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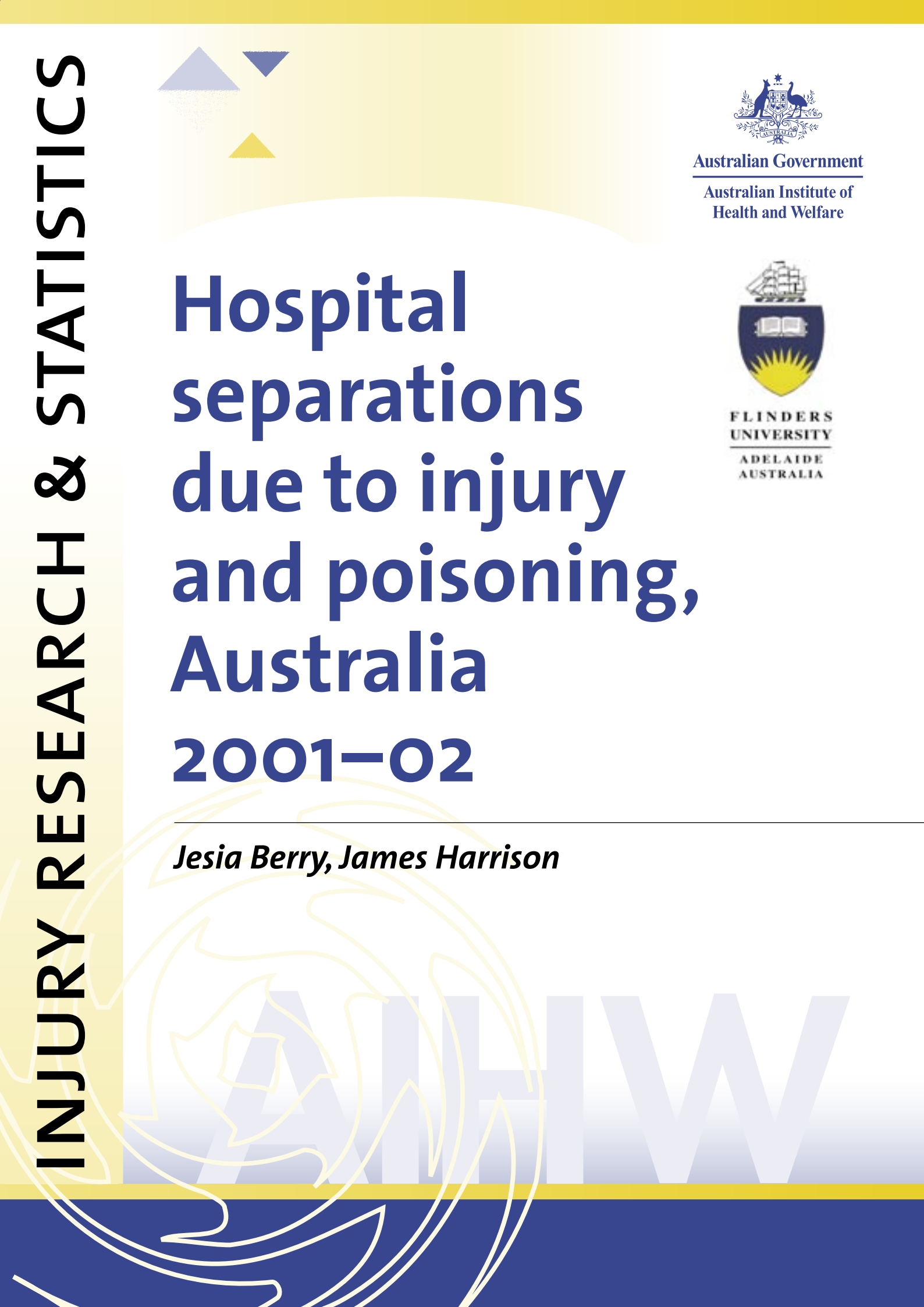
Hospital separations due to injury and poisoning, Australia 2001–02

Jesia Berry, James Harrison



Hospital separations due to injury and poisoning, Australia 2001–02

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Hospital separations due to injury and poisoning, Australia 2001–02

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

During the period 1 July 2001 to 30 June 2002, there were 409,364 hospital separations with a Principal Diagnosis in the ICD-10-AM range S00–T98 of *Injury, poisoning and certain other consequences of external causes*, which constitutes 6.4% of all hospital injury separations. These cases are considered in two categories; *Community injury* and *Complications of surgical and medical care*. Cases that did not fit into these categories for various reasons are excluded (n=12,321; 0.2% of all separations).

Major causes of injury hospitalisation in 2001–02

Major causes of injury hospitalisation[(a)]	Number of separations	Percentage of all separations (n=6,394,498)	Rate per 100,000 population[(b)]
Community injury	333,449	5.2%	1,717.6
Complications of surgical and medical care	63,594	1.0%	327.6

(a) There are 12,321 injury separations that do not fit into either of these categories, accounting for 0.2% of all separations.
(b) Age-standardised to the Australian Bureau of Statistics estimated resident population in 2001.

Community injury accounted for 333,449 hospital cases and 1.34 million patient days at an average of 4 days per episode. The age-standardised rate of *Community injury* was 1,718 episodes per 100,000 persons. *Complications of surgical and medical care* accounted for 63,594 hospital cases and 414,269 patient days at an average of 6.5 days per episode. The age-standardised rate of *Complications of surgical and medical care* was 328 episodes per 100,000 persons.

Community injury

Major causes of Community injury hospitalisation	Number of separations	Percentage of all Community injury separations	Rate per 100,000 population[(a)]	Ranking
Intentional				
Self-harm	22,530	6.8%	116.0	3
Assault	21,205	6.4%	109.2	4
Undetermined intent	2,472	0.7%	12.7	8
Unintentional				
Falls	116,104	34.8%	598.1	1
Transportation	48,790	14.6%	251.3	2
Poisoning, pharmaceuticals	7,728	2.3%	39.8	5
Poisoning, other substances	2,722	0.8%	14.0	7
Fires, burns and scalds	5,357	1.6%	27.6	6
Drowning	462	0.1%	2.4	9
Other unintentional	106,079	31.8%	546.4	–

(a) Age-standardised to the Australian Bureau of Statistics Estimated Resident Population in 2001.

The most commonly reported identifiable cause of *Community injury* was unintentional falls, which accounted for 35% of all injury cases in 2001–02. This was followed by transportation which accounted for 15% of all injury cases, intentional self-harm (7%), assault (6%), poisoning by pharmaceuticals (2%) and fires, burns and scalds injury (2%).

Almost half of unintentional fall injuries occurred in people aged 65 years and over (a third of unintentional falls involved females aged 65 years and over). Fracture of the limbs accounted for half of unintentional fall injuries, and the mechanism for almost a third of unintentional falls was slipping, tripping and stumbling on the same level. Fairly even numbers of males and females were injured, and there was no increase by remoteness of usual residence.

Most transportation injuries occurred on land, and 61% were traffic accidents. Car occupants were injured in 40% of accidents, 22% were motorcycle riders, 16% were pedal cyclists and 9% were pedestrians. The 5 most common mechanisms of injury were 1) a collision of a car with a car, pick-up truck or van (19%), 2) a motorcycle in a non-collision transport accident (11%), 3) a collision of a car with a fixed or stationary object (10%), 4) a pedal cyclist in a non-collision transport accident (9%), and 5) a car in a non-collision transport accident (9%). Almost 60% of transportation injuries occurred to people aged 15–44 years. Twice as many males as females were injured in transport accidents, and injury rates for both sexes increased by remoteness of usual residence.

A quarter of intentional self-harm cases were aged between 15–24 years and half were aged 25–44 years, and 60% of injury cases were female. The mechanism for 85% of intentional self-harm cases was self-poisoning, and twice as many females as males used this method. The drugs most commonly involved in self-poisoning were benzodiazepines, 4-aminophenol derivatives such as paracetamol and antidepressants. The second most common mechanism was self-harm with a sharp object (10%) and half of these involved an open wound of the wrist, hand or forearm. There was no increase in rates of self-harm by remoteness of usual residence.

The majority of assaults occurred in those aged 15–24 years (32%) and 25–44 years (51%) and 64% of injuries involved the head. Three times as many males as females were injured by assault. The most common mechanism of injury for males was assault by bodily force (56%), or assault by a blunt or sharp object (27%). Females were most commonly injured by bodily force (44%), by a blunt or sharp object (22%) or by maltreatment syndromes such as physical or sexual abuse, or torture (19%). Injury rates markedly increased for both sexes by remoteness of usual residence, and the Northern Territory had assault rates 5.5 times above the national average.

A quarter of poisonings by pharmaceuticals occurred in young children aged 0–4 years (only 4% were in older children aged 5–14 years) and 31% occurred in adults aged 25–44 years. The drugs most commonly involved were benzodiazepines and 4-aminophenol derivatives such as paracetamol. There were slightly more females than males hospitalised from poisoning by pharmaceuticals. There was no increase in rates of poisoning by pharmaceuticals according to remoteness of usual residence.

Twenty-eight per cent of fires, burns and scalds injury occurred in young children aged 0–4 years and 24% occurred in adults aged 25–44 years. Lesser numbers of injuries occurred in older children aged 5–14 years (12%), in youth and young people (14%) and in older people aged 65 years or more (9%). The most common mechanism of injury was from contact with hot drinks, food fats and cooking oils (20%), followed by contact with other hot fluids (e.g. water heated on a stove) (13%). Burns of the wrist and hand were the most common injuries, followed by burns of the head and neck. Almost twice as many males as females were injured by fires, burns and scalds, and there was no increase by remoteness of usual residence.

The largest burden of patient days were contributed by falls (n=706,157) and transportation (n=231,875), with an average length of stay of 6 and 5 days per episode, respectively. Lesser, but substantial numbers of patient days were attributed to intentional self-harm (n=59,414) and assault (n=49,508), with an average length of stay of 3 and 2 days per episode, respectively. Poisoning by pharmaceuticals accounted for 15,825 patient days and the length of stay was short, with an average of 2 days per episode. Fires, burns and scalds injury (n=30,574) accounted for more patient days than poisoning by pharmaceuticals, mainly because such injuries require a longer length of stay, an average of 6 days per episode.

Community injury rates in Victoria and South Australia were similar to the age-standardised population incidence rate, but rates were lower in New South Wales, Western Australia, Tasmania and the Australian Capital Territory. The Northern Territory and Queensland had rates that exceeded the national average.

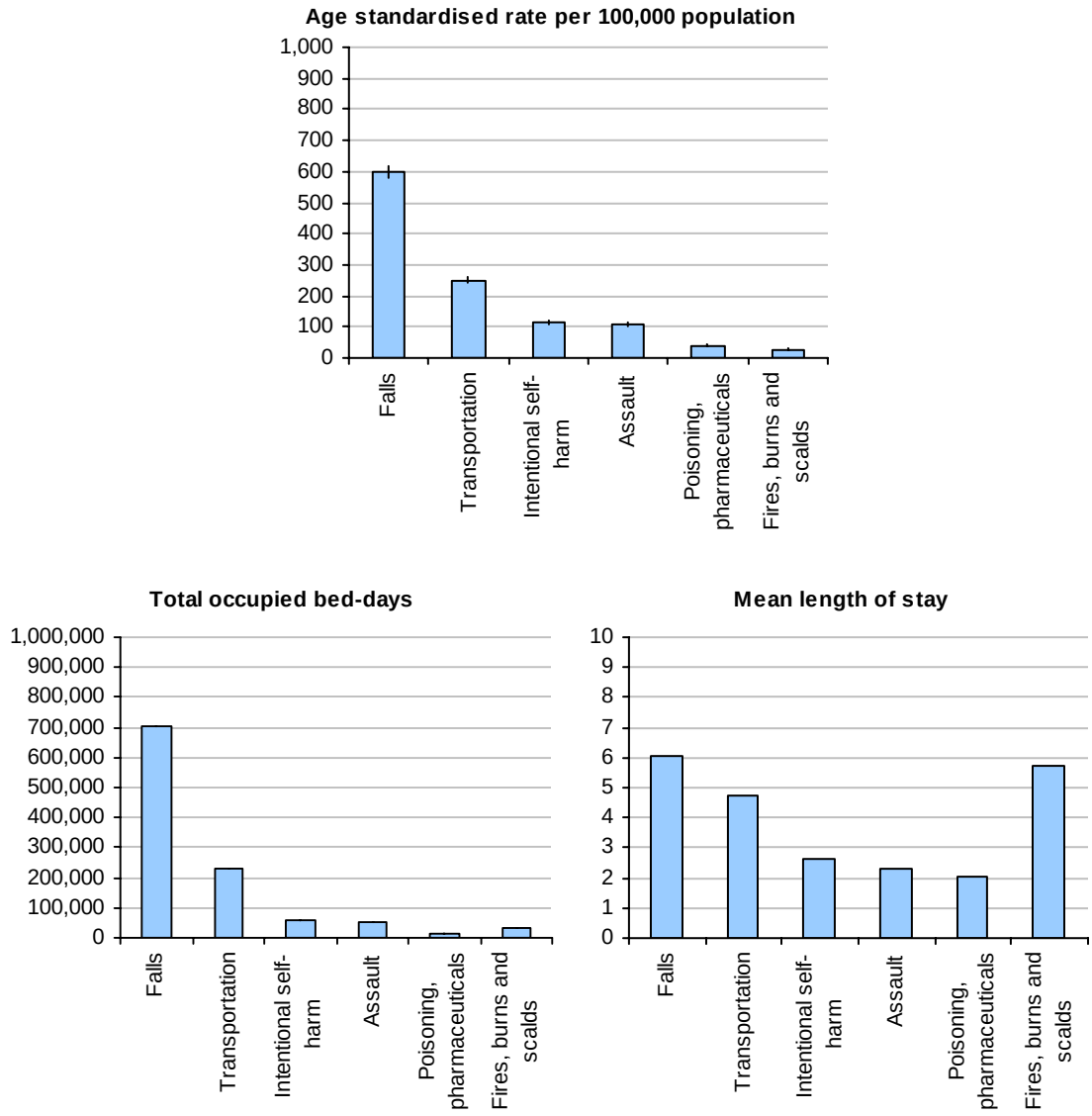


Figure 1: Summary of key indicators for the top 6 causes of injury and poisoning; Australia 2001–02

Complications of surgical and medical care

One per cent of all hospital separations in 2001–02 were associated with a *Complication of surgical and medical care*. This is likely to be an underestimate, as adverse events that are not explicitly described or recorded in hospital case records will usually not be assigned the ICD-10-AM codes specified in this report. The method used in this report to describe adverse events uses different specifications from those used by the Australian Institute of Health and Welfare (AIHW) in Australian Hospital Statistics 2003–04, which can be expected to result in lower estimates than in that publication. The most commonly reported adverse events were an infection following a procedure (19% of all adverse events), a haemorrhage or haematoma (13%), and a mechanical complication of an internal joint prosthesis (7%). Of the adverse events described above, most resulted from a surgical operation or other surgical procedure, without mention of misadventure at the time of the procedure.

Abbreviations used

ABS	Australian Bureau of Statistics
AIHW	Australian Institute for Health and Welfare
ASGC	Australian Standard Geographical Classification
DHA	Department of Health and Ageing
ED	Emergency Department
ICD	International Classification of Diseases
ICD-9	International Classification of Diseases, 9th Revision
ICD-10-AM	International Classification of Diseases, 10th Revision Australian Modification
LOS	Length of stay
MLOS	Mean length of stay
NISU	AIHW National Injury Surveillance Unit
NHMD	National Hospital Morbidity Database
RCIS	Research Centre for Injury Studies

1 Introduction

This report uses data for hospital separations due to injury and poisoning that occurred in Australia during 2001–02 (1st of July 2001 to 30th June, 2002) to describe the occurrence of hospitalised injury in Australia. Hospitalised injury is described according to major types of injury and poisoning and detailed analysis of the external causes of injury is undertaken.

It was considered important to report on the financial year of 2001–02 as this period is close to the time of the most recent national Census in 2001. Population denominators are available by remoteness zones for this period, permitting analysis by remoteness of usual residence. These analyses are not possible in intercensal years, when such denominators are not available.

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 was 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 (Australian Institute of Health and Welfare 2001).

Hospital separations reported here were coded according to the second edition of ICD-10-AM (National Centre for Classification in Health 2000).

Selecting injury and poisoning cases

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

- Australian hospital separations occurring July 1st, 2001 to June 30th, 2002;
- Principal Diagnosis in the ICD-10-AM range S00–T98 using Chapter XIX *Injury, poisoning and certain other consequences of external causes* codes;
- External causes of morbidity V01–Y98 of ICD-10-AM (i.e. Chapter XX *External causes of morbidity and mortality*); and
- Mode of admission excluding cases where transfer from another hospital has occurred.

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

In this report, a method has been used to reduce over-counting of cases, by omitting records in which the mode of admission is recorded as being by transfer from another acute-care hospital, on the grounds that such cases are likely to result in more than one separation record that meets the operational definition of injury. It should be recognised that this method for avoiding multiple counting of cases is approximate. It should allow for cases involving transfer between or within hospitals. It cannot allow for readmissions which meet the project's selection criteria. Cases transferred from another hospital are included in estimates of patient days.

Most injuries occur in settings such as car crashes, inter-personal violence, sporting and recreational activities, and work. In this report, these are referred to as *Community injury*. *Community injury* is the main subject of this report. Other injuries occur in the context of surgical and medical care, where they are often referred to as complications. These are considered briefly in this report, and are referred to here as *Complications of surgical and medical care*.

Since Australian hospital separations records should include a Principal Diagnosis code and, for 2001–02, could include up to 31 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.

Table 1.1: Selection criteria for cases due to injury and poisoning; Australia 2001–02

Selection criteria	Males	Females	Persons
Community injury (ICD-10-AM Principal Diagnosis range S00–T75, T79)	199,443	140,955	340,405[(a)]
Meet the definition of *Community injury* (i.e. Principal Diagnosis S00–T75, T79) but omitted from analyses because they:			
• lack any external cause code	2,909	1,632	4,541
• have a first reported external cause code of *Complications of surgical and medical care*	1,103	1,312	2,415
Total case numbers for *Community injury*	**195,431**	**138,011**	**333,449[(a)]**
Complications of surgical and medical care (ICD-10-AM Principal Diagnosis range T80–T88)	33,113	31,671	64,785[(b)]
Meet the definition of *Complications of surgical and medical care* (i.e. Principal Diagnosis range T80–T88) but omitted from analyses because they:			
• lack any external cause code	349	383	732
• have a first reported external cause code of *Community injury*	239	220	459
Total case numbers for *Complications of surgical and medical care*	**32,525**	**31,068**	**63,594[(b)]**
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*	**1,956**	**2,218**	**4,174**

Includes [(a)] 7 and [(b)] 1 separation(s) for which sex was not reported.

This report follows the order and format of Table 1.1, *Community injury* and *Complications of surgical and medical care*. Residual groups that do not fit into either category are considered separately at the end. *Community injury* comprises intentional and unintentional injuries. Self-harm and assault are categorised as intentional injury, but for some injury types, intent is difficult to determine. Such injuries are classed as undetermined intent and are included at the end of the intentional injuries chapter. Unintentional injuries include injuries that were accidental; falls, transport, poisoning, fire, drowning and near-drowning, and other unintentional injuries.

Developments

Hospital separations are categorised into major groups of injury such as transport, falls, drowning, intentional self-harm etc. This is an established practice, but has some limitations as the categories are not mutually exclusive. For example, a proportion of intentional self-harm hospitalisations occur by means of transport, drowning and falls, but are excluded from these major groups of injury in order to avoid double-counting of records. The practice in this report is to consider the counts and percentages of each major group of injury, without overlap. In the chapter for each major group of injury, consideration is given to the total hospitalisations that satisfy the criteria. For example, transport injury excludes hospitalisations attributable to intentional self-harm or assault, but provides a count of how many cases are omitted. This report addresses a number of data issues and further details of the methods used are outlined in Appendix 1 Data issues.

Profiles of priority injury areas

The National Injury Prevention and Safety Promotion Plan: 2004 Onwards has identified 7 national injury prevention areas for action (Strategic Injury Prevention Partnership 2005; Pointer et al, 2003); children (0–14 years), youth and young people (15–24 years), adults (25–64 years), older people (65+ years), Aboriginal and Torres Strait Islander people, rural and remote populations, and alcohol and injury. Where appropriate, results have been presented to highlight the impact of injury on the targeted age groups. Aboriginal and Torres Strait Islander populations are not encompassed in this report, as this is the topic of a separate National Injury Surveillance Unit (NISU) report covering the period considered in this report, and in preparation at the time of writing. Results for rural and remote populations according to the Australian Standard Geographical Classification (ASGC) remoteness structure are presented in each chapter (Australian Bureau of Statistics 2001). The contribution of alcohol to hospitalised injury in Australia is not considered in this report as it is not yet possible to assess the alcohol-relatedness of this data with adequate reliability. Deficiencies in the identification of alcohol involvement in the National Hospital Morbidity Database are described elsewhere (Pidd et al, In press.) and work currently in progress may enable consideration of alcohol in future reports in this series.

Trends in injury rates

Valid reporting of trends over time in hospitalised injury is not easy to achieve. By the end of the financial year 1999–2000, all jurisdictions had progressed from ICD-9-CM to ICD-10-AM as the basis for classifying diagnoses and external causes of injury. There are some inconsistencies between the two classification systems that limit comparability of major groups of injury. There is potential for variation over time in admission practice, especially for lower severity cases, and changes over time in the coding of external causes (Harrison & Steenkamp 2002). Work is currently being undertaken atNISU to construct a dataset which is adjusted for these incompatibilities, to allow reporting of trends over time in hospitalised injury and the results of this will be the subject of a separate report. It is envisaged that trends in injury rates will be a topic included in future reports in this series.

2 Community injury, Australia

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79 and

First reported external cause: V01–Y36, Y85–Y87, Y89

2.1 All injury hospitalisations

Table 2.1.1: Key indicators for cases due to all external causes of injury and poisoning; Australia 2001–02

Indicator	Males	Females	Persons
All hospital separations	2,974,106	3,420,234	6,394,498[(a)]
Hospital cases due to injury and poisoning	195,431	138,011	333,449[(b)]
Hospital cases due to injury and poisoning as % of all separations	6.6%	4.0%	5.2%
Mean length of stay (days)	3.3	5.0	4.0
Total patient days	647,899	689,396	1,337,363[(c)]
Crude rate/100,000 population	2,029.2	1,410.7	1,717.6
Age-standardised rate/100,000 population	2,056.0	1,342.3	1,717.6

Includes [(a)] 158 and [(b)] 7 separations and [(c)] 68 patient days for which sex was not reported.

Overview

For public and private hospitals combined, *Injury, poisoning and certain other consequences of external causes* ranked fifth in the number of separations after *Factors influencing health status and contact with health services groups*, *Diseases of the digestive system*, *Neoplasms*, and *Diseases of the circulatory system* (Australian Institute of Health and Welfare 2003).

In 2001–02, injury and poisoning due to external causes accounted for 333,449 hospital cases, 5.2% of a total of 6,394,498 hospital separations from public, private and psychiatric hospitals in Australia (Table 2.1.1) (Australian Institute of Health and Welfare 2003). Injury and poisoning due to external causes accounted for 1.34 million patient days, at an average of 4 days per episode (Table 2.1.1).

The six most commonly reported identifiable causes of injury were:

1. Falls (35%)
2. Transportation (15%)
3. Intentional self-harm (7%)
4. Assault (6%)
5. Poisoning, pharmaceuticals (2%)
6. Fires, burns and scalds (2%)

The male to female rate ratio (M:F rate ratio), based on age-standardised rates was 1.5: 1, indicating that more males than females were hospitalised for injury and poisoning from external causes.

In the calendar year 2002, there were 7,820 persons who died from injury and poisoning (Kreisfeld et al, 2004). Many of these injury cases are likely to be included in both the NHMD and national mortality unit record data collection. Patients who sustain severe injuries may die rapidly and may not reach hospital or die in the Emergency Department (ED), prior to admission. Such injury cases may be omitted from hospital separations data, but will be captured in the national mortality database. Difficulties in differentiating between severe and fatal injuries complicate discernment of the extent of overlap between the NHMD and national mortality database.

Age and sex distribution

Male age-specific rates were higher than females until the age of 65 years, after which female rates overtook males (Figure 2.1.1). Age-specific hospitalisation rates for females were relatively constant up to 69 years of age. A different pattern was seen for males; hospitalisation rates increased in the teens, peaked in the early twenties and then declined until 69 years of age. For both genders, a steep increment occurred from 70+ years, peaking in the very old (age 85+ years; M:F rate ratio 0.6:1).

The percentage of injury and poisoning hospitalisations attributed to the age groups identified in the National Injury Prevention and Safety Promotion Plan: 2004–2014 (Strategic Injury Prevention Partnership 2005) were 17% (n=57,901) for children (0–14 years), 18% (n=58,214) for youth and young adults (15–24 years), 43% (n=143,722) for adults (25–64 years), and 22% (n=73,602) for older people.

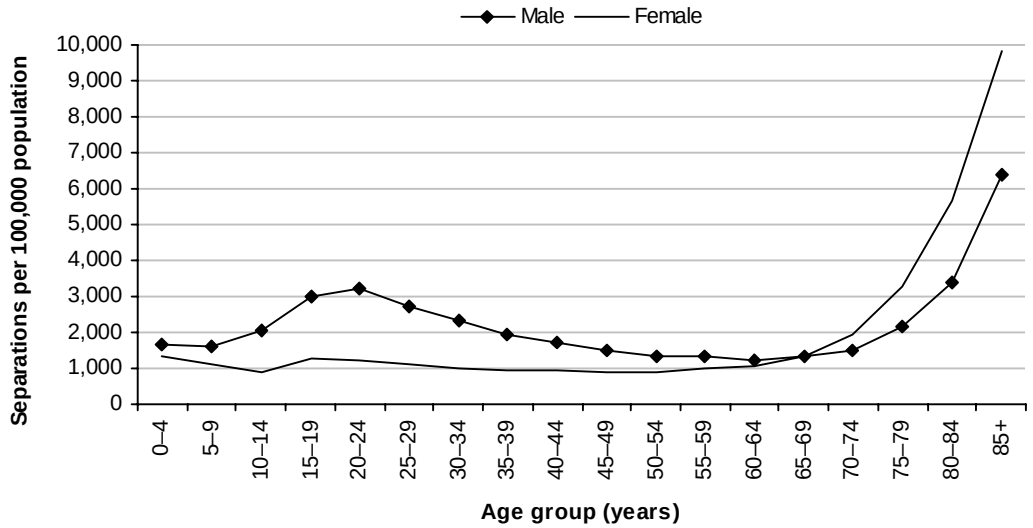
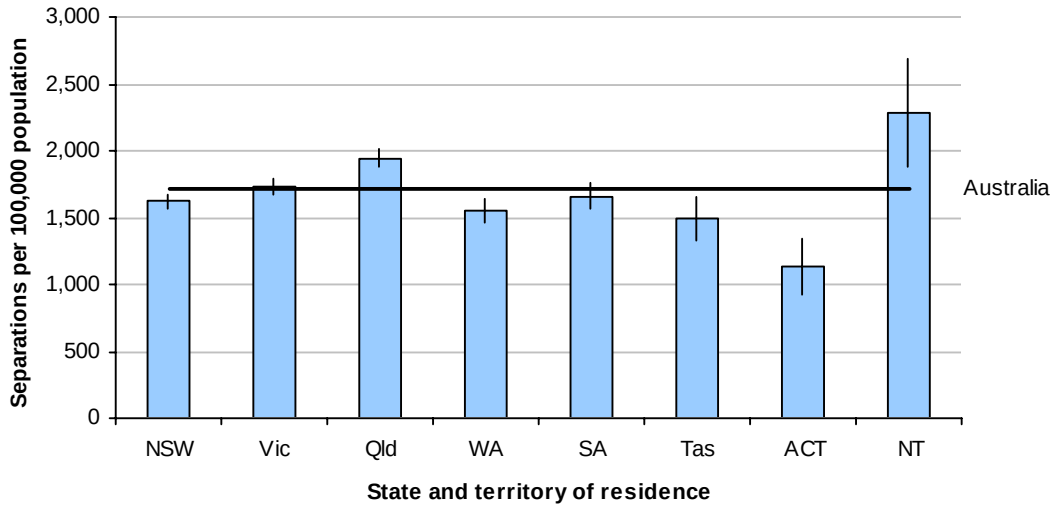


Figure 2.1.1: Age-specific hospital separation rates for all external causes of injury and poisoning by sex; Australia 2001–02

State and territory differences

The national average rate was 1,718 injury and poisoning cases per 100,000 of the population (95% CI, 1,690–1,745), and Victoria and South Australia had similar rates to this (Figure 2.1.2). New South Wales, Western Australia, Tasmania and the Australian Capital Territory had rates lower than the national average, whereas the Northern Territory and Queensland had rates that were higher. *State of residence not reported* was only 0.8% (n=2,785) and 0.1% (n=196) were from *other territories*.



