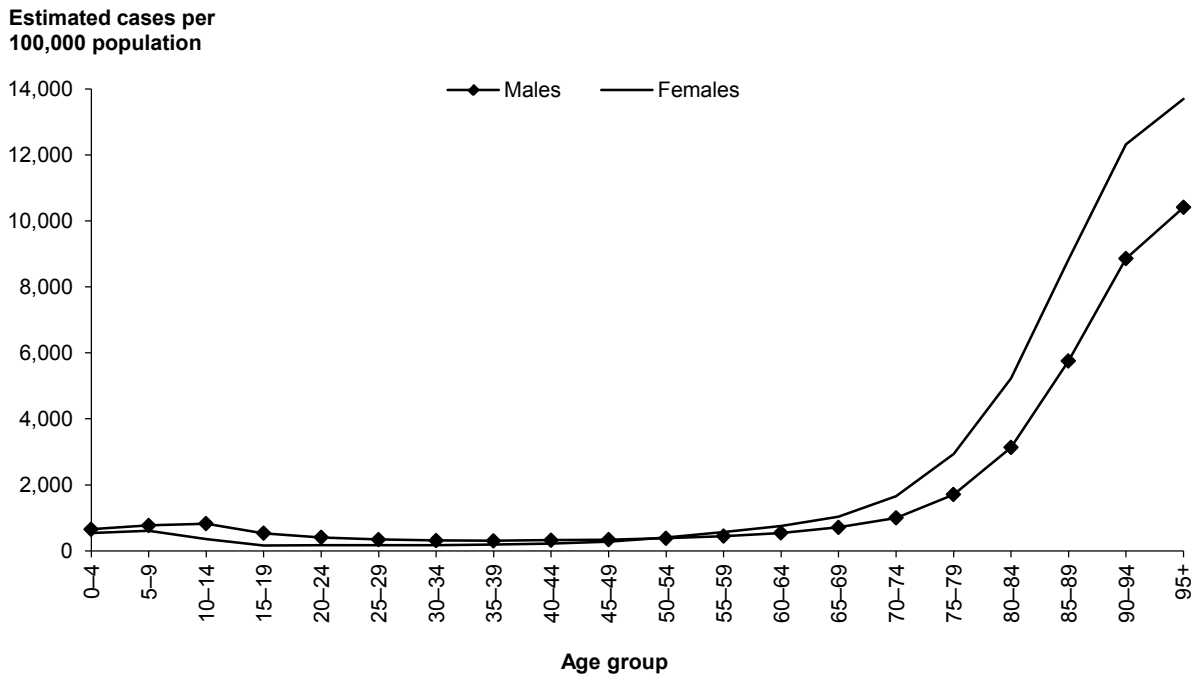


Figure 2.6.1: Age-specific rates of falls, by sex, Australia, 2009–10

Fifty-two per cent of fall injuries occurred in adults aged 65+ and 16% occurred in children aged 0–14 (Table 2.6.2). More than twice as many women aged 65+ sustained a fall injury compared with their male peers.

Table 2.6.2: Fall cases, by age group, Australia, 2009–10

	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–4	4,856	6.8	3,770	4.2	8,626	5.4
5–14	11,317	15.9	6,431	7.1	17,748	11.0
15–24	7,553	10.6	2,504	2.8	10,057	6.2
25–44	10,156	14.3	5,867	6.5	16,023	9.9
45–64	11,519	16.2	13,406	14.9	24,925	15.5
65+	25,597	36.1	58,171	64.5	83,768	52.0
Total	**70,998**	**100.0**	**90,149**	**100.0**	**161,147**	**100.0**

Mechanism

Falls on the same level from slipping, tripping and stumbling accounted for just over a quarter of all hospitalised fall injuries (26%; *n* = 42,354) (Table 2.6.3).

Other fall on same level accounted for 18% of all falls cases (*n* = 28,769). *Fall on and from stairs and steps* accounted for 7% of cases (*n* = 10,495), with 46% of these cases occurring in older people aged 65+ (*n* = 4,841) (not shown in table).

Falls involving beds and *Falls involving chairs* accounted for 3% each of fall-related injuries, and cases were most common in older people aged 65+ (*n* = 3,534 and 2,530 respectively). However, children aged 0–14 also accounted for a considerable proportion of these separations (*n* = 1,172 and 1,337 respectively).

Hospitalisations as a result of *Fall on same level involving ice and snow* were less than .05%.

The sorts of fall injuries where males outnumbered females more than 3.0:1.0 were *Other fall on same level due to collision with, or pushing by, another person, Fall on and from ladder, Fall on and from scaffolding, Fall from, out of or through building or structure, Fall from tree* and *Diving or jumping into water causing injury other than drowning or submersion*.

Overall, children aged 0–14 accounted for 96% of *Falls involving playground equipment*, 80% of *Falls while being carried or supported by other persons,* 66% of *Falls from a tree,* 65% of *Falls involving other furniture,* and 57% of *Falls involving ice-skates, skis, roller-skates, skateboards, scooters and other pedestrian conveyances.*

Table 2.6.3: External causes of unintentional fall injury, by sex, Australia, 2009–10

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	37	0.1	41	0.0	78	0.0
W01	Fall on same level from slipping, tripping and stumbling	13,925	19.6	28,429	31.5	42,354	26.3
W02	Fall involving ice-skates, skis, roller-skates, skateboards, scooters and other pedestrian conveyances	3,724	5.2	1,630	1.8	5,354	3.3
W03	Other fall on same level due to collision with, or pushing by, another person	3,814	5.4	639	0.7	4,453	2.8
W04	Fall while being carried or supported by other persons	282	0.4	293	0.3	575	0.4
W05	Fall involving wheelchair	377	0.5	486	0.5	863	0.5
W06	Fall involving bed	1,985	2.8	3,226	3.6	5,211	3.2
W07	Fall involving chair	1,869	2.6	2,899	3.2	4,768	3.0
W08	Fall involving other furniture	459	0.6	462	0.5	921	0.6
W09	Fall involving playground equipment	3,405	4.8	2,791	3.1	6,196	3.8
W10	Fall on and from stairs and steps	4,030	5.7	6,465	7.2	10,495	6.5
W11	Fall on and from ladder	3,608	5.1	854	0.9	4,462	2.8
W12	Fall on and from scaffolding	205	0.3	6	0.0	211	0.1
W13	Fall from, out of or through building or structure	3,685	5.2	975	1.1	4,660	2.9
W14	Fall from tree	791	1.1	254	0.3	1,045	0.6
W15	Fall from cliff	334	0.5	156	0.2	490	0.3
W16	Diving or jumping into water causing injury other than drowning or submersion	498	0.7	144	0.2	642	0.4
W17	Other fall from one level to another	3,778	5.3	2,025	2.2	5,803	3.6
W18	Other fall on same level	11,447	16.1	17,322	19.2	28,769	17.9
W19	Unspecified fall	12,745	18.0	21,052	23.4	33,797	21.0
Total		**70,998**	**100.0**	**90,149**	**100.0**	**161,147**	**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 1,200 separations per 100,000 population for clarity.

Between ages 0–9, *Fall involving playground equipment* was the most common reason for hospitalisation for a fall injury for both boys and girls. The rate of these falls was higher for boys than girls in both age categories (boys aged 0–4: 110.1 and aged 5–9: 264.0 per 100,000 population versus girls: 92.0 and 254.9 per 100, 000 population respectively).

At ages 10–14, the most common cause for both sexes was *Fall involving ice-skates, skis, roller-skates, skateboards, scooters and other pedestrian conveyances.* However, the rate for boys far exceeded that for girls (177.5 versus 69.3 hospital separations per 100,000 population).

Other fall on same level due to collision with, or pushing by, another person was the most significant cause of fall injuries for males aged 15–29. The male rate for these types of falls exceeded the female rate until the age of 60, whereby the female rate exceeded males in all older adults' age categories.

Fall on same level from slipping, tripping and stumbling was the most common cause of fall injuries for females from the age of 15. 'Slips, trips and stumbles' were also the most common cause of fall injuries for men over the age of 30. The rates for both males and females increased in an exponential pattern; however, females were twice as likely to be hospitalised for a slip, trip or tumble than males (*M:F ratio* 0.5:1.0).

Falls from a bed or chair were high for all children aged 0–4, and the rates for *Fall involving bed* were similar for boys and girls (58.0 and 57.1 per 100,000 population). The rates of bed-related falls injury rose in an exponential pattern after age 65 for both men and women.

The male rate for *Fall on and from steps and stairs* was higher than the female rate under the age of 25. Overall females had the higher hospitalisation rate for *Falls on or from steps and stairs* (58.1 separations per 100,000 population compared with 36.5 per 100,000 population).

Overall, males were more than four times likely than females to be hospitalised following a *Fall on and from a ladder* (M:F ratio 4.2:1.0).

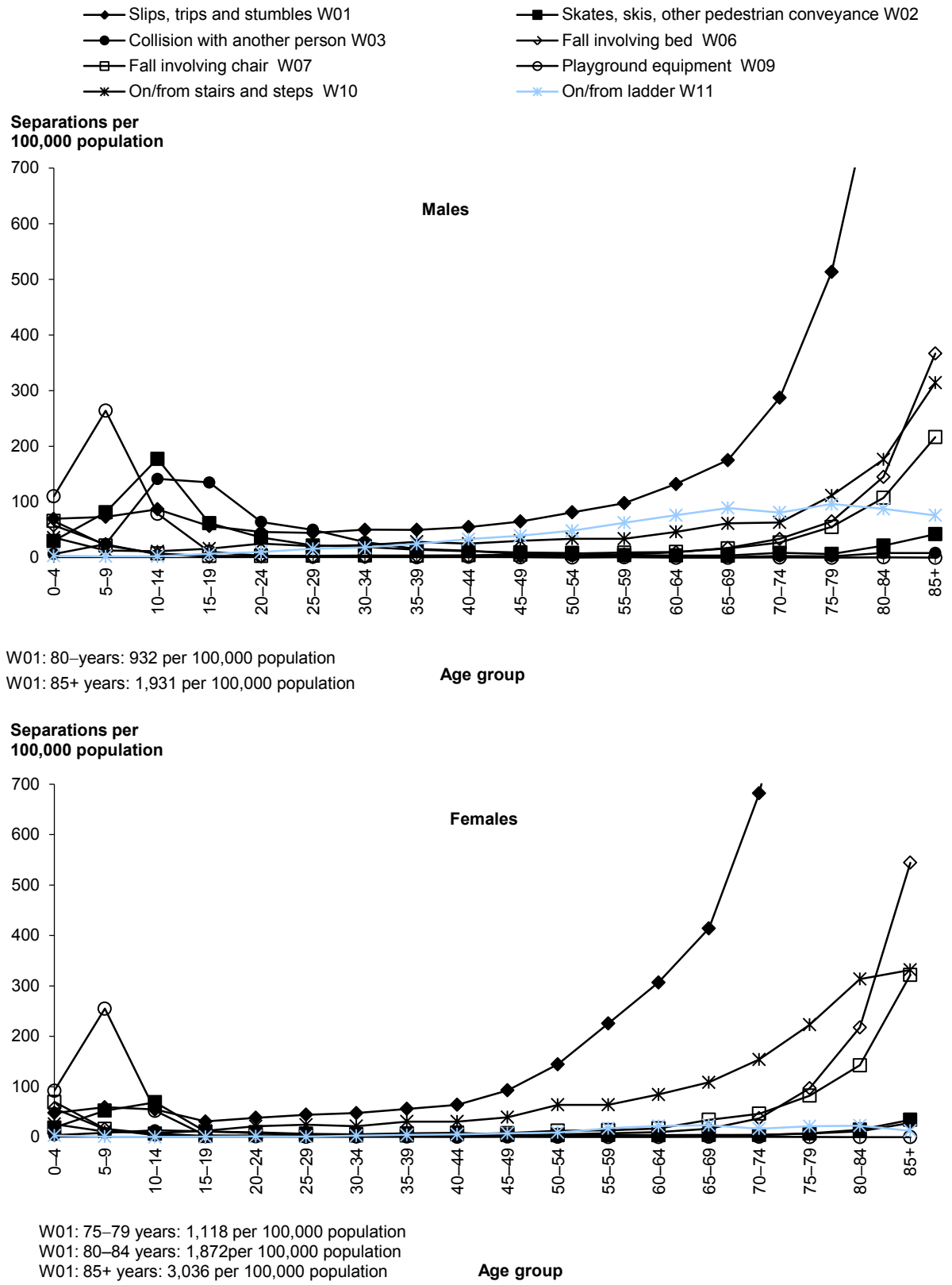


Figure 2.6.2: Age-specific rates of fall injury, by sex, Australia, 2009–10

Children aged 0–14

Sixteen per cent of all falls in 2009–10 occurred in children aged 0–14 (*n* = 26,374). The most common cause of injury for children was *Fall involving playground equipment* (23%; *n* = 5,922). The second most common cause was *Fall involving ice-skates, skis, roller-skates, skateboards, scooters and other pedestrian conveyances* (12%; *n* = 3,026), with the number of boys injured outnumbering their female peers at a ratio of 2.2:1.0.

Injury cases among children aged 0–14 were distributed relatively evenly across all three age groups, with ages 5–9 recording the highest number of cases (*n* = 9,414) (Table 2.6.4). Falls for boys were highest aged 10–14 (37%; *n* = 5,930), while girls in the same age group experienced the lowest numbers of falls (24%; *n* = 2,404).

Table 2.6.4: Fall injury cases in children aged 0–14, by sex, Australia, 2009–10

	Males		Females		Persons	
Age	Count	Per cent	Count	Per cent	Count	Per cent
0–4	4,856	30.0	3,770	37.0	8,626	32.7
5–9	5,387	33.3	4,027	39.5	9,414	35.7
10–14	5,930	36.7	2,404	23.6	8,334	31.6
Total	**16,173**	**100.0**	**10,201**	**100.0**	**26,374**	**100.0**

Fall involving playground equipment accounted for 17% (*n* = 1,461) of falls hospitalisations for children aged 0–4. These injuries increased to 38% (*n* = 3,535) for children aged 5–9, but accounted for 11% (*n* = 926) of cases for children aged 10–14 (data not shown).

The second most common cause of fall injuries for children aged 0–4 was *Fall involving chair* (11% of cases; *n* = 977). *Fall involving ice-skates, skis, roller-skates, skateboards, scooters and other pedestrian conveyances* had the second highest number of cases for children aged 5–9 (10%; *n* = 913), and was the leading cause for children aged 10–14 (21%; *n* = 1,753) (data not shown).

Principal diagnosis and body region injured

Injuries to the hip and lower limb were the most commonly reported body region associated with hospitalised falls (32% of cases), closely followed by injury to the shoulder and upper limb (31% of cases) (Table 2.6.5). Head injuries were the third most commonly reported body region (21%; *n* = 33,884).

Fifty-five per cent of injuries to the hip and lower limb involved the hip and thigh (*n* = 27,230), and were more common for females (*n* = 18,766). More than half of injuries to the shoulder and upper limb involved the elbow and forearm (57%; *n* = 28,240) and again were more common to females (*n* = 15,766). Marginally more males than females were hospitalised for a fall injury involving the head during the 2009–10 financial year (*n* = 17,299 versus 16,585).

Table 2.6.5: Hospitalised fall injury, by body region and sex, Australia, 2009–10

	Males		Females		Persons	
Body region	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Head	17,299	24.4	16,585	18.4	33,884	21.0
Trunk[(a)]	10,485	14.8	13,463	14.9	23,948	14.9
Shoulder and upper limb	22,791	32.1	26,976	29.9	49,767	30.9
Hip and lower limb	19,682	27.7	32,334	35.9	52,016	32.3
Other injuries not specified by body region	741	1.0	791	0.9	1,532	1.0
All body regions	**70,998**	**100.0**	**90,149**	**100.0**	**161,147**	**100.0**

(a) Trunk includes: neck, thorax, abdomen, lower back, lumbar spine and pelvis.

Injury type by age

Fractures were the most commonly reported injury type due to a fall in every age group for both males and females (overall 59%; *n* = 95,180).

For children aged 0–14, fractures accounted for 62% of fall-related injuries (*n* = 16,389). Specifically, the most common fracture site among children was the forearm (*n* = 10,438), followed by the shoulder and upper arm (*n* = 2,940), and lower leg, including ankle (*n* = 1,330).

Among youth and young people aged 15–24 injured in a fall, 53% resulted in a fracture (*n* = 5,348). *Fracture of forearm* accounted for the highest number of injuries (*n* = 1,626) with young men outnumbering young women at a ratio of 4.3:1.0. *Fracture of lower leg, including ankle* (*n* = 1,506) had the second highest proportion of injury in this age group, followed by *Fracture at wrist and hand level* (*n* = 724).

For adults aged 25–44, 55% of fall injuries were fractures (*n* = 8,735). *Fracture of lower leg, including ankle* (*n* = 2,862) was the most common type of injury, closely followed by *Fracture of forearm* (*n* = 2,307), then *Fracture at wrist and hand level* (*n* = 851).

Among adults aged 45–64, 62% reported a fracture injury (*n* = 15,383). Of these, 4,517 cases were a *fracture of forearm,* 4,096 were a *Fracture of lower leg, including ankle* and 1, 644 cases involved a *Fracture of shoulder and upper arm*.

Fifty-nine per cent of older people aged 65+ reported a fracture-related injury (*n* = 49,325). *Fracture of femur* (*n* = 19,429) was the most common injury site, followed by *Fracture of forearm* (*n* = 6,652) and *Fracture of lumbar spine and pelvis* (*n* = 6,513). Eighty-nine per cent of femur fractures occurred in those aged 65+ and of these, 74% were women.

Type of fracture by sex

Table 2.6.6 illustrates the top seven types of fracture injuries reported for fall-related injury in 2009–10. Of these, *Fracture of forearm* was the most common injury (27%), and more specifically, *Fracture of lower end of radius with dorsal angulation* was the most frequent (*n* = 9,227).

For the second most common injury, *Fracture of femur*, *Fracture of subcapital section of femur* and *Fracture of intertrochanteric section of femur* accounted for 30% (*n* = 6,485) and 24% (*n* = 5,308) of injuries respectively. A substantially higher proportion of females experienced a fracture of the femur than males (27% versus 17%).

Within F*racture of lower leg, including ankle,* injury to the lateral malleolus of the ankle accounted for 21% of cases, while a bimalleolar fracture of the ankle and a trimalleolar fracture of the ankle accounted for 14% (*n* = 1,930) and 9% (*n* = 1,242) respectively. Fractures of the patella accounted for just over 10% of injuries in this region (*n* = 1,533).

The majority of fall-related *Fracture of shoulder and upper arm* injuries involved either the upper or lower end of the humerus (*n* = 5,888 and 3,515) respectively.

For *Fracture of lumbar spine and pelvis*, slightly more than 50% involved a break of the pubis (51%, *n* = 3,942), and of these, 83% were females.

Fracture of nasal bones was the most common type of fracture involving the skull and facial bones (31%), followed by *Fracture of base of skull* (16%).

Table 2.6.6: Top seven specific fracture injuries for falls, Australia, 2009–10

	Males		Females		Persons	
Principal diagnosis	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Fracture of forearm	10,982	28.7	14,558	25.6	25,540	26.8
Fracture of femur	6,412	16.8	15,410	27.1	21,822	22.9
Fracture of lower leg, including ankle	6,075	15.9	7,973	14.0	14,048	14.8
Fracture of shoulder and upper arm	4,137	10.8	6,896	12.1	11,033	11.6
Fracture of lumbar spine and pelvis	2,290	6.0	5,433	9.5	7,723	8.1
Fracture of ribs, sternum and thoracic spine	2,836	7.4	2,536	4.5	5,372	5.6
Fracture of skull and facial bones	1,673	4.4	1,534	2.7	3,207	3.4
Sub total	**34,405**	**90.0**	**54,340**	**95.5**	**88,745**	**93.2**

Note: Per cent of total diagnosis of fracture.

Length of stay

Mean length of stay was longer for falls than for any other type of injury included in this report, the MLOS for all persons being 5.8 days. This reflects the long mean length of stay for falls cases in older people (Figure 2.6.3). The mean length of stay rose with age from 1.5 days for children aged 0–14, 2.2 days for young people aged 15–24, 2.9 days for adults aged 25–44, 4.4 days for adults aged 45–64 to 8.7 days for people aged 65+. Overall, the MLOS was less for males (4.9 days) than females (6.6 days).

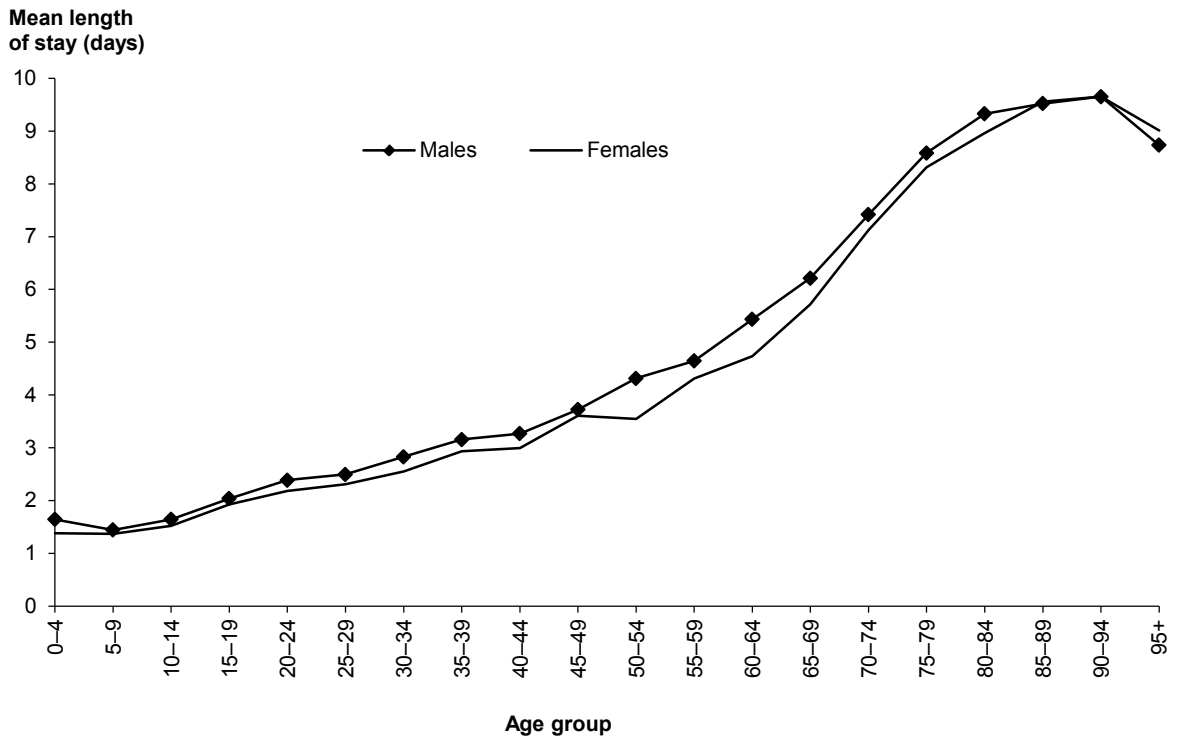


Figure 2.6.3: Mean length of stay for fall injury, by age and sex, Australia, 2009–10

Place of occurrence

Three in five fall injury cases had a documented place of occurrence; however, there were still 46,061 (40%) cases where the location was unspecified and 26 cases where location was not reported. The following observations are restricted to those cases in which the place of occurrence was specified (Table 2.6.7).