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

Figure 2.1.2: All external causes of injury and poisoning, states and territories 2001–02; Persons (age-standardised rates)

Major types of injury

Falls constituted the largest proportion of injury hospitalisations, especially among the elderly (Figure 2.1.3). Transport emerged in adolescent years as a substantial contributor to injury and remained so until middle age. Intentional self-harm was a lesser, but prominent cause of injury emerging in early adolescence. Assault was a prominent cause of injury in adolescents aged 15 years and over and remained so until middle age. Poisoning by pharmaceuticals and fires, burns and scalds injury were most prevalent in children aged 0–4 years.

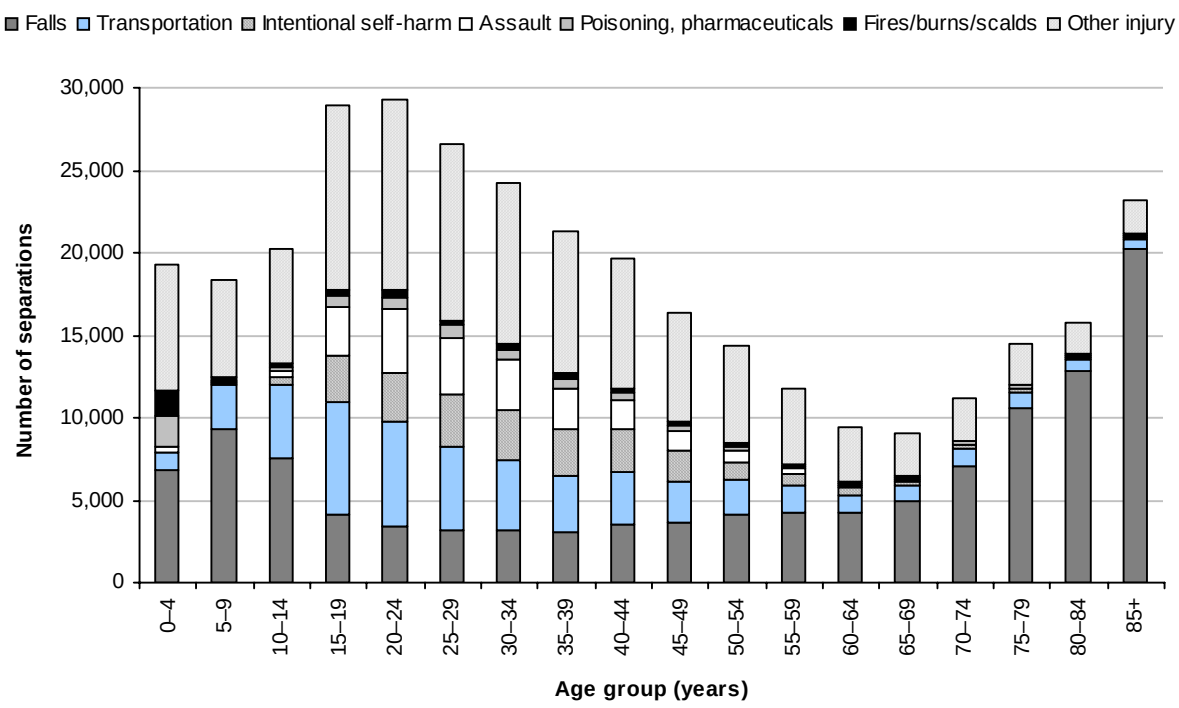


Figure 2.1.3: Age distribution of cases for selected major causes of injury; Australia 2001–02

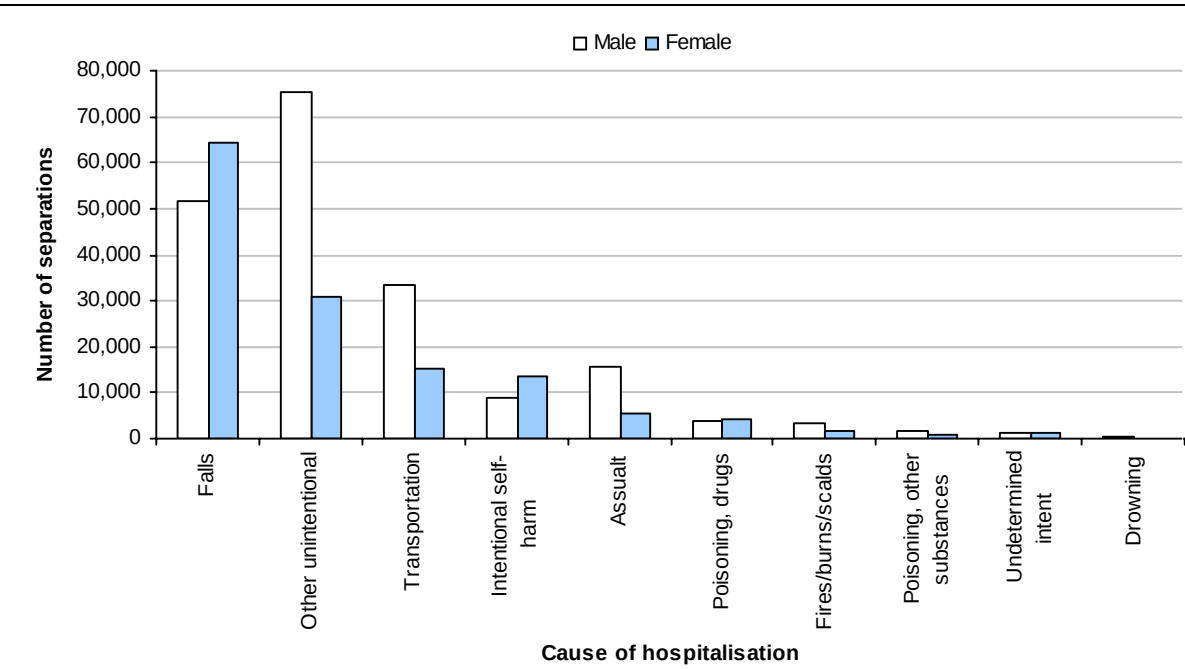


Figure 2.1.4: Major causes of injury by gender; Australia 2001–02

The pattern of external causes differed between the sexes. The only external causes of hospitalised injury in which females exceeded the number of males being hospitalised were from falls and intentional self-harm (Figure 2.1.4). Intentional self-harm is noteworthy, because in 2002, male deaths from suicide far exceeded female deaths, but in hospital separations the reverse pattern occurred, with more females than males admitted for intentional self-harm. This observation may be explained by differences in the lethality of the

methods used by the sexes to attempt suicide—females tending to take over-doses of pharmaceutical drugs, which are usually not fatal (Kreisfeld et al, 2004).

The *Community injury* category with the largest number of cases after falls was other unintentional injuries. This was a heterogenous category; it contained a large proportion of work- and sports-related injuries, but not all of them. Separating the other unintentional injuries category into its component injury groups creates more problems that it solves. Therefore, it is retained as the subject of a chapter in this report, in which the many different types of injuries in the group are outlined e.g. being struck or crushed by objects, contact with machinery, non-powered tools, being impaled by a foreign body, animal bites, invenomation etc. (see Table 2.11.3).

Body part

Body part is classified here, and in similar tables elsewhere in this report, according to Principal Diagnosis. If a patient admitted due to injury has injuries to more than one body part then the most serious is normally coded as Principal Diagnosis and others as Additional Diagnoses. Shoulder and upper limb was the most commonly injured body region overall, and in particular, for males. Hip and lower limb were the most commonly injured body region for females (Table 2.1.2).

Table 2.1.2: Case counts and proportions by body region and sex for all external causes of injury and poisoning; Australia 2001–02

	Males		Females		Persons	
Indicator	**Count**	**%**	**Count**	**%**	**Count**	**%**
Head	41,710	21.3	20,327	14.7	62,039[(a)]	18.6
Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis)	21,194	10.8	17,382	12.6	38,577[(b)]	11.6
Shoulder and upper limb	65,140	33.3	34,990	25.4	100,131[(b)]	30.0
Hip and lower limb	41,026	21.0	38,535	27.9	79,561	23.9
Other injuries not specified by body region	26,361	13.5	26,777	19.4	53,141[(c)]	15.9
All body regions	**195,431**	**100.0**	**138,011**	**100.0**	**333,449[(d)]**	**100.0**

Includes [(a)] 2, [(b)] 1, [(c)] 3, and [(d)] 7 separations for which sex was not reported.

Length of stay

Patient days is the number of full and partial days a patient was in hospital if they separated from hospital during the reporting period, and is summed for all patients to give an aggregate of the length of stay (LOS). Re-admissions, transfers and newly admitted cases are included in the calculation of LOS, but only newly admitted cases are included in the estimation of case counts. One patient day is counted for same day patients (admitted and discharged from hospital on the same day). LOS provides an approximate indication of case severity, that is, severe injuries are more likely to result in longer episodes of care than minor injuries. The mean length of stay (MLOS) 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 by the number of actual separations for the same period. Table 2.1.3 presents an aggregate estimate of LOS and MLOS, calculated for all separations meeting the selection criteria of this report [Chapter XIX Principal Diagnosis in range S00–T75, T79, (excluding T78) and related Chapter XX External cause codes].

Table 2.1.3: Length of stay for all external causes of injury and poisoning: case counts, length of stay, percentage of total patient days for acute care of injury and mean length of stay; Australia 2001–02

External cause	Males				Females				Persons			
	Count	LOS	%	MLOS	Count	LOS	%	MLOS	Count	LOS	%	MLOS
Intentional												
Intentional self-harm	8,911	26,241	4.1	2.9	13,618	33,171	4.8	2.4	22,530[a]	59,414[d]	4.4	2.6
Assault	15,766	36,772	5.7	2.3	5,438	12,735	1.9	2.3	21,205[a]	49,508[c]	3.7	2.3
Undetermined intent	1,131	2,775	0.4	2.5	1,341	2,857	0.4	2.1	2,472	5,632	0.4	2.3
Unintentional												
Falls	51,839	244,769	37.8	4.7	64,264	461,387	66.9	7.2	116,104[a]	706,157[c]	52.8	6.1
Transportation	33,406	160,059	24.7	4.8	15,383	71,762	10.4	4.7	48,790[a]	231,875[f]	17.3	4.8
Poisoning, pharmaceuticals	3,613	7,549	1.2	2.1	4,114	8,275	1.2	2.0	7,728[a]	15,825[c]	1.2	2.0
Poisoning, other substances	1,674	3,085	0.5	1.8	1,048	1,814	0.3	1.7	2,722	4,899	0.4	1.8
Fires, burns, scalds	3,491	20,336	3.1	5.8	1,865	10,231	1.5	5.5	5,357[a]	30,574[e]	2.3	5.7
Drowning	308	722	0.1	2.3	154	278	0.0	1.8	462	1,000	0.1	2.2
Other unintentional injuries	75,292	145,591	22.5	1.9	30,786	86,886	12.6	2.8	106,079[a]	232,479[d]	17.4	2.2
Total	**195,431**	**647,899**	**100.0**	**3.3**	**138,011**	**689,396**	**100.0**	**5.0**	**333,449[b]**	**1,337,363[g]**	**100.0**	**4.0**

Includes [a] 1 and [b] 7 separations and [c] 1, [d] 2, [e] 7, [f] 54 and [g] 68 patient days where sex was not reported.
Patient days for 1 outlier separation were omitted.
Note: Shaded areas indicate three highest figures for each column.

The MLOS in 2001–02 for injury and poisoning was 4.0 days (1,337,363 patient days for 333,449 separations). Discharge occurred on the same day of admission for 35% (n=116,505) of these separations. Excluding same day cases and re-admissions and transfers, the total number of patient days was 1,218,875 for 216,944 separations, resulting in an MLOS of 5.6 patient days per separation. About 26% of admitted patients had a stay of 3 days or more for first episodes of *Community injury* (n=87,225; see Table 2.1.4).

Table 2.1.4: Length of stay for all external causes of injury and poisoning; Australia 2001–02

Length of stay (days)	All cases		Excluding 'same day' separations	
	Frequency	%	Frequency	%
Up to 1	214,113	64.2	97,608	45.0
2	32,111	9.6	32,111	14.8
3–4	29,249	8.8	29,249	13.5
5–7	21,387	6.4	21,387	9.9
8–14	21,090	6.3	21,090	9.7
15–21	7,492	2.3	7,492	3.5
22–28	3,316	1.0	3,316	1.5
29–35	1,922	0.6	1,922	0.9
36–49	1,553	0.5	1,553	0.7
More than 7 weeks	1,216	0.4	1,216	0.6
Total	**333,449**	**100.0**	**216,944**	**100.0**

The mean length of stay for all external causes of injury and poisoning rose with age (Figure 2.1.5).

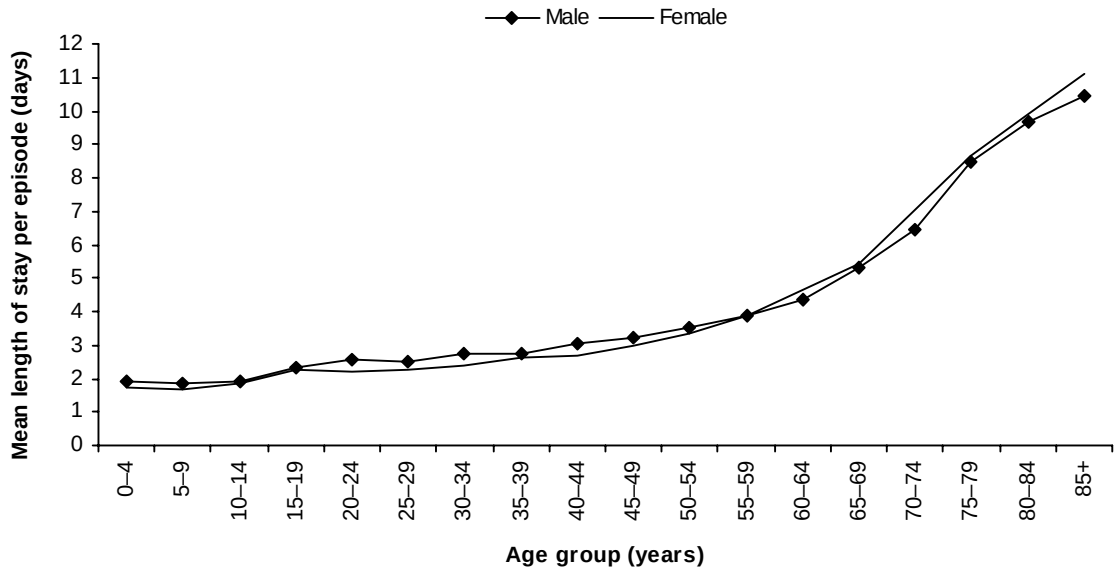


Figure 2.1.5: Length of stay per episode for all external causes of injury and poisoning by age and sex; Australia 2001–02

Remoteness zones

The Australian Standard Geographical Classification (ASGC) (see Appendix 1: Data issues) is used to categorise Australia into remoteness zones. Australian hospital separations data include information about place of usual residence for most patients, which can be summarised in terms of ASGC remoteness zones. Australian injury mortality rates are greater for residents of more remote areas, which may be partly attributable to higher injury risk among Aboriginal and Torres Strait Islander Australians, who comprise a relatively large proportion of the remote area populations (Helps & Harrison 2004). For all external causes of injury and poisoning, male and female age-standardised rates of hospitalisation increased by remoteness zone and male injury rates were higher (Figure 2.1.6). Distinguishing how much of this increase was attributable to Aboriginal and Torres Strait Islander injury is difficult due to likely misclassification of Indigenous status (Helps & Harrison 2004).

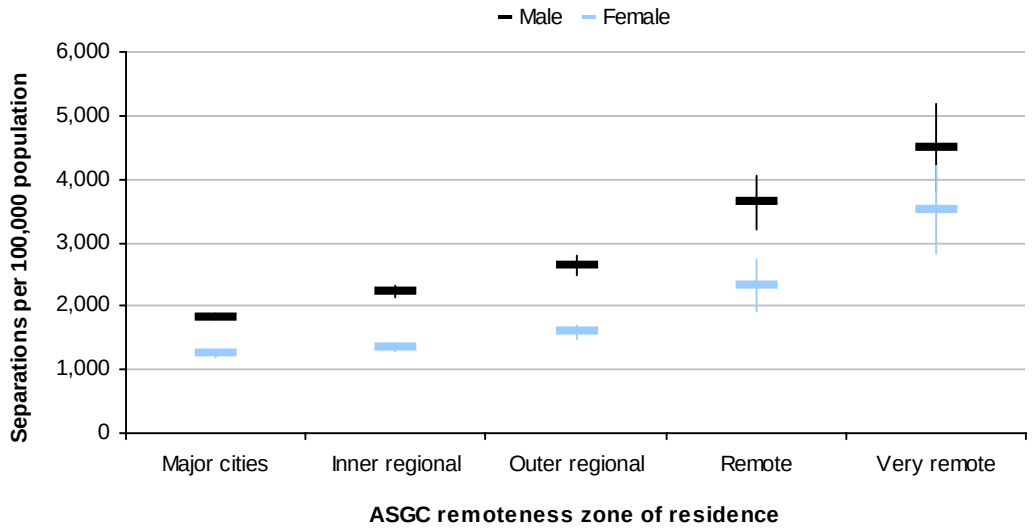


Figure 2.1.6: Age-standardised hospital separation rates for all external causes of injury and poisoning by ASGC remoteness zone and sex; Australia 2001–02

Activity and place

According to standard ICD-10-AM coding rules, activity codes are applicable within the range of external cause categories V01–Y34. According to this criterion, 332,876 *Community injury* hospital cases were eligible to receive an activity code, although 183 records outside the specified range were assigned a code. In 73% of cases eligible to be assigned a code, the type of activity being undertaken at the time of injury was recorded as *Other specified activity*, *Unspecified activity*, or *Activity not reported/not applicable*. Only in 90,860 (27%) of eligible cases was a particular activity recorded (Table 2.1.5).

Table 2.1.5: Activity when injury occurred; all external causes of injury and poisoning; Australia 2001–02

Activity	Persons	%
While engaged in sports	24,234	7.3
While engaged in leisure	16,685	5.0
While working for income	21,652	6.5
While engaged in other types of work	12,105	3.6
While resting, sleeping, eating or engaging in other vital activities	16,184	4.9
Other specified activity	79,282	23.8
Unspecified activity	161,555	48.5
Activity not reported/not applicable	1,179	0.4
Total eligible for an activity code	**332,876**	**100.0**

Place of occurrence codes are applicable within the range of external cause categories V01–Y89. According to this criterion, 333,449 injury hospital cases were eligible to receive a place code. Place of occurrence was recorded as *Other specified*, *Unspecified*, or *Place not reported/not applicable* in 42% of these cases (Table 2.1.6). The most commonly recorded type of place in which the injury occurred was *Home* (28% of injuries) followed by *Street, highway* (11% of injuries) (Table 2.1.6). To enable more meaningful comparisons, records which were *Unspecified* or *Place not reported/not applicable* are omitted in place of occurrence tables for subsequent chapters.

Table 2.1.6: Place of occurrence for all external causes of injury and poisoning; Australia 2001–02

Place	Persons	%
Home	93,608	28.1
Residential institution	8,519	2.6
School	5,622	1.7
Health service area	7,234	2.2
Other specified institution and public administered area	1,507	0.4
Sport, athletics area	18,309	5.5
Street, highway	36,778	11.0
Trade, service area	10,087	3.0
Industrial, construction area	8,208	2.5
Farm	3,687	1.1
Other specified	18,568	5.6
Unspecified	120,482	36.1
Place not reported/not applicable	840	0.3
Total eligible for a place code	**333,449**	**100.0**

The large number of separations lacking detail on the activity code limits meaningful interpretation of these counts. For this reason, activity data are not reported extensively in this report, although sports injuries and work-related injuries are considered in Chapter 2.11—Other unintentional injuries. Coding was more complete for place of occurrence, but over half 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.

Part A: Intentional injuries

2.2 Intentional self-harm

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79 and

First reported external cause: X60–X84, Y87.0

Table 2.2.1: Key indicators for intentional self-harm cases; Australia 2001–02

Indicator	Males	Females	Persons
Cases	8,911	13,618	22,530[(a)]
Percentage of all injury hospitalisations	4.6%	9.9%	6.8%
Mean length of stay (days)	2.9	2.4	2.6
Total patient days	26,241	33,171	59,414[(b)]
Crude rate/100,000 population	92.5	139.2	116.0
Age-standardised rate/100,000 population	92.3	140.3	116.0

[(a)] Includes 1 separation and [(b)] 2 patient days for which sex was not reported.

Intentional self-harm accounted for 7% of all injury hospitalisations in the financial year 2001–02 (Table 2.2.1). It includes suicide and attempts of suicide, as well as cases where people have intentionally hurt themselves, but not necessarily with the intention to kill e.g. self-mutilation.

Age and sex distribution

Females had higher rates of hospitalised intentional self-harm than males up to the age of 65 years (Figure 2.2.1). The excess of female rates was greatest for youth and young people aged 15–19 years. More females than males were hospitalised for intentional self-harm (based on age-standardised rates), with a M:F rate ratio of 0.7:1.

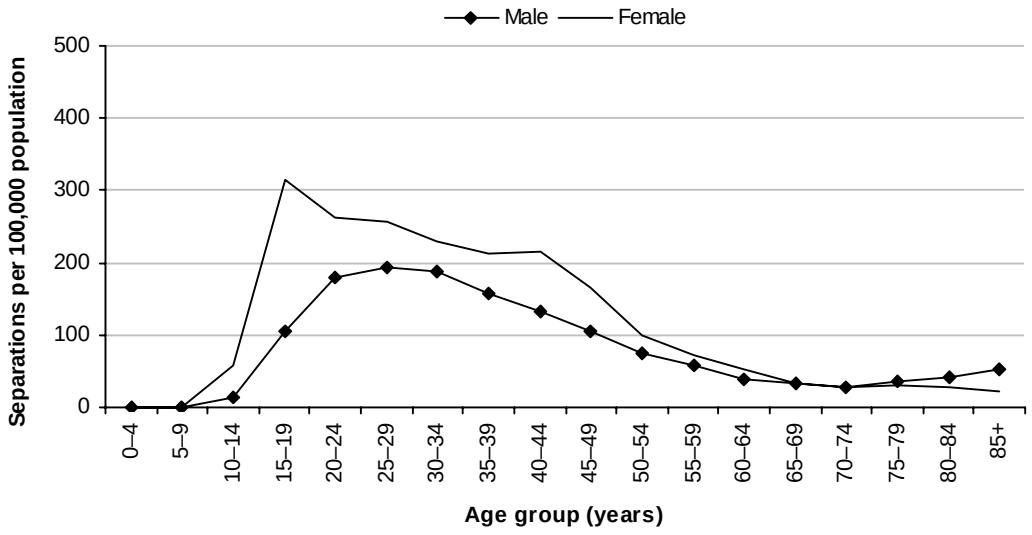
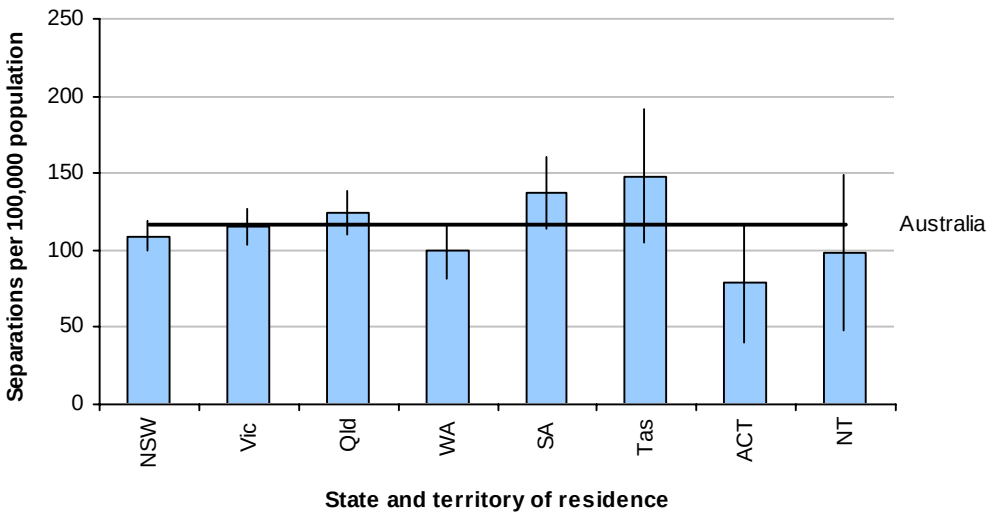


Figure 2.2.1: Age-specific hospital separation rates for intentional self-harm injury by sex; Australia 2001–02

State and territory differences

Rates for each of the states and territories were not significantly different from the national average and ranged from 78.6 per 100,000 in the Australian Capital Territory to 147.9 per 100,000 in Tasmania (Figure 2.2.2).



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

Figure 2.2.2: Intentional self-harm injury cases, states and territories 2001–02; Persons (age-standardised rates)

Body part

The majority of admitted injury cases due to intentional self-harm did not specify a particular body region that was injured (Table 2.2.2). This reflects the fact that the mechanism in most cases was poisoning.

Table 2.2.2: Case counts and proportions by body region and sex for intentional self-harm injury cases; Australia 2001–02

	Males		Females		Persons	
Indicator	**Count**	**%**	**Count**	**%**	**Count**	**%**
Head	141	1.6	57	0.4	198	0.9
Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis)	460	5.2	215	1.6	675	3.0
Shoulder and upper limb	994	11.2	835	6.1	1,829	8.1
Hip and lower limb	81	0.9	70	0.5	151	0.7
Other injuries not specified by body region	7,235	81.2	12,441	91.4	19,677[(a)]	87.3
All body regions	**8,911**	**100.0**	**13,618**	**100.0**	**22,530[(a)]**	**100.0**

[(a)] Includes 1 separation for which sex was not reported.

Mechanism

There were 22,530 cases of hospitalised intentional self-harm in the financial year 2001–02 compared to 2,320 suicide deaths in 2002—nearly 10 times as many cases of intentional self-harm than deaths (Kreisfeld et al, 2004). The most frequent mechanism of fatal suicide was hanging, strangulation and suffocation (45%; n=1,045), self-poisoning was the second most common (31%; n=726) and shooting was third (9%; n=217).

In contrast, 85% of hospitalised cases of self-harm were intentional self-poisoning and almost twice as many females as males used this method. Intentional self-harm by a sharp object accounted for 11% of hospitalisations and more males than females used this method. Hanging, strangulation and suffocation accounted for less than 2% of hospitalised intentional self-harm (of which 72% were males), and shooting was even less common (0.3%—nearly all were males).