The most commonly reported place of occurrence for fall injuries for all ages and sexes (except for males aged 15–24) was in and around the home (males 32%; females 43%). Sports and athletics areas were the next most documented area for falls injuries for males overall (8%) exceeding the female rate at a ratio of 3.2:1.0; while 16% of females experienced a falls-related injury in a residential institution (M:F ratio 0.3:1.0). Ninety-five per cent of falls in a residential institution occurred in an aged care facility.

The top three places of occurrence for falls injuries for children aged 0–14 were the home, school and sports and athletics areas respectively, with boys more than three times likely to incur a fall injury in sports and athletics areas than girls (n = 1,897 versus 547 cases).

Almost one-third (n = 2,228) of all falls injuries for young men aged 15–24 occurred in sports and athletics areas. The home and other specified places, including beaches and other areas of water, were the other leading place of occurrences for males in this age group. Young women were more likely to experience a falls injury in the home followed by sports and athletics areas and other specified places.

Men and women aged 25–44 were most commonly injured in the home followed by sports and athletics areas. Women were then more likely to be injured in a trade and service area, including shops, cafés, hotel and restaurants (6%; *n* = 352), while men were more likely to be injured in other specified places such as the beach (7%; *n* = 706).

About 1 in 3 men (34%) and 1 in 3 women (39%) aged 45–64 sustained a fall injury at home, while 5% of both sexes sustained a fall injury on the street or highway.

Forty-nine per cent of older men and women aged 65+ were injured in the home. The next most common place of occurrence for this age group was a residential institution (men 18%; women 24%), followed by a street or highway (5% and 4% respectively). Seventy-one per cent of these injuries occurred on the sidewalk.

Table 2.6.7: Place of occurrence of fall injury cases, by age and sex, Australia, 2009–10

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	3,857	23.8	591	7.8	1,806	17.8	3,879	33.7	12,611	49.3	22,744	32.0
Residential institution	n.p.	n.p.	n.p.	n.p.	89	0.9	237	2.1	4,632	18.1	5,000	7.0
School	2,584	16.0	231	3.1	17	0.2	36	0.3	12	0.0	2,880	4.1
Health service area	25	0.2	11	0.1	41	0.4	67	0.6	396	1.5	540	0.8
Other specified institution	121	0.7	35	0.5	27	0.3	53	0.5	106	0.4	342	0.5
Sports and athletics area	1,897	11.7	2,228	29.5	1,384	13.6	271	2.4	139	0.5	5,919	8.3
Street and highway	236	1.5	299	4.0	415	4.1	572	5.0	1,269	5.0	2,791	3.9
Trade and service area	211	1.3	248	3.3	457	4.5	551	4.8	838	3.3	2,305	3.2
Industrial and construction area	n.p.	n.p.	n.p.	n.p.	365	3.6	325	2.8	48	0.2	861	1.2
Farm	26	0.2	18	0.2	52	0.5	73	0.6	103	0.4	272	0.4
Other specified places	915	5.7	495	6.6	706	7.0	615	5.3	505	2.0	3,236	4.6
Total	**9,881**	**100.0**	**4,312**	**100.0**	**5,359**	**100.0**	**6,679**	**100.0**	**20,659**	**100.0**	**46,890**	**100.0**

(continued)

Table 2.6.7 (continued): Place of occurrence of fall injury cases, by age and sex, Australia, 2009–10

Place	0–14	Per cent	15–24	Per cent	25–44	Per cent	45–64	Per cent	65+	Per cent	Total	Per cent
Females												
Home	2,894	28.4	475	19.0	1,760	30.0	5,280	39.4	28,469	48.9	38,878	43.1
Residential institution	n.p.	n.p.	n.p.	n.p.	31	0.5	256	1.9	14,018	24.1	14,320	15.9
School	1,566	15.4	63	2.5	49	0.8	111	0.8	21	0.0	1,810	2.0
Health service area	18	0.2	7	0.3	56	1.0	169	1.3	805	1.4	1,055	1.2
Other specified institution	71	0.7	9	0.4	31	0.5	80	0.6	302	0.5	493	0.5
Sports and athletics area	547	5.4	323	12.9	420	7.2	313	2.3	238	0.4	1,841	2.0
Street and highway	138	1.4	85	3.4	241	4.1	728	5.4	2,284	3.9	3,476	3.9
Trade and service area	178	1.7	187	7.5	352	6.0	776	5.8	1,928	3.3	3,421	3.8
Industrial and construction area	n.p.	n.p.	n.p.	n.p.	18	0.3	33	0.2	15	0.0	78	0.1
Farm	16	0.2	10	0.4	19	0.3	52	0.4	36	0.1	133	0.1
Other specified places	527	5.2	210	8.4	322	5.5	670	5.0	936	1.6	2,665	3.0
Total	**5,969**	**100.0**	**1,382**	**100.0**	**3,299**	**100.0**	**8,468**	**100.0**	**49,052**	**100.0**	**68,170**	**100.0**

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

State and territory differences

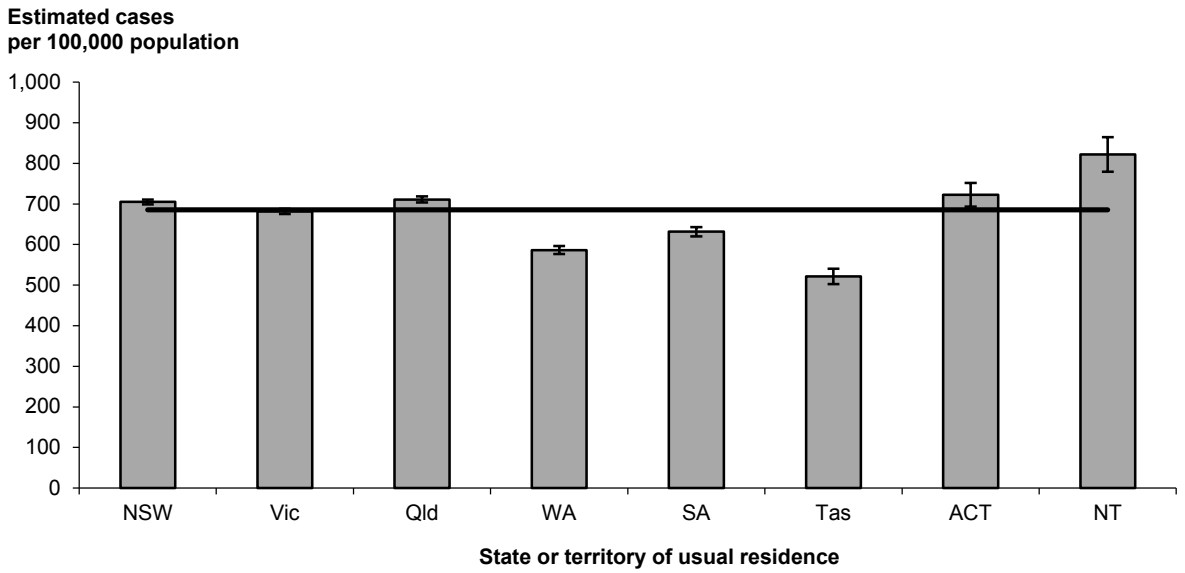
New South Wales, Queensland, the Australian Capital Territory and the Northern Territory had rates of hospitalised fall injury above the national rate (Table 2.6.8 and Figure 2.6.4). Victoria was on par at 681.6 cases per 100,000 population compared with the national rate of 685.6 cases. Western Australia, South Australia and Tasmania were all lower than the national rate.

Table 2.6.8: Age-standardised rates of fall injury, states and territories, 2009–10

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI[(a)]
NSW	705	699–711
Vic	682	675–688
Qld	711	703–719
WA	587	577–596
SA	632	620–643
Tas	522	503–540
ACT	723	694–752
NT	822	780–864
Australia[(b)]	**686**	**682–689**

(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.



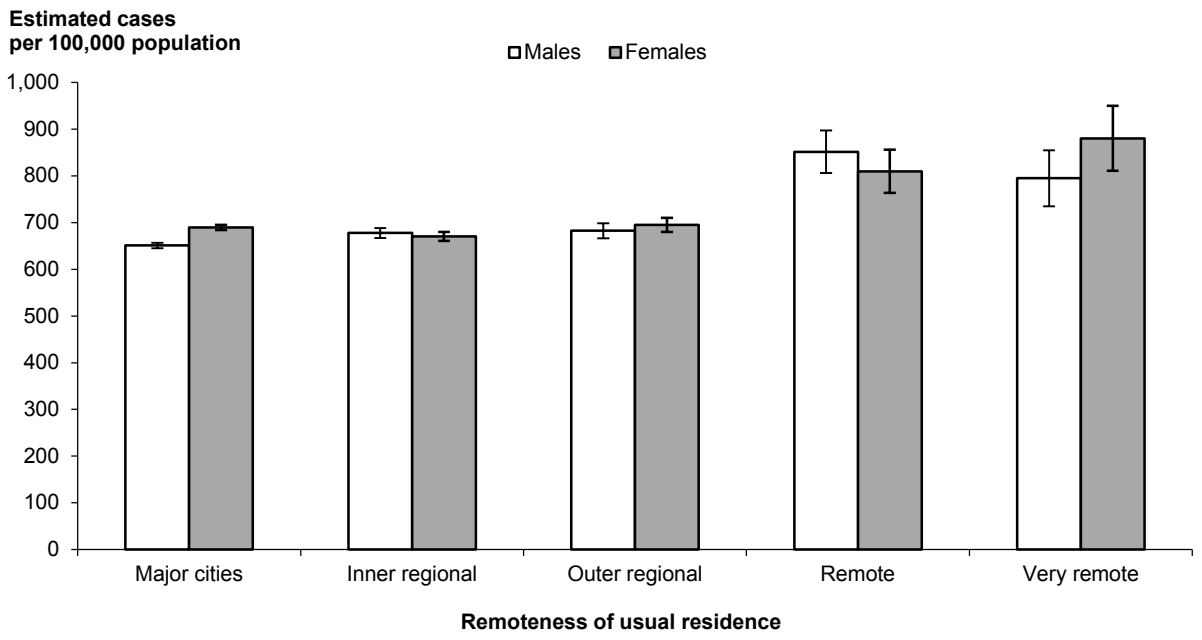
Notes

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 2.6.4: Age-standardised rates of fall injury, states and territories, 2009–10

Remoteness of usual residence

The rate of hospitalised fall injuries was highest for males who usually resided in *Remote* Australia (851.8 per 100,000 population), and females in *Very remote* areas (880.6 per 100,000 population). The lowest rates were observed for males living in *Major cities* (651.2) and females living in *Inner regional* areas (670.4).



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 2.6.5: Age-standardised rates of fall injury: males and females, by remoteness of usual residence (ASGC regions), 2009–10

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 exposure to smoke, fire, heat and hot substances injury cases, Australia, 2009–10

Indicator	Males	Females	Persons
Separations from hospital due to smoke, fire, heat & hot substances	4,378	2,295	6,673
Percentage of all community injury separations	1.7	1.2	1.5
Estimated cases[(a)]	3,867	2,066	5,933
Crude rate/100,000 population	35.1	18.6	26.8
Age-standardised rate/100,000 population[(b)]	34.9	18.8	26.9
Total patient days[(c)]	20,370	10,663	31,033
Mean length of stay (days)	5.3	5.2	5.2
Estimated cases with a high threat to life	524	265	789
Percentage of cases with a high threat to life	13.6	12.8	13.3

(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.

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. Exposure to smoke, fire, heat and hot substances injury accounted for less than 2% of all community injury hospitalisations in the financial year 2009–10 (Table 2.7.1). More males than females were injured by smoke, fire, heat and hot substances (based on age-standardised rates) by a ratio of 1.9:1.0.

This chapter does not include injuries due to *Explosion and rupture of boilers* (*n* = suppressed), *Explosion and rupture of gas cylinder* (*n* = 172), *Discharge of fireworks* (*n* = 75), *Explosion of other materials* (for example, munitions, blasting material) (*n* = 289), *Exposure to electric current* (*n* = 642), *Exposure to excessive heat of man-made origin* (*n* = 9), *Exposure to sunlight* (*n* = 148), or *Exposure to lightning* (*n* = 17), all of which are covered by Chapter 2.8.

Injuries attributable to *Intentional self-harm by smoke, fire and flames* (*n* = 234) or *Intentional self-harm by steam, hot vapours and hot objects* (*n* = 48) are covered by Chapter 2.9. Injuries resulting from *Assault by means of explosive material* (*n* = suppressed), *Assault by smoke, fire and flames* (*n* = 55) or *Assault by steam, hot vapours and hot objects* (*n* = 67) are covered by Chapter 2.10. *Events of undetermined intent—exposure to smoke, fire and flames* (*n* = 200) and *steam, hot vapours and hot objects* (*n* = 51) are included in Chapter 2.11.

Age and sex distribution

Rates of injury by exposure to smoke, fire, heat and hot substances were highest for young children aged 0–4. The incidence rate for boys aged 0–4 was 131.9 per 100,000 population compared with 89.6 for girls of the same age (Figure 2.7.1). Caution should be exercised in interpreting rates over the age of about 65 due to smaller case numbers.

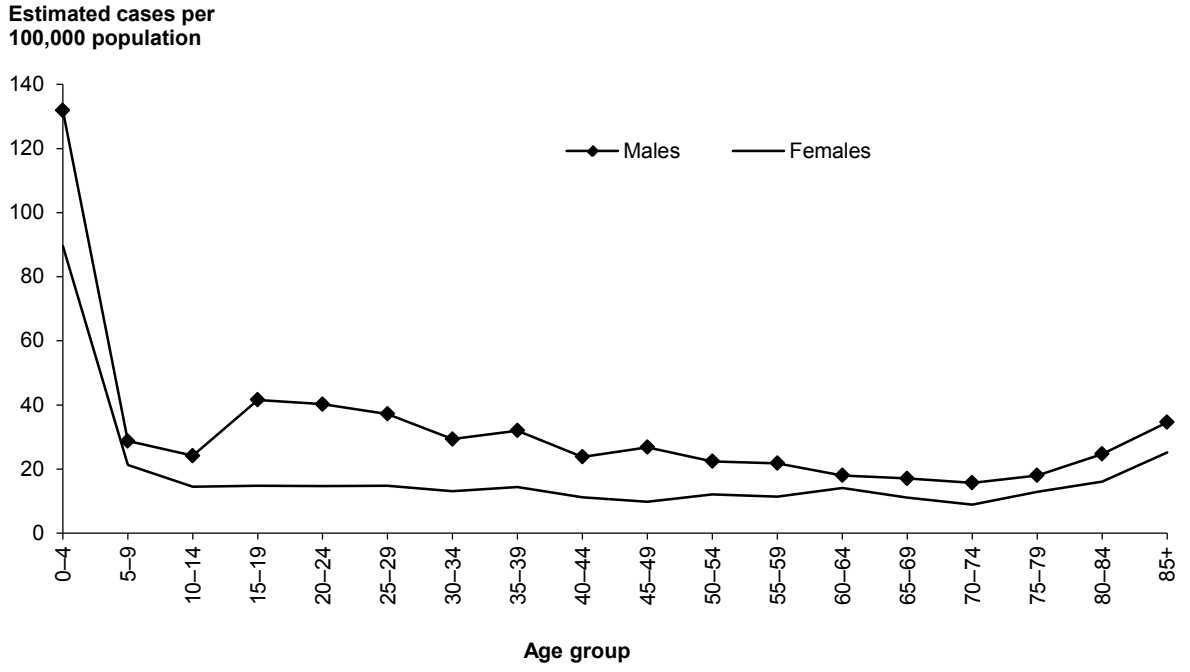


Figure 2.7.1: Age-specific rates of exposure to smoke, fire, heat and hot substances injury, by sex, Australia, 2009–10

More than one-third of those injured by smoke, fire, heat and hot substances in 2009–10 were children aged 0–14 (Table 2.7.2). Slightly less than one-quarter of injuries occurred in adults aged 25–44 (n = 1,393) and less than 10% occurred in older people aged 65+ (n = 490).

Table 2.7.2: Exposure to smoke, fire, heat and hot substances injury cases, by age group and sex, Australia, 2009–10

	Males		Females		Persons	
Age group	Count	Per cent	Count	Per cent	Count	Per cent
0–4	976	25.2	629	30.4	1,605	27.1
5–14	375	9.7	240	11.6	615	10.4
15–24	660	17.1	224	10.8	884	14.9
25–44	971	25.1	422	20.4	1,393	23.5
45–64	619	16.0	327	15.8	946	15.9
65+	266	6.9	224	10.8	490	8.3
Total	**3,867**	**100.0**	**2,066**	**100.0**	**5,933**	**100.0**

External cause

Contact with hot drinks, food, fats and cooking oils was the leading cause of injury for exposure to smoke, fire, heat and hot substances injury hospitalisations (21%; *n* = 1,258), followed by Contact with other hot fluid, for example, water heated on stove (17%), and Exposure to controlled fire, not in building or structure, for example, camp-fire (8%) (Table 2.7.3). There were some differences between the sexes, however: 29% of females experienced an injury from Contact with hot drinks, food, fats and cooking oils compared with 17% of males. Similarly, females were more likely to experience a burn or scald from *Contact with other hot fluids* than males (23% versus 13%). The converse was true for males and injuries from *Exposure to ignition of highly flammable material* for example, gasoline, kerosene, petrol and *Exposure to controlled fire, not in building or structure* (10% versus 2% and 9% versus 5% respectively).

Table 2.7.3: External causes of exposure to smoke, fire, heat and hot substances injury, by sex, Australia, 2009–10

		Males		Females		Persons	
ICD-10-AM Code	External cause	Count	Per cent	Count	Per cent	Count	Per cent
X00	Exposure to uncontrolled fire in building or structure	76	2.0	39	1.9	115	1.9
X01	Exposure to uncontrolled fire, not in building or structure (for example, forest fire)	68	1.8	7	0.3	75	1.3
X02	Exposure to controlled fire in building or structure (for example, fireplace, stove)	134	3.5	40	1.9	174	2.9
X03	Exposure to controlled fire, not in building or structure (for example, camp-fire)	363	9.4	99	4.8	462	7.8
X04	Exposure to ignition of highly flammable material (for example, gasoline, kerosene, petrol)	401	10.4	43	2.1	444	7.5
X05	Exposure to ignition or melting of nightwear	n.p.	n.p.	n.p.	n.p.	6	0.1
X06	Exposure to ignition or melting of other clothing and apparel	60	1.6	23	1.1	83	1.4
X08	Exposure to other specified smoke, fire and flames	216	5.6	66	3.2	282	4.8
X09	Exposure to unspecified smoke, fire and flames	244	6.3	89	4.3	333	5.6
X10	Contact with hot drinks, food, fats and cooking oils	658	17.0	600	29.0	1,258	21.2
X11	Contact with hot tap-water	162	4.2	147	7.1	309	5.2
X12	Contact with other hot fluids (for example, water heated on stove)	517	13.4	474	22.9	991	16.7
X13	Contact with steam and hot vapours	101	2.6	30	1.5	131	2.2
X14	Contact with hot air and gases	n.p.	n.p.	n.p.	n.p.	20	0.3
X15	Contact with hot household appliances	253	6.5	172	8.3	425	7.2
X16	Contact with hot heating appliances, radiators and pipes	168	4.3	73	3.5	241	4.1
X17	Contact with hot engines, machinery and tools	172	4.4	50	2.4	222	3.7
X18	Contact with other hot metals	61	1.6	13	0.6	74	1.2
X19	Contact with other and unspecified heat and hot substances	193	5.0	95	4.6	288	4.9
Total		**3,867**	**100.0**	**2,066**	**100.0**	**5,933**	**100.0**

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

Contact with hot drinks, food, fats and cooking oils was the most common cause of hospitalisation for smoke, fire, heat and hot substances injury for children aged 0–14 (*n* = 676), adults aged 25–44 (*n* = 232) and older people aged 65+ (*n* = 84) (not shown in table). The most common cause recorded for young people aged 15–24 was *Exposure to controlled fire, not in building or structure* (*n* = 145), and *Contact with other hot fluids* for adults aged 45–64 (*n* = 148). Incidences of *Exposure to ignition or melting of other clothing and apparel* were similar across all age groups.

Young children aged 0–4

More than one-quarter of exposure to smoke, fire, heat and hot substances injuries occurred in young children aged 0–4 (27%; *n* = 1,605), and most of these occurred before their third birthday (83%; *n* = 1,336) (Table 2.7.4). Almost one-third of injuries were from *Contact with hot drinks, foods, fats and cooking oils* (*n* = 523), and *Contact with other hot fluids* accounted for 305 cases. The other leading causes of exposure to smoke, fire, heat and hot substances injury for young children were *Contact with hot household appliances* such as hotplates, stoves and toasters (15% of all smoke, fire, heat and hot substances cases in children 0–4) and *Contact with hot tap water* (8%).

Table 2.7.4: Top six specified mechanisms of exposure to smoke, fire, heat and hot substances injuries for young children aged 0–4, Australia, 2009–10

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	89	316	69	32	17	523	32.6
X12	Contact with other hot fluids (for example, water heated on stove)	61	133	59	30	22	305	19.0
X15	Contact with hot household appliances	45	119	39	27	9	239	14.9
X11	Contact with hot tap-water	31	59	n.p.	8	n.p.	124	7.7
X03	Exposure to controlled fire, not in building or structure (for example, camp-fire)	n.p.	25	20	18	n.p.	72	4.5
X16	Contact with hot heating appliances, radiators and pipes	n.p.	26	n.p.	6	n.p.	60	3.7
	Sub-total	*250*	*678*	*212*	*121*	*62*	*1,323*	*82.4*
X00–X02, X04–X09, X13, X14, X17–X19	Other causes	24	101	71	43	43	282	17.6
Total		**274**	**779**	**283**	**164**	**105**	**1,605**	**100.0**

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

Principal diagnosis and body part injured

More than 90% of exposure to smoke, fire, heat and hot substances injuries can be attributed to the six specific principal diagnoses shown in Table 2.7.5. The most common site of injury was a *Burn of the wrist and hand* for males (22%; *n* = 857) and a *Burn of the head and neck* for females (20%; *n* = 412). A principal diagnosis other than burn accounted for only 4% of exposure to smoke, fire, heat and hot substances injuries.