Close to half of all cases were self-poisoning with antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs. This category includes benzodiazepenes (45%; n=4,976), other and unspecified antidepressants—likely to be selective serotonin reuptake inhibitors (20%; n=2,227), phenothiazine antipsychotics and neuroleptics (7%; n=745), and tricyclic and tetracyclic antidepressants (7%; n=722). The second most frequent was self-poisoning with nonopioid analgesics, antipyretics and antirheumatics. This category includes 4-aminophenol derivatives such as paracetamol (82%; n=3,138), nonsteroidal anti-inflammatory drugs (8%; n=313) and salicylates such as aspirin (4%; n=135).

For self-poisoning with other gases and vapours (2%; n=415), 81% were from toxic effects of carbon monoxide (it is likely that most of these involved motor vehicle exhaust), and male numbers were at least double that of females.

Intentional pesticide poisoning is a common problem in many agricultural communities of low- and middle-income countries, including China, India, Sri Lanka and Vietnam (World Health Organisation 2004). In comparison, it is an uncommon cause of hospitalisation in Australia (less than 1%) and occurs more frequently in males than females.

For the second most common cause of hospitalisation—intentional self-harm by a sharp object (11%; n=2,386), the two most common Principal Diagnoses were an open wound of the wrist and hand (33%; n=790) and an open wound of the forearm (17%; n=397).

Table 2.2.3: External cause of intentional self-harm injury cases; Australia 2001–02

ICD-10-AM Code	Indicator	Males		Females		Persons	
		Count	%	Count	%	Count	%
	Intentional self-poisoning by and exposure to:	6,939	77.9	12,232	89.8	19,172[(a)]	85.1
X60	• nonopioid analgesics, antipyretics and antirheumatics	*1,029*	*11.6*	*2,791*	*20.5*	*3,820*	*17.0*
X61	• antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	*3,944*	*44.3*	*7,001*	*51.4*	*10,945*	*48.6*
X62	• narcotics and psychodysleptics [hallucinogens]	*488*	*5.5*	*624*	*4.6*	*1,112*	*4.9*
X63	• other drugs acting on the autonomic nervous system	*104*	*1.2*	*158*	*1.2*	*262*	*1.2*
X64	• other and unspecified drugs, medicaments and biological substances	*593*	*6.7*	*1,089*	*8.0*	*1,683[(a)]*	*7.5*
X65	• alcohol	*210*	*2.4*	*245*	*1.8*	*455*	*2.0*
X66	• organic solvents and their halogenated hydrocarbons and their vapours	*23*	*0.3*	*19*	*0.1*	*42*	*0.2*
X67	• other gases and vapours (eg. carbon monoxide)	*309*	*3.5*	*106*	*0.8*	*415*	*1.8*
X68	• pesticides	*113*	*1.3*	*51*	*0.4*	*164*	*0.7*
X69	• other and unspecified chemicals and noxious substances	*126*	*1.4*	*148*	*1.1*	*274*	*1.2*
X70	Intentional self-harm by hanging, strangulation and suffocation	269	3.0	104	0.8	373	1.7
X71	Intentional self-harm by drowning and submersion	9	0.1	10	0.1	19	0.1
X72	Intentional self-harm by handgun discharge	10	0.1	0	0.0	10	0.0
X74	Intentional self-harm by other and unspecified firearm discharge	46	0.5	4	0.0	50	0.2
X76	Intentional self-harm by smoke, fire and flames	28	0.3	29	0.2	57	0.3
X77	Intentional self-harm by steam, hot vapours and hot objects	*	*	*	*	8	0.0
X78	Intentional self-harm by sharp object	1,324	14.9	1,062	7.8	2,386	10.6
X79	Intentional self-harm by blunt object	32	0.4	9	0.1	41	0.2
X80	Intentional self-harm by jumping from a high place	59	0.7	44	0.3	103	0.5
X81	Intentional self-harm by jumping or lying before moving object	27	0.3	18	0.1	45	0.2
X82	Intentional self-harm by crashing of motor vehicle	33	0.4	15	0.1	48	0.2
X83	Intentional self-harm by other specified means	101	1.1	48	0.4	149	0.7
X84	Intentional self-harm by unspecified means	28	0.3	34	0.3	62	0.3
Y87.0	Sequelae of intentional self-harm	*	*	*	*	7	0.0
	Total	**8,911**	**100.0**	**13,618**	**100.0**	**22,530[(a)]**	**100.0**

[(a)] Includes 1 separation for which sex was not reported.
*Small counts are omitted.

Length of stay

Mean length of stay for intentional self-harm hospital cases rose with age (Figure 2.2.3). The small number of intentional self-harm cases for children aged 0–9 years are for injury of the eye, self-poisoning with narcotics and prescription medicines, burns and asphyxiation.

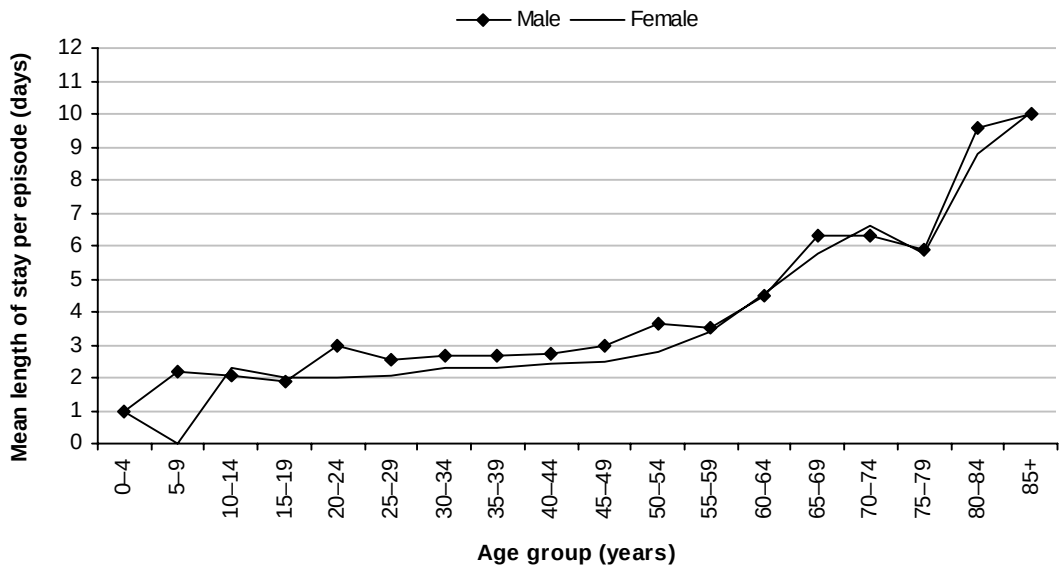


Figure 2.2.3: Length of stay per episode for intentional self-harm injury cases by age and sex; Australia 2001–02

Remoteness zones

Male and female age-standardised rates of hospitalisation for intentional self-harm did not increase by remoteness of the person's usual residence (Figure 2.2.4).

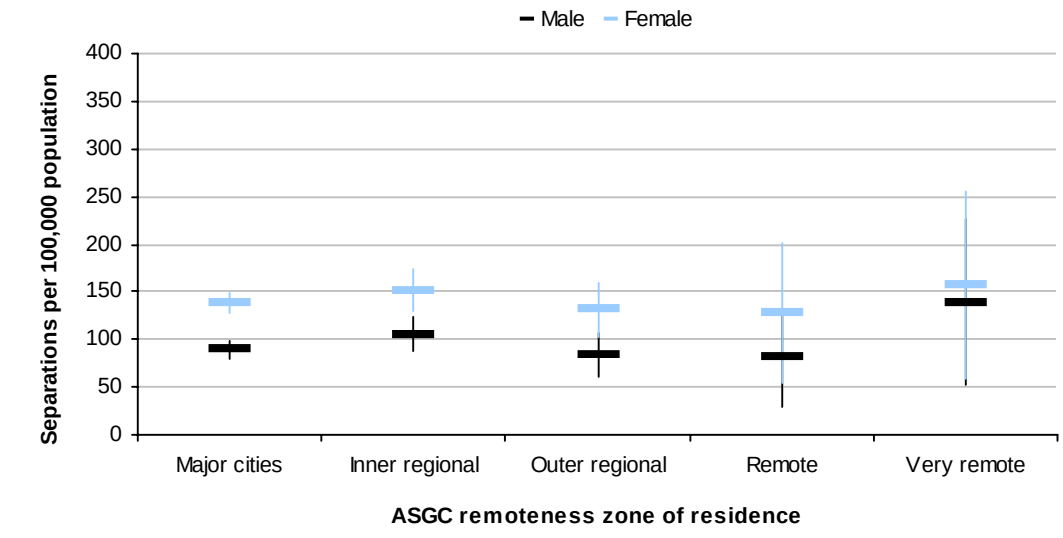


Figure 2.2.4: Age-standardised hospital separation rates for intentional self-harm injury by ASGC remoteness zone and sex; Australia 2001–02

Place of occurrence

For over a quarter of records, place of occurrence was unspecified (27%; n=6,020) or not reported (0.3%; n=65). The following observations are restricted to those records in which the place of occurrence was specified (Table 2.2.4). The majority of the intentional self-harm injury hospitalisations occur in the home (88%; n=14,533).

Table 2.2.4: Place of occurrence for intentional self-harm injury; Australia 2001–02

Place	Persons	%
Home	14,533	88.4
Residential institution	334	2.0
School	64	0.4
Health service area	290	1.8
Other specified institution and public administrative area	58	0.4
Sports and athletics area	20	0.1
Street and highway	263	1.6
Trade and service area	265	1.6
Industrial and construction area	51	0.3
Farm	5	0.0
Other specified places	562	3.4
Total	**16,445**	**100.0**

Ascertainment of intentional self-harm

Determining whether an injury is due to intentional self-harm is not always straightforward. Intent is a complex concept and not easily defined. Cases may appear to be intentional self-harm, but their inconclusiveness may preclude them being coded as such (e.g. Y30–Y32 *Falling, jumping or pushed from a high place, undetermined intent*, *Falling, lying or running before or into moving object, undetermined intent*, or by *Crashing of motor vehicle, undetermined intent*). It is possible that through the coding process, some types of injury may be more readily attributed to intentional self-harm than others. The intent for many injuries is difficult to determine e.g. near-drowning by falling overboard on a water-craft (V92), falling from a building structure (e.g. W13, out of a window, bridge or roof), or a cliff (W15), specified threats to breathing (e.g. W83, suffocation by plastic bag), and exposure to electric current (W85–W87). An unknown proportion of transport accidents could be intentional self-harm e.g. when a pedestrian is injured in a collision with a car, pick-up truck or van, or heavy transport vehicle or railway train (e.g. V03, V04, V05), or a small vehicle (e.g. car, motorcycle) collides with a heavy transport vehicle or train (e.g. V24, V25, V44, V45) or a fixed or stationary object (e.g. V27, V47). Some patients may choose not to disclose that their injuries resulted from intentional self-harm, or may be unable to do so due to the nature of the injuries, or because their motives were ambiguous. Such sources of uncertainty about the assignment of intent limit the certainty of 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 Section 2.4).

2.3 Assault

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79 and

First reported external cause: X85–Y09, Y35–Y36, Y87.1, Y89.0, Y89.1

Table 2.3.1: Key indicators for assault injury cases; Australia 2001–02

Indicator	Males	Females	Persons
Cases	15,766	5,438	21,205[(a)]
Percentage of all injury hospitalisations	8.1%	3.9%	6.4%
Mean length of stay (days)	2.3	2.3	2.3
Total patient days	36,772	12,735	49,508[(b)]
Crude rate/100,000 population	163.7	55.6	109.2
Age-standardised rate/100,000 population	162.1	56.0	109.2

[(a)] Includes 1 separation and [(b)] 1 patient day for which sex was not reported.

Assault accounted for 6% of all injury hospitalisations in the financial year 2001–02 (Table 2.3.1). As defined here, this category includes all cases in which a person, or more than one person, intentionally injured another person.

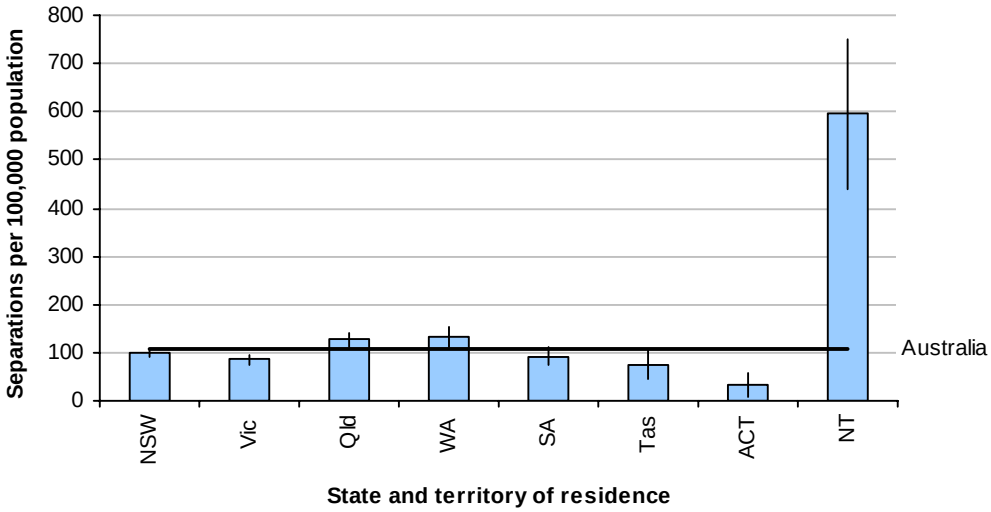
Age and sex distribution

Many more males than females were hospitalised for injury resulting from assault (based on age-standardised rates) with a M:F rate ratio of nearly 3:1. Male rates were greater than female rates in most five year age groups (Figure 2.3.1). The difference was most evident in the age range 15–24 years, where the mean rate was 4 times higher for males.

Figure 2.3.1: Age-specific hospital separation rates for assault by sex; Australia 2001–02

State and territory differences

The rate of injury hospitalisation due to assault for the Northern Territory was 5.5 times higher than the national rate (Figure 2.3.2). Of the 1,298 hospital cases in the Northern Territory, 87% (n=1,127) were recorded as being Aboriginal or Torres Strait Islander persons. The Australian Capital Territory and Victoria had rates significantly below the national average.



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

Figure 2.3.2: Assault injury cases, states and territories 2001–02; Persons (age-standardised rates)

Body part

The majority of hospital cases due to assault involved injuries to the head (Table 2.3.2).

Table 2.3.2: Principal diagnosis by body region for assault; Australia 2001–02

	Males		Females		Persons	
Principal diagnosis by body region	**Count**	**%**	**Count**	**%**	**Count**	**%**
Head	10,557	67.0	2,911	53.5	13,469[(a)]	63.5
Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis)	1,802	11.4	845	15.5	2,647	12.5
Shoulder and upper limb	2,436	15.5	842	15.5	3,278	15.5
Hip and lower limb	618	3.9	340	6.3	958	4.5
Other injuries not specified by body region	353	2.2	500	9.2	853	4.0
All body regions	**15,766**	**100.0**	**5,438**	**100.0**	**21,205[(a)]**	**100**

[(a)] Includes 1 separation for which sex was not reported.

Mechanism

Of the 15,766 male cases, 56% (n=8,829) were due to *Assault by bodily force*, 14% (n=2,159) were due to *Assault by a blunt object*, 13% (n=1,983) were *Assault by a sharp object*, and 12% (n=1,868) were *Assault by unspecified means*.

For the 5,438 female cases, *Assault by bodily force* accounted for 44% of hospital cases (n=2,368), 19% (n=1,024) were due to *Other maltreatment syndromes* (e.g. physical or sexual abuse, torture), 13% (n=702) were due to *Assault by a blunt object*, 9% (n=480) were *Assault by a sharp object*, 8% (n=423) were *Assault by unspecified means*, and 2% (n=120) were *Sexual assault by bodily force*.

Table 2.3.3: External cause of assault injury cases; Australia 2001–02

ICD-10-AM Code	Indicator	Males		Females		Persons	
		Count	%	Count	%	Count	%
X85	Assault by drugs, medicaments and biological substances	21	0.1	60	1.1	81	0.4
X86–X90	Assault by corrosive substances, pesticides, gases and vapours, other specified or unspecified chemicals and noxious substances	8	0.1	11	0.2	19	0.1
X91	Assault by hanging, strangulation and suffocation	20	0.1	20	0.4	40	0.2
X92	Assault by drowning and submersion	0	0.0	0	0.0	0	0.0
X93	Assault by handgun discharge	65	0.4	6	0.1	71	0.3
X95	Assault by other and unspecified firearm discharge	57	0.4	8	0.2	65	0.3
X96–97	Assault by explosive material or smoke, fire and flames	14	0.1	15	0.3	29	0.1
X98	Assault by steam, hot vapours and hot objects	23	0.2	13	0.2	36	0.2
X99	Assault by sharp object	1,983	12.6	480	8.8	2,463	11.6
Y00	Assault by blunt object	2,159	13.7	702	12.9	2,861	13.5
Y01	Assault by pushing from a high place	17	0.1	20	0.4	37	0.2
Y02–Y03	Assault by pushing or placing victim before moving object or crashing of motor vehicle	18	0.1	7	0.1	25	0.1
Y04	Assault by bodily force	8,829	56.0	2,368	43.6	11,197	52.8
Y05	Sexual assault by bodily force	17	0.1	120	2.2	137	0.7
Y06	Neglect and abandonment	33	0.2	29	0.5	62	0.3
Y07	Other maltreatment syndromes	272	1.7	1,024	18.8	1,296	6.1
Y08	Assault by other specified means	286	1.8	118	2.2	404	1.9
Y09	Assault by unspecified means	1,868	11.9	423	7.8	2,292[(a)]	10.8
Y35	Legal intervention	54	0.3	4	0.1	58	0.3
Y36	Operations of war	*	*	*	*	*	*
Y89.0	Sequelae of legal intervention	21	0.1	8	0.2	29	0.1
Y89.1	Sequelae of war operations	*	*	*	*	*	*
	Total	**15,766**	**100.0**	**5,438**	**100.0**	**21,205[(a)]**	**100.0**

Note: Shaded areas indicate the highest 3 figures for a column.
[(a)] Includes 1 separation for which sex was not reported.
*Small counts are omitted.

Thirty-five per cent (n=5,494) of male hospital cases occurred in youth and young people aged 15–24 years and 49% (n=7,754) were in adults aged 25–44 years. Twenty-four per cent (n=1,307) of female hospital cases were in youth and young people aged 15–24 years and 56% (n=3,051) involved adults aged 25–44 years. Only 4% involved children aged 0–14 years (males n=524; females n=312).

Length of stay

Mean length of stay for assault was elevated in young children 0–4 years and declined in older children and then gradually rose with age (Figure 2.3.3).

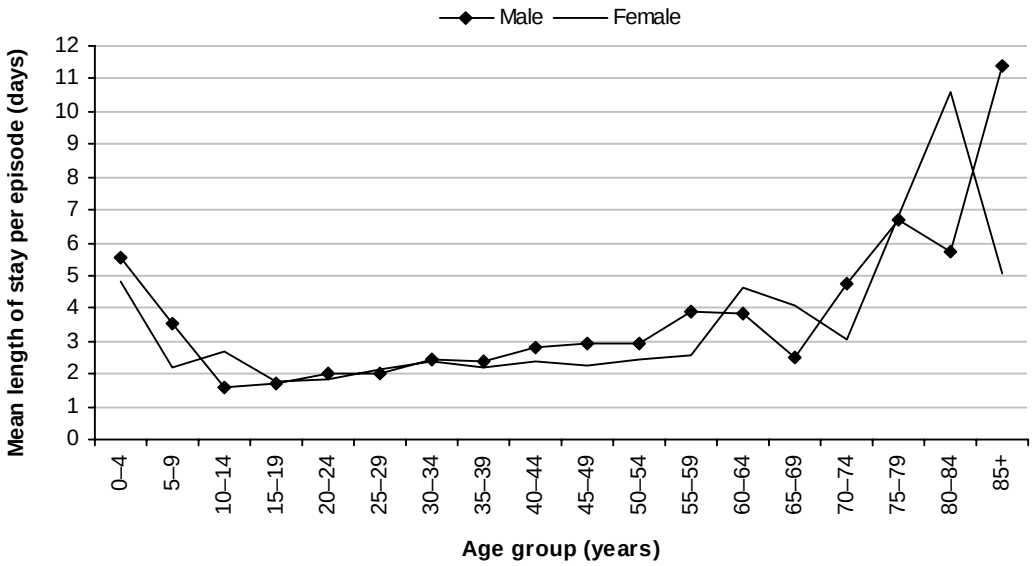


Figure 2.3.3: Length of stay per episode for assault injury by age and sex; Australia 2001–02

Remoteness zones

Male and female age-standardised rates due to assault increase by remoteness of the person's usual residence, with markedly higher rates in remote and very remote areas (Figure 2.3.4). Rates were significantly higher for males than for females in major cities and regional zones, identical in the remote zone and lower (but not significantly) in the very remote zone.

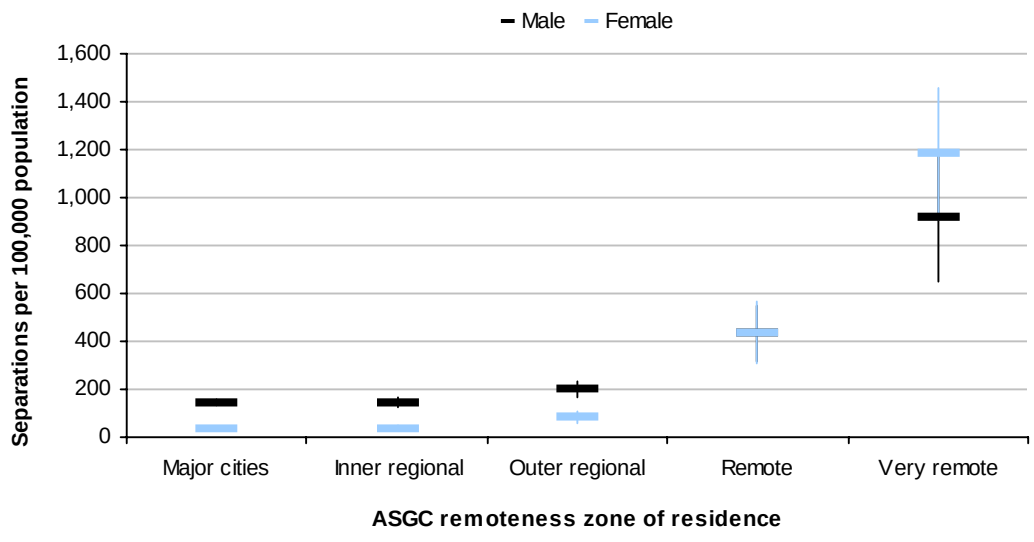


Figure 2.3.4: Age-standardised hospital separation rates for assault injury by ASGC remoteness zone and sex; Australia 2001–02

Place of occurrence

The hospitalisations from assault injury occurred in diverse locations. Most were unspecified (52%; n=10,972) or not reported (2%; n=349).

The following observations are restricted to those records in which the place of occurrence was specified. Around three-quarters of females were assaulted in the home—the exception being young women (15–24 years) who were also often injured in trade and service areas (which includes hotels and many other entertainment venues). Boys were most commonly injured in the home and at school. Young men (15–24 years) were often assaulted in a trade or service area (e.g. hotels) or on a street or highway. Trade and service areas were the most common place to be injured for males aged 25–44 years, and home was second. Older males (45+ years) were most frequently assaulted in the home.

Ascertainment of assault

As for intentional self-harm, there are reasons to think that the identification of admitted injury cases as being due to inter-personal violence is not entirely complete. Feelings of shame or embarrassment may underlie reticence to admit to both types of intentional injury. In addition, most injury due to inter-personal violence has potential legal implications. Pressures or incentives not to reveal assault are particularly likely in circumstances such as injury of a child or other dependent person by a care-giver, and injury of one spouse by the other. Cases recognised as possibly being due to assault, but where doubt remains, can be coded as undetermined intent (see Section 2.4).

Table 2.3.4: Place of occurrence for assault injury, by age and gender; Australia 2001–02

Place	0–14 yrs	%	15–24 yrs	%	25–44 yrs	%	45–64 yrs	%	65+ yrs	%	Total	%
Male												
Home	186	55.2	370	16.2	882	25.2	356	39.1	64	47.8	1,859[(a)]	25.9
Residential institution	4	1.2	87	3.8	192	5.5	23	2.5	9	6.7	315	4.4
School	84	24.9	48	2.1	*	*	*	*	0	0.0	136	1.9
Health service area	4	1.2	8	0.4	19	0.5	6	0.7	9	6.7	46	0.6
Other specified institution	*	*	55	2.4	60	1.7	10	1.1	*	*	129	1.8
Sports and athletics area	*	*	86	3.8	53	1.5	10	1.1	*	*	159	2.2
Street and highway	13	3.9	546	23.9	730	20.9	165	18.1	21	15.7	1,475	20.6
Trade and service area	12	3.6	697	30.5	1,087	31.1	203	22.3	17	12.7	2,016	28.1
Industrial and construction area	*	*	12	0.5	30	0.9	23	2.5	*	*	66	0.9
Farm	0	0.0	*	*	*	*	*	*	0	0.0	4	0.1
Other specified places	23	6.8	377	16.5	445	12.7	111	12.2	10	7.5	966	13.5
Total	**337**	**100**	**2,287**	**100**	**3,501**	**100.0**	**911**	**100.0**	**134**	**100**	**7,171[(a)]**	**100.0**
Female												
Home	145	74.7	348	59.8	1,090	74.8	276	74.0	83	77.6	1,942	71.6
Residential institution	5	2.6	*	*	11	0.8	10	2.7	*	*	32	1.2
School	12	6.2	15	2.6	*	*	*	*	0	0.0	28	1.0
Health service area	*	*	*	*	8	0.6	8	2.1	4	3.7	24	0.9
Other specified institution	*	*	7	1.2	7	0.5	*	*	0	0.0	17	0.6
Sports and athletics area	*	*	4	0.7	8	0.6	*	*	0	0.0	14	0.5
Street and highway	6	3.1	56	9.6	111	7.6	34	9.1	8	7.5	215	7.9
Trade and service area	7	3.6	77	13.2	96	6.6	18	4.8	6	5.6	204	7.5
Industrial and construction area	*	*	*	*	6	0.4	*	*	*	*	13	0.5
Farm	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Other specified places	12	6.2	70	12.0	119	8.2	22	5.9	*	*	224	8.3
Total	**194**	**100.0**	**582**	**100.0**	**1,457**	**100.0**	**373**	**100.0**	**107**	**100.0**	**2,713**	**100.0**

Note: Shaded areas indicate the highest 2 figures for a column. Records are restricted to those where place of occurrence is specified.
[(a)] Includes 1 separation for which sex was not reported.
*Small counts are omitted.

2.4 Undetermined intent

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79 and

First reported external cause: Y10–Y34, Y87.2

Table 2.4.1: Key indicators for undetermined intent injury cases; Australia 2001–02

Indicator	Males	Females	Persons
Cases	1,131	1,341	2,472
Percentage of all injury hospitalisations	0.6	1.0%	0.7%
Mean length of stay (days)	2.5	2.1	2.3
Total patient days	2,775	2,857	5,632
Crude rate/100,000 population	11.7	13.7	12.7
Age-standardised rate/100,000 population	11.7	13.8	12.7

Injuries where the intent is undetermined accounted for 1% of all injury hospitalisations in the financial year 2001–02 (Table 2.4.1). This section includes cases where intent was unspecified, unstated or could not be determined. Most such cases are uncertain self-harm or uncertain assault.