Table 2.7.5: Top six specific injuries for exposure to smoke, fire, heat and hot substances, Australia, 2009–10

	Males		Females		Persons	
Principal diagnosis	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Burn of wrist and hand	857	22.2	382	18.5	1,239	20.9
Burn of hip and lower limb, except ankle and foot	586	15.2	372	18.0	958	16.1
Burn of head and neck	540	14.0	412	19.9	952	16.0
Burn of trunk	618	16.0	238	11.5	856	14.4
Burn of shoulder and upper limb, except wrist and hand	524	13.6	306	14.8	830	14.0
Burn of ankle and foot	491	12.7	254	12.3	745	12.6
Sub-total	**3,616**	**93.5**	**1,964**	**95.1**	**5,580**	**94.1**

Note: Per cent of total smoke, fire, heat and hot substances injuries.

Length of stay

The majority of exposure to smoke, fire, heat and hot substances separations had a length of stay of one day (70%; *n* = 4,114). However, there was also a small proportion of prolonged hospital admissions of greater than 100 days recorded (0.2%; *n* = 11). The mean length of stay for exposure to smoke, fire, heat and hot substances injury was 5.2 days. There was little variation between the sexes overall (male 5.3 days versus female 5.2 days). This is the second longest overall length of stay for a community injury category in this report after falls.

Overall, length of stay for exposure to smoke, fire, heat and hot substances injury rose with age (Figure 2.7.2). The MLOS was shortest for boys aged 0–4 (2.8 days) and women aged 25–29 (2.9 days). Mean length of stay was highest for older men aged 90–94 (19.2 days), and older women aged 85–89 (20.0 days). Caution should be exercised in interpreting data for those over 70 due to smaller case numbers.

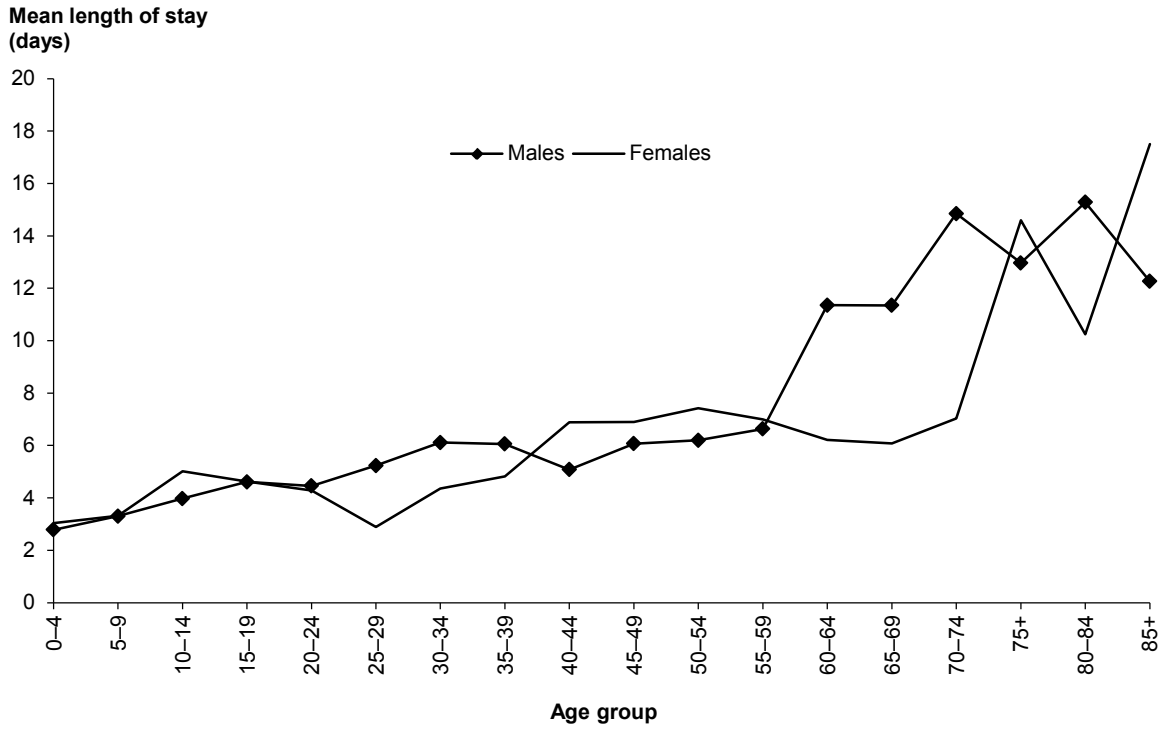


Figure 2.7.2: Mean length of stay for exposure to smoke, fire, heat and hot substances injury, by age and sex, Australia, 2009–10

Place of occurrence

Location was not specified or reported for more than one-third of exposure to smoke, fire, heat and hot substances injury cases (unspecified *n* = 2,212). The following observations are restricted to those cases in which the place of occurrence was specified (Table 2.7.6). More than three-quarters of all cases occurred in the home (77%; *n* = 2,866), with a higher proportion of females (84%) injured in the home than males (73%). For children aged 0–4 for whom a place of occurrence was specified (*n* = 1,223), almost all smoke, fire, heat and hot substances injuries occurred in the home (92%; *n* = 1,137) (not shown in table).

Of the 209 cases that occurred in a trade and service area, more than half occurred in a café, hotel or restaurant (57%; *n* = 118). Of the 118 cases that occurred in an industrial or construction area, more than half occurred in a factory or plant (56%; *n* = 66). Of the 44 cases that occurred in a residential institution, more than half occurred in an aged care facility (61%; *n* = 27).

Table 2.7.6: Place of occurrence for cases of exposure to smoke, fire, heat and hot substances injuries, Australia, 2009–10

	Males		Females		Persons	
Place	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Home	1,677	72.5	1,189	84.4	2,866	77.0
Residential institution	23	1.0	21	1.5	44	1.2
School	20	0.9	6	0.4	26	0.7
Health service area	8	0.3	10	0.7	18	0.5
Other specified institution and public administrative area	n.p.	n.p.	n.p.	n.p.	5	0.1
Sports and athletics area	n.p.	n.p.	n.p.	n.p.	15	0.4
Street and highway	58	2.5	16	1.1	74	2.0
Trade and service area	149	6.4	60	4.3	209	5.6
Industrial and construction area	103	4.5	15	1.1	118	3.2
Farm	71	3.1	8	0.6	79	2.1
Other specified places	193	8.3	74	5.3	267	7.2
Total	**2,313**	**100.0**	**1,408**	**100.0**	**3,721**	**100.0**

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

State and territory differences

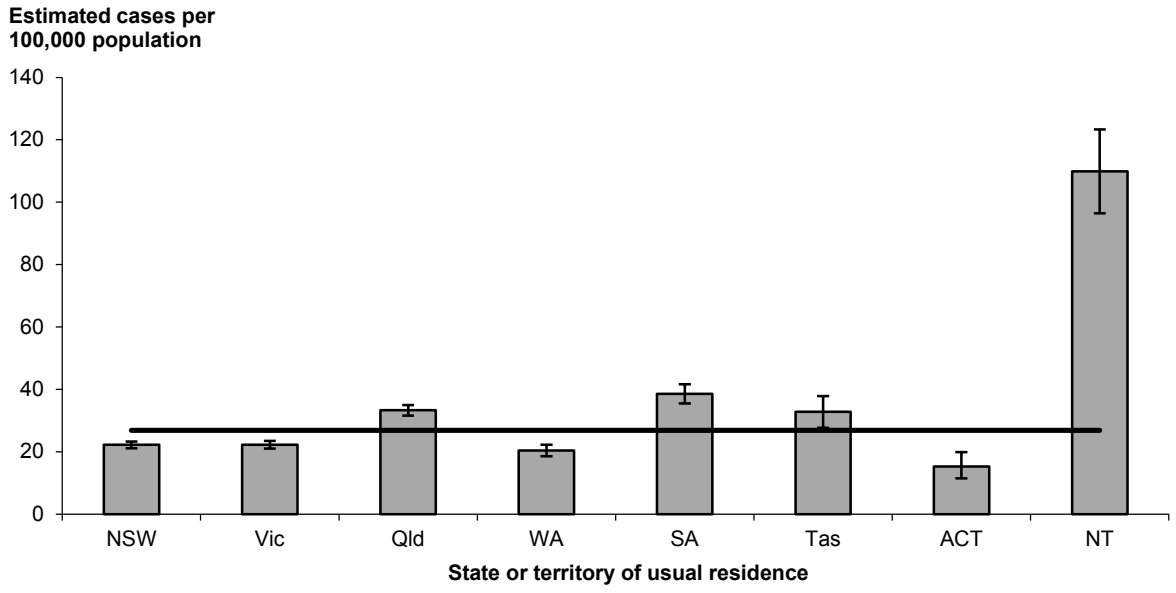
Queensland, South Australia, Tasmania and the Northern Territory all had rates of injury from exposure to smoke, fire, heat and hot substances above the national rate (Table 2.7.7 and Figure 2.7.3). The remaining states all had rates below the national rate, with the Australian Capital Territory having the lowest incidence rate at 15.3 per 100,000 population. The Northern Territory was the highest at 109.9 cases per 100,000 population.

Table 2.7.7: Age-standardised rates of exposure to smoke, fire, heat and hot substances injuries, states and territories, 2009–10

Jurisdiction	**Age-standardised rate (per 100,000 population)**	**95% CI[(a)]**
NSW	22	21–23
Vic	22	21–24
Qld	33	32–35
WA	20	19–22
SA	39	36–42
Tas	33	28–38
ACT	15	4–35
NT	110	97–123
Australia[(b)]	**27**	**26–28**

(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.

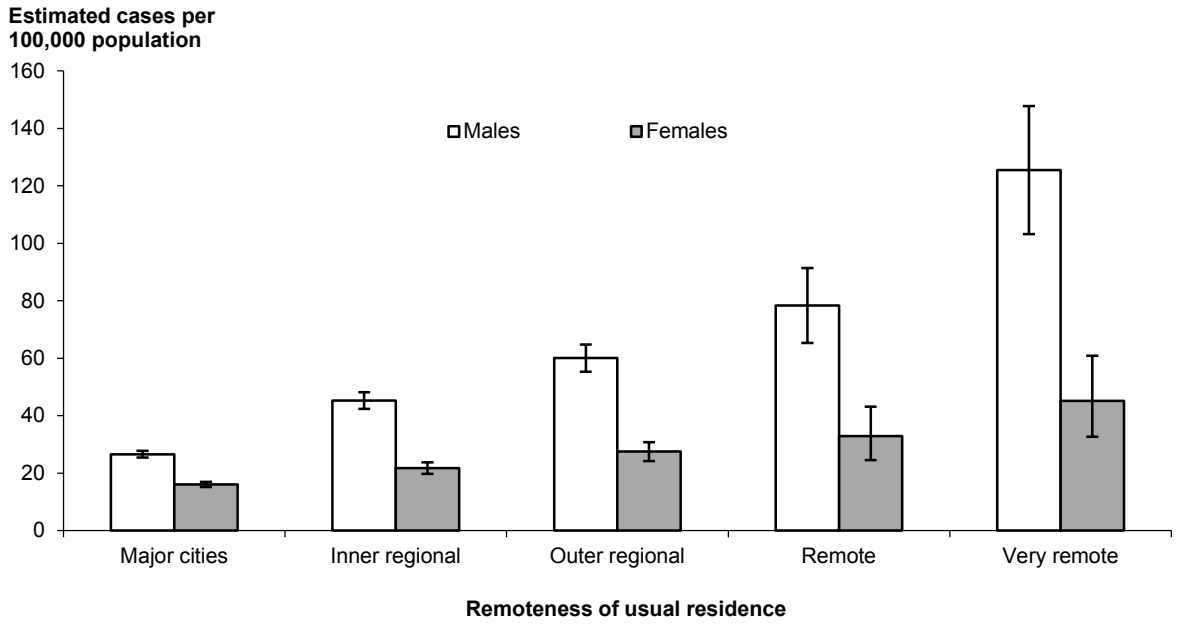


Note: The thick horizontal line shows the rate for Australia.

Figure 2.7.3: Age-standardised rates of exposure to smoke, fire, heat and hot substances injury, states and territories, 2009–10

Remoteness of usual residence

Rates of exposure to smoke, fire, heat and hot substances injury increased markedly with increasing remoteness for males (Figure 2.7.4). The lowest rate observed was for females residing in a major Australian city (16.1 per 100,000 population) while the highest was observed for males residing in *Very remote* regions at nearly eight times the rate (125.5 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 2.7.4: Age-standardised rates of exposure to smoke, fire, heat and hot substances injury: males and females, by remoteness of usual residence (ASGC regions), 2009–10

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, 2009–10

Indicator	Males	Females	Persons[(a)]
Separations from hospital due to other unintentional injuries	99,667	41,236	140,904
Percentage of all community injury separations	38.2	21.4	31.1
Estimated cases[(b)]	94,082	38,982	133,065
Crude rate/100,000 population	853.0	350.5	600.7
Age-standardised rate/100,000 population[(c)]	849.1	343.2	598.9
Total patient days[(d)]	179,915	100,436	280,352
Mean length of stay (days)	1.9	2.6	2.1
Estimated cases with a high threat to life	3,019	1,878	4,897
Percentage of cases with a high threat to life	3.2	4.8	3.7

(a) Includes 1 separation where 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 category includes all injury hospitalisations recorded as unintentional that are not included in Chapters 2.2 to 2.7. Other unintentional injuries accounted for 31% of all community injuries in the financial year 2009–10 (Table 2.8.1). A summary of the key components of external causes is provided in Table 2.8.2 below. A complete listing of the first reported external cause codes for unintentional injuries is provided in Table 2.8.5 in the latter section on external cause.

Table 2.8.2: Summary of key components of other unintentional injury cases, Australia, 2009–10

External cause	Persons	Per cent
Exposure to inanimate mechanical forces (W20–W49)	60,003	45.1
Exposure to animate mechanical forces (W50–W64)	15,350	11.5
Other accidental threats to breathing (W75–W84)	621	0.5
Exposure to electric current, radiation and extreme ambient air temperature and pressure (W85–W99)	849	0.6
Contact with venomous animals and plants (X20–X29)	3,158	2.4
Exposure to forces of nature (X30–X39)	604	0.5
Overexertion, travel and privation (X50–X57)	10,891	8.2
Accidental exposure to other and unspecified factors (X58–X59)	41,589	31.3
Total	**133,065**	**100.0**

Age and sex distribution

More males than females required hospitalisation as a result of other unintentional injury (based on age-standardised rates) by a ratio of 2.5:1 (Figure 2.8.1). The rate for males was highest at 15–19 with 1,411.3 cases per 100,000 population. Much of the large excess in male rates, especially between the ages of 15–65 was associated with injuries that occur while at work or during sporting activities.

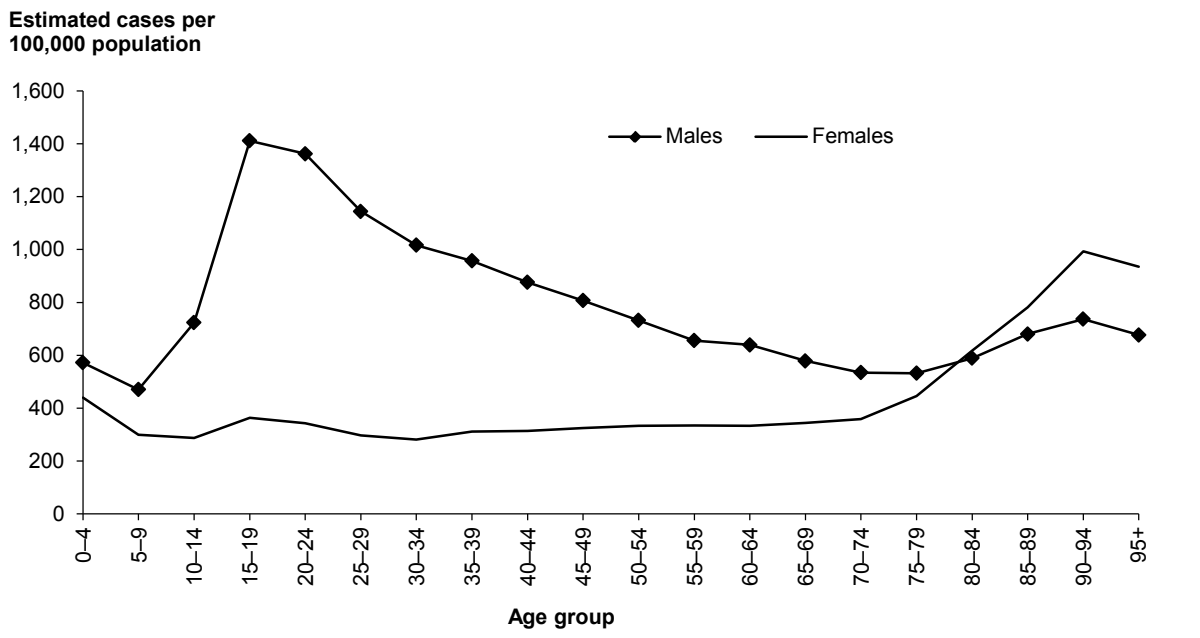


Figure 2.8.1: Age-specific rates of other unintentional injury, by sex, Australia, 2009–10

Injuries were most commonly reported for both males and females in the 25–44 age group (Table 2.8.3).

Table 2.8.3: Other unintentional injury cases, by age group, Australia, 2009–10

	Males		Females		Persons[(a)]	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–4	4,233	4.5	3,086	7.9	7,319	5.5
5–14	8,499	9.0	3,949	10.1	12,448	9.4
15–24	22,375	23.8	5,363	13.8	27,738	20.8
25–44	31,622	33.6	9,491	24.3	41,113	30.9
45–64	19,626	20.9	9,238	23.7	28,864	21.7
65+	7,727	8.2	7,855	20.2	15,583	11.7
Total	**94,082**	**100.0**	**38,982**	**100.0**	**133,065**	**100.0**

(a) Includes 1 separation where sex was not reported.

Body region injured

The shoulder and upper limb was the most commonly injured body region for other unintentional injuries (46%) followed by the hip and lower limb (26%) (Table 2.8.4).

Table 2.8.4: Hospitalised other unintentional injury, by body region and sex, Australia, 2009–10

	Males		Females		Persons[(a)]	
Body region	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Head	11,379	12.1	4,509	11.6	15,888	11.9
Trunk[(b)]	5,021	5.3	3,051	7.8	8,072	6.1
Shoulder and upper limb	46,941	49.9	13,839	35.5	60,780	45.7
Hip and lower limb	22,024	23.4	12,478	32.0	34,503	25.9
Other injuries not specified by body region	8,717	9.3	5,105	13.1	13,822	10.4
All body regions	**94,082**	**100.0**	**38,982**	**100.0**	**133,065**	**100.0**

(a) Trunk includes: neck, thorax, abdomen, lower back, lumbar spine and pelvis.

(b) Includes 1 case for which no sex was reported.

Length of stay

The mean length of stay for hospitalisations for other unintentional injuries rose in slight age increments for both sexes until 65+, when a sharp increase trend was observed (Figure 2.8.2). Overall, males required shorter stays than females (1.9 days versus 2.6 days). The MLOS for children aged 0–14 was 1.5 days, 1.5 days for youth and young people aged 15–24, 1.7 days for adults aged 25–44, 2.2 days for adults aged 45–64, and 4.8 days for older people aged 65+.

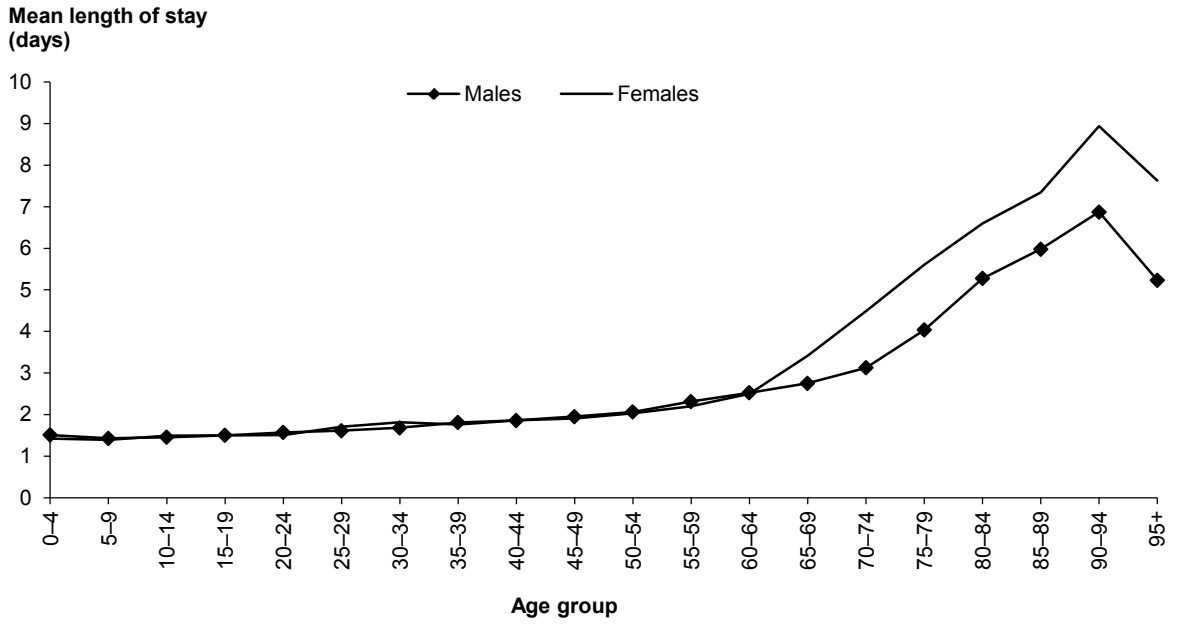


Figure 2.8.2: Mean length of stay for other unintentional injury, by age and sex, Australia, 2009–10

External cause

The majority (88%; *n* = 116,942) of other unintentional hospitalised injury cases could be classified into three broad external cause categories: *Exposure to inanimate mechanical forces* (ICD-10-AM Codes W20–W49), *Exposure to animate mechanical forces* (W50–W64) and *Accidental exposure to other and unspecified factors* (X58–X59).