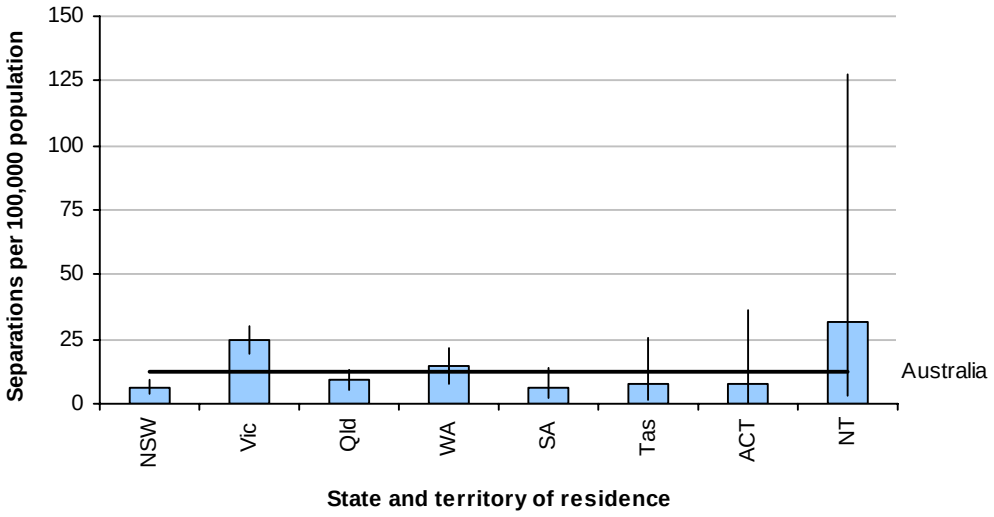
Age and sex distribution

More females than males were hospitalised for injuries of undetermined intent (based on age-standardised rates), with a M:F rate ratio of 0.8:1. Rates were low in children and peaked for youth and young people aged 15–24 years and gradually declined with age (Figure 2.4.1).

Figure 2.4.1: Age-specific hospital separation rates for injuries of undetermined intent by sex; Australia 2001–02

State and territory differences

New South Wales was the only jurisdiction significantly below the national average, and Victoria was the only jurisdiction to significantly exceed the national average (Figure 2.4.2).



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

Figure 2.4.2: Injuries of undetermined intent, states and territories 2001–02; Persons (age-standardised rates)

Length of stay

The mean length of stay for injuries of undetermined intent increased with age (Figure 2.4.3).

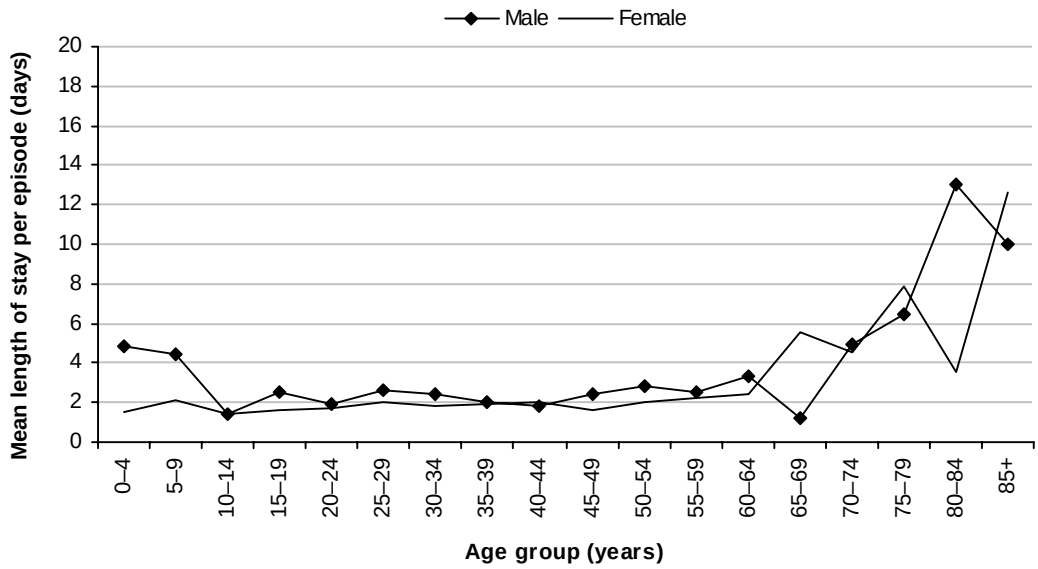


Figure 2.4.3: Length of stay per episode for injuries of undetermined intent by age and sex; Australia 2001–02

Remoteness zones

For injuries of undetermined intent, male and female age-standardised rates did not significantly increase by remoteness of the person's usual residence (Figure 2.4.4).

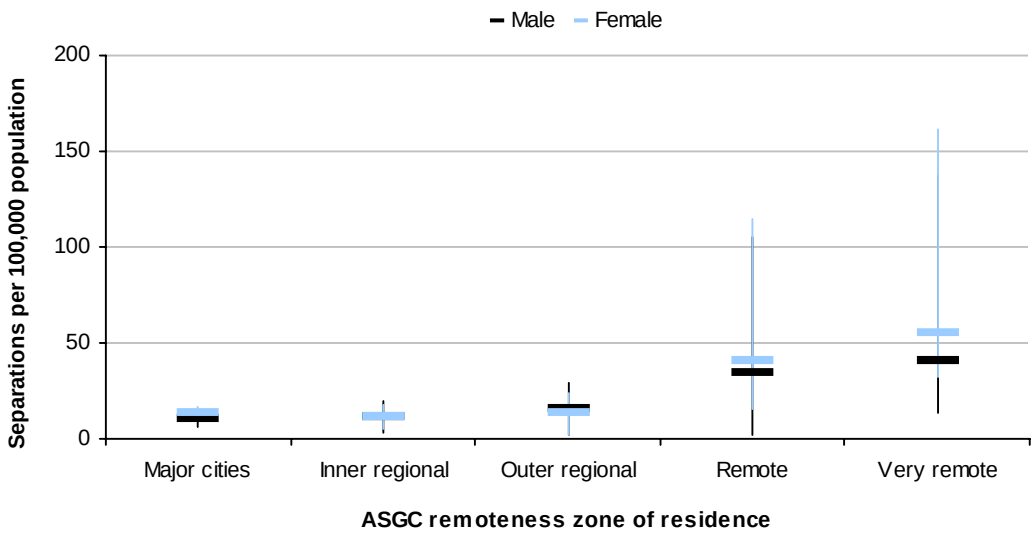


Figure 2.4.4: Age-standardised hospital separation rates for injuries of undetermined intent by ASGC remoteness zone and sex; Australia 2001–02

Mechanism

Overall, 77% of injuries of undetermined intent resulted from poisoning. Poisoning by antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs comprised 42% (n=1,033) of events of undetermined intent, of which benzodiazepines constituted 47% (n=486) and 16% (n=168) were other and unspecified antidepressants—likely to be selective serotonin reuptake inhibitors. Twelve per cent (n=300) were poisoning by nonopioid analgesics, antipyretics and antirheumatics, of which 84% (n=252) were 4-aminophenol derivatives such as paracetamol. For females, the 2 leading causes of hospitalisation were by poisoning, but for males the second most common cause of hospitalisation for males was contact with a sharp object (10%; n=117), rather than poisoning by nonopioid analgesics, antipyretics and antirheumatics.

Table 2.4.2: External cause of injuries of undetermined intent; Australia 2001–02

ICD-10-AM Code	Indicator	Males		Females		Persons	
		Count	%	Count	%	Count	%
	Poisoning by and exposure to:	754	66.7	1,146	85.5	1,900	76.9
Y10	• nonopioid analgesics, antipyretics and antirheumatics	*79*	*7.0*	*221*	*16.5*	*300*	*12.1*
Y11	• antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	*405*	*35.8*	*628*	*46.8*	*1,033*	*41.8*
Y12	• narcotics and psychodysleptics [hallucinogens]	*98*	*8.7*	*74*	*5.5*	*172*	*7.0*
Y13	• other drugs acting on the autonomic nervous system	*10*	*0.9*	*13*	*1.0*	*23*	*0.9*
Y14	• other and unspecified drugs, medicaments and biological substances	*69*	*6.1*	*143*	*10.7*	*212*	*8.6*
Y15	• alcohol	*48*	*4.2*	*41*	*3.1*	*89*	*3.6*
Y16	• organic solvents and their halogenated hydrocarbons and their vapours	*	*	*	*	*15*	*0.6*
Y17	• other gases and vapours (eg. Carbon monoxide)	*7*	*0.6*	*4*	*0.3*	*11*	*0.4*
Y18	• pesticides	*	*	*	*	*5*	*0.2*
Y19	• other and unspecified chemicals and noxious substances	*21*	*1.9*	*19*	*1.4*	*40*	*1.6*
Y20	Hanging, strangulation and suffocation	28	2.5	8	0.6	36	1.5
Y21	Drowning and submersion	*	*	*	*	*	*
Y22	Handgun discharge	*	*	*	*	*	*
Y24	Other and unspecified firearm discharge	*	*	*	*	18	0.7
Y25	Contact with explosive material	*	*	*	*	4	0.2
Y26	Exposure to smoke, fire and flames	6	0.5	4	0.3	10	0.4
Y27	Contact with steam, hot vapours and hot objects	*	*	*	*	4	0.2
Y28	Contact with sharp object	117	10.3	76	5.7	193	7.8
Y29	Contact with blunt object	16	1.4	9	0.7	25	1.0
Y30	Falling, jumping or pushed from a high place	53	4.7	20	1.5	73	3.0
Y31	Falling, lying or running before or into moving object	*	*	*	*	*	*
Y32	Crashing of motor vehicle	0	0.0	0	0.0	0	0.0
Y33	Other specified events	23	2.0	18	1.3	41	1.7
Y34	Unspecified event	95	8.4	52	3.9	147	6.0
Y87.2	Sequelae of events of undetermined intent	*	*	*	*	13	0.5
	Total	**1,131**	**100.0**	**1,341**	**100.0**	**2,472**	**100.0**

Note: Shaded areas indicate the highest 2 figures for a column.
*Small counts are omitted.

Place of occurrence

Location was not specified or reported for 44% of records (unspecified; n=1,078, not reported/not applicable; n=6). The following observations are restricted to those records in which the place of occurrence was specified. The majority of hospital cases resulted from injuries that occurred in the home (82%; n=1,141) (Table 2.4.3).

Table 2.4.3: Place of occurrence for injuries of undetermined intent; Australia 2001–02

Place	Persons	%
Home	1,141	82.2
Residential institution	21	1.5
School	15	1.1
Health service area	32	2.3
Other specified institution and public administrative area	*	*
Sports and athletics area	9	0.7
Street and highway	44	3.2
Trade and service area	47	3.4
Industrial and construction area	6	0.4
Farm	*	*
Other specified places	68	4.9
Total	**1,388**	**100.0**

*Small counts are omitted.

Part B: Unintentional injuries

2.5 Falls

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79 and

First reported external cause: W00–W19

Table 2.5.1: Key indicators for unintentional fall injury cases; Australia 2001–02

Indicator	Males	Females	Persons
Cases	51,839	64,264	116,104[(a)]
Percentage of all injury hospitalisations	26.5%	46.6%	34.8%
Mean length of stay (days)	4.7	7.2	6.1
Total patient days	244,769	461,387	706,157[(b)]
Crude rate/100,000 population	538.3	656.9	598.1
Age-standardised rate/100,000 population	572.8	590.5	598.1

[(a)] Includes 1 separation and [(b)] 1 patient day for which sex was not reported.
Patient days for 1 outlier separation were omitted.

This chapter covers unintentional falls. Falls were responsible for 35% of all hospitalisations in the financial year 2001–02 (Table 2.5.1).

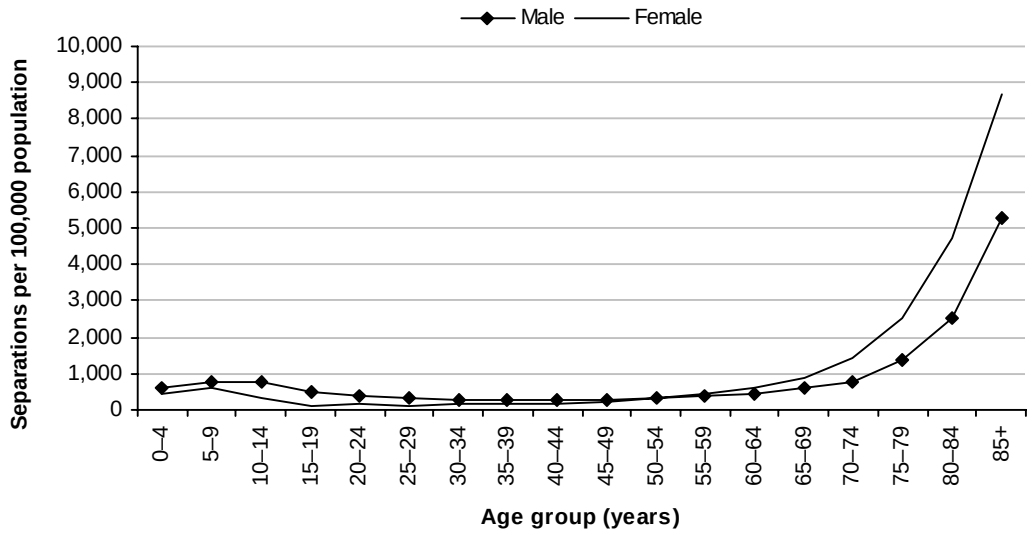
This report does not employ the method previously described (Kreisfeld & Harrison 2005) to allow for the absence in ICD-10-AM of an equivalent to ICD-9 code E887 *Fracture, cause unspecified* in Australian deaths data. The effect of this coding change was large in Australian deaths data for reasons that do not apply to Australian hospitals data. We have previously shown a small effect of the change based on early ICD-10-AM hospital data [Figure 3.1; (Cripps et al, 2002)]. Analysis of more recent data suggests that adjustment of hospital data for the lack of a code equivalent to E887 is unnecessary and may, in fact, introduce errors into time series.

There were similar numbers of females and male hospitalisations from fall injuries, based on age-standardised rates (M: F rate ratio of 1:1).

This chapter does not include falls due to intentional self-harm (n=148), assault (n=48) or falls of undetermined intent (n=76), falls associated with vehicles (n=76), falls from watercraft (n=51) or animals (n=2,383), falls from burning structures (n=158), or falls into water that resulted in drowning or other effects of immersion (n=82).

Age and sex distribution

The age-specific rates for males are females were similar until the age of 65 years after which female rates were in excess (Figure 2.5.1). Rates for both sexes rose steeply from 70 years.

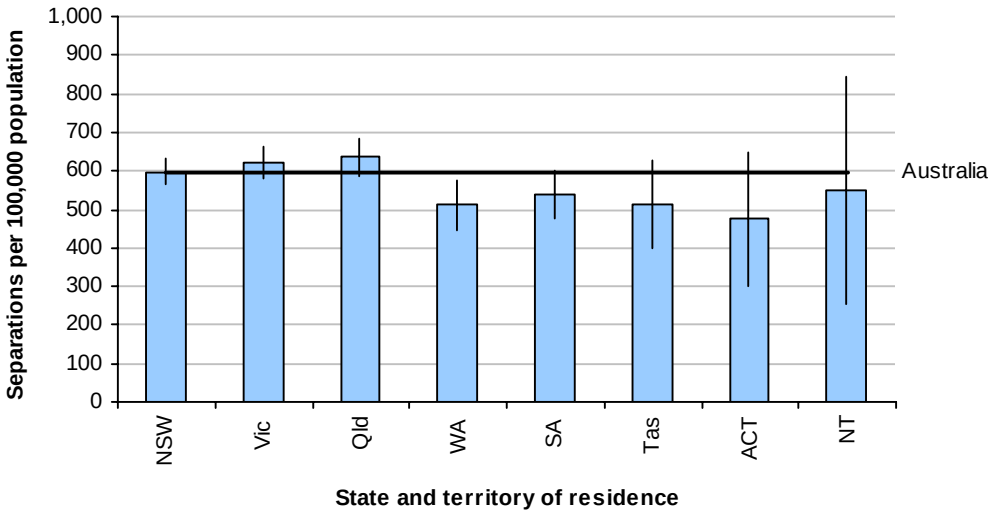


Note: One outlier separation was omitted from calculations of length of stay due to a coding anomaly.

Figure 2.5.1: Age-specific hospital separation rates for unintentional fall injury by sex; Australia 2001–02

State and territory differences

Western Australia was the only jurisdiction with fall injuries significantly lower than the national average (Figure 2.5.2).



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

Figure 2.5.2: Unintentional fall injury cases, states and territories 2001–02; Persons (age-standardised rates)

Body part

Six specific injury types accounted for 62% (n=71,649) of all fall injuries (n=116,104) (Table 2.5.2). *Fracture of the forearm* was the most common injury (19%), and the lower end of the radius was most frequently broken (50%; n=10,743). For the second most common fall injury—*fracture of femur* (16%), 90% were neck of femur fractures (neck of femur n=8,813; pertrochanteric n=7,045; subtrochanteric n=640). There were 2.5 times as many females as males with a broken femur. No specific site of injury was commonly involved for *fracture of the lower leg*. The upper (n=3,207) and lower end (n=2,941) of the humerus was most frequently broken (79%) for *fracture of shoulder and upper arm*. An open wound of the scalp was most common for *open wound of head* (40%; n=3,021). For *intracranial injury*, 67% (n=3,590) were concussive injury, the majority of which were concussion (n=1,421) or loss of consciousness for less than 30 minutes (n=1,658).

Table 2.5.2: Top 6 specific injuries for unintentional falls; Australia 2001–02

	Males		Females		Persons	
Indicator	**Count**	**Column %**	**Count**	**Column %**	**Count**	**Column %**
Fracture of forearm	10,050	19.4	11,565	18.0	21,616[(a)]	18.6
Fracture of femur	5,174	10.0	13,279	20.7	18,453	15.9
Fracture of lower leg, including ankle	4,774	9.2	6,144	9.6	10,918	9.4
Fracture of shoulder and upper arm	3,037	5.9	4,791	7.5	7,828	6.7
Open wound of head	3,937	7.6	3,535	5.5	7,472	6.4
Intracranial injury	3,232	6.2	2,130	3.3	5,362	4.6
Sub-total of top 6 specific injuries	**30,204**	**58.3**	**41,444**	**64.5**	**71,649[(a)]**	**61.7**

[(a)] Includes 1 separation for which sex was not reported.

Mechanism

The most common mechanism for all persons was *fall on same level from slipping, tripping and stumbling* for which females outnumbered males 2:1 (Table 2.5.3). Five times as many males as females were injured from a fall *due to collision with, or pushing by, another person*. Males outnumbered females for almost all injuries from outdoor activities e.g. 5: 1 for *falls on and from ladder*, 43:1 for *fall on and from scaffolding*, and 3: 1 for *falls involving ice-skates, skis, roller-blades or skateboards.*

Table 2.5.3: External causes of unintentional fall injury cases by sex; Australia 2001–02

ICD-10-AM Code	Indicator	Males		Females		Persons	
		Count	%	Count	%	Count	%
W00	Fall on same level involving ice and snow	20	0.0	23	0.0	43	0.0
W01	Fall on same level from slipping, tripping and stumbling	11,426	22.0	23,492	36.6	34,918	30.1
W02	Fall involving ice-skates, skis, roller-skates or skateboards	2,227	4.3	713	1.1	2,940	2.5
W03	Other fall on same level due to collision with, or pushing by, another person	3,797	7.3	792	1.2	4,590[(a)]	4.0
W04	Fall while being carried or supported by other persons	213	0.4	174	0.3	387	0.3
W05	Fall involving wheelchair	246	0.5	277	0.4	523	0.5
W06	Fall involving bed	1,365	2.6	2,394	3.7	3,759	3.2
W07	Fall involving chair	1,192	2.3	2,009	3.1	3,201	2.8
W08	Fall involving other furniture	473	0.9	416	0.7	889	0.8
W09	Fall involving playground equipment	2,955	5.7	2,615	4.1	5,570	4.8
W10	Fall on and from stairs and steps	2,869	5.5	4,414	6.9	7,283	6.3
W11	Fall on and from ladder	2,868	5.5	643	1.0	3,511	3.0
W12	Fall on and from scaffolding	216	0.4	5	0.0	221	0.2
W13	Fall from, out of or through building or structure	2,681	5.2	686	1.1	3,367	2.9
W14	Fall from tree	1,086	2.1	326	0.5	1,412	1.2
W15	Fall from cliff	118	0.2	51	0.1	169	0.2
W16	Diving or jumping into water causing injury other than drowning or submersion	332	0.6	78	0.1	410	0.4
W17	Other fall from one level to another	3,693	7.1	2,028	3.2	5,721	4.9
W18	Other fall on same level	5,165	10.0	8,094	12.6	13,259	11.4
W19	Unspecified fall	8,897	17.2	15,034	23.4	23,931	20.6
	Total	**51,839**	**100.0**	**64,264**	**100.0**	**116,104[(a)]**	**100.0**

Note: Shaded areas indicate the highest 2 figures for a column.
[(a)] Includes 1 separation for which sex was not reported.

Almost half of unintentional fall injuries occurred to people aged 65 years and over and 20% occurred to young children aged 0–14 years (Table 2.5.4). A third of unintentional fall injuries were sustained by females aged 65 years and over.

Table 2.5.4: Unintentional fall injury cases by age; Australia 2001–02

Age group	Males		Females		Persons	
	Count	%	Count	%	Count	%
0–14 years	14,560	28.1	8,979	14.0	23,540[(b)]	20.3
15–24 years	5,826	11.2	1,796	2.8	7,622	6.6
25–44 years	8,459	16.3	4,502	7.0	12,961	11.2
45–64 years	7,831	15.1	8,393	13.1	16,224	14.0
65+ years	15,163	29.3	40,593	63.2	55,756	48.0
Total	**51,839**	**100.0**	**64,264[(a)]**	**100.0**	**116,104[(b)]**	**100.0**

Includes 2 separations for which [(a)] age or [(b)] sex were not reported.

Figure 2.5.3 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 600 for clarity.

Falls involving playground equipment were the most common cause of injury for children under 10 years of age, especially in the age group 5–9 years (age-specific rate of 254.7 per 100,000 for males and 246.4 per 100,000 for females). The most frequent cause of injury for male children aged 10–14 was falls involving ice-skates, skis, roller-skates and skate-boards (age-specific rate of 146.3 per 100,000) whereas for female children aged 10–14 years it was falls from slipping, tripping and stumbling (67.6 per 100,0000). Young men (15–24 years) and adult males (25–29 years) were most likely to injure themselves from a collision with another person, with rates peaking in the 15–19 year age group (136.5 per 100,000). The most common cause of injury in males aged 30–34 years was slipping, tripping and stumbling (49.2 per 100,000) and this incrementally increased up to 1,928.7 per 100,000 in the 85+ year age group. The most common cause of injury in females aged 15–19 years was slipping, tripping and stumbling (31.0 per 100,000) and this incrementally increased up to 3,252.4 per 100,000 in the 85+ year age group.

Injuries involving a fall from a ladder were over 4 times more common in males than females and occurred mostly from middle age onwards, peaking at 82.5 per 100,000 in males aged 65–69 years.

Injuries resulting from falls involving a bed are uncommon except for in children aged 0–4 years (where rates are similar; 51.9 per 100,000 for males and 44.0 per 100,000 for females) and in the elderly (where female age-specific rates exceed males especially in the 85+ year age group; 302.7 per 100,000 for males and 552.6 per 100,000 for females).

Injuries resulting from falls on or from stairs and steps show similar trends for males and females, except rates are higher in the female, noticeably from 70+ years.

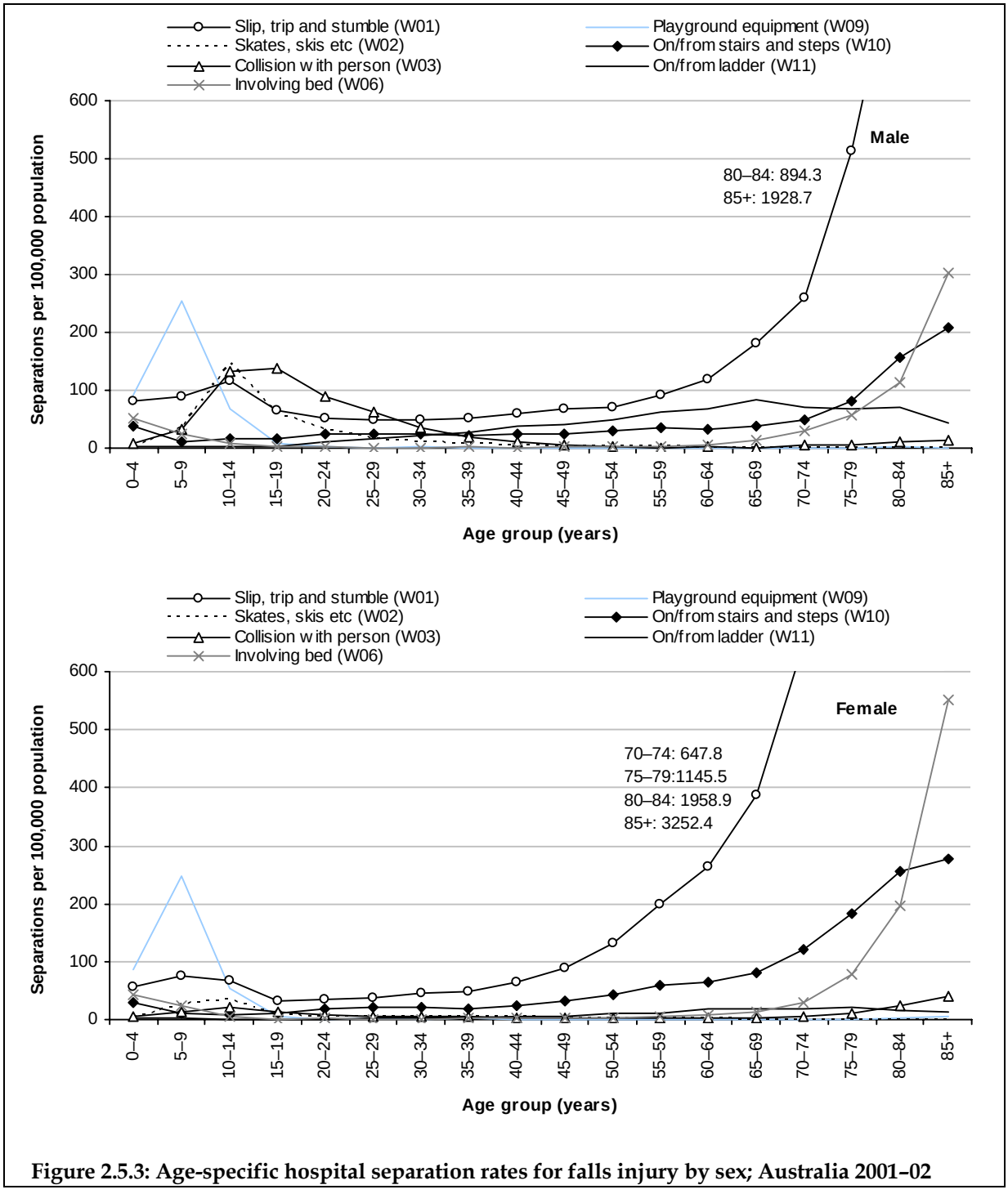
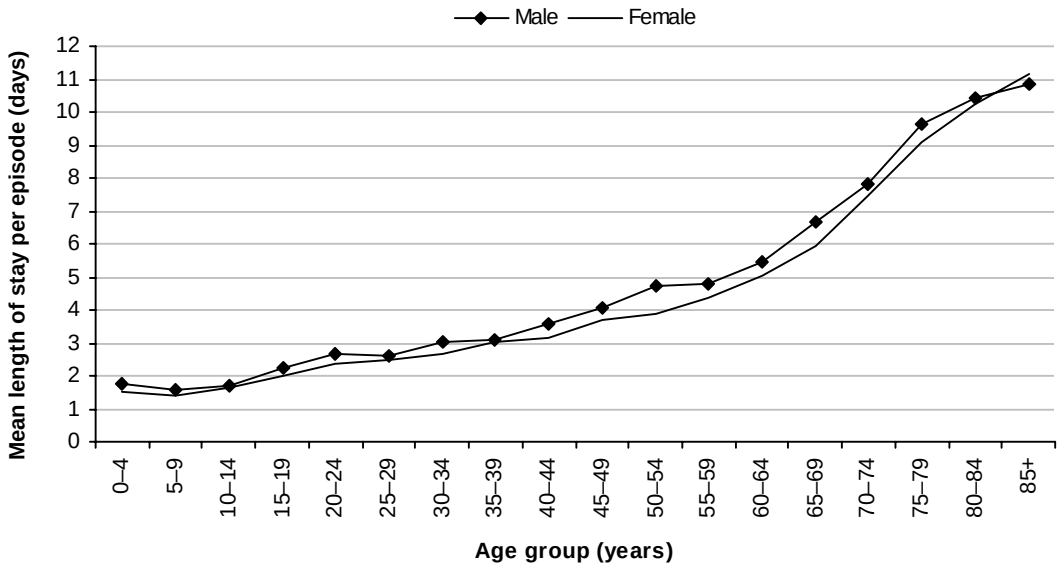


Figure 2.5.3: Age-specific hospital separation rates for falls injury by sex; Australia 2001–02

Length of stay

The mean length of stay for fall injury hospital cases rose with age (Figure 2.5.4).