Almost half of all external causes for other unintentional injuries was due to *Exposure to inanimate mechanical forces* (45%; *n* = 60,003). This category includes W22 *Striking against or struck by other objects* (*n* = 8,149), W44 *Foreign body entering into or through eye or natural orifice* (*n* = 6,689) and W25 *Contact with sharp glass* (*n* = 5,971) (Table 2.8.5).

The highest age-specific rates for *Striking against or struck by other objects* was for people aged 85+ (102.4 cases per 100,000 population), and may be associated with age-related loss of balance and stability. Rates for foreign bodies were highest for young children aged 0–4 (90.2 per 100,000), while *Contact with sharp glass* was highest among youth aged 15–19 and young adults aged 20–24 (68.9 and 73.2 per 100,000 respectively).

Accidental exposure to other and unspecified factors (X58–X59) was the second most common broad category, accounting for almost one-third of other unintentional injury cases (31%; *n* = 41,589).

The third most common category *Exposure to animate mechanical forces* accounted for 12% of other unintentional injury cases in 2009–10. About one-third of these were recorded as W50 *Hit, struck, kicked, twisted, bitten or scratched by another person* (34%; *n* = 5,269). Eighteen per cent were attributed to W54 *Bitten or struck by dog* (*n* = 2,726) and a further 15% were attributed to *Striking against or bumped into by another person* (*n* = 2,223). The likelihood of being hospitalised following a dog bite was greatest for young children aged 0–4 (23.0 cases per 100,000 population, based on age-specific rates).

Table 2.8.5: External causes of other unintentional injury cases, Australia, 2009–10

ICD-10-AM Code	External cause of morbidity and mortality	Count	Per cent
W20	Struck by thrown, projected or falling object	4,508	3.4
W21	Striking against or struck by sports equipment	2,787	2.1
W22	Striking against or struck by other objects	8,149	6.1
W23	Caught, crushed, jammed or pinched in or between objects	5,920	4.4
W24	Contact with lifting and transmission devices, not elsewhere classified	627	0.5
W25	Contact with sharp glass	5,971	4.5
W26	Contact with knife, sword or dagger	4,171	3.1
W27	Contact with non-powered hand tool	2,094	1.6
W28	Contact with powered lawnmower	733	0.6
W29	Contact with other powered hand tools and household machinery	4,291	3.2
W30	Contact with agricultural machinery	332	0.2
W31	Contact with other and unspecified machinery	4,772	3.6
W32	Handgun discharge	8	0.0
W34	Discharge from other and unspecified firearms	113	0.1
W35	Explosion and rupture of boiler	n.p.	n.p.
W36	Explosion and rupture of gas cylinder	127	0.1
W37	Explosion and rupture of pressurised tyre, pipe or hose	55	0.0
W38	Explosion and rupture of other specified pressurised devices	26	0.0
W39	Discharge of firework	61	0.0
W40	Explosion of other materials	230	0.2
W41	Exposure to high-pressure jet	17	0.0
W43	Exposure to vibration	n.p.	n.p.
W44	Foreign body entering into or through eye or natural orifice	6,689	5.0
W45	Foreign body or object entering through skin	3,019	2.3
W46	Contact with hypodermic needle	135	0.1
W49	Exposure to other and unspecified inanimate mechanical forces	5,165	3.9
W50	Hit, struck, kicked, twisted, bitten or scratched by another person	5,269	4.0
W51	Striking against or bumped into by another person	2,223	1.7
W52	Crushed, pushed or stepped on by crowd or human stampede	117	0.1
W53	Bitten by a rat	n.p.	n.p.
W54	Bitten or struck by dog	2,726	2.0
W55	Bitten or struck by other mammals	2,239	1.7
W56	Contact with marine animal	158	0.1
W57	Bitten or stung by nonvenomous insect and other nonvenomous arthropods	788	0.6
W58	Bitten or struck by crocodile or alligator	9	0.0
W59	Bitten or crushed by other reptiles	1,196	0.9
W60	Contact with plant thorns and spines and sharp leaves	320	0.2
W61	Contact with plant thorns and spines and sharp leaves	32	0.0
W64	Exposure to other and unspecified animate mechanical forces	269	0.2
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	28	0.0
W79	Inhalation and ingestion of food causing obstruction of respiratory tract	301	0.2
W80	Inhalation and ingestion of other objects causing obstruction of respiratory	214	0.2
W81	Confined to or trapped in a low-oxygen environment	22	0.0
W83	Other specified threats to breathing	n.p.	n.p.
W84	Unspecified threat to breathing	32	0.0

continued

Table 2.8.5 (continued): External causes of other unintentional injury cases, Australia, 2009–10

ICD-10-AM Code	External cause of morbidity and mortality	Count	Per cent
W85	Exposure to electric transmission lines	61	0.0
W86	Exposure to other specified electric current	390	0.3
W87	Exposure to unspecified electric current	102	0.1
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	9	0.0
W93	Exposure to excessive cold of man-made origin	6	0.0
W94	Exposure to high and low air pressure and changes in air pressure	262	0.2
W99	Exposure to other and unspecified man-made environmental factors	9	0.0
X20	Contact with venomous snakes and lizards	537	0.4
X21	Contact with venomous spiders	978	0.7
X22	Contact with scorpions	n.p.	n.p.
X23	Contact with hornets, wasps and bees	842	0.6
X24	Contact with centipedes and venomous millipedes (tropical)	10	0.0
X25	Contact with other specified venomous arthropods	327	0.2
X26	Contact with venomous marine animals and plants	390	0.3
X27	Contact with other specified venomous animals	23	0.0
X28	Contact with other specified venomous plants	n.p.	n.p.
X29	Contact with unspecified venomous animal or plant	47	0.0
X30	Exposure to excessive natural heat	376	0.3
X31	Exposure to excessive natural cold	95	0.1
X32	Exposure to sunlight	61	0.0
X33	Victim of lightning	16	0.0
X36	Victim of avalanche, landslide and other earth movements	n.p.	n.p.
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	51	0.0
X50	Overexertion and strenuous or repetitive movements	10,852	8.2
X51	Travel and motion	26	0.0
X52	Prolonged stay in weightless environment	n.p.	n.p.
X53	Lack of food	8	0.0
X54	Lack of water	n.p.	n.p.
X57	Unspecified privation	n.p.	n.p.
X58	Exposure to other specified factors	1,955	1.5
X59	Exposure to unspecified factor	39,634	29.8
Total		**133,065**	**100.0**

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

State and territory differences

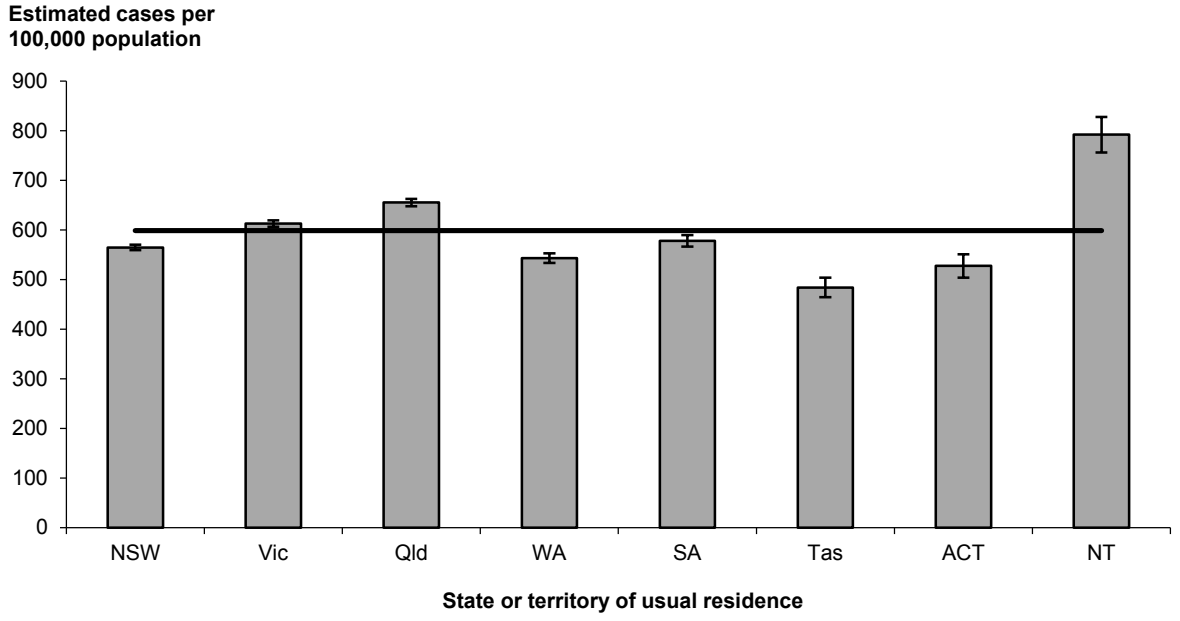
Victoria, Queensland and the Northern Territory had rates of other unintentional injury higher than the national rate of 598.9 cases per 100,000 population (Table 2.8.6 and Figure 2.8.3). Rates for New South Wales, Western Australia, South Australia, Tasmania and the Australian Capital Territory were all lower than the national rate.

Table 2.8.6: Age-standardised rates of other unintentional injury, states and territories, 2009–10

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI[(a)]
NSW	565	560–571
Vic	613	607–620
Qld	655	648–663
WA	543	534–553
SA	578	567–590
Tas	484	465–504
ACT	528	504–551
NT	792	757–828
Australia[(b)]	**599**	**596–602**

(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.



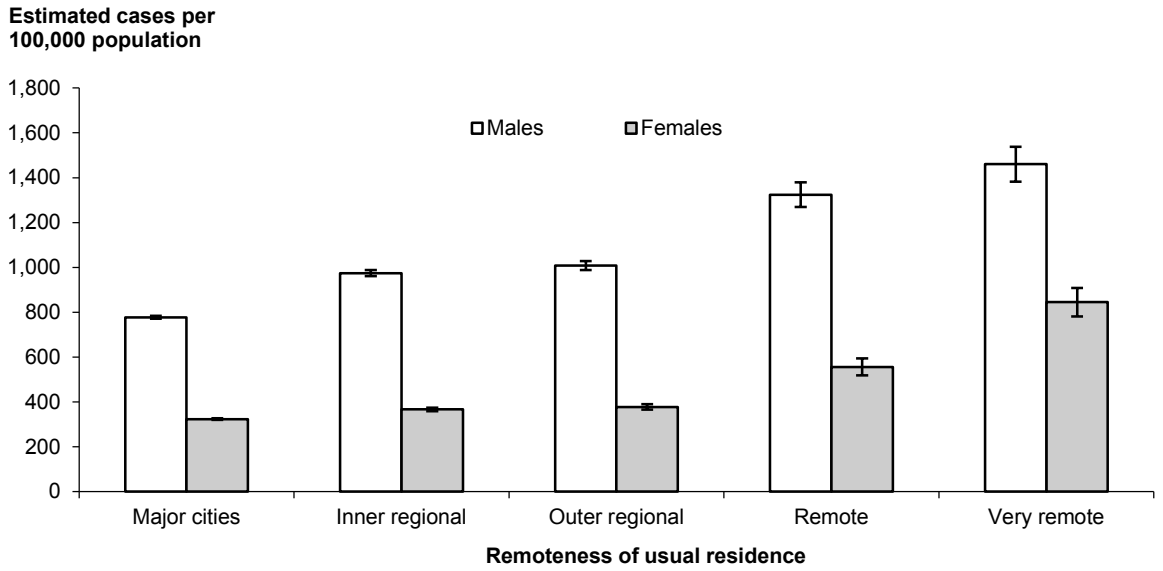
Notes

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 2.8.3: Age-standardised rates of other unintentional injury, states and territories, 2009–10

Remoteness of usual residence

Rates of hospitalisation for other unintentional injury increased with remoteness for both males and females (Figure 2.8.4). The observed rate for residents of Australia's *Major cities* was 552.4 cases per 100,000 population compared with 1,171.2 cases for those residing in *Very remote* Australia. Rates for males were more than double the rate for females in each remoteness category, with the exception of *Very remote*.



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 rates of unintentional injury: males and females, by remoteness of usual residence (ASGC regions), 2009–10

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, 2009–10

Indicator	Males	Females	Persons
Separations from hospital due to intentional self-harm	10,376	17,212	27,588
Percentage of all community injury separations	4.0	8.9	6.1
Estimated cases[(a)]	9,849	16,482	26,331
Crude rate/100,000 population	89.3	148.2	118.9
Age-standardised rate/100,000 population[(b)]	89.5	150.6	119.6
Total patient days[(c)]	37,483	51,612	89,095
Mean length of stay (days)	3.8	3.1	3.4
Estimated cases with a high threat to life	696	419	1,115
Percentage of cases with a high threat to life	7.1	2.5	4.2

(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.

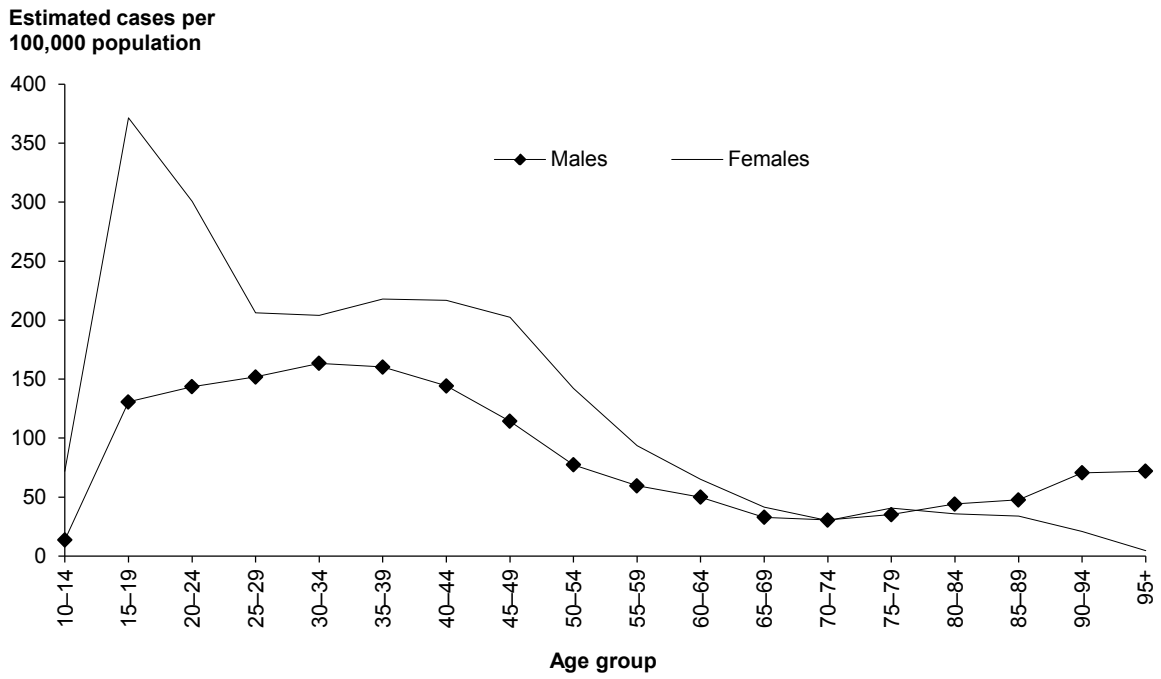
Intentional self-harm accounted for 6% of all injury hospitalisations in the financial year 2009–10 (Table 2.9.1). More females than males were hospitalised for intentional self-harm (based on age-standardised rates) with a M:F ratio of 0.6:1.0.

This chapter includes suicide and attempts to suicide, as well as cases where persons have intentionally hurt themselves, but not necessarily with the intention of suicide—for example, acts of 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 compared with males up to age 70 (Figure 2.9.1). The highest age-specific rate for cases of hospitalised self-harm was for females aged 15–19 (371.4 cases per 100,000 population). For males, rates were highest in the 30–34 age group (163.4 cases).

Half of all male cases of intentional self-harm injuries occurred in the 25–44 age group (Table 2.9.2). Due to the small number of cases of intentional self-harm coded to the 0–4 and 5–9 age group, these numbers have been suppressed in Figure 2.9.1 but are included as a part of the 0–14 age group in Table 2.9.2. Cases of intentional self-harm in the 0–9 age group may also be subject to misinterpretation given the difficulties in assigning intent to the actions of young children.



Note: Due to the small number of cases, data for children under the age of 10 have been suppressed.

Figure 2.9.1: Age-specific rates of intentional self-harm, by sex, Australia, 2009–10

Table 2.9.2: Intentional self-harm cases, by age group, Australia, 2009–10

	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–14	110	1.1	496	3.0	606	2.3
15–24	2,219	22.5	5,082	30.8	7,301	27.7
25–44	4,895	49.7	6,667	40.5	11,562	43.9
45–64	2,133	21.7	3,662	22.2	5,795	22.0
65+	492	5.0	575	3.5	1,067	4.1
Total	**9,849**	**100.0**	**16,482**	**100.0**	**26,331**	**100.0**

Body region injured

The majority of injury cases attributed to intentional self-harm did not specify a particular body part that was injured (Table 2.9.3). This reflects the fact that the mechanism in most intentional self-harm cases was poisoning.

Table 2.9.3: Hospitalised intentional self-harm cases by body region and sex, Australia, 2009–10

	Males		Females		Persons	
Body region	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Head	164	1.7	47	0.3	211	0.8
Trunk[(a)]	487	4.9	330	2.0	817	3.1
Shoulder and upper limb	1,159	11.8	1,421	8.6	2,580	9.8
Hip and lower limb	124	1.3	161	1.0	285	1.1
Other injuries not specified by body region	7,915	80.4	14,523	88.1	22,438	85.2
All body regions	**9,849**	**100.0**	**16,482**	**100.0**	**26,331**	**100.0**

(a) Trunk includes: neck, thorax, abdomen, lower back, lumbar spine and pelvis.

Mechanism

Intentional self-poisoning (X60–X69) accounted for 82% of all cases of self-harm in the financial year 2009–10 (Table 2.9.4), with female case numbers were almost twice as high as males. The second most common mechanism overall was *Intentional self-harm by sharp object* (13%, *n* = 3,336) and again, more females than males were reported.

Hanging, strangulation and suffocation accounted for 2% of all self-harm cases, but substantially more males were admitted for this method than females (*n* = 383 and 162 respectively). More than twice as many males as females were admitted for *Intentional poisoning by other gases and vapours*; this category includes the toxic effects of carbon monoxide. *Intentional self-harm by handgun discharge* was the least common of all and was only reported for males (*n* = 6).

Forty-six per cent of all cases of intentional self-harm were poisoning by and exposure to *antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs* (*n* = 12,189). This category includes benzodiazepines, other and unspecified antidepressants—which include 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.

A further 4,958 and 1,648 cases respectively were a result of *Intentional self-poisoning by nonopioid analgesics, antipyretics and antirheumatics* (19%) and *Other and unspecified drugs, medicaments and biological substances* (6%). The nonopioid analgesics category includes paracetamol, nonsteroidal anti-inflammatory drugs and salicylates such as aspirin.

Intentional self-poisoning by narcotics and psychodysleptics [hallucinogens] accounted for 5% of self-harm cases. This category includes cannabis (and its derivatives), cocaine, heroin, codeine and LSD among others. *Intentional self-poisoning by alcohol* was reported in 361 cases.

Table 2.9.4: External cause of intentional self-harm injury cases, Australia, 2009–10

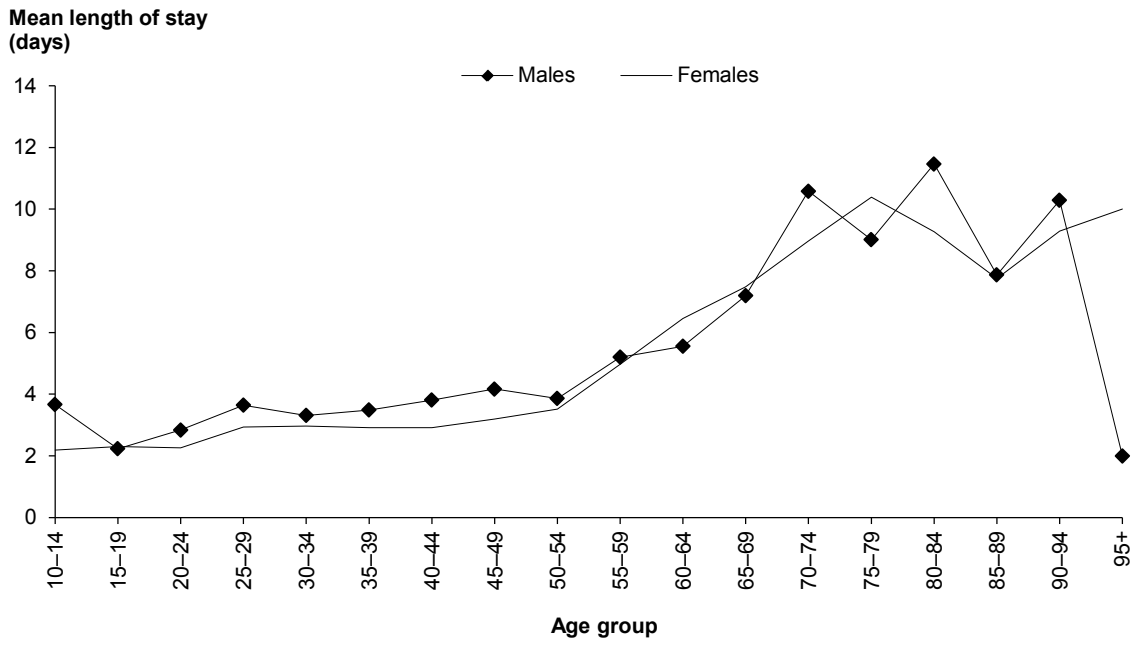
ICD-10-AM Code	External cause	Males		Females		Persons	
		Count	Per cent	Count	Per cent	Count	Per cent
	Intentional self-poisoning by and exposure to:	7,506	76.2	14,183	86.1	21,689	82.4
X60	Nonopioid analgesics, antipyretics and antirheumatics	1,319	13.4	3,639	22.1	4,958	18.8
X61	Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	4,242	43.1	7,947	48.2	12,189	46.3
X62	Narcotics and psychodysleptics [hallucinogens]	567	5.8	785	4.8	1,352	5.1
X63	Other drugs acting on the autonomic nervous system	130	1.3	164	1.0	294	1.1
X64	Other and unspecified drugs, medicaments and biological substances	581	5.9	1,067	6.5	1,648	6.3
X65	Alcohol	162	1.6	199	1.2	361	1.4
X66	Organic solvents and their halogenated hydrocarbons and their vapours	32	0.3	18	0.1	50	0.2
X67	Other gases and vapours (for example, carbon monoxide)	233	2.4	84	0.5	317	1.2
X68	Pesticides	90	0.9	40	0.2	130	0.5
X69	Other and unspecified chemicals and noxious substances	150	1.5	240	1.5	390	1.5
X70	Intentional self-harm by hanging, strangulation and suffocation	383	3.9	162	1.0	545	2.1
X71	Intentional self-harm by drowning and submersion	17	0.2	14	0.1	31	0.1
X72	Intentional self-harm by handgun discharge	6	0.1	0	0.0	6	0.0
X74	Intentional self-harm by other and unspecified firearm discharge	37	0.4	0	0.0	37	0.1
X76	Intentional self-harm by smoke, fire and flames	35	0.4	59	0.4	94	0.4
X77	Intentional self-harm by steam, hot vapours and hot objects	n.p.	n.p.	n.p.	n.p.	14	0.1
X78	Intentional self-harm by sharp object	1,549	15.7	1,787	10.8	3,336	12.7
X79	Intentional self-harm by blunt object	27	0.3	18	0.1	45	0.2
X80	Intentional self-harm by jumping from a high place	71	0.7	50	0.3	121	0.5
X81	Intentional self-harm by jumping or lying before moving object	26	0.3	8	0.0	34	0.1
X82	Intentional self-harm by crashing of motor vehicle	37	0.4	25	0.2	62	0.2
X83	Intentional self-harm by other specified means	112	1.1	98	0.6	210	0.8
X84	Intentional self-harm by unspecified means	n.p.	n.p.	n.p.	n.p.	107	0.4
Total		**9,849**	**100.0**	**16,482**	**100.0**	**26,331**	**100.0**

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

Length of stay

The mean length of stay for intentional self-harm cases was 3.4 days, and was greater for males than females (3.8 days versus 3.1 days). MLOS generally rose with age, with the longest average hospital stay for males occurring aged 80–84 (11.5 days) and females aged 75–79 (10.4 days) (Figure 2.9.2). Due to the small number of cases in children up to the age of nine, these figures have been suppressed in the graph below.

The mean length of stay was 2.4 days for children aged 10–14, 2.4 days for young people aged 15–24, 3.2 days for adults aged 25–44, 4.1 days for adults aged 45–64 and 8.9 days for older people aged 65+.



Note: Due to the small number of cases, data for children under the age of 10 have been suppressed.

Figure 2.9.2: Mean length of stay for intentional self-harm, by age and sex, Australia, 2009–10

Place of occurrence

The place of occurrence was unspecified or not reported in about one-third of all intentional self-harm cases (*n* = 9,130). The following observations are restricted to those records in which the place of occurrence was specified (Table 2.9.5). Four out of every 5 cases of intentional self-harm occurred in the home (*n* = 13,983) and nearly 1 in 10 occurred in a health service area (*n* = 1,441).

Table 2.9.5: Place of occurrence for cases of intentional self-harm, Australia, 2009–10

Place	Count	Per cent
Home	13,983	81.3
Residential institution	364	2.1
School	85	0.5
Health service area	1,441	8.4
Other specified institution and public administrative area	47	0.3
Sports and athletics area	15	0.1
Street and highway	285	1.7
Trade and service area	371	2.2
Industrial and construction area	9	0.1
Farm	12	0.1
Other specified places	589	3.4
Total	**17,201**	**100.0**

State and territory differences

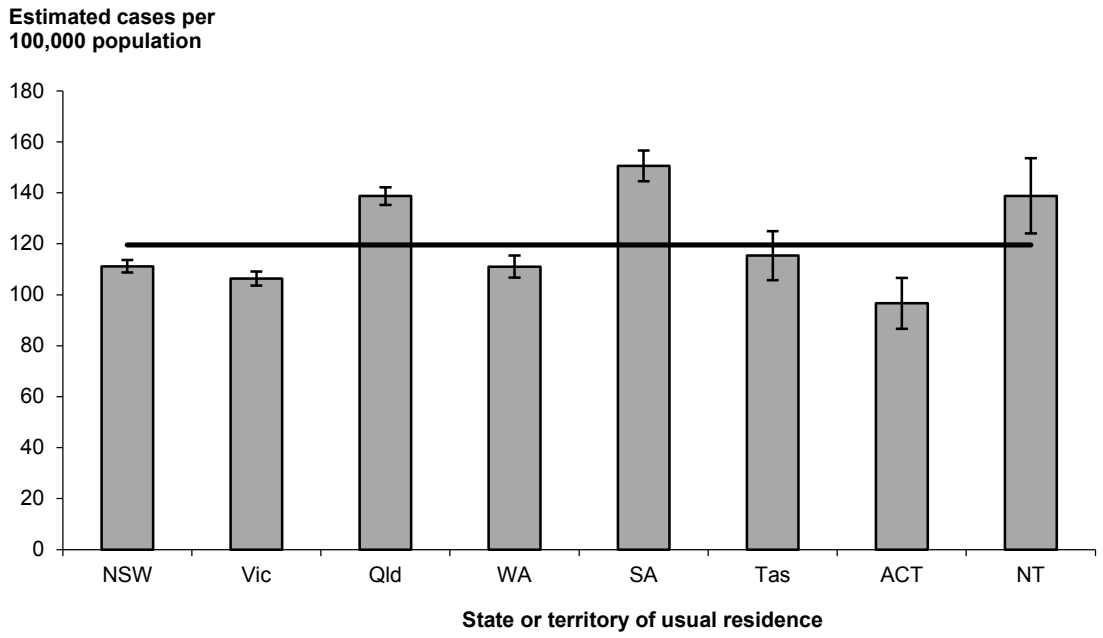
New South Wales, Victoria, Western Australia, and the Australian Capital Territory were lower than the national rate of 119.6 cases per 100,000 population (Table 2.9.6 and Figure 2.9.3). South Australia recorded the highest rate of 150.6 cases.

Table 2.9.6: Age-standardised rates of intentional self-harm, states and territories, 2009–10

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI[(a)]
NSW	111	109–114
Vic	106	104–109
Qld	139	135–142
WA	111	107–115
SA	151	145–157
Tas	115	106–125
ACT	97	87–107
NT	139	124–154
Australia[(b)]	**120**	**118–121**

(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.

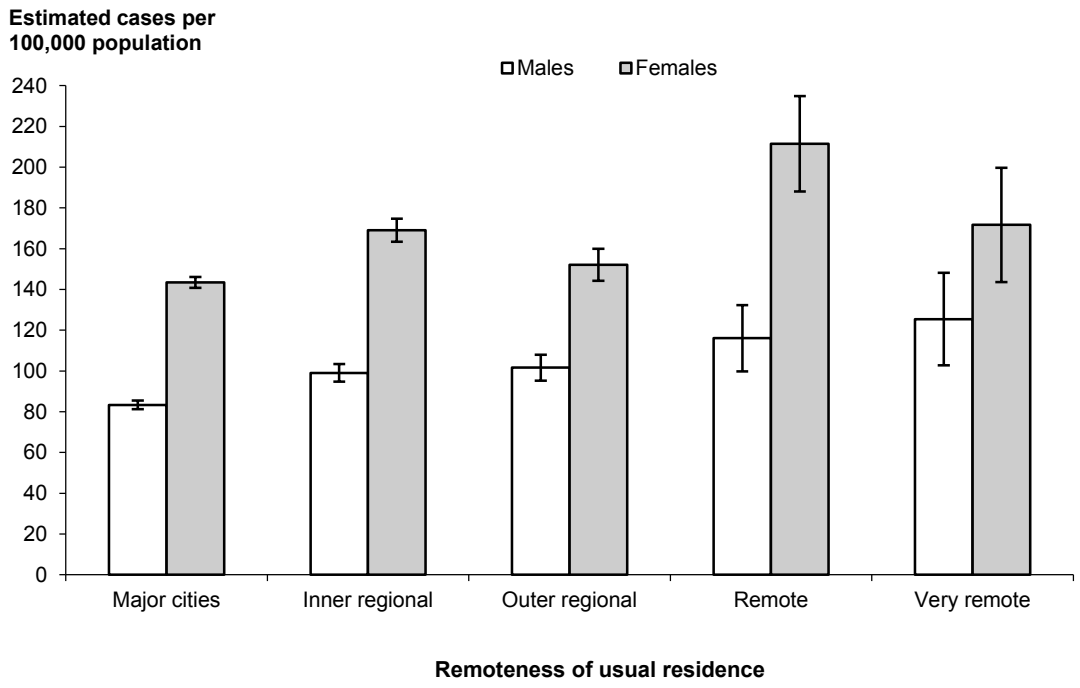


Note: The thick horizontal line shows the rate for Australia.

Figure 2.9.3: Age-standardised rates of intentional self-harm, states and territories, 2009–10

Remoteness of usual residence

Age-standardised rates of hospitalised intentional self-harm injury were higher for females than males in all remoteness regions (Figure 2.9.4). The lowest rate observed was among males living in *Major cities* (83.4 per 100,000 population) and the highest was among females living in *Remote* areas, at more than twice the rate (211.4).



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 rates of intentional self-harm: males and females, by remoteness of usual residence (ASGC regions), 2009–10

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. 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—for example, 'intentional self-harm by hanging' as opposed to 'falling from a building structure' (for example, W13 *Fall from, out of or through a window, bridge or roof*). 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 any 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, 2009–10

Indicator	Males	Females	Persons
Separations from hospital due to assault	18,473	6,077	24,550
Percentage of all community injury separations	7.1	3.2	5.4
Estimated cases[(a)]	17,353	5,809	23,162
Crude rate/100,000 population	157.3	52.2	104.6
Age-standardised rate/100,000 population[(b)]	155.6	53.4	105.1
Total patient days[(c)]	38,498	12,086	50,584
Mean length of stay (days)	2.2	2.1	2.2
Estimated cases with a high threat to life	3,393	728	4,121
Percentage of cases with a high threat to life	19.6	12.5	17.8

(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.

An estimated 5% of all injury hospitalisations were due to assault in the 2009–10 financial year (Table 2.10.1). Three times as many males as females were hospitalised for injury resulting from assault (based on age-standardised rates). 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

Age-specific rates for males were significantly higher than for females between the ages of 15 and 74 (Figure 2.10.1). Male rates for assault peaked in the 20–24 age group with an age-specific rate of 432.7 hospitalisations per 100,000 compared with 110.6 for females in the same age group.

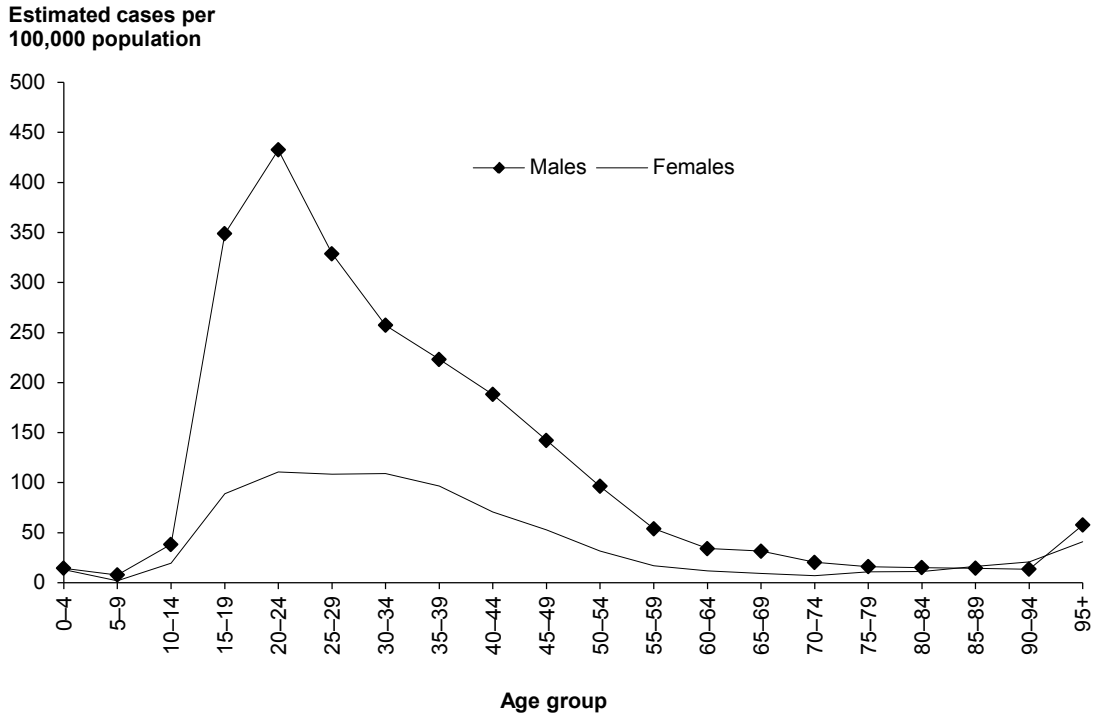


Figure 2.10.1: Age-specific rates of assault, by sex, Australia, 2009–10

Slightly more than one-third of all male assault cases (37%; *n* = 6,340) occurred in the 15–24 age group, and 46% of cases occurred in the 25–44 age group (*n* = 7,920) (Table 2.10.2). Just over one-quarter of female assault cases involved young women aged 15–24 and 52% involved women aged 25–44. Three per cent involved children under the age of 15.

Table 2.10.2: Assault cases, by age group, Australia, 2009–10

	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–14	437	2.5	238	4.1	675	2.9
15–24	6,340	36.5	1,523	26.2	7,863	33.9
25–44	7,920	45.6	3,036	52.3	10,956	47.3
45–64	2,357	13.6	835	14.4	3,192	13.8
65+	299	1.7	177	3.0	476	2.1
Total	**17,353**	**100.0**	**5,809**	**100.0**	**23,162**	**100.0**

Body region injured

Two-thirds of all hospitalised cases due to assault involved injuries to the head (Table 2.10.3). This was the most common body region injured in assault cases for both males and females.

Table 2.10.3: Hospitalised assault cases, by body region and sex, Australia, 2009–10

	Males		Females		Persons	
Body region	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Head	12,066	69.5	3,242	55.8	15,308	66.1
Trunk[(a)]	1,793	10.3	931	16.0	2,724	11.8
Shoulder and upper limb	2,571	14.8	941	16.2	3,512	15.2
Hip and lower limb	679	3.9	371	6.4	1,050	4.5
Other injuries not specified by body region	244	1.4	324	5.6	568	2.5
All body regions	**17,353**	**100.0**	**5,809**	**100.0**	**23,162**	**100.0**

(a) Trunk includes: neck, thorax, abdomen, lower back, lumbar spine and pelvis.

Mechanism

The most common mechanism by which injury occurred was *Assault by bodily force*, 60% of cases (n = 13,802) (Table 2.10.4). The second and third most common mechanisms of injury were *Assault by blunt object,* (13%; n = 3,102) and *Assault by sharp object* (12%; n = 2,773).

Over half of assault cases in children aged 0–14 (53%, n = 356) were due to *Assault by bodily force*. Significantly more boys were subjected to *Assault by bodily force* (60%, n = 263) than girls (39%, n = 93). Twenty-five per cent of girls were subjected to *Other maltreatment syndromes* (n = 60) compared with 15% of boys (n = 65). *Neglect and abandonment* accounted for 3% of assault cases in children aged 0–14 (boys n = 10; girls n = 10).

Nearly two-thirds of assault cases in youth and young people aged 15–24 were due to *Assault by bodily force* (64%; n = 5,036). Four times as many male youth and young men (n = 4,132) were subject to *Assault by bodily force* than their female counterparts (n = 904). *Assault by sharp object* was the second most common cause of assault injury for males aged 15–24 (13%, n = 766). *Assault by blunt object* was the second most common cause of injury for female youth and young women (13%, n = 201).

Fifty-seven per cent of assault cases in people aged 25–44 were due to *Assault by bodily force* (n = 6,272). An equal proportion of men in this age group were hospitalised for *Assault by sharp object* and *Assault by blunt object* (14% each), while 19% of women aged 25–44 were hospitalised for *Assault by blunt object*.

Fifty-seven per cent of assault cases in people aged 45–64 were due to *Assault by bodily force* (n = 1,805). *Assault by blunt object* accounted for 16% of hospitalisations for cases in this age group (men n = 385; women n = 140). *Assault by unspecified means* accounted for 12% of cases (men n = 301; women n = 72).

Seventy per cent of assault cases in older people aged 65+ (n = 333) were due to *Assault by bodily force*. *Assault by blunt object* accounted for 10% of hospitalisations for cases in this age group (men n = 35; women n = 13).

Table 2.10.4: External cause of assault cases, Australia, 2009–10

ICD-10-AM Code	External cause	Males		Females		Persons	
		Count	Per cent	Count	Per cent	Count	Per cent
X85	Assault by drugs, medicaments and biological substances	15	0.1	37	0.6	52	0.2
X86–X90	Assault by corrosive substances, pesticides, gases and vapours, other specified or unspecified chemicals and noxious substances	10	0.1	15	0.3	25	0.1
X91	Assault by hanging, strangulation and suffocation	9	0.1	36	0.6	45	0.2
X92	Assault by drowning and submersion	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
X93	Assault by handgun discharge	17	0.1	0	0.0	17	0.1
X95	Assault by other and unspecified firearm discharge	n.p.	n.p.	n.p.	n.p.	81	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	21	0.1	17	0.3	38	0.2
X98	Assault by steam, hot vapours and hot objects	36	0.2	20	0.3	56	0.2
X99	Assault by sharp object	2,192	12.6	581	10.0	2,773	12.0
Y00	Assault by blunt object	2,152	12.4	950	16.4	3,102	13.4
Y01	Assault by pushing from a high place	12	0.1	9	0.2	21	0.1
Y02	Assault by pushing or placing victim before moving object	n.p.	n.p.	n.p.	n.p.	7	0.0
Y03	Assault by crashing of motor vehicle	15	0.1	8	0.1	23	0.1
Y04	Assault by bodily force	10,498	60.5	3,304	56.9	13,802	59.6
Y05	Sexual assault by bodily force	10	0.1	125	2.2	135	0.6
Y06	Neglect and abandonment	12	0.1	13	0.2	25	0.1
Y07	Other maltreatment syndromes	74	0.4	136	2.3	210	0.9
Y08	Assault by other specified means	292	1.7	108	1.9	400	1.7
Y09	Assault by unspecified means	1,837	10.6	434	7.5	2,271	9.8
Y35	Legal intervention	58	0.3	8	0.1	66	0.3
Y36	Operations of war	6	0.0	0	0.0	6	0.0
Total		**17,353**	**100.0**	**5,809**	**100.0**	**23,162**	**100.0**

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

Perpetrator

Codes for 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, 23,090 hospital cases were eligible to receive a perpetrator code. A perpetrator was specified for only 46% (n = 10,549) of eligible cases. The perpetrator was an *Unspecified person* in 63% of male and 30% 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 *Multiple persons unknown to the victim* (27%; n = 1,748). For females, a *Spouse or domestic partner* was the most commonly reported perpetrator (58%; n = 2,364).

Table 2.10.5: Relationship of the perpetrator to the victim of assault, Australia, 2009–10

	Males		Females		Persons	
Perpetrator	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Spouse or domestic partner	483	7.5	2,364	58.1	2,847	27.0
Parent	164	2.5	152	3.7	316	3.0
Other family member	816	12.6	576	14.2	1,392	13.2
Carer	12	0.2	10	0.2	22	0.2
Acquaintance or friend	1,115	17.2	350	8.6	1,465	13.9
Official authorities	143	2.2	29	0.7	172	1.6
Person unknown to the victim	1,259	19.4	197	4.8	1,456	13.8
Multiple persons unknown to the victim	1,748	27.0	175	4.3	1,923	18.2
Other specified person	739	11.4	217	5.3	956	9.1
Total of cases where perpetrator is specified	**6,479**	**100.0**	**4,070**	**100.0**	**10,549**	**100.0**

Length of stay

Mean length of stay for assault was generally higher for males than females (Figure 2.10.2). Caution should be applied to interpreting the mean length of stay for the very young and older age groups due to smaller numbers. The MLOS was 2.5 days for children aged 0–14, 1.8 days for youth and young people aged 15–24, 2.2 days for adults aged 25–44, 2.7 days for adults aged 45–64, and 5.3 days for older people aged 65+.

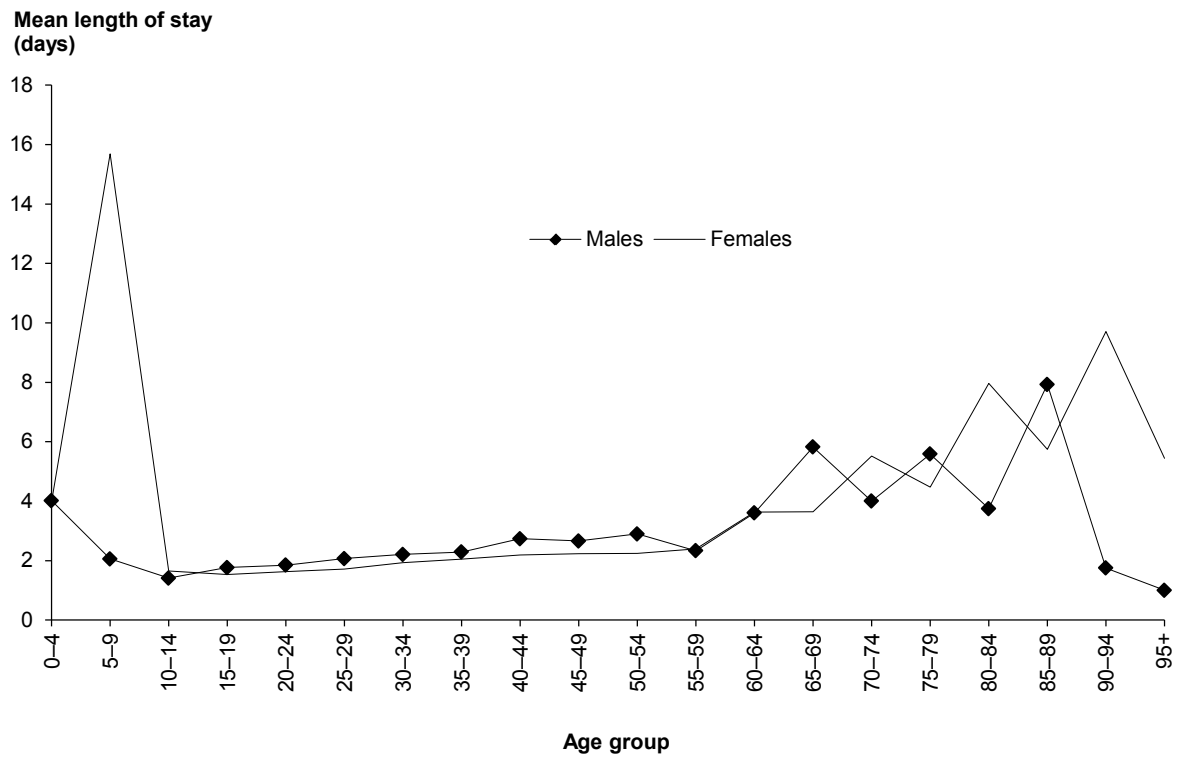


Figure 2.10.2: Mean length of stay for assault, by age and sex, Australia, 2009–10

Place of occurrence

The place of occurrence for the majority of hospitalisations from assault injury was unspecified or not reported (58%, *n* = 13,525). The following observations are restricted to those cases in which the place of occurrence was specified.