Note: One outlier separation was omitted from calculations of length of stay due to a coding anomaly.

Figure 2.5.4: Length of stay per episode for falls injury by age and sex; Australia 2001–02

Remoteness zones

Rates of hospitalisation due to fall injuries did not increase materially by remoteness of the person's usual residence (Figure 2.5.5). Wide confidence intervals for remote zones reflect small case numbers.

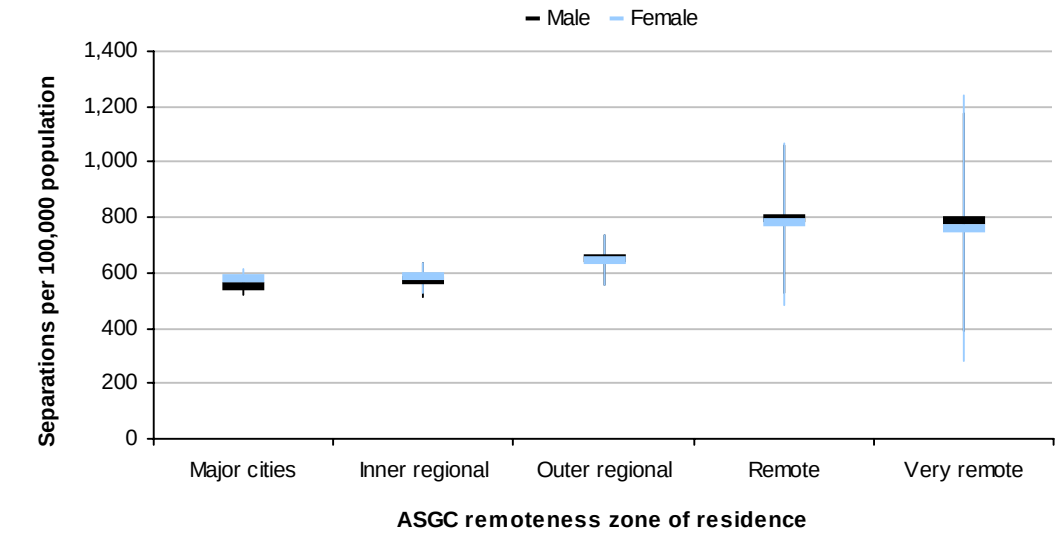


Figure 2.5.5: Age-standardised hospital separation rates for falls injury by ASGC remoteness zone and sex; Australia 2001–02

Place of occurrence

Falls resulting in hospitalisation due to unintentional falls injury occurred in diverse locations. Many were unspecified (27%; n=31,373) or not reported (0.1%; n=132).

The following observations are restricted to those records in which the place of occurrence was specified. Young children aged 0–14 years were most likely to sustain fall injuries in the home (males: 42%, females: 49%), followed by at school (males: 23%, females: 23%) (Table 2.5.5). Young men (15–24 years) sustained fall injuries most often in sports and athletics areas (51%), whereas the location for females of the same age was most commonly at home (27%) and in sports and athletic areas (26%). Males (31%) and females (48%) aged 25–44 years were most often injured by falls in the home. The majority of fall injuries in older adults occurred in the home, particularly for those aged 65+ years—62% of males and 60% of females. Almost 3 times as many elderly females as males sustained fall injuries in the home. Some older adults live in residential institutions. A substantial proportion of elderly females (15%; n=5,209) and males (11%; n=1,359) were injured in residential institutions. Twelve per cent (n=4,004) of elderly females and 11% of elderly males (n=1,313) admitted to hospital due to falls were injured in health service areas, which include hospitals, nursing homes, hospices and outpatient clinics.

Table 2.5.5: Place of occurrence of falls injury, by age and gender; Australia 2001–02

Place	0–14 yrs	%	15–24 yrs	%	25–44 yrs	%	45–64 yrs	%	65+ yrs	%	Total	%
Male												
Home	3,780	41.8	545	14.1	1,590	30.5	2,643	53.9	7,682	62.4	16,240	46.0
Residential institution	26	0.3	29	0.8	75	1.4	75	1.5	1,359	11.0	1,564	4.4
School	2,091	23.1	193	5.0	23	0.4	23	0.5	5	0.0	2,335	6.6
Health service area	23	0.3	13	0.3	62	1.2	92	1.9	1,313	10.7	1,503	4.3
Other specified institution	84	0.9	35	0.9	44	0.8	53	1.1	150	1.2	366	1.0
Sports and athletics area[(a)]	1,724	19.1	1,986	51.3	1,274	24.4	171	3.5	100	0.8	5,255	14.9
Street and highway	186	2.1	211	5.5	362	6.9	408	8.3	762	6.2	1,929	5.5
Trade and service area	170	1.9	205	5.3	440	8.4	427	8.7	495	4.0	1,737	4.9
Industrial and construction area	26	0.3	116	3.0	474	9.1	386	7.9	46	0.4	1,048	3.0
Farm	30	0.3	20	0.5	68	1.3	84	1.7	45	0.4	247	0.7
Other specified places	904	10.0	521	13.5	803	15.4	544	11.1	350	2.8	3,122	8.8
Total	**9,044**	**100.0**	**3,874**	**100.0**	**5,215**	**100.0**	**4,906**	**100.0**	**12,307**	**100.0**	**35,346**	**100.0**
Female												
Home	2,708	49.2	308	27.4	1,359	48.2	3,443	61.3	20,559	60.2	28,378[(b)]	57.6
Residential institution	*	*	*	*	26	0.9	73	1.3	5,209	15.2	5,332	10.8
School	1,287	23.4	62	5.5	36	1.3	59	1.1	18	0.1	1,462	3.0
Health service area	25	0.5	13	1.2	53	1.9	142	2.5	4,004	11.7	4,237	8.6
Other specified institution	41	0.7	15	1.3	41	1.5	74	1.3	445	1.3	616	1.3
Sports and athletics area	670	12.2	287	25.5	385	13.6	174	3.1	170	0.5	1,686	3.4
Street and highway	92	1.7	72	6.4	211	7.5	470	8.4	1,733	5.1	2,578	5.2
Trade and service area	136	2.5	123	10.9	297	10.5	456	8.1	1,270	3.7	2,282	4.6
Industrial and construction area	5	0.1	15	1.3	45	1.6	73	1.3	51	0.2	189	0.4
Farm	10	0.2	7	0.6	23	0.8	45	0.8	35	0.1	120	0.2
Other specified places	511	9.3	220	19.6	346	12.3	609	10.8	686	2.0	2,372	4.8
Total	**5,506**	**100.0**	**1,125**	**100.0**	**2,822**	**100.0**	**5,618**	**100.0**	**34,180**	**100.0**	**49,252[(b)]**	**100.0**

Note: Shaded areas indicate the highest 2 figures for a column. Records are restricted to those where place of occurrence is specified.
Includes 2 separations for which [(a)] age or [(b)] sex was not reported.

2.6 Transportation

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79 and

First reported external cause: V01–V99

Table 2.6.1: Key indicators for transport injury cases; Australia 2001–02

Indicator	Males	Females	Persons
Cases	33,406	15,383	48,790[(a)]
Percentage of all injury hospitalisations	17.1%	11.1%	14.6%
Mean length of stay (days)	4.8	4.7	4.8
Total patient days	160,059	71,762	231,875[(b)]
Crude rate/100,000 population	346.9	157.2	251.3
Age-standardised rate/100,000 population	345.0	157.2	251.3

[(a)] Includes 1 separation and [(b)] 54 patient days for which sex was not reported.

This section covers all transport hospitalisations including motor vehicle traffic and non-traffic, railway, water and air transport. Transportation accidents were responsible for 15% of all hospitalisations in the financial year 2001–02 (Table 2.6.1).

It excludes transport-related injury deaths that were registered as *intentional self-harm by jumping or lying before a moving object* (n=45), *intentional self-harm by crashing of motor vehicle* (n=48), *assault by pushing or placing victim before moving object* (n=11), *assault by crashing of motor vehicle* (n=14), *falling, lying or running before or into moving object, undetermined intent* (n=3) and *crashing of motor vehicle, undetermined intent* (n=0).

Of the 48,790 transport injury hospitalisations in 2001–02, 2% were water transport (male n=633, female n=178), 0.4% were air and space transport (male n=170, female n=40) and over 1% were other and unspecified transport (male n=490, female n=186).

Age and sex distribution

More males than females were hospitalised for transportation injuries (based on age-standardised rates), with a M:F rate ratio of 2.2:1. Males have a higher rate of transport injury hospitalisations at all ages, peaking in the 15–24 year age groups (Figure 2.6.1).

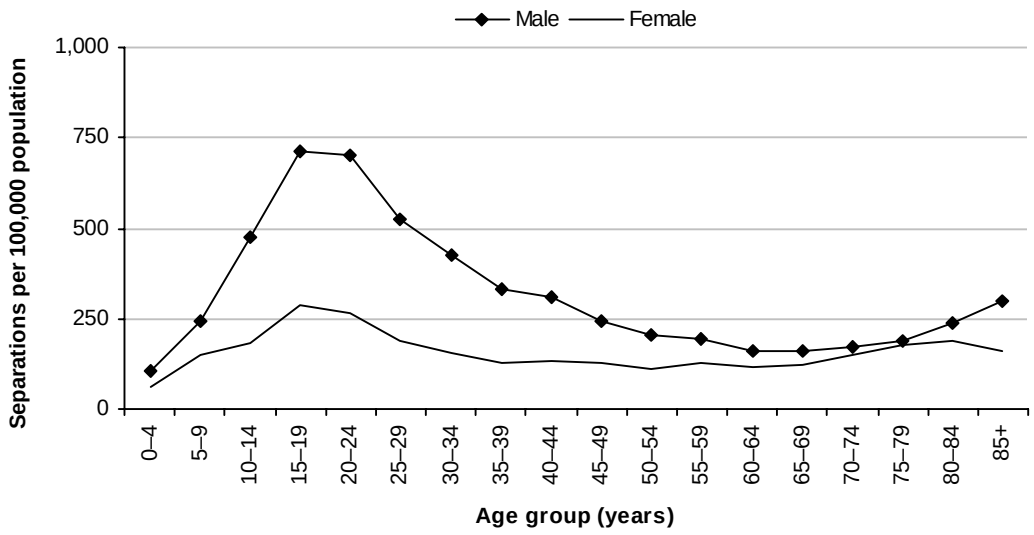
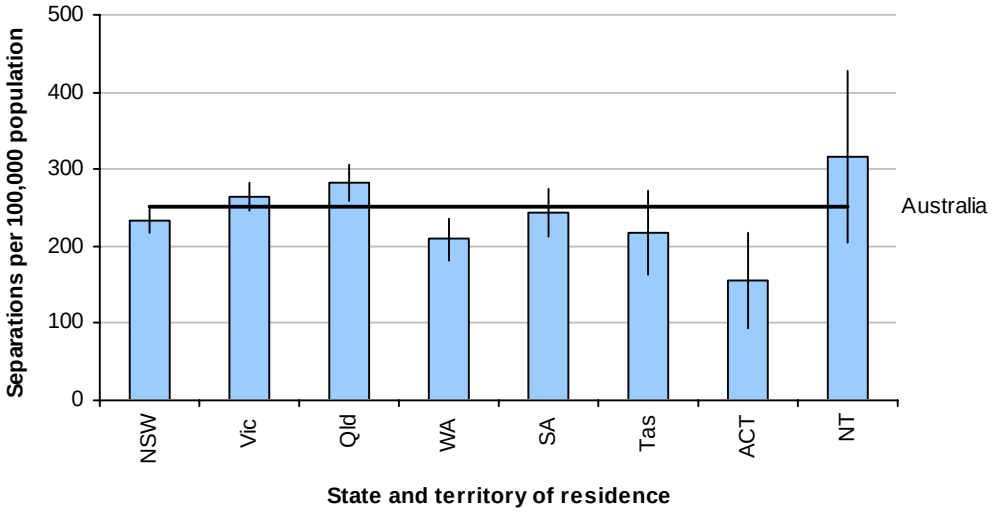


Figure 2.6.1: Age-specific hospital separation rates for unintentional transport injury by sex; Australia 2001–02

State and territory differences

Western Australia and the Australian Capital Territory were the only jurisdictions significantly lower than the national average for transport injuries (Figure 2.6.2).



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

Figure 2.6.2: Unintentional transport injury cases, states and territories 2001–02; Persons (age-standardised rates)

Body part

Injuries sustained in transportation accidents involved all major body regions with similar frequency (Table 2.6.2).

Table 2.6.2: Case counts and proportions by body region and sex for transport injury; Australia 2001–02

	Males		Females		Persons	
Indicator	**Count**	**%**	**Count**	**%**	**Count**	**%**
Head	8,167	24.5	3,621	23.5	11,789[(a)]	23.5
Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis)	7,923	23.7	5,506	35.8	13,429	27.5
Shoulder and upper limb	8,742	26.2	3,154	20.5	11,896	24.4
Hip and lower limb	7,977	23.9	2,826	18.4	10,803	22.1
Other injuries not specified by body region	597	1.8	276	1.8	873	1.8
All body regions	**33,406**	**100.0**	**15,383**	**100.0**	**48,790[(a)]**	**100.0**

[(a)] Includes 1 separation for which sex was not reported.

Length of stay

Mean length of stay for transportation injury hospital cases rose with age (Figure 2.6.3).

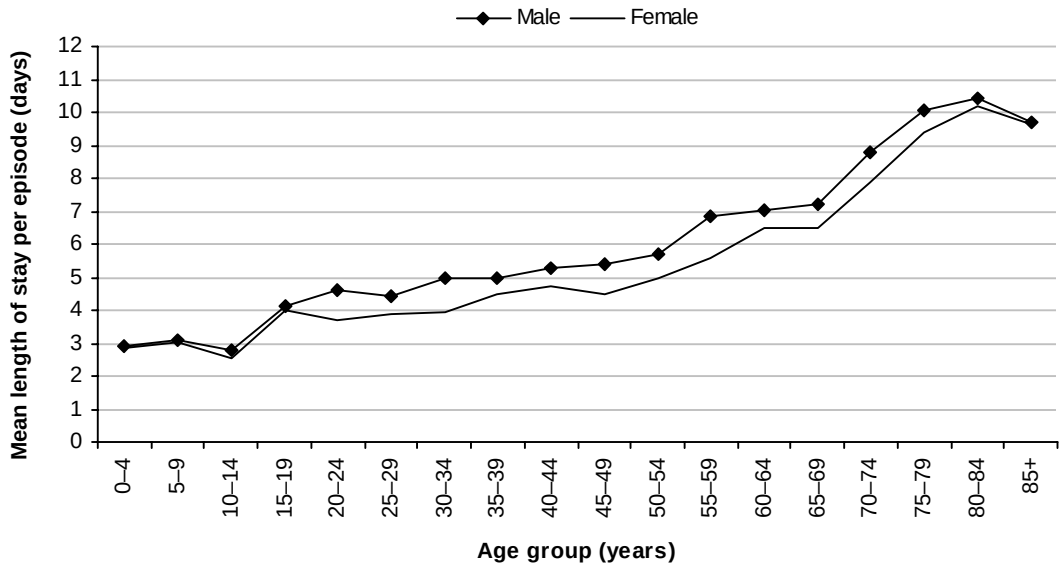


Figure 2.6.3: Length of stay per episode for transport injury cases by age and sex; Australia 2001–02

Remoteness zones

For transportation injury, male and female age-standardised rates of hospitalisation increased by remoteness of the person's usual residence, and male rates were significantly higher (Figure 2.6.4).

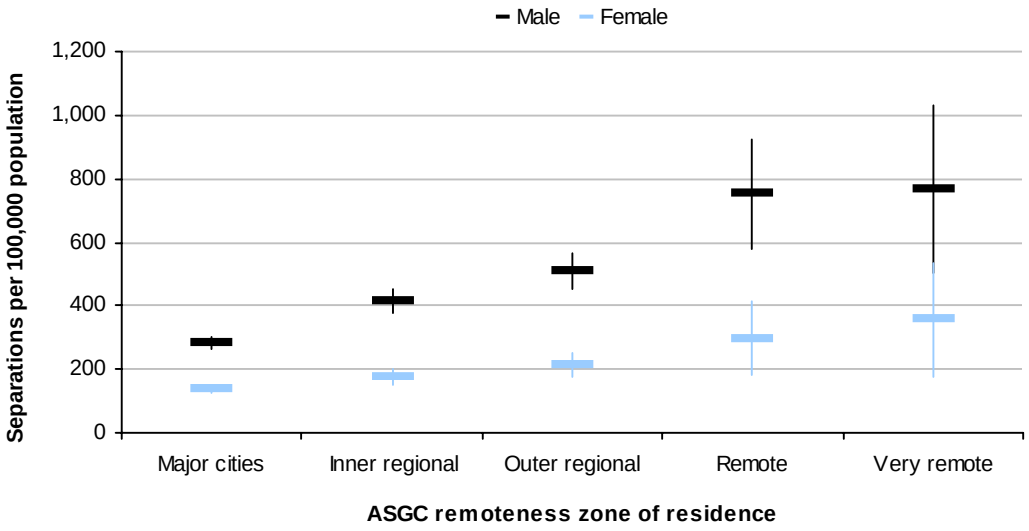


Figure 2.6.4: Age-standardised hospital separation rates for transport injury by ASGC remoteness zone and sex; Australia 2001–02

2.6.1 Land transportation

The following section concentrates on land transport accidents (n=47,093; see Table 2.6.3); 40% of people hospitalised due to land transport accidents were car occupants (n=18,888); 22% (n=10,264) were motorcycle riders; 16% (n=7,609) were pedal cyclists; and 9% (n=4,260) were pedestrians. More males than females were injured in land transportation accidents (based on age-standardised rates), with a M:F rate ratio of 2.2.

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, 61% were injured in traffic accidents (see Table 2.6.3).

Table 2.6.3 describes mode of transport for traffic and non-traffic cases. For traffic accident cases (n=28,769), the most frequent mode of transport of the injured person were cars (57%; n=16,339) or motorcycles (18%; n=5,124). There were gender differences; 76% of females injured in traffic accidents were car occupants (n=7,578) and 12% were pedestrians (n=1,162), whereas 47% of males were car occupants (n=8,761) and 25% were on a motorcycle (n=4,710).

For non-traffic accidents (n=13,325), the most frequent mode of transport were motorcycles (37%; n=4,898) followed by pedal cycles (30%; n=4,059). There were gender differences; the most common mode of transport for females injured in non-traffic accidents were pedal cycles (32%; n=784), followed closely by cars (31%; n=763), whereas the most common for males were motorcycles (42%; n=4,551), followed by pedal cycles (30%; n=3,275). Male case numbers exceeded females in most instances; an exception was bus occupant injuries, though these were not numerous.

Many injuries result from collision between a person's mode of transport and another vehicle, or collision with some other object. The other vehicle or object is often called the 'counterpart'. Table 2.6.4 details the counterpart in land transport crashes. A car, pick-up truck or van was the most frequently involved counterpart in a collision (33%; n=13,948), non-collision transport accidents were the second most common (32%; n=13,583) and collision with a fixed or stationary object was the third most common (14%; n=6,023).

Table 2.6.5 lists the 5 most common mechanisms of injury in land transport crashes as being 1) a collision of a car with either a car, pick-up truck or van, 2) a motorcycle in a non-collision transport accident, 3) a collision of a car with a fixed or stationary object, 4) a pedal cyclist in a non-collision transport accident and 5) a car in a non-collision transport accident.

Of pedestrians injured, 77% were hit by a car, pick-up truck or van. Fifty-three per cent of pedal cyclists were involved in a non-collision transport accident, and 13% were hit by a car, pick-up truck or van. Of motorcyclists, 47% were involved in non-collision transport accidents, 15% were hit by a car, pick-up truck or van and 11% collided with a fixed or stationary object. Fifty-two per cent of riders of three-wheeled motor vehicles were involved in non-collision transport accidents, and 17% collided with a fixed or stationary object. Of car occupants, 43% were involved in a collision with a car, pick-up truck or van, in 23% the car collided with a fixed or stationary object and 21% were involved in a non-collision transport accident. Forty-three per cent of pick-up truck or van occupants were involved in a non-collision transport accident, 16% when their vehicle hit a car, pick-up truck or van and 12% in a collision with a fixed or stationary object. Fifty-six per cent of heavy transport vehicle occupants were involved in a non-collision transport accident, in 9% the vehicle had collided with a fixed or stationary object and in 7% it hit a car, pick-up truck or van. Fifty per cent of bus occupants were involved in non-collision transport accidents, in 9% the bus hit a car, pick-up truck or van and in 7% it hit a fixed or stationary object.

For traffic accidents (n=28,769; Table 2.6.6) and non-traffic accidents (n=13,325; see Table 2.6.7), 17% and 22% of records, respectively, did not specify the road user type. The following observations for the injured person's vehicle are restricted to records in which road user type is specified.

For traffic and non-traffic pedal cyclist accidents, it was nearly always the cyclist and not a passenger who was injured (98%), reflecting that in most instances a pedal cycle has a sole occupant. Motorcycles are frequently ridden by one occupant; in 93% of motorcycle traffic accidents a rider was injured and only 7% injured a passenger. Similar proportions were observed for non-traffic accidents, with 96% injuring the rider and 4% a passenger. Most three-wheeled motor vehicle injuries were non-traffic and 93% were drivers, whereas only 70% of traffic-related accidents were drivers and 26% were passengers.

Drivers were the occupants most frequently injured in traffic and non-traffic related car accidents. The high proportion of drivers injured in car crashes relative to passengers reflects that a driver is almost always in a car when an accident occurs. The lower frequency of passengers injured should not be interpreted as meaning passengers are at lower risk of injury, but rather indicates that the presence of a passenger in a car is variable.

In traffic-related car accidents, 65% of those injured were drivers, 35% were passengers, and a person on the outside of the vehicle constituted only 0.4% of injuries. For non-traffic car accidents, 60% were drivers, 34% were passengers and 6% were a person on the outside of the vehicle. For occupants of a pick-up truck or van in a traffic accident, only 4% were a person on the outside of the vehicle, whereas in non-traffic accidents, this was 51%. A similar pattern was seen with heavy transport vehicle accidents; 34% of non-traffic accidents involved people on the outside of the vehicle, whereas this constituted only 1% of traffic-related accidents. Eighty-seven per cent of bus occupant injuries in traffic and non-traffic conditions were passengers and 12% were drivers. Of those transport accidents designated

unspecified (Table 2.6.8), the majority (59%; n=2,963) involved an animal rider or occupant of an animal-drawn vehicle.

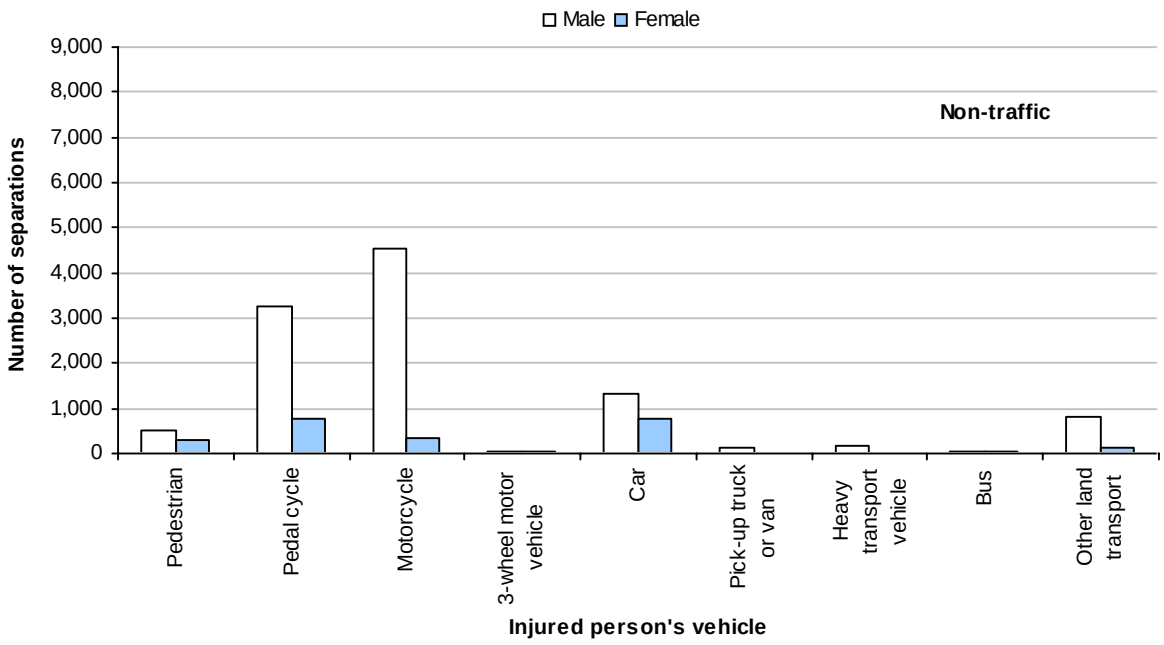
Table 2.6.3: Mode of transport for land transport injury cases; Australia 2001–02

Injured person's vehicle	Non-traffic accident	Traffic accident	Unspecified	Total
Males				
Pedestrian	535	1,833	273	2,641
Pedal cycle	3,275	2,689	200	6,164
Motorcycle	4,551	4,710	220	9,481
Three-wheeled motor vehicle	46	22	5	73
Car	1,326	8,761	219	10,306
Pick-up truck or van	130	167	49	346
Heavy transport vehicle	169	357	78	604
Bus	36	59	58	153
Animal or animal-driven vehicle	0	0	1,184	1,184
Other land transport	811	150	200	1,161
Total	**10,879**	**18,748**	**2,486**	**32,113**
Females				
Pedestrian	291	1,162	166	1,619
Pedal cycle	784	619	42	1,445
Motorcycle	347	414	22	783
Three-wheeled motor vehicle	35	13	0	48
Car	763	7,578	241	8,582
Pick-up truck or van	21	42	7	70
Heavy transport vehicle	8	21	5	34
Bus	47	96	98	241
Animal or animal-driven vehicle	0	0	1,778	1,778
Other land transport	150	76	153	379
Total	**2,446**	**10,021**	**2,512**	**14,979**
Persons				
Pedestrian	826	2,995	439	4,260
Pedal cycle	4,059	3,308	242	7,609
Motorcycle	4,898	5,124	242	10,264
Three-wheeled motor vehicle	81	35	5	121
Car	2,089	16,339	460	18,888
Pick-up truck or van	151	209	56	416
Heavy transport vehicle	177	378	83	638
Bus	83	155	156	394
Animal or animal-driven vehicle	0	0	2,963	2,963
Other land transport	961	226	353	1,540
Total[(a)]	**13,325**	**28,769**	**4,999[(b)]**	**47,093[(b)]**

Note: Shaded areas indicate the 2 highest figures for a column.

[(a)] Includes 1 separation for which sex was not reported.