Assaults in the home were the most common place for females in all age categories (29% overall, *n* = 1,686) (Table 2.10.6). For boys aged 0–14, a slightly higher percentage of assaults occurred at school (23%) than in the home (21%). For male youth and men aged between 15 and 44, the most common place of assault was a trade or service area (which includes hotels and many other entertainment venues) (13% each). For men aged 45 and older, the most common place of assault was in the home.

Table 2.10.6: Place of occurrence for assault cases, by age and sex, Australia, 2009–10

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	93	21.3	382	6.0	861	10.9	442	18.8	108	36.1	1,886	10.9
Residential institution	n.p.	n.p.	67	1.1	138	1.7	48	2.0	n.p.	n.p.	282	1.6
School	102	23.3	73	1.2	7	0.1	n.p.	n.p.	n.p.	n.p.	186	1.1
Health service area	n.p.	n.p.	7	0.1	14	0.2	17	0.7	n.p.	n.p.	43	0.2
Other specified institution	n.p.	n.p.	42	0.7	43	0.5	12	0.5	n.p.	n.p.	104	0.6
Sports and athletics area	14	3.2	84	1.3	45	0.6	n.p.	n.p.	n.p.	n.p.	152	0.9
Street and highway	21	4.8	667	10.5	715	9.0	197	8.4	30	10.0	1,630	9.4
Trade and service area	12	2.7	806	12.7	1,000	12.6	240	10.2	20	6.7	2,078	12.0
Industrial and construction area	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	11	0.1
Farm	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	5	0.0
Other specified places	14	3.2	301	4.7	275	3.5	81	3.4	11	3.7	682	3.9
Total	**267**	**100.0**	**2,432**	**100.0**	**3,106**	**100.0**	**1,051**	**100.0**	**203**	**100.0**	**7,059**	**100.0**

(continued)

Table 2.10.6 (continued): Place of occurrence for assault cases, by age and sex, Australia, 2009–10

Place	0–14	Per cent	15–24	Per cent	25–44	Per cent	45–64	Per cent	65+	Per cent	Total	Per cent
Females												
Home	97	40.8	339	22.3	834	27.5	322	38.6	94	53.1	1,686	29.0
Residential institution	n.p.	n.p.	n.p.	n.p.	19	0.6	5	0.6	34	19.2	63	1.1
School	16	6.7	8	0.5	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	29	0.5
Health service area	n.p.	n.p.	n.p.	n.p.	11	0.4	15	1.8	n.p.	n.p.	32	0.6
Other specified institution	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	7	0.1
Sports and athletics area	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	7	0.1
Street and highway	7	2.9	75	4.9	110	3.6	23	2.8	7	4.0	222	3.8
Trade and service area	n.p.	n.p.	105	6.9	108	3.6	29	3.5	8	4.5	252	4.3
Industrial and construction area	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Farm	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Other specified places	9	3.8	82	5.4	144	4.7	37	4.4	6	3.4	278	4.8
Total	**137**	**100.0**	**621**	**100.0**	**1,235**	**100.0**	**434**	**100.0**	**151**	**100.0**	**2,578**	**100.0**

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

State and territory differences

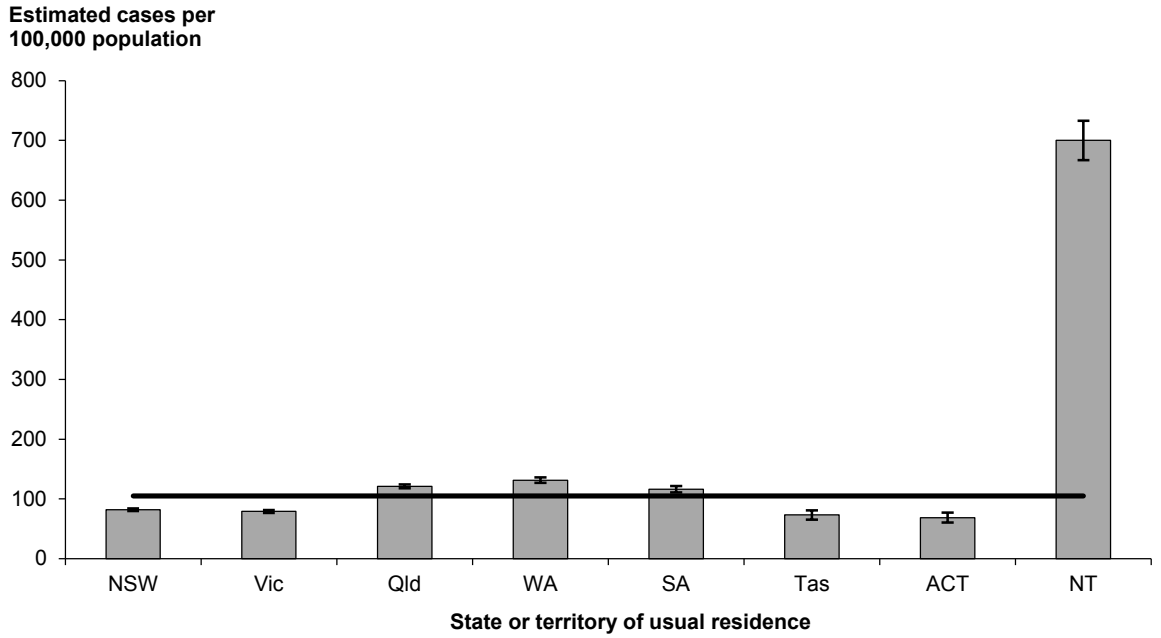
The rates of hospitalisation due to assault in New South Wales, Victoria, Tasmania and the Australian Capital Territory were below the national rate (Table 2.10.7 and Figure 2.10.3). Queensland, Western Australia, South Australia and the Northern Territory had rates of hospitalisation due to assault that were above the national rate. The rate in the Northern Territory (700.1 cases per 100,000 population) was almost 6 times higher than the national rate (105.1 cases).

Table 2.10.7: Age-standardised rates of assault, states and territories, 2009–10

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI[(a)]
NSW	82	80–84
Vic	79	77–81
Qld	121	118–124
WA	131	127–136
SA	116	111–122
Tas	73	65–81
ACT	69	61–77
NT	700	667–733
Australia[(b)]	**105**	**104–107**

(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

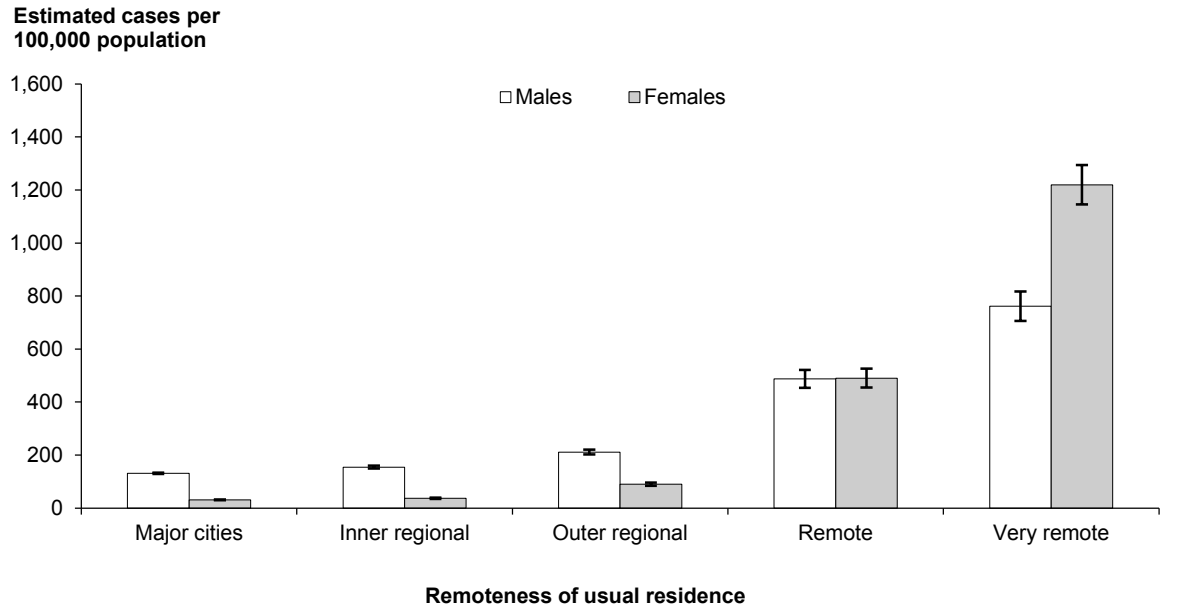
1. The thick horizontal line shows the rate for Australia.
2. Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.10.3: Age-standardised rates of assault, states and territories, 2009–10

Remoteness of usual residence

Rates of hospitalised assault injuries increased significantly with remoteness (Figure 2.10.4). The lowest rate of hospitalised assaults for both males and females was for residents of *Major cities* (131.6 per 100,000 population for males, 31.4 for females). The highest rate was among residents of *Very remote* areas.

Rates for males were significantly higher than for females in *Major cities* and *Inner regional* areas (four times greater respectively). Males in *Outer regional* areas were hospitalised at more than twice the rate for females. In *Remote* areas the rate for males and females was similar. In *Very remote* areas, the rate for females (1,219.4 per 100,000 population) significantly exceeded that for males (761.8).



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 rates of assault: males and females, by remoteness of usual residence (ASGC regions), 2009–10

Ascertainment of assault

As for intentional self-harm, there are reasons to think that the identification of admitted injury cases as being due to interpersonal 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 interpersonal 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, 2009–10

Indicator	Males	Females	Persons
Separations from hospital due to undetermined intent	3,169	2,730	5,899
Percentage of all community injury separations	1.2	1.4	1.3
Estimated cases[(a)]	3,062	2,646	5,708
Crude rate/100,000 population	27.8	23.8	25.8
Age-standardised rate/100,000 population[(b)]	27.8	23.8	25.8
Total patient days[(c)]	7,166	5,765	12,931
Mean length of stay (days)	2.3	2.2	2.3
Estimated cases with a high threat to life	129	64	193
Percentage of cases with a high threat to life	4.2	2.4	3.4

(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 cases where intent was unspecified, unstated or could not be determined. Injuries where the intent is undetermined accounted for 1% of all community injury separations in the financial year 2009–10 (Table 2.11.1). Slightly more males than females were hospitalised for injuries for which the intent was undetermined.

The coding of the external cause of injury is based on a review of the patient's 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 it is supposed to be coded as accidental, even if there are reasons to think that it might have been intentional. In hospitals 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

The lowest rate for injuries of undetermined intent occurred during childhood (age 5–9) for both males and females (Figure 2.11.1). Caution should be exercised in interpreting rates over age 90 due to the small number of cases.

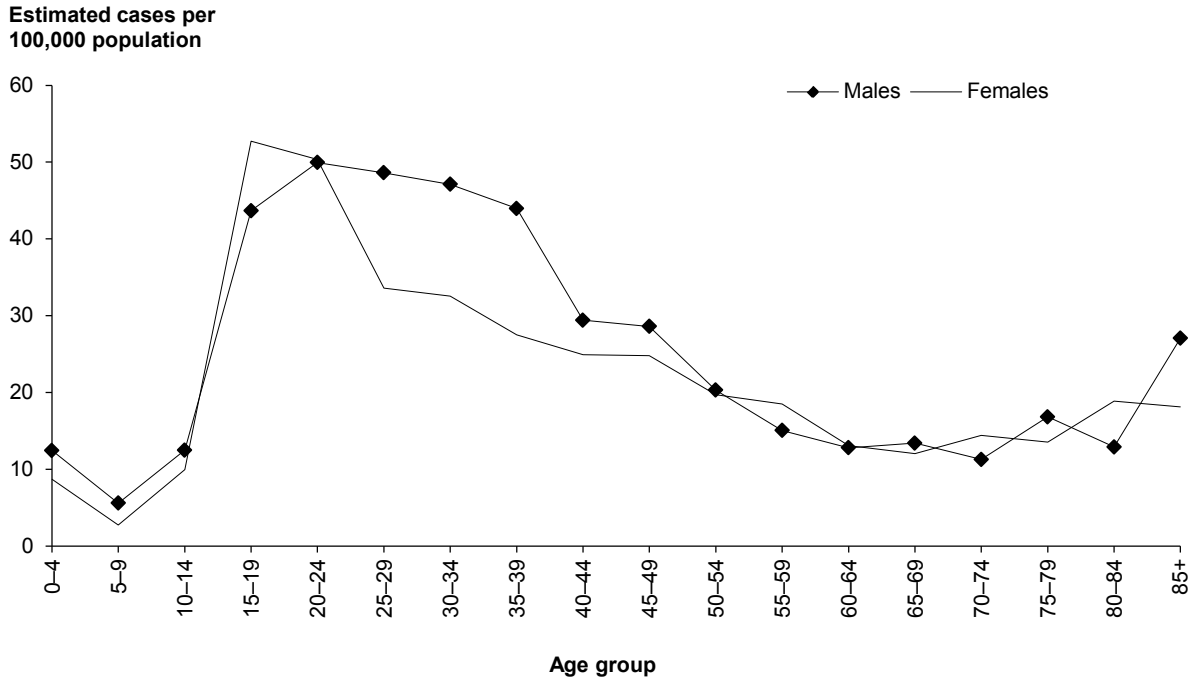


Figure 2.11.1: Age-specific rates of injuries of undetermined intent, by sex, Australia, 2009–10

Forty per cent of hospitalisations for injuries of undetermined intent occurred in adults aged 25–44 (*n* = 2,275) (Table 2.11.2).

Table 2.11.2: Injuries of undetermined intent, by age group, Australia, 2009–10

	Males		Females		Persons	
Age group	Count	Per cent	Count	Per cent	Count	Per cent
0–14	221	7.2	147	5.6	368	6.5
15–24	758	24.8	782	29.6	1,540	27.0
25–44	1,340	43.8	935	35.3	2,275	39.9
45–64	543	17.7	543	20.5	1,086	19.0
65+	200	6.5	239	9.0	439	7.7
Total	**3,062**	**100.0**	**2,646**	**100.0**	**5,708**	**100.0**

Length of stay

The overall mean length of stay in hospital for injuries occurring as a result of undetermined intent was 2.3 days for males and 2.2 days for females. The general trend was for an increasing length of stay with age (Figure 2.11.2).

The mean length of stay was 1.8 days for children aged 0–14, 1.5 days for young people aged 15–24, 2.1 days for adults aged 25–44, 2.8 days for adults aged 45–64 and 4.6 days for older people aged 65+.

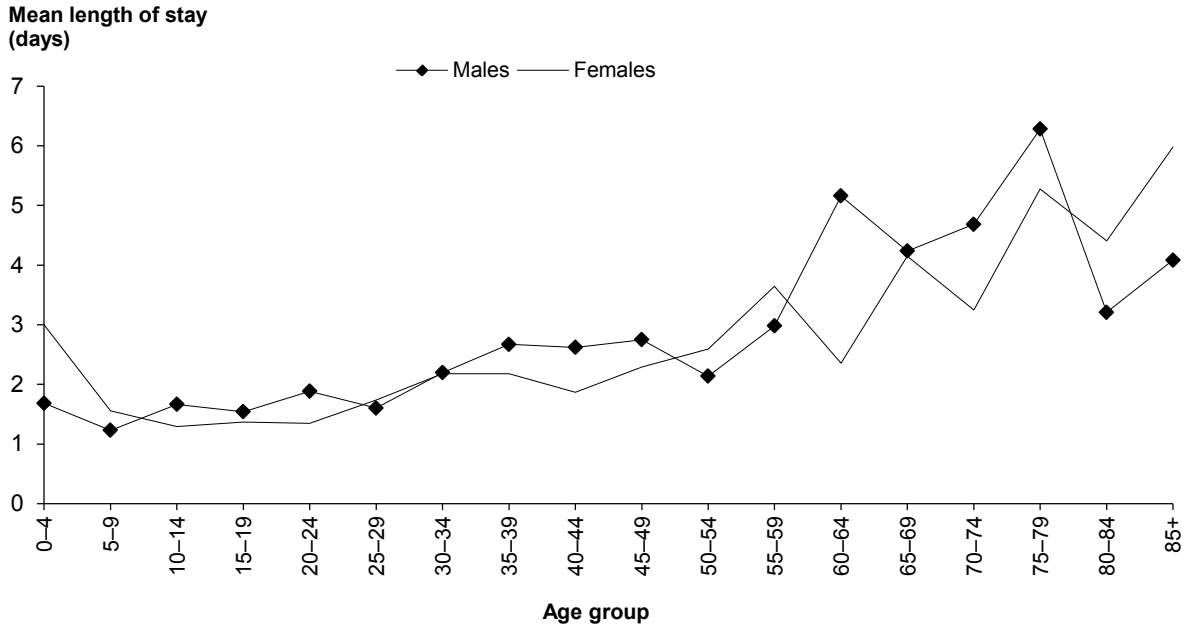


Figure 2.11.2: Mean length of stay for injuries of undetermined intent, by age and sex, Australia, 2009–10

Body region injured

The majority of admitted cases due to undetermined intent were not specified by body region injured (Table 2.11.3). This reflects the fact that the mechanism in most cases was poisoning.

Table 2.11.3: Hospitalised undetermined intent cases, by body region and sex, Australia, 2009–10

	Males		Females		Persons	
Body region	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Head	187	6.1	68	2.6	255	4.5
Trunk[(a)]	86	2.8	35	1.3	121	2.1
Shoulder and upper limb	496	16.2	167	6.3	663	11.6
Hip and lower limb	161	5.3	92	3.5	253	4.4
Other injuries not specified by body region	2,132	69.6	2,284	86.3	4,416	77.4
All body regions	**3,062**	**100.0**	**2,646**	**100.0**	**5,708**	**100.0**

(a) Trunk includes: neck, thorax, abdomen, lower back, lumbar spine and pelvis.

Mechanism

Overall, 73% of injuries of undetermined intent resulted from poisoning (Table 2.11.4). Eighty-three per cent of female and 64% of male undetermined intent cases were coded as poisoning. The second most common mechanism of undetermined injury for both males and females was *Contact with blunt object* (17%, *n* = 526 and 6%, *n* = 169, respectively).

Table 2.11.4: External cause of injuries of undetermined intent, Australia, 2009–10

		Males		Females		Persons	
ICD-10-AM Code	External cause	Count	Per cent	Count	Per cent	Count	Per cent
	Poisoning by and exposure to:	1,971	64.4	2,187	82.7	4,158	72.8
Y10	nonopioid analgesics, antipyretics and antirheumatics	153	5.0	360	13.6	513	9.0
Y11	antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	730	23.8	1,009	38.1	1,739	30.5
Y12	narcotics and psychodysleptics [hallucinogens]	407	13.3	220	8.3	627	11.0
Y13	other drugs acting on the autonomic nervous system	19	0.6	19	0.7	38	0.7
Y14	other and unspecified drugs, medicaments and biological substances	336	11.0	308	11.6	644	11.3
Y15	alcohol	142	4.6	97	3.7	239	4.2
Y16	organic solvents and their halogenated hydrocarbons and their vapours	8	0.3	6	0.2	14	0.2
Y17	other gases and vapours (for example, Carbon monoxide)	20	0.7	17	0.6	37	0.6
Y18	pesticides	7	0.2	6	0.2	13	0.2
Y19	other and unspecified chemicals and noxious substances	149	4.9	145	5.5	294	5.2
Y20	Hanging, strangulation and suffocation	13	0.4	13	0.5	26	0.5
Y21	Drowning and submersion	n.p.	n.p.	n.p.	n.p.	7	0.1
Y22	Handgun discharge	7	0.2	0	0.0	7	0.1
Y24	Other and unspecified firearm discharge	n.p.	n.p.	n.p.	n.p.	43	0.8
Y25	Contact with explosive material	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Y26	Exposure to smoke, fire and flames	95	3.1	26	1.0	121	2.1
Y27	Contact with steam, hot vapours and hot objects	15	0.5	15	0.6	30	0.5
Y28	Contact with sharp object	209	6.8	136	5.1	345	6.0
Y29	Contact with blunt object	526	17.2	169	6.4	695	12.2
Y30	Falling, jumping or pushed from a high place	24	0.8	12	0.5	36	0.6
Y31	Falling, lying or running before or into moving object	19	0.6	13	0.5	32	0.6
Y32	Crashing of motor vehicle	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Y33	Other specified events	103	3.4	41	1.5	144	2.5
Y34	Unspecified event	34	1.1	27	1.0	61	1.1
Total		**3,062**	**100.0**	**2,646**	**100.0**	**5,708**	**100.0**

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

Poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs accounted for 31% of poisoning cases. Other cases of undetermined intent injuries attributed to poisoning included 11% each for *Poisoning by and exposure to narcotics and psychodysleptics [hallucinogens]* and *Poisoning by and exposure to other and unspecified drugs, medicaments and biological substances*. *Poisoning by and exposure to alcohol* was reported in 4% of hospitalised undetermined intent injuries during the 2009–10 financial year.

Place of occurrence

Location was not specified or reported for 53% of cases (n = 3,004). The following observations are restricted to those cases in which the place of occurrence was specified. The majority of hospitalised undetermined intent cases were the result of injuries that occurred in the home (65%; n = 1,745) followed by health service area (11%) (Table 2.11.5).