[(b)] Excludes 1,697 hospital separations that are water, air and space, and other and unspecified transport.



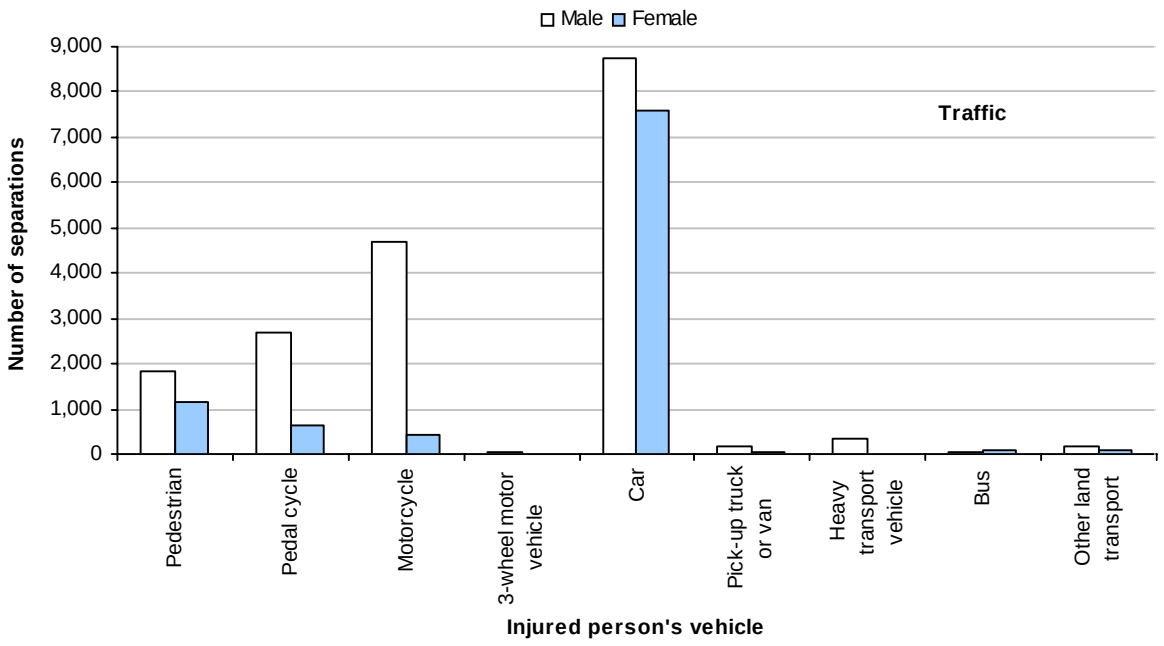


Figure 2.6.5: Mode of transport for land transport injury cases; Australia 2001–02

Table 2.6.4: Mechanism of injury for land transport injury cases; Australia 2001–02

	Counterpart in collision									
Injured person	**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**
Pedestrian	0	85	91	3,261	157	55	68	0	0	543
Pedal cyclist	30	161	19	989	42	*	*	360	4,017	1,984
Motorcycle rider	181	*	274	1,491	71	*	14	1,101	4,864	2,261
Occupant of three-wheeled motor vehicle	*	0	*	7	*	*	*	21	63	21
Car occupant	104	*	25	8,053	561	17	22	4,410	3,905	1,788
Occupant of pick-up truck or van	4	*	0	65	19	*	0	48	180	96
Occupant of heavy transport vehicle	0	0	0	46	42	8	0	55	356	131
Bus occupant	*	0	0	36	8	0	*	28	198	122
Total (n=42,590)[(a)]	**324**	**256**	**412**	**13,948**	**901**	**86**	**111**	**6,023**	**13,583**	**6,946**

[(a)] Excludes 4,503 hospital separations that are 'Other land transport accidents' and 1,697 hospital separations that are water, air and space, and other and unspecified transport.

Note: Shaded areas indicate the highest figure for a row.

*Small counts are omitted.

Table 2.6.5: Most common mechanisms of injury for land transport injury cases; Australia 2001–02

Type of collision	**Count**	**Percentage of episodes (N=42,590)[(a)]**
Car collides with car, pick-up truck or van	8,053	19
Motorcycle rider in non-collision transport accident	4,864	11
Car collides with fixed or stationary object	4,410	10
Pedal cyclist in non-collision transport accident	4,017	9
Car in non-collision transport accident	3,905	9
Total	**25,249**	**59**

[(a)] Excludes 4,503 hospital separations that are 'Other land transport accidents' and 1,697 hospital separations that are water, air and space, and other and unspecified transport.

Table 2.6.6: Mode of transport for traffic land transport injury cases; Australia 2001–02

Injured person's vehicle	Pedestrian	Driver	Passenger	Person boarding or alighting	Person on outside of vehicle	Not specified	Animal rider or occupant of animal-driven vehicle	Total (n=28,769)
Pedestrian	2,995	–	–	–	–	–	–	2,995
Pedal cycle	–	1,590	27	0	–	1,691	–	3,308
Motorcycle	–	3,254	230	0	–	1,640	–	5,124
3-wheeled motor vehicle	–	16	6	*	*	12	–	35
Car	–	9,657	5,264	0	59	1,359	–	16,339
Pick-up truck or van	–	113	55	0	7	34	–	209
Heavy transport vehicle	–	296	44	0	4	34	–	378
Bus	–	16	113	*	*	25	–	155
Other land transport	–	50	9	0	6	161	–	226

Table 2.6.7: Mode of transport for non-traffic land transport injury cases; Australia 2001–02

Injured person's vehicle	Pedestrian	Driver	Passenger	Person boarding or alighting	Person on outside of vehicle	Not specified	Animal rider or occupant of animal-driven vehicle	Total (n=13,325)
Pedestrian	826	–	–	–	–	–	–	826
Pedal cycle	–	2,777	52	0	–	1,230	–	4,059
Motorcycle	–	3,676	145	0	–	1,077	–	4,898
3-wheeled motor vehicle	–	69	4	*	*	7	–	81
Car	–	1,134	646	0	112	197	–	2,089
Pick-up truck or van	–	30	26	0	59	36	–	151
Heavy transport vehicle	–	67	12	0	41	57	–	177
Bus	–	6	47	*	*	29	–	83
Other land transport	–	509	81	0	129	242	–	961

Table 2.6.8: Mode of transport for land transport injury cases unspecified as to whether traffic or non-traffic; Australia 2001–02

Injured person's vehicle	Pedestrian	Driver	Passenger	Person boarding or alighting	Person on outside of vehicle	Not specified	Animal rider or occupant of animal-driven vehicle	Total (n=4,999)
Pedestrian	439	–	–	–	–	–	–	439
Pedal cycle	–	–	–	13	–	229	–	242
Motorcycle	–	–	–	14	–	228	–	242
3-wheeled motor vehicle	–	–	–	*	–	*	–	5
Car	–	–	–	234	–	226	–	460
Pick-up truck or van	–	–	–	22	–	34	–	56
Heavy transport vehicle	–	–	–	37	–	46	–	83
Bus	–	–	–	90	–	66	–	156
Animal/ animal-driven vehicle	–	–	–	–	–	–	2,963	2,963
Other land transport	–	–	71	142	35	105	–	353

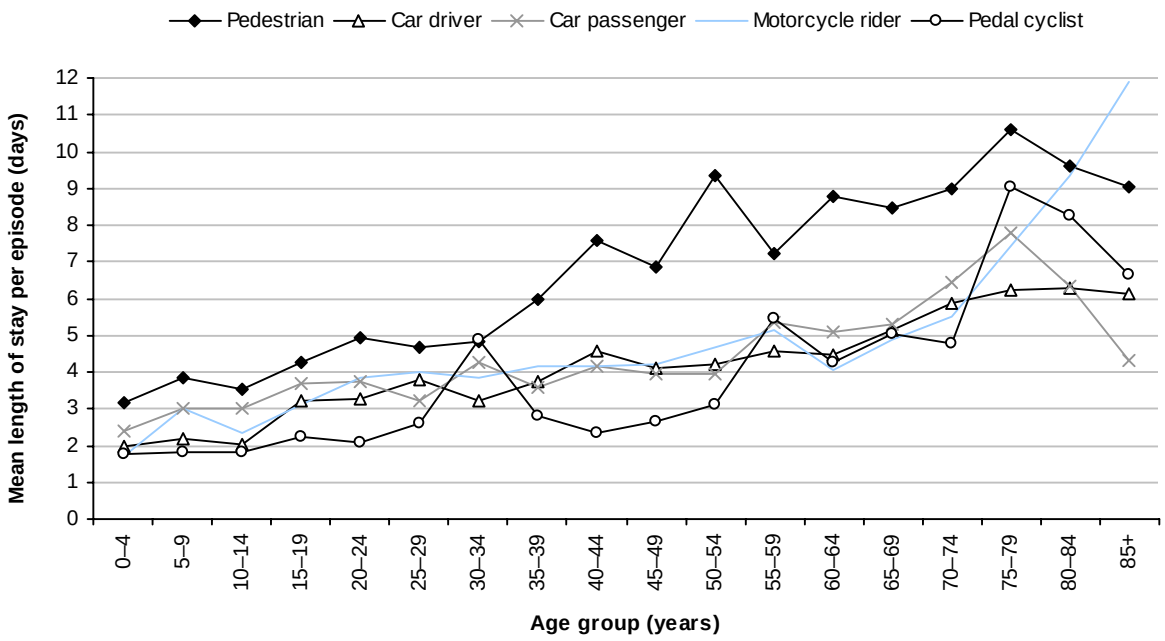


Figure 2.6.6: Length of stay per episode by injured person's vehicle; Australia 2001–02

Pedestrians contributed the most patient days for land transport injury and mean length of stay was greater for pedestrians than other road users at all ages except for the 85+ age group where the longest mean length of stay was for motor cycle injuries—due to small case numbers in this category (Figure 2.6.6).

Traffic accidents—age and sex distribution

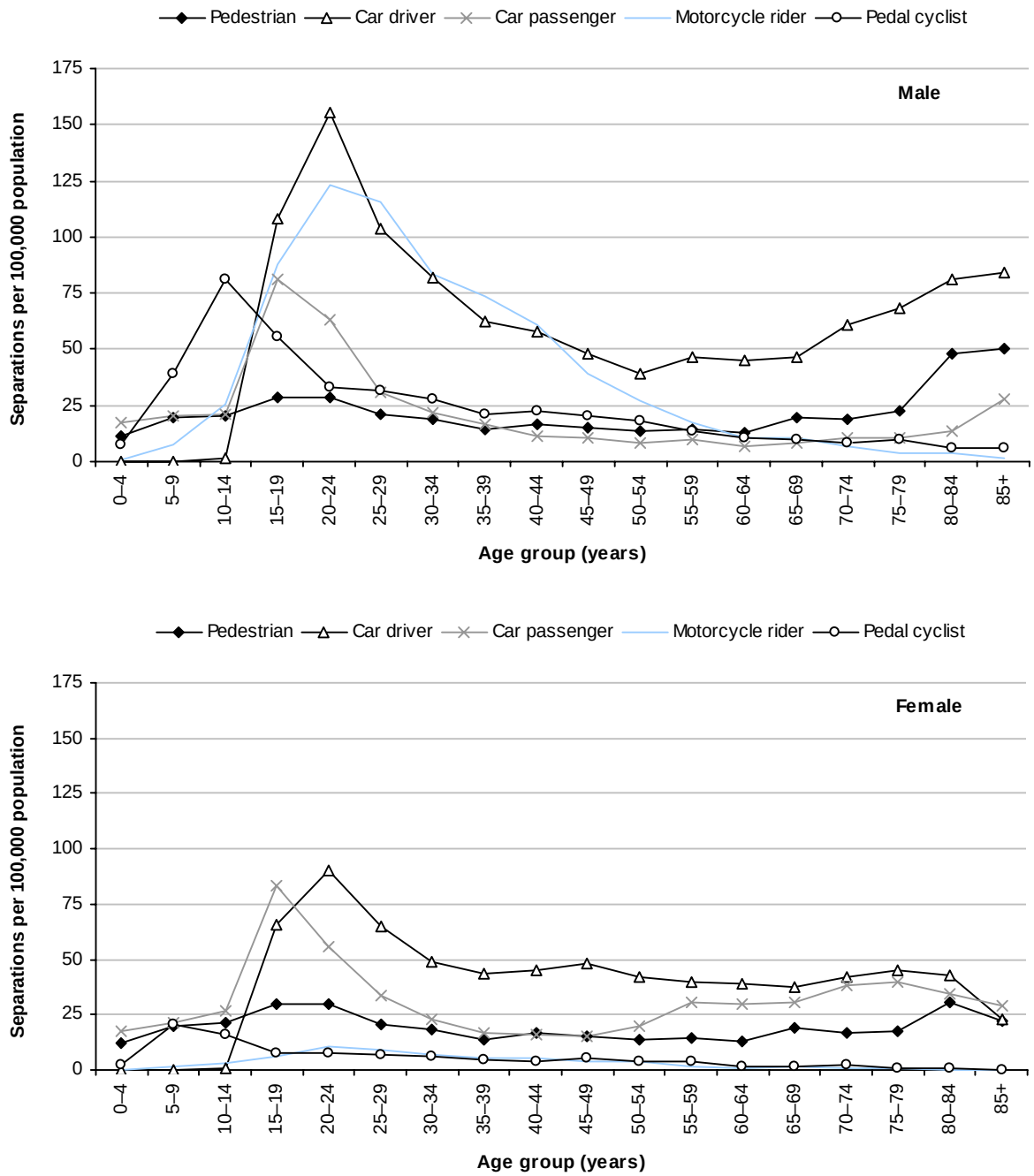


Figure 2.6.7: Traffic accidents—age-specific hospital separation rates by sex; Australia 2001–02

Car accidents were the most common cause of hospitalised traffic injury—male and female car driver rates of hospitalisation were highest between ages 15–24 years, and peaked in the 20–24 year age group (with male rates almost double female rates) (Figure 2.6.7). Motorcycle traffic injury was the second highest cause of hospitalisation for males (after car accidents) and peaked in the 20–24 year age group, but it was a relatively uncommon cause of injury for females. The second highest cause of injury for females was being a car passenger in a traffic accident, peaking in the 15–19 year age group. Pedal cyclist injury in a traffic accident occurred at higher rates in males than females and peaked in the 10–14 year age group. Pedestrian injury in a traffic accident occurred at similar rates for males and females and varied little across age groups except for an increase in the very old (80+ years).

Male rates of injury in traffic accidents exceed female rates mainly due to much higher rates while riding motorcycles and pedal cycles, and higher rates while driving cars (except in middle age).

Non-traffic accidents—age and sex distribution

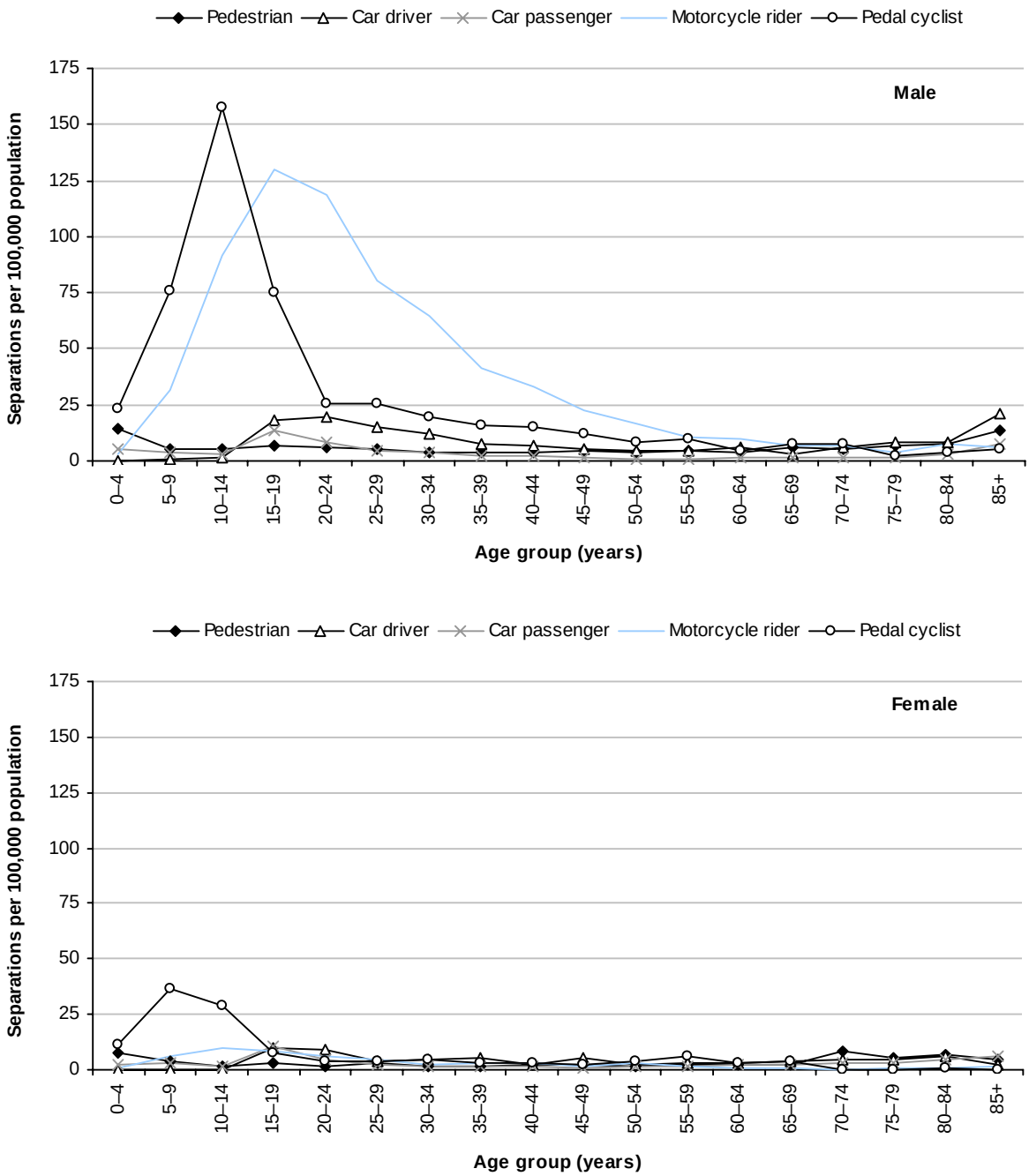


Figure 2.6.8: Non-traffic accidents—age-specific hospital separation rates by sex; Australia 2001–02

For males, motorcycle riders were most commonly involved in non-traffic injury, with injuries peaking in the 15–19 year age group, with an age-specific rate of 130.2 hospital separations per 100,000 population (Figure 2.6.8). Injury from riding a pedal cycle was the second highest cause of hospitalisation for males and the 10–14 year age group was most affected with an age-specific rate of 157.6 hospital separations per 100,000 population. Pedal cycle injury was the most common cause of non-traffic injury for females, but rates were much lower than for males—the age most affected was 5–9 years with 36.6 hospital separations per 100,000 population. Motorcycle injury was uncommon in females. Injury rates for pedestrian and car occupants were low for non-traffic accidents.

2.7 Poisoning, pharmaceuticals

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79 and

First reported external cause: X40–X44

Table 2.7.1: Key indicators for poisoning by pharmaceutical cases; Australia 2001–02

Indicator	Males	Females	Persons
Cases	3,613	4,114	7,728[a]
Percentage of all injury hospitalisations	1.8%	3.0%	2.3%
Mean length of stay (days)	2.1	2.0	2.0
Total patient days	7,549	8,275	15,825[b]
Crude rate/100,000 population	37.5	42.1	39.8
Age-standardised rate/100,000 population	37.4	42.2	39.8

[a] Includes 1 separation and [b] 1 patient day for which sex was not reported.

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. Poisoning by pharmaceuticals accounted for 2% of all injury hospitalisations in the financial year 2001–02 (Table 2.7.1).

This chapter does not include poisoning from non-pharmaceutical substances (n=2,722), intentional self-poisoning (n=19,172), poisoning by homicide (n=100) or poisoning of undetermined intent (n=1,900).

Age and sex distribution

More females than males were hospitalised for poisoning, pharmaceuticals (based on age-standardised rates) with a M:F rate ratio of 0.9:1. Rates of accidental poisoning were highest in children aged 0–4 years (males: 159.1 per 100,000, females: 145.6 per 100,000) but much lower in older children (Figure 2.7.1). Rates rose again for youth and young people (15–24 years) and then declined gradually with age.

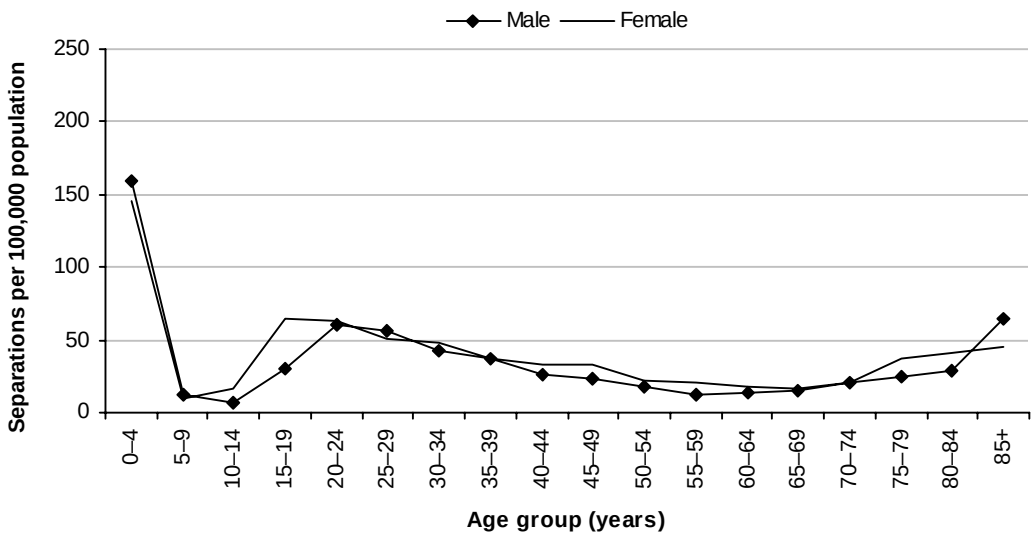
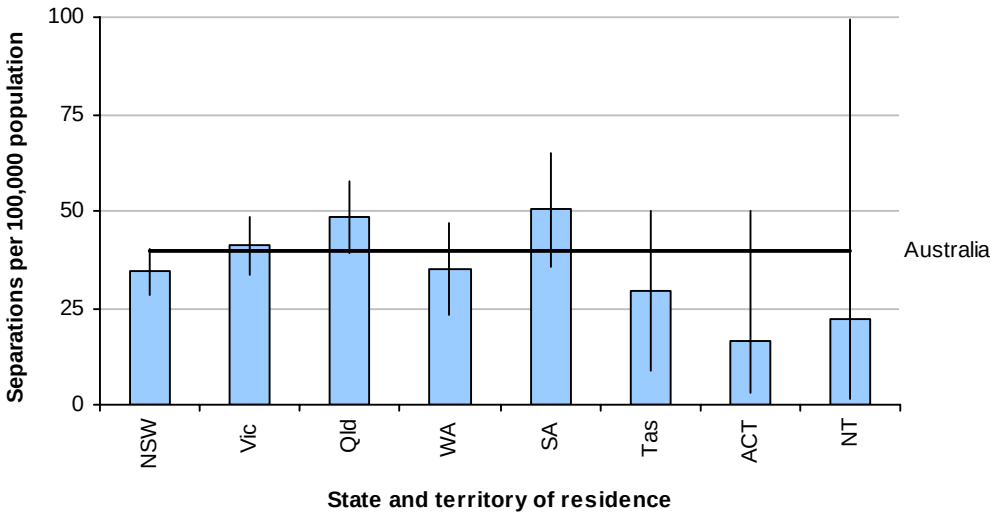


Figure 2.7.1: Age-specific hospital separation rates for poisoning by pharmaceuticals injury cases by sex; Australia 2001–02

State and territory differences

Rates for each of the states and territories were not significantly different from the national average and ranged from 16.6 per 100,000 in the Australian Capital Territory to 50.3 per 100,000 in South Australia (Figure 2.7.2).



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

Figure 2.7.2: Poisoning by pharmaceuticals injury cases, states and territories 2001–02; Persons (age-standardised rates)

Mechanism

Fourty-three per cent (n=3,326) of hospital cases were *accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkisonism and psychotropic drugs* (Table 2.7.2). This category includes benzodiazepines (40%; n=1,328), other and unspecified antidepressants—likely to be selective serotonin reuptake inhibitors (13%; n=447) and psychostimulants (12%; n=411). This category was responsible for the majority of hospitalisations of males and females under the age of 65 years.

Twenty-five per cent (n=1,931) of injury cases were *accidental poisoning by and exposure to other and unspecified drugs, medicaments, and biological substances*.

Sixteen per cent (n=1,264) of cases were *accidental poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics*—most of which were 4-aminophenol derivatives such as paracetamol (80%; n=1,009).

Twelve per cent (n=949) of injury cases were *accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified*—of which 32% (n=292) were heroin, 30% (n=282) were other opioids (e.g. codeine or morphine) and 11% (n=102) were methadone.

Three per cent (n=258) of injury cases were *accidental poisoning by and exposure to other drugs acting on the autonomic nervous system*.

In the context of the broader age groups identified in the National Injury Prevention and Promotion Plan: 2004–2014 (Strategic Injury Prevention Partnership 2005; Pointer et al, 2003), 60% of pharmaceutical poisonings occurred in either adults aged 25–44 years (31%; n=2,417) or young children aged 0–14 years (29%; n=2,271) (Table 2.7.2), and less commonly occurred in older people aged 65+ years (9%; n=661).

Table 2.7.2: Mechanism of pharmaceutical poisoning by age and gender; Australia 2001–02

ICD-10-AM Code	Accidental poisoning by and exposure to:	0–14 yrs	%	15–24 yrs	%	25–44 yrs	%	45–64 yrs	%	65+ yrs	%	Total	%
	Male												
X40	• nonopioid analgesics, antipyretics and antirheumatics	230	19.4	76	12.5	130	11.1	47	12.0	21	8.1	504	14.0
X41	• antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	269	22.7	316	52.1	637	54.5	190	48.5	62	23.9	1,474	40.8
X42[b]	• narcotics and psychodysleptics [hallucinogens]	41	3.5	142	23.4	253	21.6	67	17.1	43	16.6	546	15.1
X43	• other drugs acting on the autonomic nervous system	73	6.2	13	2.1	24	2.1	11	2.8	15	5.8	136	3.8
X44	• other and unspecified drugs, medicaments and biological substances	572	48.3	60	9.9	125	10.7	77	19.6	118	45.6	953[a]	26.4
	Total	**1,185**	**100.0**	**607**	**100.0**	**1,169**	**100.0**	**392**	**100.0**	**259**	**100.0**	**3,613[a]**	**100.0**
	Female												
X40	• nonopioid analgesics, antipyretics and antirheumatics	250	23.0	232	27.6	193	15.5	68	12.6	17	4.2	760	18.5
X41	• antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	297	27.4	389	46.3	736	59.0	306	56.9	124	30.9	1,852	45.0
X42	• narcotics and psychodysleptics [hallucinogens]	27	2.5	113	13.5	158	12.7	51	9.5	53	13.2	402	9.8
X43	• other drugs acting on the autonomic nervous system	67	6.2	10	1.2	24	1.9	5	0.9	16	4.0	122	3.0
X44	• other and unspecified drugs, medicaments and biological substances	445	41.0	96	11.4	137	11.0	108	20.1	192	47.8	978	23.8
	Total	**1,086**	**100.0**	**840**	**100.0**	**1,248**	**100.0**	**538**	**100.0**	**402**	**100.0**	**4,114**	**100.0**

Note: Shaded areas indicate the highest figure for a column.
Includes 2 separations for which [a] age or [b] sex was not reported.

Young children aged 0–4 years

A considerable proportion of accidental poisonings occurred in young children aged 0–4 years (25%; n=1,956), and most of these (88%) occurred in young children aged 1–3 years, whereas only 5% occurred in infants aged less than 1 year (Table 2.7.3). *Accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances* accounted for 47% (n=910) of poisonings. *Accidental poisoning by and exposure to antiepileptic, sedative-hypnotic and antiparkinsonism drugs* accounted for 24% of cases (n=461). This category included benzodiazepines (37%; n=171), other and unspecified antidepressants—likely to be selective serontonin reuptake inhibitors (15%; n=70) and psychostimulants (11%; n=52). *Accidental poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics* accounted for 21% of cases (n=408); most of which were 4-aminophenol derivatives such as paracetamol (83%; n=340). *Accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens]* and *other drugs acting on the autonomic nervous system* constituted only a small proportion of poisonings; 3% and 6%, respectively.

Table 2.7.3: Mechanism of poisoning by pharmaceuticals in children 0–4 years; Australia 2001–02

ICD-10-AM Code	Accidental poisoning by and exposure to:	Age at admission					
		0–11 months	1 year	2 year	3 year	4 year	Total
X40	• nonopioid analgesics, antipyretics and antirheumatics	18	112	179	79	20	408
X41	• antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	11	104	215	97	34	461
X42	• narcotics and psychodysleptics [hallucinogens]	*	14	24	10	*	54
X43	• other drugs acting on the autonomic nervous system	9	28	54	24	8	123
X44	• other and unspecified drugs, medicaments and biological substances	52	217	399	174	68	910
Total		**94**	**475**	**871**	**384**	**132**	**1,956**
Per cent		**4.8**	**24.3**	**44.5**	**19.6**	**6.7**	**100.0**

*Small counts are omitted.

Length of stay

Mean length of stay for poisoning by pharmaceuticals increased with age (Figure 2.7.3).

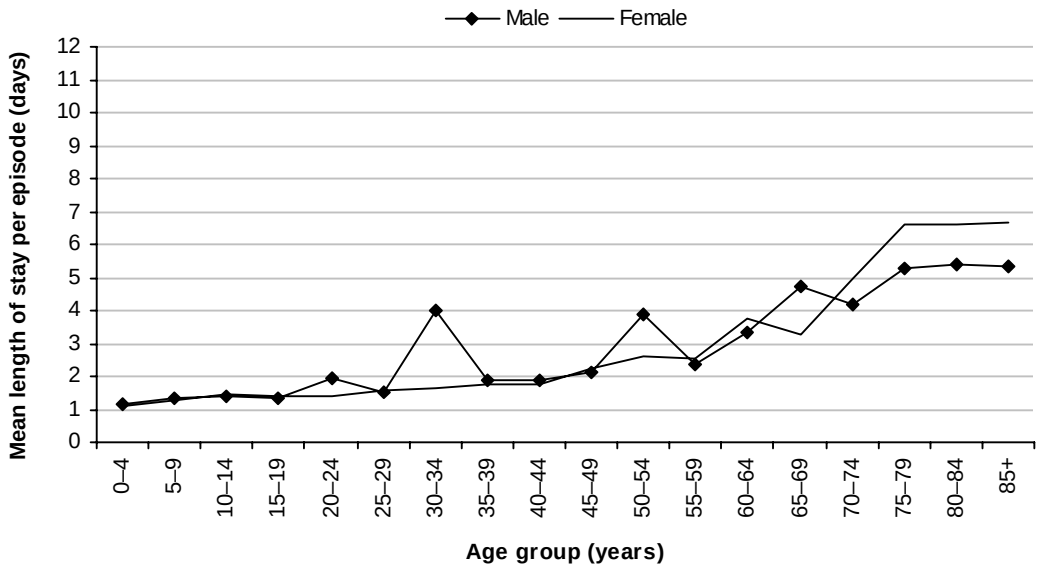


Figure 2.7.3: Length of stay per episode for poisoning by pharmaceuticals by age and sex; Australia 2001–02

Remoteness zones

Male and female age-standardised rates of hospitalisation for poisoning by pharmaceuticals did not increase by remoteness of the person's usual residence (Figure 2.7.4).

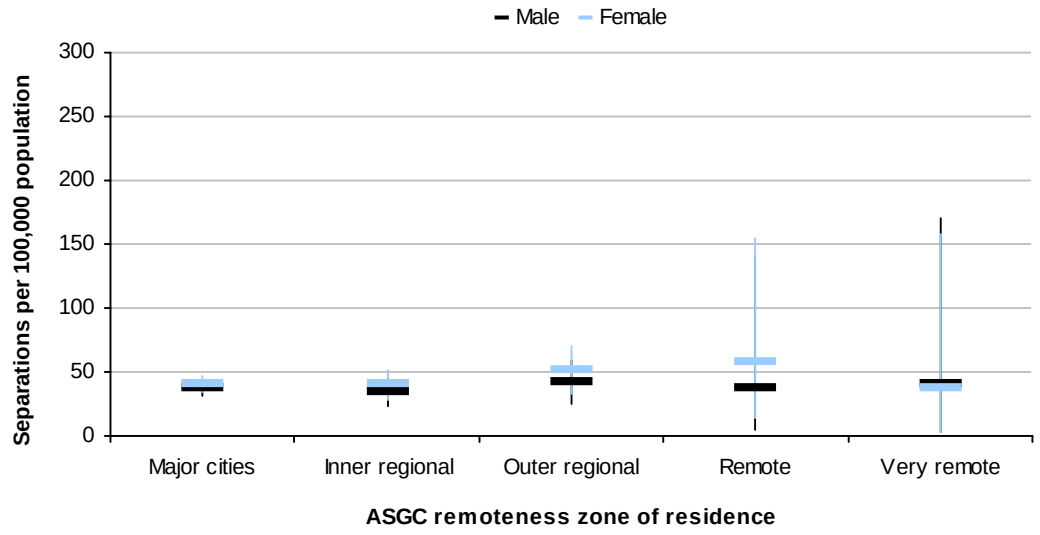


Figure 2.7.4: Age-standardised hospital separation rates for poisoning by pharmaceuticals injury by ASGC remoteness zone and sex; Australia 2001–02

Place of occurrence

Location was not specified or reported for 30% of records (unspecified; n=2,329, not reported/not applicable; n=14). The following observations are restricted to those records in which the place of occurrence was specified. The majority of hospitalised cases due to poisoning by pharmaceuticals occurred in the home (87%; n=4,701) (Table 2.7.4).

Table 2.7.4: Place of occurrence of poisoning by pharmaceuticals; Australia 2001–02

Place	Persons	%
Home	4,701	87.3
Residential institution	103	1.9
School	32	0.6
Health service area	153	2.8
Other specified institution and public administrative area	17	0.3
Sports and athletics area	8	0.2
Street and highway	67	1.2
Trade and service area	141	2.6
Industrial and construction area	14	0.3
Farm	6	0.1
Other specified places	143	2.7
Total	**5,385**	**100.0**

2.8 Poisoning, other substances

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79 and

First reported external cause: X45–X49

Table 2.8.1: Key indicators for poisoning by other substances; Australia 2001–02

Indicator	Males	Females	Persons
Cases	1,674	1,048	2,722
Percentage of all injury hospitalisations	0.9%	0.8%	0.8%
Mean length of stay (days)	1.8	1.7	1.8
Total patient days	3,085	1,814	4,899
Crude rate/100,000 population	17.4	10.7	14.0
Age-standardised rate/100,000 population	17.3	10.8	14.0

This chapter includes hospitalisations arising from the toxic effects of accidental contact with substances which are chiefly non-medicinal. These accounted for 1% of all injury hospitalisations in the financial year 2001–02 (Table 2.8.1).

Age and sex distribution

More males than females were hospitalised for poisoning by other substances (based on age-standardised rates) with a M:F rate ratio of 1.6:1. Rates of accidental poisoning from non-medicinal sources were highest in children aged 0–4 years (males: 58.7 per 100,000, females: 44.3 per 100,000) but much lower in older children. Rates rose for youth and young people (15–24 years) and then declined gradually with age.

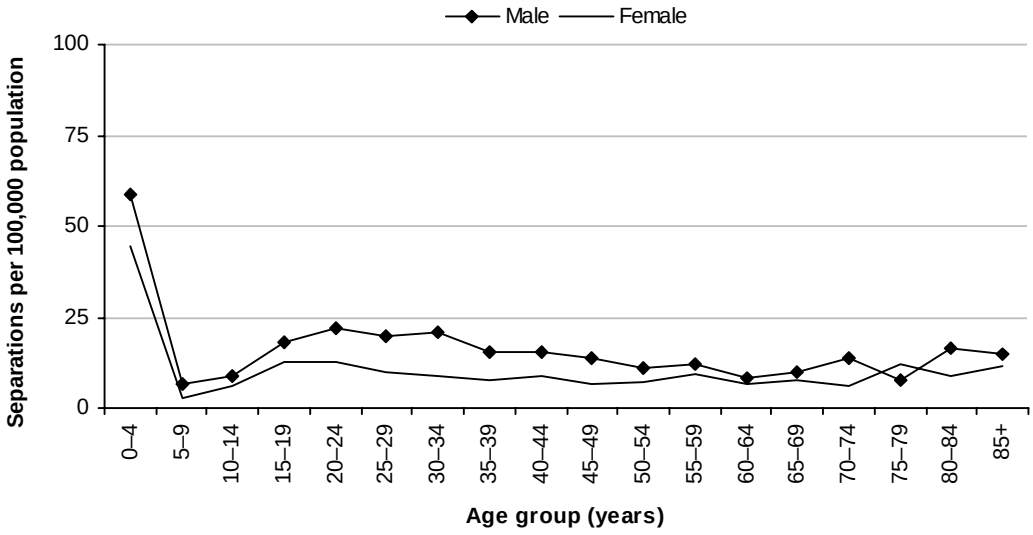
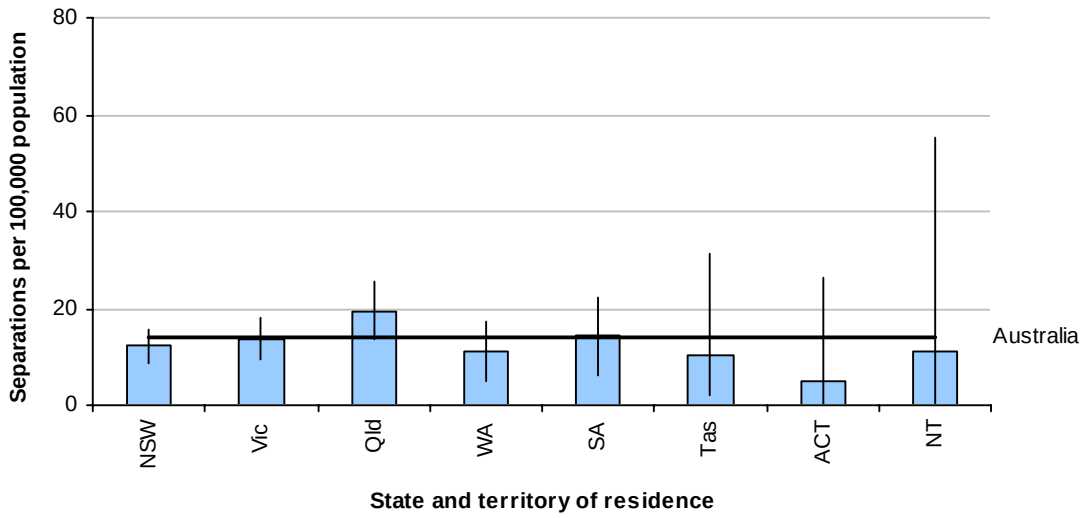


Figure 2.8.1: Age-specific hospital separation rates for poisoning by other substances by sex; Australia 2001–02

State and territory differences

Rates for each of the states and territories were not significantly different from the national average and ranged from 4.8 per 100,000 in the Australian Capital Territory to 19.6 per 100,000 in Queensland (Figure 2.8.2).



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

Figure 2.8.2: Poisoning by other substances injury cases, states and territories 2001–02; Persons (age-standardised rates)

Mechanism

Almost 60% of hospitalisations from non-medicinal poisoning were as a result of *accidental poisoning and exposure to other and unspecified chemicals and noxious substances* (n=1,606) (Table 2.8.2). In this category, 36% (n=583) were toxic effects of other noxious substances eaten as food (Principal Diagnosis of T62) which includes toxic reaction to ingested mushrooms and berries but excludes gastroenteritis or analphylactic shock. Fourteen per cent of hospitalisations were as a result of *accidental poisoning and exposure to alcohol*, and most were ethanol (70%; n=260). Ten per cent of hospitalisations were from *accidental poisoning and exposure to pesticides*, and 44% (n=113) were from organophosphate and carbamate insecticides (Principal Diagnosis of T60.0). Nine per cent of hospitalisations were from *accidental poisoning by and exposure to other gases and vapours*. Eight per cent of hospitalisations were from *accidental poisoning by and exposure to organic solvents and halogenated hydrocarbons and their vapours*, and 40% (n=91) were from petroleum products (Principal Diagnosis of T52.0).

Table 2.8.2: External causes of poisoning by other substances, by sex; Australia 2001–02

ICD-10-AM Code	Accidental poisoning by and exposure to:	Males		Females		Persons	
		Count	%	Count	%	Count	%
X45	• Alcohol	226	13.5	149	14.2	375	13.8
X46	• Organic solvents and halogenated hydrocarbons and their vapours	157	9.4	70	6.7	227	8.3
X47	• Other gases and vapours	185	11.1	70	6.7	255	9.4
X48	• Pesticides	169	10.1	90	8.6	259	9.5
X49	• Other and unspecified chemicals and noxious substances	937	56.0	669	63.8	1,606	59.0
	Total	**1,674**	**100.0**	**1,048**	**100.0**	**2,722**	**100.0**

Note: Shaded areas indicate the highest figure for a column.

Young children aged 0–4 years

A considerable proportion of accidental poisonings from non-medicinal sources occurred in young children aged 0–4 years (24%; n=663), and most of these (83%) occurred before the third birthday (Table 2.8.3). *Accidental poisoning and exposure to other and unspecified chemicals and noxious substances* accounted for 58% of non-medicinal poisoning under 5 years of age (n=384). *Organic solvents and halogenated hydrocarbons and their vapours* accounted for 19% of cases (n=126); most cases were petroleum products (39%; n=49) and other specified organic solvents (43%; n=54). *Accidental poisoning and exposure to pesticides* accounted for 17% of cases (n=115), and included organophosphate and carbamate insecticides (37%; n=42) and rodenticides (21%; n=24). *Accidental poisoning and exposure to alcohol* and *other gases and vapours* constituted only a small proportion of poisonings; 3% and 2%, respectively.

Table 2.8.3: Mechanism of poisoning by other substances in children 0–4 years; Australia 2001–02

ICD-10-AM Code	Accidental poisoning by and exposure to:	Age at admission					
		0–11 months	1 year	2 year	3 year	4 year	Total
X45	• Alcohol	*	9	9	*	*	23
X46	• Organic solvents and halogenated hydrocarbons and their vapours	*	68	35	14	*	126
X47	• Other gases and vapours	*	8	*	*	*	15
X48	• Pesticides	17	50	34	7	7	115
X49	• Other and unspecified chemicals and noxious substances	66	153	90	38	37	384
	Total	**94**	**288**	**171**	**62**	**48**	**663**
	Per cent	**14.2**	**43.4**	**25.8**	**9.4**	**7.2**	**100.0**

*Small counts are omitted.

In the context of the broader age groups identified in the National Injury Prevention and Promotion Plan: 2004–2014 (Strategic Injury Prevention Partnership 2005; Pointer et al, 2003), 60% of non-medicinal poisoning occurred in children aged 0–14 years (31%; n=830) and adults aged 25–44 years (29%; n=779) (Table 2.8.4), and less commonly occurred in those aged 65+ years (9%; n=247). Children aged 0–14 years were most commonly hospitalised for poisoning by organic solvents and halogenated hydrocarbons and their vapours (60%; n=136) and for poisoning by pesticides (46%; n=118). Alcohol poisoning (usually ethanol poisoning) occurred mostly in youth and young people aged 15–24 years (39%; n=146).

Table 2.8.4: External causes of poisoning by other substances by age; Australia 2001–02

ICD-10-AM Code	Accidental poisoning by and exposure to:	0–14 years		15–24 years		25–44 years		45–64 years		65+ years		Total	
		Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %
X45	Alcohol	52	13.9	146	38.9	112	29.9	49	13.1	16	4.3	375	100.0
X46	Organic solvents and halogenated hydrocarbons and their vapours	136	59.9	23	10.1	43	18.9	16	7.1	9	4.0	227	100.0
X47	Other gases and vapours	36	14.1	39	15.3	112	43.9	52	20.4	16	6.3	255	100.0
X48	Pesticides	118	45.6	16	6.2	61	23.6	40	15.4	24	9.3	259	100.0
X49	Other and unspecified chemicals and noxious substances	488	30.4	216	13.5	451	28.1	269	16.8	182	11.3	1,606	100.0
	Total	**830**	**30.5**	**440**	**16.2**	**779**	**28.6**	**426**	**15.7**	**247**	**9.1**	**2,722**	**100.0**

Note: Shaded areas indicate the highest 1 or 1–2 figures for a row.

Length of stay

Mean length of stay for poisoning by other substances increased with age (Figure 2.8.3).

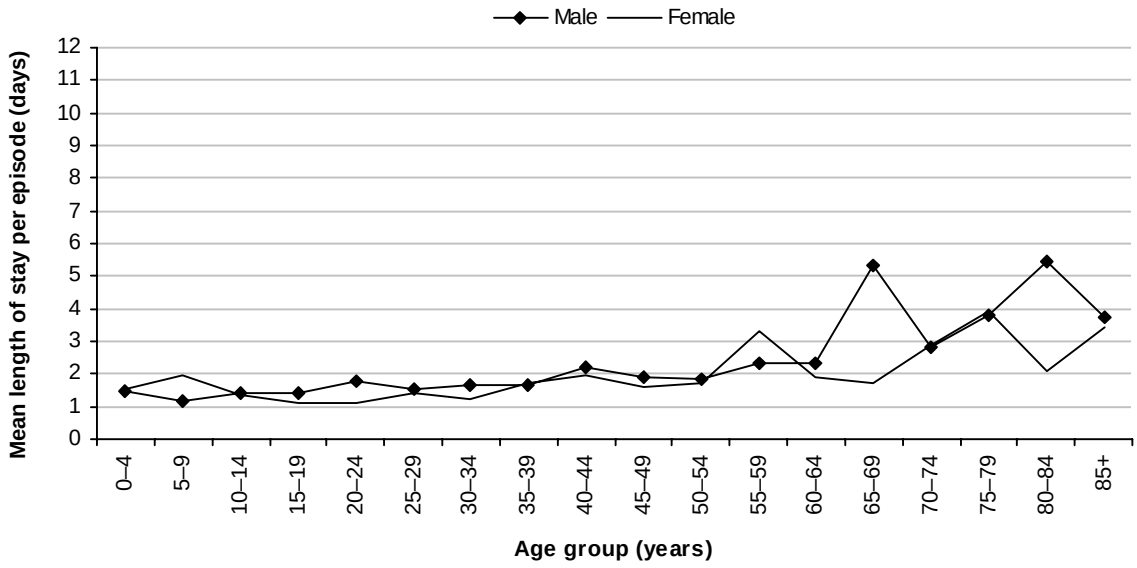


Figure 2.8.3: Length of stay per episode for poisoning by other substances by age and sex; Australia 2001–02

Remoteness zones

Male and female age-standardised rates of hospitalisation for poisoning by other substances did not increase by remoteness of the person's usual residence (Figure 2.8.4)

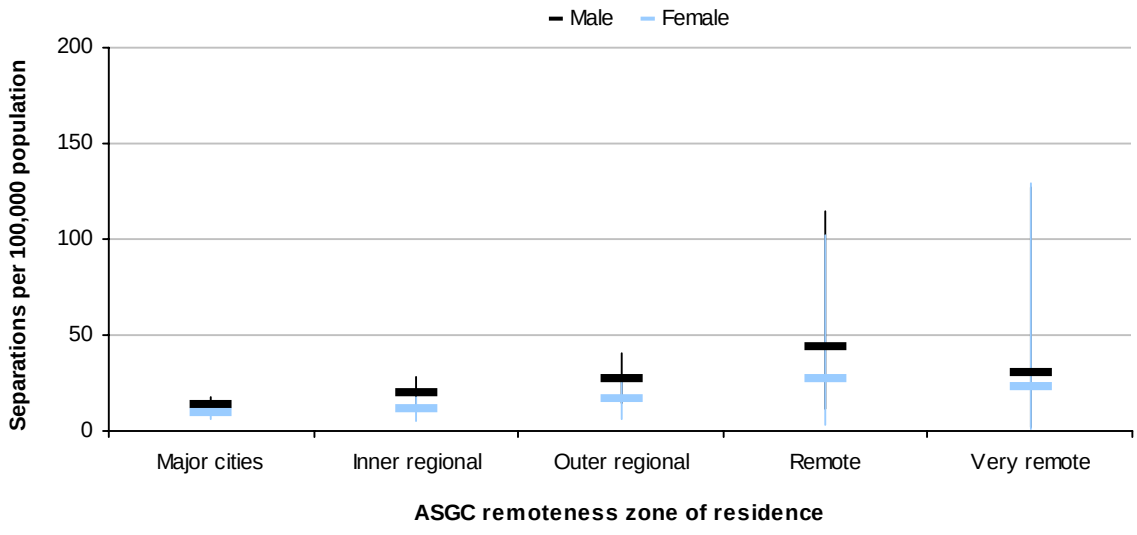


Figure 2.8.4: Age-standardised hospital separation rates for poisoning, other substances injury by ASGC remoteness zone and sex; Australia 2001–02

In young children aged 0–4 years, there was a significant increase in poisoning by other substances by remoteness of the person's usual residence (Figure 2.8.5). The same pattern of increase by remoteness was observed for X48 *Pesticides* although case numbers were small (n=115). This finding is consistent with an earlier report (O'Connor 2000).

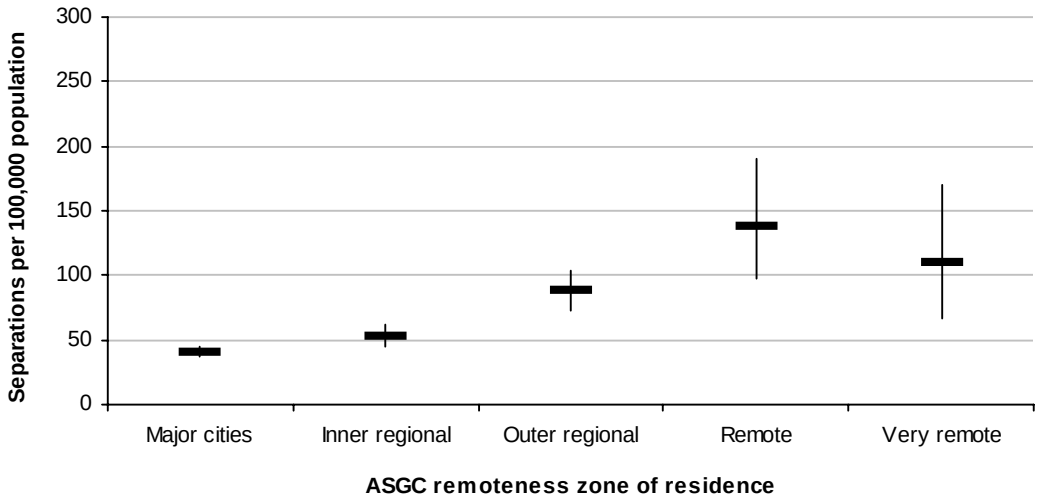


Figure 2.8.5: Age-standardised hospital separation rates for poisoning, other substances injury by ASGC remoteness zone; Australia 2001–02

Place of occurrence

Location was not specified or reported for 35% of records (unspecified; n=947, not reported/not applicable; n=3). The following observations are restricted to those records in which the place of occurrence was specified. The majority of injuries from poisoning by other substances occurred in the home for young children aged 0–14 years (85%; n=539) and the elderly aged 65+ years (79%; n=128) (Table 2.8.5). In youth and young people (15–24 years), only 39% (n=100) occurred in the home and a substantial proportion occurred in trade and service areas (24%; n=60) and industrial and construction areas (12%; n=31). Trade and service areas include hotels, petrol and service stations, commercial garages, stores, supermarkets and a wide range of other facilities. Industrial and construction areas include factories, dockyards, industries, mines, oil rigs, workshops etc. In adults aged 25–44 years, 40% occurred in the home (n=189), 27% occurred in industrial and construction areas (n=129) and 14% in trade and service areas (n=64). In adults aged 45–64 years, over half occurred in the home (n=133; 53%), 23% occurred in industrial and construction areas (n=58) and 8% occurred in trade and service areas (n=20).

Table 2.8.5: Place of occurrence of poisoning by other substances by age and gender; Australia 2001–02

Place	0–14 yrs	%	15–24 yrs	%	25–44 yrs	%	45–64 yrs	%	65+ yrs	%	Total	%
All persons												
Home	539	85.2	100	39.4	189	40.1	133	53.0	128	78.5	1,089	61.5
Residential institution	4	0.6	*	*	7	1.5	*	*	8	4.9	23	1.3
School	20	3.2	*	*	*	*	*	*	0	0.0	27	1.5
Health service area	*	*	*	*	9	1.9	8	3.2	5	3.1	28	1.6
Other specified institution	12	1.9	7	2.8	5	1.1	*	*	*	*	28	1.6
Sports and athletics area	*	*	*	*	*	*	*	*	0	0.0	10	0.6
Street and highway	*	*	7	2.8	8	1.7	4	1.6	*	*	23	1.3
Trade and service area	12	1.9	60	23.6	64	13.6	20	8.0	11	6.8	167	9.4
Industrial and construction area	*	*	31	12.2	129	27.4	58	23.1	*	*	221	12.5
Farm	6	1.0	*	*	17	3.6	10	4.0	*	*	37	2.1
Other specified places	28	4.4	35	13.8	37	7.9	11	4.4	8	4.9	119	6.7
Total	**633**	**100.0**	**254**	**100.0**	**471**	**100.0**	**251**	**100.0**	**163**	**100.0**	**1,772**	**100.0**

Note: Shaded areas indicate the highest 1 or 1–3 figures for a column. Records are restricted to those where place of occurrence is specified.
*Small counts are omitted.

2.9 Fires, burns and scalds

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79 and

First reported external cause: X00–X19

Table 2.9.1: Key indicators for fires burns and scalds injury cases; Australia 2001–02

Indicator	Males	Females	Persons
Cases	3,491	1,865	5,357[(a)]
Percentage of all injury hospitalisations	1.8%	1.4%	1.6%
Mean length of stay (days)	5.8	5.5	5.7
Total patient days	20,336	10,231	30,574[(b)]
Crude rate/100,000 population	36.2	19.1	27.6
Age-standardised rate/100,000 population	36.0	19.1	27.6

[(a)] Includes 1 separation and [(b)] 7 patient days for which sex was not reported.

Fire, burns and scalds injury accounted for 2% of all injury hospitalisations in the financial year 2001–02 (Table 2.9.1).

This chapter does not include injuries due to explosion and rupture of boilers (n=11), discharge of fireworks (n=71), explosion of other materials (e.g. munitions, blasting material) (n=212), exposure to electric current (n=561), exposure to extreme heat of man-made origin (n=10), excessive natural heat (n=273), sunlight (n=16), lightening (n=19), or volcanic eruption (n=1), all of which are covered by Section 2.11. Injuries attributable to intentional self-harm by explosive material (n=0), smoke, fire and flames (n=57) or steam, hot vapours and hot objects (n=9) are covered by Section 2.2, as are injuries from legal interventions involving explosives (n=0), war operations involving explosions and fragments (n=2), or fires, conflagrations and hot substances (n=0). Injuries resulting from assault by means of explosive material (n=1), smoke, fire and flames (n=28) or steam, hot vapours and hot objects (n=36) are covered by Section 2.3. Events of undetermined intent—contact with explosive material (n=4), smoke, fire and flames (n=10) or steam, hot vapours and hot objects (n=4) are included in Section 2.4.