Table 2.11.5: Place of occurrence for injury cases of undetermined intent, Australia, 2009–10

Place	Count	Per cent
Home	1,745	64.5
Residential institution	106	3.9
School	39	1.4
Health service area	307	11.4
Other specified institution and public administrative area	14	0.5
Sports and athletics area	28	1.0
Street and highway	95	3.5
Trade and service area	178	6.6
Industrial and construction area	41	1.5
Farm	9	0.3
Other specified places	142	5.3
Total	**2,704**	**100.0**

State and territory differences

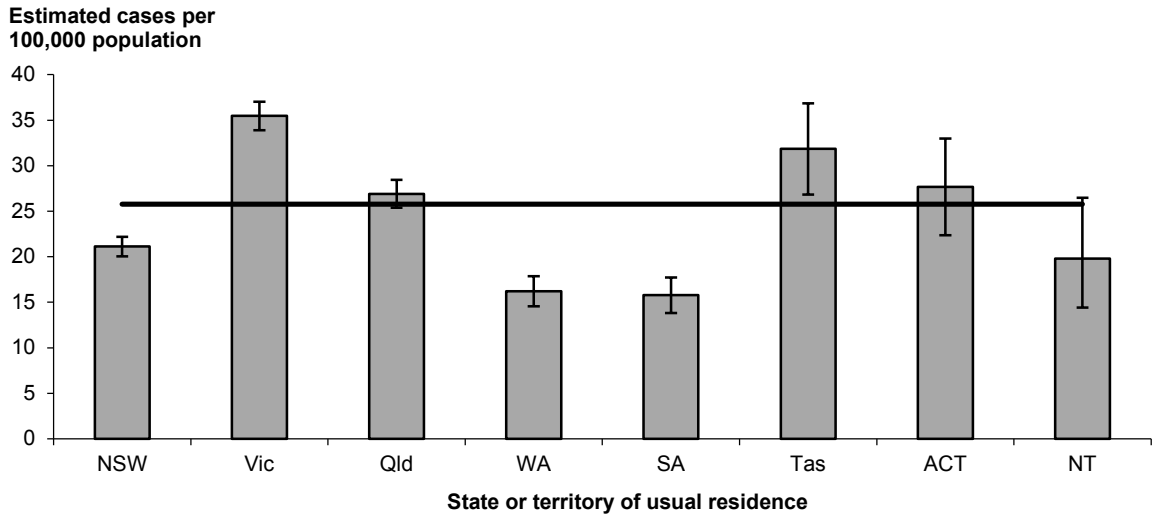
The age-standardised rate of injuries for undetermined intent for New South Wales, South Australia and Western Australia was lower than the national rate of 25.8 per 100,000 population (Table 2.11.6 and Figure 2.11.3). The rates for both Victoria and Tasmania were significantly higher (35.5 and 31.8 per 100,000 population, respectively).

Table 2.11.6: Age-standardised rates of injuries of undetermined intent, states and territories, 2009–10

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI[(a)]
NSW	21	20–22
Vic	35	34–37
Qld	27	25–28
WA	16	15–18
SA	16	14–18
Tas	32	27–37
ACT	28	22–33
NT	20	5–46
Australia[(b)]	**26**	**25–26**

(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

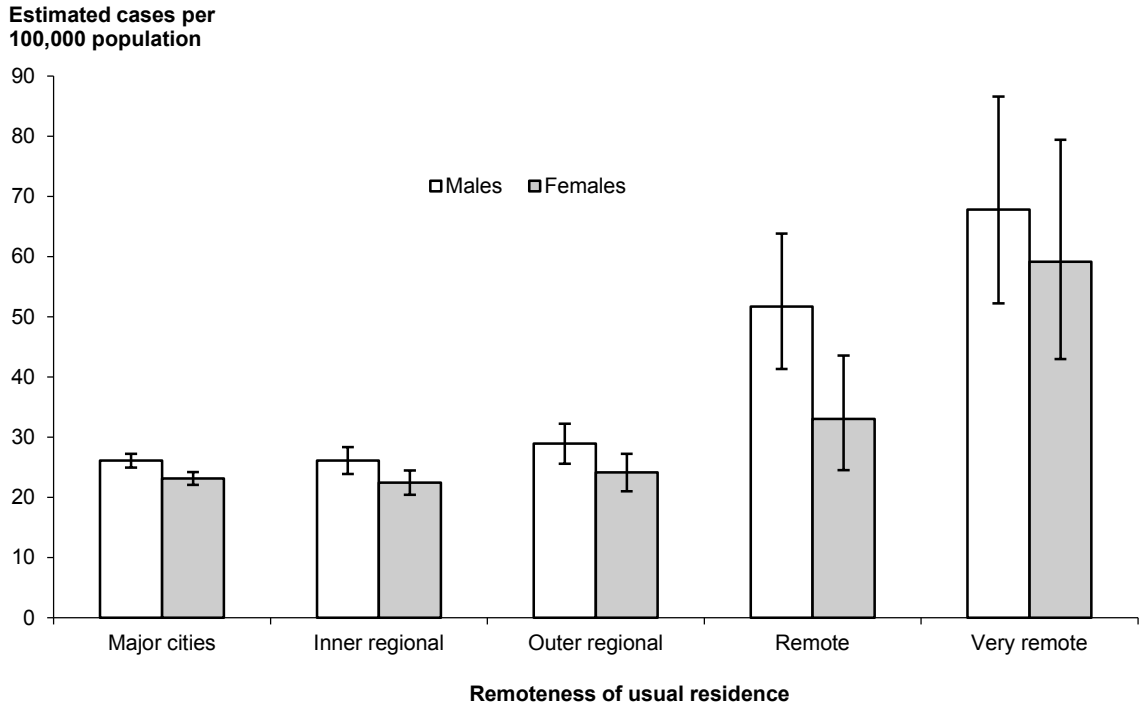
1. The thick horizontal line shows the rate for Australia.
2. Confidence intervals are provided to show by about how much rates might be expected to vary (between years, for example) in view of the number of cases. See the Data issues section for further information.

Figure 2.11.3: Age-standardised rates for injuries of undetermined intent, states and territories, 2009–10

Remoteness of usual residence

Hospitalisation rates for injuries of undetermined intent were similar for males and females across all geographical areas of Australia (Figure 2.11.4).

The lowest rate for males was found in *Major cities* (26.1 per 100,000 population); the lowest rate for females was found in *Inner regional* areas (22.5). Both males and females in *Very remote* areas reported the highest rates (67.8 and 59.2 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 2.11.4: Age-standardised rates of undetermined intent: males and females, by remoteness of usual residence (ASGC regions), 2009–10

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, 2009–10

Key indicators	Males	Females	Persons
Separations from hospital due to work-related injury	25,599	4,837	30,436
Percentage of all community injury separations	9.8	2.5	6.7
Estimated cases[(a)]	23,664	4,513	28,177
Crude rate/100,000 population	214.5	40.6	127.2
Age-standardised rate/100,000 population[(b)]	211.8	39.7	125.9
Total patient days[(c)]	55,774	9,190	64,964
Mean length of stay (days)	2.4	2.0	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.

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* (which includes time spent travelling to and from such activities). Nearly three-quarters of injuries in the V01–Y34 category had a non-specific activity code (that is, coded as *Other specified*, *unspecified* or *not reported/applicable*) that limits meaningful interpretation of work-relatedness.

In 2009–10, an estimated 28,177 community injury cases occurred while the patient was reportedly working for income (Table 3.1.1). Eighty-four per cent of these cases involved males (n = 23,664). The age–standardised rate of hospitalised work-related injuries was 125.9 per 100,000 population. In keeping with the higher proportion of males who sustained a work-related injury, the age-standardised rate for males far exceeded that of females (211.8 compared with 39.7 per 100,000 population).

The majority of work-related injury cases were classified as *Other unintentional injuries* (65%; n = 18,367). *Falls* were the second most common type of injury (19%; n = 5,298), followed by *Transportation* injuries (10%; n = 2,919) (Table 3.1.2).

Table 3.1.2: Major external cause groups for work-related injury cases: males, females and persons, Australia, 2009–10

	Males		Females		Persons	
External cause	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Transportation	2,383	10.1	536	11.9	2,919	10.4
Drowning & near-drowning	n.p.	n.p.	n.p.	n.p.	6	0.0
Poisoning, pharmaceuticals	16	0.1	15	0.3	31	0.1
Poisoning, other substances	379	1.6	62	1.4	441	1.6
Falls	3,760	15.9	1,538	34.1	5,298	18.8
Smoke, fire, heat & hot substances	423	1.8	93	2.1	516	1.8
Other unintentional injuries	16,189	68.4	2,178	48.3	18,367	65.2
Intentional, self -inflicted (self-harm)	n.p.	n.p.	n.p.	n.p.	21	0.1
Intentional, inflicted by another (assault)	392	1.7	62	1.4	454	1.6
Undetermined intent	111	0.5	13	0.3	124	0.4
Total	**23,664**	**100.0**	**4,513**	**100.0**	**28,177**	**100.0**

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

Commonly reported causes of work-related injury in the other unintentional injuries category were *Contact with other and unspecified machinery* W31 (males *n* = 2,462; females *n* = 132), *Overexertion and strenuous or repetitive movements* X50 (males *n* = 1,400; females *n* = 482), *Caught, crushed, jammed or pinched in or between objects* W23 (males *n* = 1,274; females *n* = 142), and *Struck by thrown, projected or falling object* W20 (males *n* = 1,258; females *n* = 101).

For work-related falls injuries, the most common causes were *Fall on same level from slipping, tripping and stumbling* W01 (males *n* = 699; females *n* = 734), *Other fall from one level to another* W17 (males *n* = 708; females *n* = 49), *Unspecified fall* W19 (males *n* = 483; females *n* = 247), *Fall on and from ladder* W11 (males *n* = 682; females *n* = 41), and *Fall from, out of or through building or structure* W13 (males *n* = 509; females *n* = 16).

For work-related transportation injuries, the most common causes were *Car occupant injured in collision with car, pick-up truck or van* V43 (males *n* = 158; females *n* = 174), *Animal-rider or occupant of animal-drawn vehicle injured in transport accident* V80 (males *n* = 187; females *n* = 99), *Occupant of heavy transport vehicle injured in non-collision transport accident* V68 (males *n* = 259; females *n* = suppressed), *Motorcycle rider injured in non-collision transport accident* V28 (males *n* = 159; females *n* = 11) and *Occupant of special vehicle mainly used in agriculture injured in transport accident* V84 (males *n* = 128; females *n* = 9).

4 Sport-related community injury

ICD-10-AM case inclusion

Principal diagnosis S00–T75 or T79

Activity code U50–U71

Table 4.1.1: Key indicators for hospitalised sport-related injury: males, females and persons, Australia, 2009–10

Key indicators	Males	Females	Persons
Separations from hospital due to sport-related injury	35,725	10,484	46,209
Percentage of all community injury separations	13.7	5.4	10.2
Estimated cases[(a)]	33,612	9,901	43,513
Crude rate/100,000 population	304.7	89.0	196.4
Age-standardised rate/100,000 population[(b)]	306.4	92.3	201.2
Total patient days[(c)]	71,550	21,351	92,901
Mean length of stay	2.1	2.2	2.1

(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 sport, that is, with an activity code in the range of U50–U71.

An estimated 43,513 cases were hospitalised in the financial year 2009–10 due to injuries sustained while engaged in sport (Table 4.1.1). The age-standardised rate of these sport-related injury cases was 201.2 per 100,000 population. The rate for males (306.4) was more than three times higher than the rate for females (92.3). These rates reflect the significantly higher proportion of males who were hospitalised for a sport-related injuries (77%; *n* = 33,612). The highest rate for males occurred at age 15–19 (12,247.8 per 100,000 population) while for females, it was age 10–14 (3,365.5).

There were 92,901 patient days reported and the MLOS was 2.1 days for males and 2.2 days for females. This short duration reflects the considerable number of same-day discharges (37%; *n* = 17,027).

Table 4.1.2 shows that the majority of sport-related hospitalised injury cases could be classified into the three broad external cause categories: *Other unintentional* (45%; *n* = 19,579), *Falls* (32%; *n* = 14,089) and *Transport accidents* (22%; *n* = 9,377).

Table 4.1.2: Major external cause groups for sport-related injury cases: males, females and persons, Australia, 2009–10

	Males		Females		Persons	
External cause	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Unintentional injuries						
Transportation	7,224	21.5	2,153	21.7	9,377	21.5
Drowning & near-drowning	126	0.4	58	0.6	184	0.4
Poisoning, pharmaceuticals	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Poisoning, other substances	n.p.	n.p.	n.p.	n.p.	6	0.0
Falls	10,228	30.4	3,861	39.0	14,089	32.4
Smoke, fire, heat & hot substances	22	0.1	9	0.1	31	0.1
Other unintentional	15,792	47.0	3,787	38.2	19,579	45.0
Intentional injuries						
Intentional, self -inflicted	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Intentional, inflicted by another	146	0.4	9	0.1	155	0.4
Undetermined intent	51	0.2	12	0.1	63	0.1
Total	**33,612**	**100.0**	**9,901**	**100.0**	**43,513**	**100.0**

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

Commonly reported causes of other unintentional sport-related injury were Hit, struck, kicked, twisted, bitten or scratched by another person (males *n* = 3,537; females *n* = 336), Overexertion and strenuous or repetitive movements (males *n* = 2,601; females *n* = 968), Striking against or struck by sports equipment (males *n* = 1,778; females *n* = 428) and Striking against or bumped into by another person (males *n* = 896; females *n* = 92).

Unlike other falls injuries, for injuries occurring while engaged in sporting activity, males consistently outnumbered females. Overall, the top five causes of sport-related falls injuries were Other fall on same level due to collision with, or pushing by, another person (males *n* = 3,326; females *n* = 258), Other fall on same level (males *n* = 2,038; females *n* = 946), Fall involving ice-skates, skis, roller-skates, skateboards, scooters and other pedestrian conveyances (males *n* = 2,099; females *n* = 811), Fall on same level from slipping, tripping and stumbling (males *n* = 938; females *n* = 860), and Unspecified fall (males *n* = 763; females *n* = 411).

The most common causes of sport-related transportation injuries were Pedal cyclist injured in non-collision transport accident (males *n* = 1,933; females *n* = 411), Motorcycle rider injured in non-collision transport accident (males *n* = 2,046; females *n* = 140), Animal-rider or occupant of animal-drawn vehicle injured in transport accident (males *n* = 462; females *n* = 1,070), Pedal cyclist injured in other and unspecified transport accidents (males *n* = 419; females *n* = 90), and Motorcycle rider injured in other and unspecified transport accidents (males *n* = 303; females
n = 25).

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, 2009–10

Indicator	Males	Females	Persons[(a)]
All hospital separations	4,042,026	4,488,869	8,531,003
Separations from hospital due to complications of surgical and medical care	50,006	47,366	97,372
Percentage of all separations	1.2	1.1	1.1
Crude rate/100,000 population	420.2	397.3	408.7
Age-standardised rate/100,000 population[(b)]	417.0	375.0	392.3
Total patient days[(c)]	284,851	255,279	540,130
Mean length of stay (days)	6.1	5.8	6.0

(a) Includes separations where no sex was recorded.

(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 2009–10, which results in lower estimates here than in that publication (AIHW 2011).

The method used here includes 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 recorded 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 recorded as the principal diagnosis, but it should be noted that a larger number of records included complications of care as additional diagnoses (see Table A1.1).

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 that 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. The limitations of these data are elsewhere described (Pidd et al. 2006).

In 2009–10, *Complications of surgical and medical care, not elsewhere classified* was the principal diagnosis assigned to just over 1% of all hospital separations (both public and private) in Australia (1.1%; n = 97,372) (Table 5.1.1). The number of males (n = 50,006) slightly outnumbered females (n = 47,366) at a ratio of 1.1:1.0 (based on age-standardised rates).

Major types of injury

Table 5.1.2: Major types of injury for complications of surgical and medical care, Australia, 2009–10

	Males		Females		Persons	
Principal diagnosis	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Complications following infusion, transfusion and therapeutic injection	395	0.9	422	1.0	817	0.9
Complications of procedures, not elsewhere classified	18,363	39.6	17,277	39.1	35,640	39.4
Complications of cardiac and vascular prosthetic devices, implants and grafts	6,331	13.7	4,530	10.3	10,861	12.0
Complications of genitourinary prosthetic devices, implants and grafts	3,343	7.2	1,939	4.4	5,282	5.8
Complications of internal orthopaedic prosthetic devices, implants and grafts	8,533	18.4	7,784	17.6	16,317	18.0
Complications of other internal prosthetic devices, implants and grafts	5,177	11.2	9,156	20.7	14,333	15.8
Failure and rejection of transplanted organs and tissues	2,544	5.5	1,512	3.4	4,056	4.5
Complications peculiar to reattachment and amputation	738	1.6	180	0.4	918	1.0
Other complications of surgical and medical care, not elsewhere classified	922	2.0	1,384	3.1	2,306	2.5
Total	**46,346**	**100.0**	**44,184**	**100.0**	**90,530**	**100.0**

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 more than one-third of cases (39%; *n* =18,363) and was evenly distributed between males and females. The second most common principal diagnosis was *Complications of internal orthopaedic prosthetic devices, implants and grafts* (T84) (18%) and *Complications of other internal prosthetic devices, implants and grafts* (T85) accounted for 16%. The proportion of *Complications of other internal prosthetic devices, implants and grafts* cases was considerably higher for females, with a male to female ratio of 0.6:1.0.

The most commonly recorded adverse event overall was in the broad T81 category, T81.41 *Wound infection following a procedure* (18% of all cases; *n* = 15,979), followed by 11% for T81.0 *Haemorrhage and haematoma complicating a procedure, not elsewhere classified* (also in the T81 category) (*n* = 10,224).

The majority of hospitalisations due to complications of surgical and medical care were assigned an external cause code of *Surgical and other medical procedures as the cause of abnormal reaction of the patient, or of later complication, without mention of misadventure at the time of the procedure* (Y83–Y84) (94%; *n* = 84,758). More specifically, Y83 *Surgical operation and other surgical procedures as the cause of abnormal reaction of the patient, or of later complication, without mention of misadventure at the time of the procedure* was recorded for 73,061 cases and Y84 *Other medical procedures as the cause of abnormal reaction of the patient, or of later complication, without mention of misadventure at the time of the procedure* was recorded for 11,697 cases. In all injury cases for complications of surgical and medical care, no particular body region was specified.

Age and sex distribution

The rates of injury as a result of complications of surgical and medical care was similar between the sexes and age groups to age 65 (Figure 5.1.1).

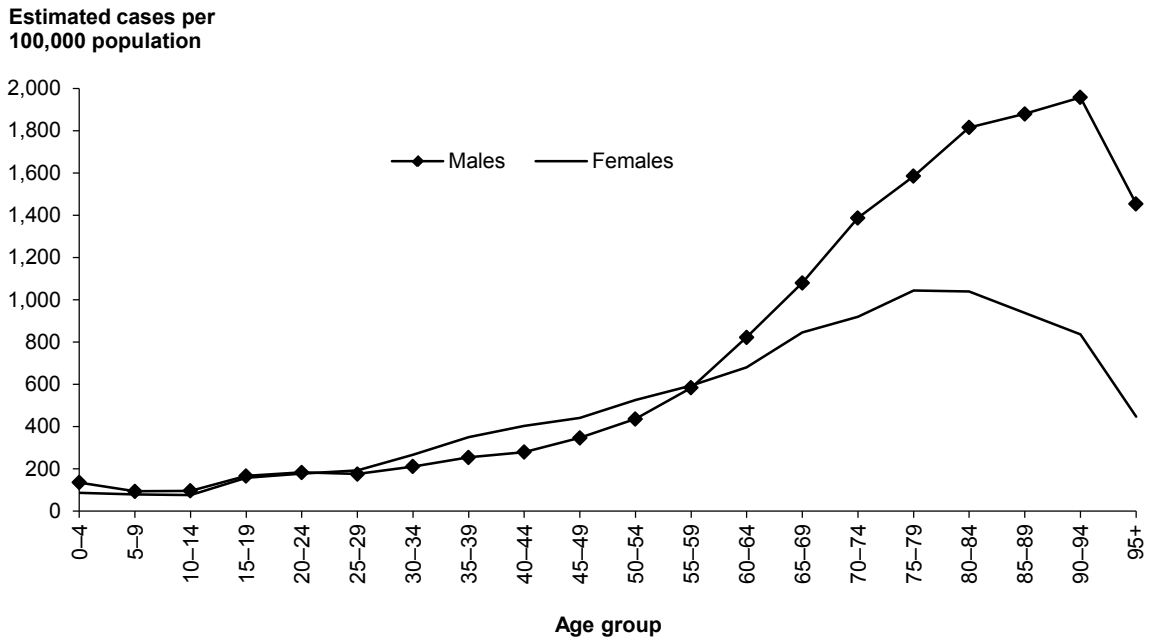


Figure 5.1.1: Age-specific rates of complications of surgical and medical care, by sex, Australia, 2009–10

Length of stay

The mean length of stay for complications of surgical and medical care generally increased with age for females, and for males up until the age of 80 (Figure 5.1.2).

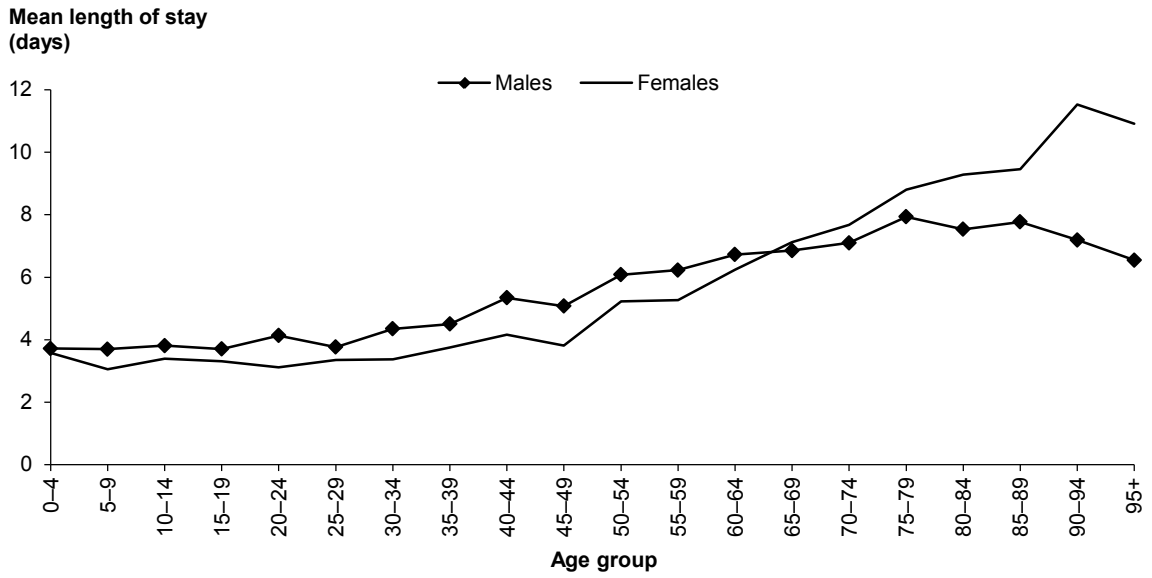


Figure 5.1.2: Mean length of stay for complications of surgical and medical care, by age and sex, Australia, 2009–10

Place of occurrence

Of the 90,102 complications of surgical and medical care cases where place of occurrence was reported, 99.6% occurred in a health service area (n = 89,742).

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 *Adverse effects, not elsewhere classified,* T89 *Other specified complications of trauma* or T90–T98 *Sequelae of injuries, of poisoning and of other consequences of external causes* accounted for 6,786 hospital separations. When inward transfers from another acute care hospital were excluded, there were 6,675 estimated cases. Most of these cases were coded T78 *Adverse effects, not elsewhere classified* (*n* = 6,440) (Table 6.1.1). The remainder were recorded as T89 *Other specified complications of trauma* (*n* = 235). There were no recorded sequelae cases in the financial year 2009–10.

Table 6.1.1: Case counts for ICD-10-AM principal diagnosis T78, T89 or T90–T98, Australia, 2009–10

	Males		Females		Persons	
Principal diagnosis	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Anaphylactic shock due to adverse food reaction (T78.0)	778	24.6	735	21.0	1,513	22.7
Other adverse food reactions, not elsewhere classified (T78.1)	652	20.6	663	18.9	1,315	19.7
Anaphylactic shock, unspecified (T78.2)	410	12.9	550	15.7	960	14.4
Angioneurotic oedema (T78.3)	576	18.2	718	20.5	1,294	19.4
Allergy, unspecified (T78.4)	589	18.6	746	21.3	1,335	20.0
Other adverse effects, not elsewhere classified or unspecified (T78.8)	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Adverse effect, unspecified (T78.9)	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
All adverse effects not elsewhere classified (T78)	*3,017*	*95.2*	*3,423*	*97.6*	*6,440*	*96.5*
Complications of open wound, unspecified (T89.00)	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
Open wound with foreign body (T89.01)	46	1.5	26	0.7	72	1.1
Open wound with infection (T89.02)	90	2.8	45	1.3	135	2.0
Other complications of open wound (T89.03)	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
All complications of open wound (T89)	*151*	*4.8*	*84*	*2.4*	*235*	*3.5*
Sequelae (T90–T98)	0	0.0	0	0.0	0	0.0
Total	**3,168**	**100.0**	**3,507**	**100.0**	**6,675**	**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).

The first two appendices of AIHW's publication *Australian hospital statistics 2009–10* provide comprehensive details on the technical characteristics, scope and coverage aspects of the NHMD <www.aihw.gov.au/publication-detail/?id=10737418863&tab=2>.

Crude and age-specific rates were calculated using as population data the final estimate of the estimated resident population as at 31 December 2009, 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 admitted-patient episodes that ended in the period 1 July 2009 to 30 June 2010.

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 4.0 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 2009–10. This includes nearly all public and private hospitals in Australia. Further information on inclusion scope can be found in *Australian hospital statistics 2009–10* (AIHW 2011).

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 the range S00–T98. 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, not elsewhere classified.

About 99% of all NHMD records in the period of interest that have any code from ICD-10-AM Chapter XIX S00–T98 *Injury, poisoning and certain other consequences of external causes* as their principal diagnosis fall into one of these two groups (Table A1.1).

Table A1.1: Selection criteria for cases due to injury and poisoning, Australia, 2009–10

Selection criteria	Males	Females	Persons[(a)]
Community injury (ICD-10-AM principal diagnosis range S00–T75, T79), and			
• lack any external cause code	146	62	208
• have a first reported external cause code of complications of surgical and medical care	740	753	1,493
• have a first reported external cause code in the range V01–Y36, Y85–Y87, Y89	241,592	177,771	419,364
Total case numbers for community injury	**242,478**	**178,586**	**421,065**
Do not have a principal diagnosis of community injury, but additional diagnosis codes are in range (ICD-10-AM range S00–T75, T79)	50,367	58,057	108,425
Total case numbers where there is a code for community injury in the principal or additional diagnosis fields	**292,845**	**236,643**	**529,490**
Complications of surgical and medical care (ICD-10-AM principal diagnosis range T80–T88), and			
• lack any external cause code	37	45	82
• have a first reported external cause code of community injury	84	87	171
• have a first reported external cause in the range Y40–T84, Y88	46,158	43,993	90,151
Total case numbers for complications of surgical and medical care	46,279	44,125	90,404
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)	140,896	117,087	257,985
Total case numbers where there is a code for complications of surgical and medical care in the principal or additional diagnosis fields	**187,175**	**161,212**	**348,389**
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.	3,017	3,423	6,440
• Other complications of trauma not elsewhere classified (ICD-10-AM principal diagnosis T89)	151	84	235
• Sequelae of injuries, of poisoning and of other consequences of external causes (ICD-10-AM principal diagnosis T90–T98)	0	0	0
All cases with principal diagnosis in the ICD-10-AM range S00–T98	**291,992**	**226,277**	**518,270**

Note: To correct for double-counting, 32,236 separations were omitted from the estimate of incident cases as they were inward transfers from another acute care hospital. Without this exclusion, there were 453,301 separations with a principal diagnosis of community injury, 97,372 for complications of surgical and medical care and 6,786 for the remainder of separations in the Chapter XIX Injury and poisoning chapter.

(a) Includes separations where no sex was reported.

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 (SIPP 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 = 1,493) or a principal diagnosis in the complications of surgical and medical care range and a first reported external cause code indicating community injury (n = 171). These records, shown in Table A1.1, 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 (see Chapter 6). 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 6,786 injury separations in 2009–10 and 98.4% (n = 6,675) were estimated cases.

Injury solely as additional diagnosis (excluded)

Records in the NHMD for 2009–10 can report up to 50 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 A1.1.

Records in which injury codes appear only as additional diagnosis have not been used in the analysis presented in this report, mainly because injury was not recorded as being the main 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 2011). 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, 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 0.1% 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 included only 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 208 (0.05%) of the community injury subset, and 82 (0.09%) of the complications of surgical and medical care subset (see Table A1.1).

Changes to grouping of external causes of injury

Two changes have been made to grouping of external causes of injury. Together they affect less than 1% of cases that meet the inclusion criteria for this report.

The first change affects the approximately 0.5% of in-scope cases in which the first external cause code is in the range Y90–Y98 *Supplementary factors related to causes of morbidity and mortality classified elsewhere.* These codes are normally used to supplement a code from the main part of the 'External causes' classification. In previous reports, the affected cases were included in estimates of the total number of hospitalised injury cases and patient days, but were not assigned to any of the 'major groups' of external causes that are the subject of the chapters of the report. Nearly all of the affected records include another external cause code, which does correspond to one of the 'major groups'. In this report, the affected cases have been assigned and reported on the basis of that subsequent external cause code.

The second change affects the approximately 0.2% of in-scope cases in which the first external cause code is in the range Y85–Y89 *Sequelae of external causes*. *Sequelae* are late effects. In previous reports, a few of the reported major groups of external causes included *sequelae* corresponding to the topic of the group (for example, Y87.0 *Sequelae of intentional self-harm* was assigned to the major external cause group 'Intentional self-harm'). However, the ICD-10-AM classification does not provide categories necessary to allow this to be done for most of the major groups that are the subject of chapters in this report. Due to that limitation of the classification system, most were assigned to the *Other unintentional* group, although that might not always have been correct (for example, the classification does not allow *sequelae* of near drowning, exposure to fire and hot substances and several other groups to be distinguished) and this handling of *sequelae* produced a small conceptual inconsistency between the major groups reported (that is, some groups included *sequelae* but most did not). In the present edition of the report, cases with an external cause code of *sequelae* of any external cause were assigned to a single group. Cases in this group are included in estimates of the total number of hospitalised injury cases and patient days but are not reported elsewhere in the report.

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.
- 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.

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 = 32,236) were omitted from the estimates of incident cases that are shown in Table A1.1 and elsewhere in this report.

This procedure should correct for overestimation of cases that is due to transfers, but will not correct for overestimation that is due to readmissions.

The patient days reported for 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 patient episodes associated with an injury case.

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 patient 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. External 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 about 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 the Australian population in 30 June 2001 as the standard (ABS 2003). Where crude rates or age-specific rates are reported, this is noted.

Suppression of small cell counts in data tables

Cell counts in tables that have fewer than 5 cases have been suppressed as have rates derived from them, to protect confidentiality and because values based on very small numbers are sometimes difficult to interpret. In the instances where only one cell in a row or column has a count less than 5, counts of one or more other cells in the same row or column have generally also been suppressed. The abbreviation 'n.p.' has been used in these tables to denote these suppressions. For these tables, the totals include the suppressed information.

Errors, inconsistencies and uncertainties

Due to rounding, the sum of the percentages in tables may not equal 100%. 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 the National Injury Surveillance Unit (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: Rates of separation tables

Table A2.1: Age-specific rates and age-standardised rates of separations due to external causes in males, Australia, 2009–10

ICD-10-AM Major groups	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+		
	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate
Unintentional																				
Transportation	73.9	191.2	417.2	650.3	539.8	429.8	388.7	396.5	360.4	331.4	288.0	235.7	192.0	188.6	172.6	212.4	253.2	290.2	336.1	336.4
Drowning & near-drowning	17.6	3.0	1.8	3.2	3.8	2.9	2.0	1.7	1.3	1.5	1.7	1.5	1.7	2.0	1.8	4.3	1.1	1.5	3.2	3.2
Poisoning, pharmaceuticals	98.2	10.9	4.6	21.0	34.6	32.4	32.9	32.0	23.5	26.4	18.6	15.7	17.3	18.0	26.4	38.3	45.2	75.9	29.4	29.4
Poisoning, other substances	29.7	5.3	5.0	15.3	17.6	17.0	13.3	12.5	17.5	12.7	11.8	9.8	6.7	9.8	10.7	10.2	16.7	18.0	13.4	13.4
Falls	656.2	770.8	822.9	535.0	406.1	342.7	313.0	305.9	323.2	339.7	383.9	445.3	540.3	712.2	998.7	1,707.5	3,131.6	6,693.1	643.7	659.3
Smoke, fire, heat & hot substances	131.9	28.8	24.1	41.6	40.2	37.2	29.3	32.0	23.8	26.8	22.4	21.8	18.0	17.0	15.7	18.0	24.7	34.6	35.1	34.9
Other unintentional injuries	572.0	470.3	723.3	1,411.3	1,362.0	1,144.1	1,016.8	957.0	876.0	807.0	731.9	655.9	639.3	578.6	534.5	532.3	589.1	693.1	853.0	849.0
Intentional																				
Intentional self-harm	0.3	1.4	13.6	130.7	143.5	151.9	163.4	160.3	144.3	114.3	77.4	59.6	50.0	32.9	30.5	35.2	44.1	54.1	89.3	89.5
Assault	14.5	7.7	38.3	348.9	432.7	328.8	257.4	223.2	188.2	142.2	96.4	54.0	34.2	31.6	20.5	16.0	15.1	16.5	157.3	155.6
Undetermined intent	12.4	5.6	12.5	43.7	49.9	48.6	47.1	44.0	29.4	28.6	20.3	15.0	12.8	13.4	11.3	16.8	12.9	27.1	27.8	27.7
Community injury	**1,608.3**	**1,497.0**	**2,065.4**	**3,206.9**	**3,036.5**	**2,540.9**	**2,271.9**	**2,170.2**	**1,993.8**	**1,838.7**	**1,663.7**	**1,538.6**	**1,527.5**	**1,618.2**	**1,853.8**	**2,623.0**	**4,178.1**	**7,947.7**	**2,198.4**	**2,208.6**
Complications of surgical and medical care	135.5	94.4	96.7	166.6	183.4	175.9	211.6	254.9	279.8	346.9	436.5	584.5	822.7	1,080.1	1,387.5	1,585.9	1,815.7	1,875.5	420.2	417.1

Note: Rates per 100,000 population.

Table A2.2: Age-specific rates and age-standardised rates of separations due to external causes in females, Australia, 2009–10

ICD-10-AM Major groups	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+		
	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate
Unintentional																				
Transportation	42.2	117.2	156.9	264.3	224.6	179.5	151.5	142.2	140.7	136.1	137.6	125.5	121.0	127.4	152.7	173.2	236.1	187.1	153.2	152.6
Drowning & near-drowning	14.7	1.7	1.6	0.7	0.5	0.9	0.7	0.4	0.5	0.1	0.7	1.1	0.8	0.2	0.3	1.0	2.4	0.0	1.6	1.7
Poisoning, pharmaceuticals	84.8	5.6	7.5	38.4	38.8	31.6	23.2	26.5	27.6	24.3	22.9	20.9	16.6	22.3	30.5	34.5	56.6	70.5	30.2	29.6
Poisoning, other substances	24.4	3.2	3.4	7.6	10.5	9.3	9.1	6.5	5.3	6.3	6.1	5.6	7.2	7.8	5.5	6.4	12.8	20.5	8.3	8.1
Falls	537.1	607.3	351.3	159.7	169.6	168.1	167.0	190.8	217.9	278.8	402.5	564.9	750.7	1,035.9	1,655.3	2,939.5	5,231.4	10,176.2	810.5	685.9
Smoke, fire, heat & hot substances	89.6	21.3	14.5	14.8	14.7	14.8	13.0	14.4	11.2	9.8	12.1	11.4	14.1	11.1	8.9	12.9	16.1	25.2	18.6	18.8
Other unintentional injuries	439.7	298.9	287.4	363.4	343.5	296.6	280.9	311.1	313.8	324.6	333.1	334.2	333.6	344.5	358.4	445.5	618.3	850.5	350.5	343.3
Intentional																				
Intentional self-harm	0.4	0.2	71.9	371.4	300.6	206.1	204.1	218.0	216.8	202.3	142.1	93.5	65.2	41.4	30.2	40.6	35.7	28.0	148.2	150.6
Assault	13.1	2.0	19.4	89.0	110.6	108.5	109.0	96.5	70.7	52.8	31.7	17.0	11.7	9.4	6.9	10.8	11.2	19.7	52.2	53.4
Undetermined intent	8.7	2.7	9.9	52.7	50.3	33.6	32.5	27.5	24.9	24.8	19.7	18.5	13.1	12.0	14.4	13.5	18.9	18.1	23.8	23.8
Community injury	**1,695.7**	**1,577.7**	**2,174.8**	**3,398.8**	**3,236.6**	**2,618.2**	**2,275.3**	**2,138.4**	**1,968.4**	**1,805.2**	**1,627.4**	**1,508.4**	**1,520.1**	**1,586.6**	**1,732.3**	**2,269.0**	**3,121.0**	**4,165.1**	**2,180.1**	**2,165.0**
Complications of surgical and medical care	86.8	79.2	76.7	158.3	177.9	192.9	267.2	351.2	403.8	441.3	526.4	595.2	680.8	845.6	920.8	1,044.0	1,039.5	869.0	397.3	374.9

Note: Rates per 100,000 population.

Table A2.3: Age-specific rates and age-standardised rates of separations due to external causes in persons, Australia, 2009–10

ICD-10-AM Major groups	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+		
	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate
Unintentional																				
Transportation	58.5	155.1	290.4	462.9	387.2	306.6	270.2	268.5	249.8	232.8	212.0	180.1	156.4	157.7	162.3	191.4	243.4	222.6	244.3	245.1
Drowning & near-drowning	16.2	2.3	1.7	2.0	2.2	1.9	1.3	1.1	0.9	0.8	1.2	1.3	1.3	1.1	1.0	2.5	1.8	0.5	2.4	2.5
Poisoning, pharmaceuticals	91.7	8.3	6.0	29.5	36.7	32.0	28.0	29.2	25.6	25.3	20.8	18.3	17.0	20.1	28.5	36.3	51.7	72.4	29.8	29.5
Poisoning, other substances	15.3	2.7	2.6	7.9	9.1	8.6	6.6	6.2	8.7	6.3	5.8	4.9	3.4	4.8	5.2	4.7	7.1	6.2	6.7	6.7
Falls	598.2	691.2	593.2	352.8	291.6	256.7	240.0	247.9	270.3	309.0	393.3	505.7	645.8	875.6	1,338.1	2,368.1	4,333.6	8,978.5	727.5	685.6
Smoke, fire, heat & hot substances	111.3	25.1	19.4	28.6	27.9	26.1	21.2	23.1	17.5	18.2	17.2	16.6	16.0	14.1	12.2	15.2	19.8	28.4	26.8	26.9
Other unintentional injuries	507.6	386.9	511.0	902.6	869.0	726.7	649.1	631.7	593.1	563.6	530.3	493.4	486.1	460.5	443.4	485.8	605.8	796.4	600.7	598.9
Intentional																				
Intentional self-harm	0.3	0.8	42.0	247.6	219.6	178.6	183.7	189.3	180.8	158.7	110.1	76.7	57.6	37.2	30.4	38.1	39.3	37.0	118.9	119.6
Assault	13.8	4.9	29.1	222.7	276.8	220.3	183.2	159.4	129.1	97.1	63.7	35.3	22.9	20.4	13.5	13.2	12.9	18.6	104.6	105.1
Undetermined intent	10.6	4.2	11.2	48.1	50.1	41.2	39.8	35.7	27.1	26.7	20.0	16.8	12.9	12.7	12.9	15.1	16.3	21.2	25.8	25.8
Community injury	**611.5**	**516.6**	**450.7**	**662.7**	**613.0**	**518.1**	**497.8**	**522.8**	**520.4**	**541.5**	**563.7**	**605.9**	**673.6**	**824.5**	**1,183.3**	**1,998.4**	**3,588.0**	**7,495.1**	**806.2**	**770.5**
Complications of surgical and medical care	111.8	87.0	87.0	162.6	180.8	184.3	239.4	303.4	342.2	394.5	481.9	589.9	751.6	961.7	1,146.2	1,295.3	1,371.4	1,215.1	408.7	392.3

Note: Rates per 100,000 population.

References

ABS (Australian Bureau of Statistics) 2003. Population by age and sex, Australian states and territories, 2001 Census edition final. ABS cat. no. 3201.0. Canberra: ABS.

AIHW (Australian Institute of Health and Welfare) 2001. National health data dictionary. Version 10. Cat. no. HW I30. Canberra: AIHW.

AIHW 2011. Australian hospital statistics 2009–10. Cat. no. HSE 107. Canberra: AIHW.

Anderson R & Rosenburg H 1998. Age standardisation of death rates: implementation of the year 2000 standard. National Vital Statistics Report 47:1–17.

Berry J & Harrison J 2006. Hospital separations due to injury and poisoning, Australia 2001–02. Injury research and statistics series no. 26. Cat. no. INJCAT 78. Canberra: AIHW.

Berry J & Harrison J 2007. Hospital separations due to injury and poisoning, Australia 2003–04. Injury research and statistics series no. 30. Cat. no. INJCAT 88. Canberra: AIHW.

Bradley C & Harrison J 2008. Hospital separations due to injury and poisoning, Australia 2004–05. Injury research and statistics series no. 47. Cat. no. INJCAT 117. Canberra: AIHW.

Cripps R 2009. Spinal cord injury, Australia, 2006–07. Injury research and statistics series no. 48. Cat. no. INJCAT 119. Canberra: AIHW.

Harrison J & Steenkamp M 2002. Technical review and documentation of current NHPA injury indicators and data sources. Injury research and statistics series no. 14. Cat. no. INJCAT 47. Canberra: AIHW.

Helps Y & Harrison J 2004. Reported injury mortality of Aboriginal and Torres Strait Islander people in Australia, 1997–2000. Injury technical paper series no. 4. Cat. no. INJCAT 66. Canberra: AIHW.

Helps Y & Harrison J 2006. Hospitalised injury of Australia's Aboriginal and Torres Strait Islander people: 2000–02. Injury research and statistics series no. 30. Cat. no. INJCAT 88. Canberra: AIHW.

Kreisfeld R & Harrison J 2010. Hospital separations due to injury and poisoning, Australia 2005–06. Injury research and statistics series no. 55. Cat. no. INJCAT 131. Canberra: AIHW.

Kreisfeld R, Newson R & Harrison J 2004. Injury deaths, Australia 2002. Injury research and statistics series no. 23. Cat. no. INJCAT 65. Canberra: AIHW.

McKenna K & Harrison J 2012. Hospital separations due to injury and poisoning, Australia 2008–09. Injury research and statistics series no. 65. Cat. no. INJCAT 141. Canberra: AIHW.

NCCH (National Centre for Classification in Health) 2006. The international classification of diseases and related health problems, tenth revision, Australian modification. Sydney: NCCH.

Norton L & Harrison J 2012. Hospital separations due to injury and poisoning, Australia 2006–07. Injury research and statistics series no. 63. Cat. no. INJCAT 139. Canberra: AIHW.

Pidd K, Berry J, Harrison J, Roche A, Driscoll T & Newson R 2006. Alcohol and work: patterns of use, workplace culture and safety. Injury research and statistics series no. 28. Cat no. INJCAT 82. Canberra: AIHW.

Pointer S, Harrison J & Bradley C 2003. National injury prevention plan priorities for 2004 and beyond. Discussion paper. Injury research and statistics series no. 18. Cat. no. INJCAT 55. Canberra: AIHW.

Stephenson S, Henley G, Harrison J & Langley J 2004. Diagnosis based injury severity scaling: investigation of a method using Australian and New Zealand hospitalisations. Injury Prevention 10:379–83.

SIPP (Strategic Injury Prevention Partnership) 2005. The national injury prevention and safety promotion plan: 2004–2014. Canberra: SIPP.

Watson W & Ozanne-Smith J 1997. The cost of injury to Victoria. Melbourne: Monash University Accident Research Centre.

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This report is the eighth in a series on hospitalisations due to injury and poisoning in Australia, and covers the financial year 2009–10. A total of 421,065 injury cases required hospitalisation during the 12 months (242,478 males and 178,586 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 (38% of cases), followed by transport accidents (13%).

Hospital separations due to injury and poisoning, Australia 2009–10

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