Age and sex distribution

More males than females were injured by fires, burns and scalds (based on age-standardised rates), by nearly 2:1 (Figure 2.9.1). Rates were highest for young children aged 0–4 years (males: 133.1 per 100,000, females: 101.3 per 100,000).

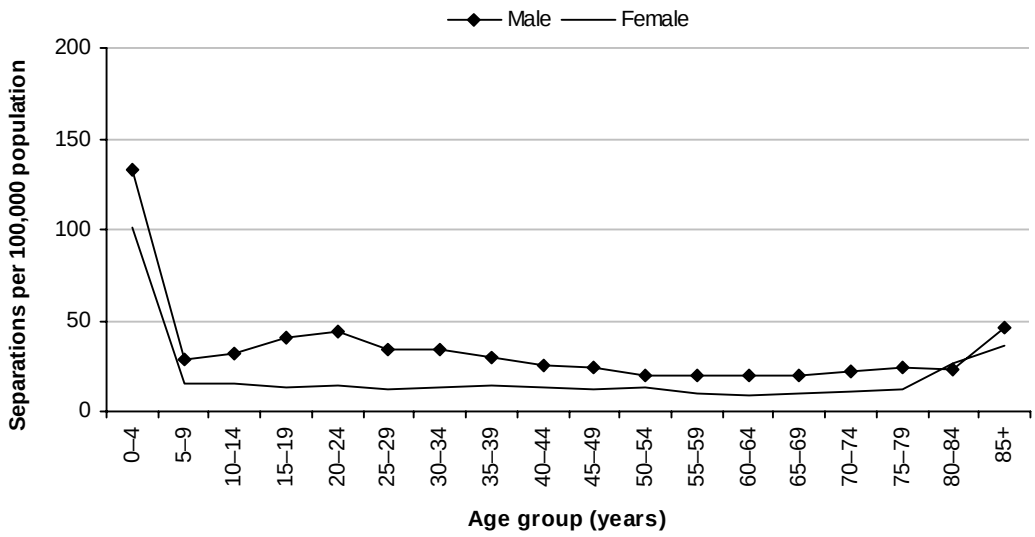
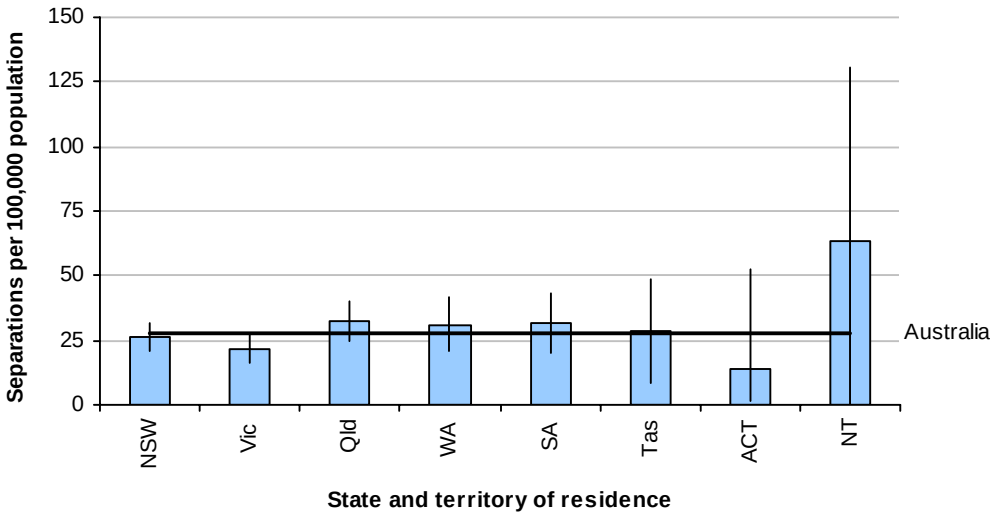


Figure 2.9.1: Age-specific hospital separation rates for fire, burns and scalds injury by sex; Australia 2001–02

State and territory differences

Rates did not significantly differ from the national average and ranged from 13.6 per 100,000 in the Australian Capital Territory to 63.3 per 100,000 in the Northern Territory (Figure 2.9.2).



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

Figure 2.9.2: Fire, burns and scalds injury cases, states and territories 2001–02; Persons (age-standardised rates)

Body part

Six specific body areas accounted for 90% (n=4,846) of all fires, burns and scalds injuries (n=5,357) (Table 2.9.2). *Burn of wrist and hand* was the most common injury (18%) followed closely by *burn of head and neck*. There were no marked differences in the proportions of the 6 top specific injuries for males and females.

Table 2.9.2: Top 6 specific injuries for fires, burns and scalds injury cases; Australia 2001–02

	Males		Females		Persons	
Indicator	**Count**	**Column %**	**Count**	**Column %**	**Count**	**Column %**
Burn of wrist and hand	615	17.6	371	19.9	986	18.4
Burn of head and neck	663	19.0	273	14.6	937[(a)]	17.5
Burn of trunk	522	15.0	330	17.7	852	15.9
Burn of hip and lower limb, except ankle and foot	523	15.0	306	16.4	829	15.5
Burn of ankle and foot	446	12.8	196	10.5	642	12.0
Burn of shoulder and upper limb, except wrist and hand	384	11.0	216	11.6	600	11.2
Sub-total of top 6 specific injuries	**3,153**	**90.3**	**1,692**	**90.7**	**4,846[(a)]**	**90.5**

[(a)] Includes 1 separation for which sex was not reported.

Mechanism

In the context of the broader age groups identified in the National Injury Prevention and Promotion Plan: 2004–2014 (Strategic Injury Prevention Partnership 2005; Pointer et al, 2003), children aged 0–14 years old comprised 40% of those injured, but only 9% of those injured were elderly aged 65+ years. Sixty-five per cent of those injured were male (Table 2.9.3).

Table 2.9.3: Fires, burns and scalds injury cases by age; Australia 2001–02

	Males		Females		Persons	
Age group	**Count**	**%**	**Count**	**%**	**Count**	**%**
0–14 years	1,296	37.1	831	44.6	2,128[(a)]	39.7
15–24 years	571	16.4	178	9.5	749	14.0
25–44 years	894	25.6	382	20.5	1,276	23.8
45–64 years	475	13.6	250	13.4	725	13.5
65+ years	255	7.3	224	12.0	479	8.9
Total	**3,491**	**100.0**	**1,865**	**100.0**	**5,357[(a)]**	**100.0**

[(a)] Includes 1 separation for which sex was not reported.

Young children aged 0–4 years

The greatest proportion of fires, burns and scalds injury occurred in young children aged 0–4 years (28%; n=1,508), and most of these (85%) occurred before the third birthday (Table 2.9.4). A third of injuries were from *contact with hot drinks, food fats and cooking oils*, and almost a third were from *contact with other hot fluids* (e.g. water heated on a stove) or *contact with hot tap-water*. The risk was highest at one year and declined sharply after two years of age. This is the age range during which children become mobile and manipulate objects, but have not yet developed awareness of the hazardousness of hot objects and liquids. The other categories that were leading causes of fire, burns and scalds in early childhood were *contact with hot household appliances* such as hotplates, stoves, and toasters (9%), *exposure to controlled*

fire, not in a building or structure (e.g. campfires) (6%) and *contact with hot heating appliances, radiators and pipes* (5%). There were only 6 hospital cases in young children aged 0–4 from *exposure to ignition or melting of nightwear* (and no cases in older children aged 5–14 years). Regulations introduced in 1993 banning nightwear garments from being sold if they do not meet safety standards continue to be effective in prevention of severe burns to young children (Consumer Affairs Division 2005).

Table 2.9.4: Top 6 mechanisms of fires, burns and scalds for young children aged 0–4 years; Australia 2001–02

		Age at admission						
ICD-10-AM Code	**Accidental poisoning by and exposure to:**	**0–11 months**	**1 year**	**2 year**	**3 year**	**4 year**	**Total**	**%**
X10	• Contact with hot drinks, food, fats and cooking oils	62	323	72	30	23	510	33.8
X12	• Contact with other hot fluids (e.g. water heated on stove)	53	119	41	19	26	258	17.1
X11	• Contact with hot tap-water	40	112	35	13	9	209	13.9
X15	• Contact with hot household appliances	39	68	26	*	*	142	9.4
X03	• Exposure to controlled fire, not in building or structure (e.g. camp-fire)	*	28	43	11	*	88	5.8
X16	• Contact with hot heating appliances, radiators and pipes	28	28	10	*	*	73	4.8
	Sub-total	**223**	**678**	**227**	**83**	**69**	**1,280**	**84.9**
X00–X02, X04–X09, X13, X14, X17–X19	• Other	26	73	54	27	48	228	15.1
	Total	**249**	**751**	**281**	**110**	**117**	**1,508**	**100.0**

*Small counts are omitted.

For all ages, the most common fire, burns and scalds injuries presenting to hospital were from contact with *hot drinks, foods, fats and cooking oils* (20%), followed by *contact with other hot fluids* e.g. water heated on a stove (13%) (Table 2.9.5). There were some differences by gender; the most common cause of hospitalisation for males was *exposure to ignition of highly flammable material* such as gasoline, kerosene, petrol etc (17%). For females it was *contact with hot drinks, food, fats and cooking oils* (25%).

Young children aged 0–14 years were the largest component of all hospitalisations for *contact with hot drinks, food, fats and cooking oils* (58%; n=613), *contact with other hot fluids* (48%; n=330), *contact with hot tap-water* (50%; n=268), *contact with hot household appliances* (67%; n=154) *contact with hot heating appliances, radiators and pipes* (47%; n=98), *exposure to controlled fire, not in building or structure* e.g. camp-fire (44%; n=118) and *exposure to ignition or melting or other clothing and apparel* (44%; n=33).

For *exposure to uncontrolled fire in building or structure* e.g. house fires (n=158), young children aged 0–14 years comprised only 15% of injury cases (n=23), 11% were youth and young people aged 15–24 years (n=18), 34% were aged 25–44 years (n=53), 22% were 45–64 years (n=34) and 19% were the elderly aged 65+ years (n=30).

For youth and young people aged 15–24 years, *exposure to ignition of highly flammable material* accounted for 24% (n=181) of hospitalisations in this age group (n=749), and 17% (n=129) were *contact with hot drinks, foods, fats and cooking oils*.

For elderly adults aged 65+ years, *contact with hot tap-water* was responsible for 17% (n=80) of hospitalisations due to fires, burns and scalds (n=479).

Table 2.9.5: External causes of fire, burns and scalds injury cases by sex; Australia 2001–02

ICD-10-AM Code	Indicator	Males		Females		Persons	
		Count	%	Count	%	Count	%
X00	Exposure to uncontrolled fire in building or structure	93	2.7	65	3.5	158	3.0
X01	Exposure to uncontrolled fire, not in building or structure (e.g. forest fire)	55	1.6	27	1.5	82	1.5
X02	Exposure to controlled fire in building or structure (e.g. fireplace, stove)	75	2.2	43	2.3	118	2.2
X03	Exposure to controlled fire, not in building or structure (e.g. camp-fire)	191	5.5	77	4.1	268	5.0
X04	Exposure to ignition of highly flammable material (e.g. gasoline, kerosene, petrol)	586	16.8	85	4.6	672[(a)]	12.5
X05	Exposure to ignition or melting of nightwear	8	0.2	9	0.5	17	0.3
X06	Exposure to ignition or melting of other clothing and apparel	55	1.6	20	1.1	75	1.4
X08	Exposure to other specified smoke, fire and flames	130	3.7	53	2.8	183	3.4
X09	Exposure to unspecified smoke, fire and flames	374	10.7	145	7.8	519	9.7
X10	Contact with hot drinks, food, fats and cooking oils	580	16.6	473	25.4	1,053	19.7
X11	Contact with hot tap-water	292	8.4	241	12.9	533	10.0
X12	Contact with other hot fluids (e.g. water heated on stove)	392	11.2	297	15.9	689	12.9
X13	Contact with steam and hot vapours	83	2.4	26	1.4	109	2.0
X14	Contact with hot air and gases	16	0.5	9	0.5	25	0.5
X15	Contact with hot household appliances	134	3.8	97	5.2	231	4.3
X16	Contact with hot heating appliances, radiators and pipes	126	3.6	84	4.5	210	3.9
X17	Contact with hot engines, machinery and tools	75	2.2	14	0.8	89	1.7
X18	Contact with other hot metals	50	1.4	5	0.3	55	1.0
X19	Contact with other and unspecified heat and hot substances	176	5.0	95	5.1	271	5.1
	Total	**3,491**	**100.0**	**1,865**	**100.0**	**5,357[(a)]**	**100.0**

Note: Shaded areas indicate the highest 2 figures for a column.

[(a)] Includes 1 separation for which sex was not reported.

Length of stay

The mean length of stay for fires, burns, and scalds injury increased with age (Figure 2.9.3).

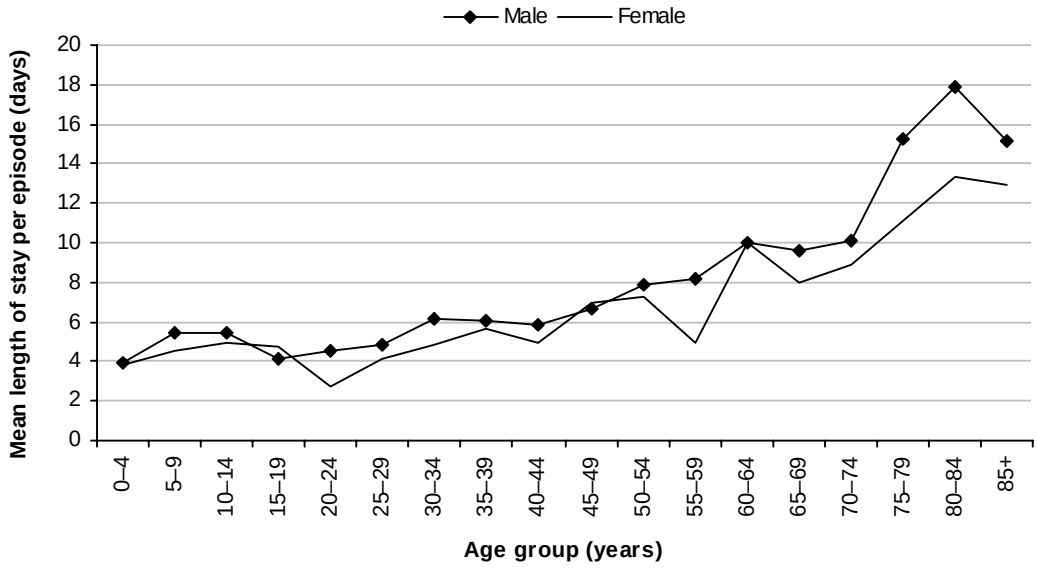


Figure 2.9.3: Length of stay per episode for fire, burns and scalds injury by age and sex; Australia 2001–02

Remoteness zones

Male and female age-standardised rates of hospitalisation for fires, burns and scalds injury increased with remoteness of the person's usual residence, but differences were not statistically significant (Figure 2.9.4).

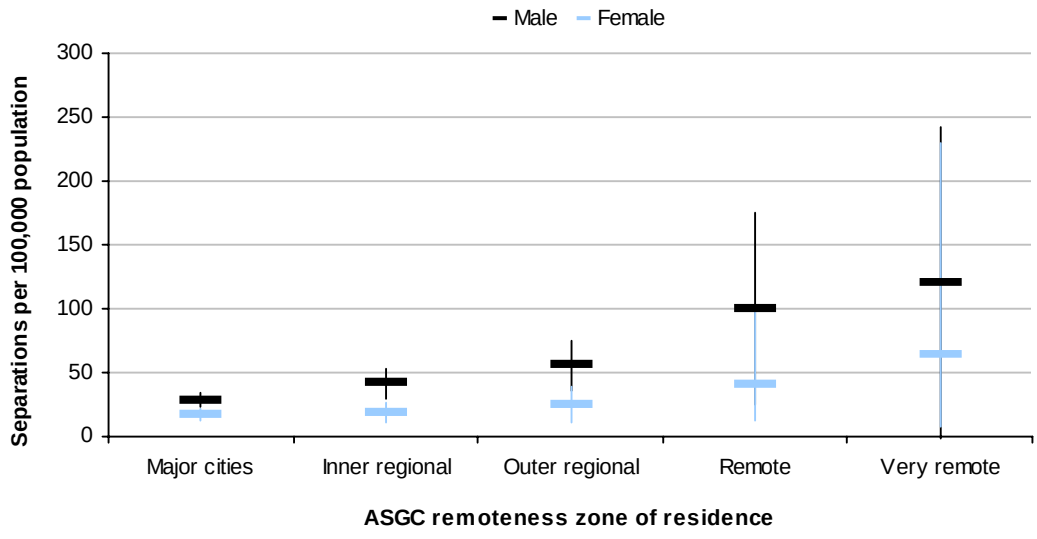


Figure 2.9.4: Age-standardised hospital separation rates for fire, burns and scalds injury by ASGC remoteness zone and sex; Australia 2001–02

Place of occurrence

Location was not specified or reported for 30% of records (unspecified; n=1,594, not reported/not applicable; n=18). The following observations are restricted to those records in which the place of occurrence was specified. Over three-quarters of hospital cases resulted from injuries that occurred in the home (78%; n=2,930) (Table 2.9.6).

Table 2.9.6: Place of occurrence of fires, burns and scalds injury; Australia 2001–02

Place	Persons	%
Home	2,930	78.2
Residential institution	27	0.7
School	19	0.5
Health service area	38	1.0
Other specified institution and public administrative area	11	0.3
Sports and athletics area	13	0.4
Street and highway	58	1.6
Trade and service area	128	3.4
Industrial and construction area	154	4.1
Farm	65	1.7
Other specified places	302	8.1
Total	**3,745**	**100.0**

2.10 Drowning and near-drowning

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79 and

First reported external cause: W65–W74

All identifiable drowning and near-drowning (as shown in Table 2.10.2):

First reported external cause: W65–W74, V90, V92, X71, X92, Y21, plus various others

Table 2.10.1: Key indicators for drowning and near-drowning cases; Australia 2001–02

Indicator	Males	Females	Persons
Cases	308	154	462
Percentage of all injury hospitalisations	0.2%	0.1%	0.1%
Mean length of stay (days)	2.3	1.8	2.2
Total patient days	722	278	1,000
Crude rate/100,000 population	3.2	1.6	2.4
Age-standardised rate/100,000 population	3.1	1.6	2.4

Drowning and near-drowning accounted for 0.1% of all injury hospitalisations in the financial year 2001–02 (Table 2.10.1). This chapter predominantly focuses on *Accidental drowning and submersion* (ICD-10-AM W65–W74) (n=462). There are a number of extra hospitalisations that have an external cause code outside this range that indicates drowning involvement (Table 2.10.2) (n=48). A further 17 hospital cases have a Principal Diagnosis of *Drowning and nonfatal submersion* although they lack an external cause code, and 12 have an external cause code of *Complications of surgical and medical care*. The *Accidental drowning and submersion* (ICD-10-AM W65–W74) category encompasses 86% of all identifiable drowning-related hospitalisations (n=539) (Table 2.10.2). Note that the total of 539 cases included in Tables 2.10.2 and 2.10.3 includes 60 cases that are also in the data for other chapters, since they involved both (near) drowning and another external cause.

Table 2.10.2: All identifiable drowning and near-drowning injury cases; Australia 2001–02

No in 2001–02	Percentage of all drowning cases in 2001–02	ICD-10-AM Code	ICD Category	Coverage in this report	Terminology in this report
462	85.7	W65–W74	Accidental drowning and submersion	Drowning	Accidental drowning
22	4.1	V90, V92	Water transport accident	Other transport deaths	
14	2.6	X71	Suicide and self inflicted injury by drowning	Intentional, self-harm	Other drowning identified by external cause codes
*	*	Y21	Drowning and submersion	Undetermined intent	
*	*	Various	Various external cause codes that do not mention drowning (e.g. fall)	Various	Hidden drowning
510	**94.6**				**Total drowning with an external cause code**
17	3.2	T75.1	No external cause code	Out of scope	
12	2.2	Y83.1	Complications of surgical and medical care	Chapter 3	
539	**100%**				**Total drowning**

Note: The total number of drowning hospital separations was identified by using a combination of the relevant external cause codes and the principal diagnosis code of T75.1 *Drowning and non-fatal submersion*.

*Small counts are omitted.

Table 2.10.3: Circumstances of total drowning and near-drowning hospitalisations by age; Australia 2001–02

	Age group													
	0–4 years		5–14		15–24		25–44		45–64		65+		All ages	
Circumstances of drowning†	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Total**	**%**
Swimming pool	116	43.8	21	40.4	9	15.5	7	9.1	4	7.0	7	23.3	164	30.4
Natural water	30	11.3	8	15.4	39	67.2	42	54.6	30	52.6	11	36.7	160	29.7
Bathtub	41	15.5	4	7.7	0	0.0	0	0.0	*	*	*	*	46	8.5
Watercraft	*	*	*	*	*	*	7	9.1	10	17.5	*	*	22	4.1
Other or unspecified	77	29.1	18	34.6	9	15.5	21	27.3	13	22.8	9	30.0	147	27.3
Group Total	**265**	**100.0**	**52**	**100.0**	**58**	**100.0**	**77**	**100.0**	**57**	**100.0**	**30**	**100.0**	**539**	**100.0**

Note: Shaded areas indicate the highest 1 or 1–2 figures for a column. † Aggregation of relevant external cause codes and the principal diagnosis code of T75.1 *Drowning and non-fatal submersion*.
* Small counts are omitted.

Most hospitalised drowning and near-drowning (49%) occurred in the 0–4 year age group (Table 2.10.3). Swimming pools were the most common setting of drowning and near-drowning for children aged 0–4 years (44%) and children aged 5–14 years (40%). Natural water (e.g. rivers, lakes, the ocean) was the most common setting of drowning and near-drowning for those aged 15–64 years (percentages ranging from 53%–67%) and swimming pool-related hospitalisations were less frequent (percentages ranging from 7%–16%). Bathtub-related hospitalisations most commonly occurred in young children aged 0–4 years (16%). Watercraft-related hospitalisations most commonly occurred in middle age; 45–64 years (18%). Older people aged 65+ years were more likely to drown or nearly drown in swimming pools than other adults (23%) and therefore fewer numbers (37%) than other adults drowned or nearly drowned in natural water. Overall, swimming pools were the most common setting for drowning-related hospitalisations (30%), followed by natural water (30%) and other or unspecified settings (27%). Bathtubs (9%) and watercraft (4%) related hospitalisation occurred less frequently.

Age and sex distribution

The following sections focus on the *Accidental drowning and submersion* (ICD-10-AM W65–W74) category (n=462). The highest rates were in children aged 0–4 years (males: 21.9 per 100,000, females: 15.4 per 100,000) (Figure 2.10.1).

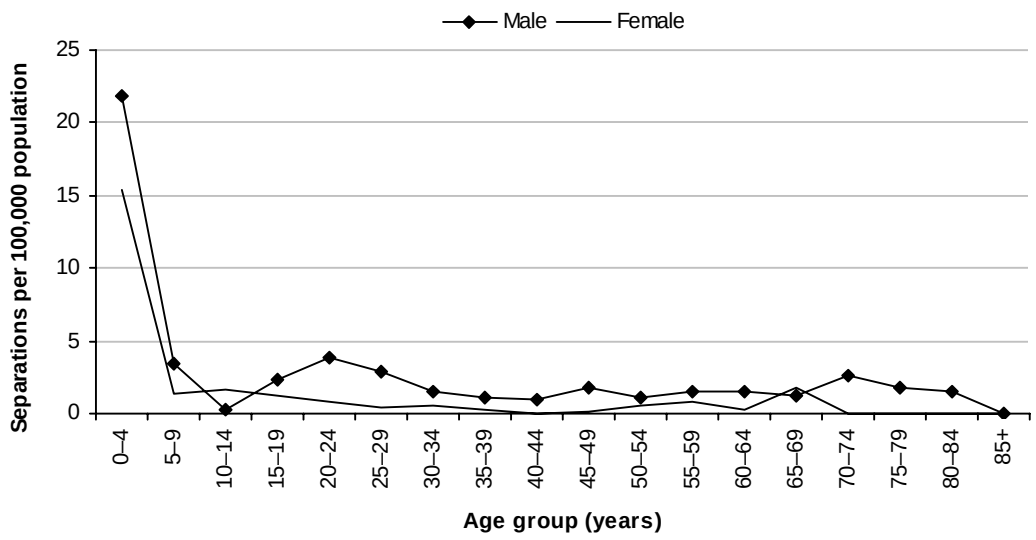


Figure 2.10.1: Age-specific hospital separation rates for drowning and near-drowning injury by sex; Australia 2001–02

More males than females were hospitalised for drowning and near-drowning (based on age-standardised rates), by nearly 2:1. Over half of the drowning and near-drowning injury cases occurred in young children aged 0–4 years (Table 2.10.4).

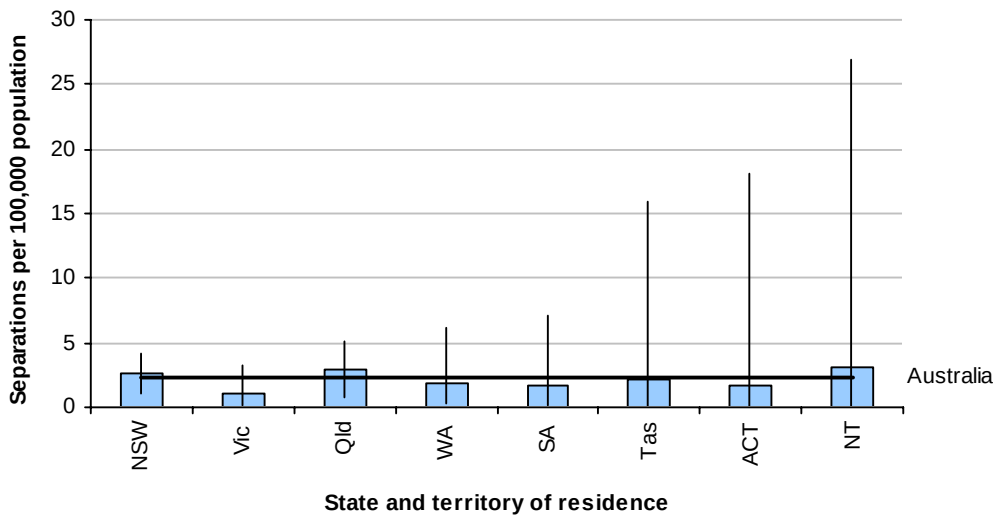
Table 2.10.4: Drowning and near-drowning injury cases by age; Australia 2001–02

	Males		Females		Persons	
Age group	**Count**	**%**	**Count**	**%**	**Count**	**%**
0–4 years	144	46.8	96	62.3	240	52.0
5–14 years	26	8.4	20	13.0	46	10.0
15–24 years	41	13.3	13	8.4	54	11.7
25–44 years	46	14.9	9	5.8	55	11.9
45–64 years	33	10.7	10	6.5	43	9.3
65+ years	18	5.8	6	3.9	24	5.2
Total	**308**	**100.0**	**154**	**100.0**	**462**	**100.0**

Note: Shaded areas indicate the highest figure for a column.

State and territory differences

Rates did not significantly differ from the national average and ranged from 1.1 per 100,000 for residents of Victoria to 3.0 per 100,000 for Queensland and Northern Territory residents (Figure 2.10.2).



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

Figure 2.10.2: Drowning and near-drowning injury cases, states and territories 2001–02; Persons (age-standardised rates)

Length of stay

The mean length of stay due to drowning and near-drowning showed no strong trend with age, large fluctuations for females and both sexes at older ages reflecting small case numbers (Figure 2.10.3).

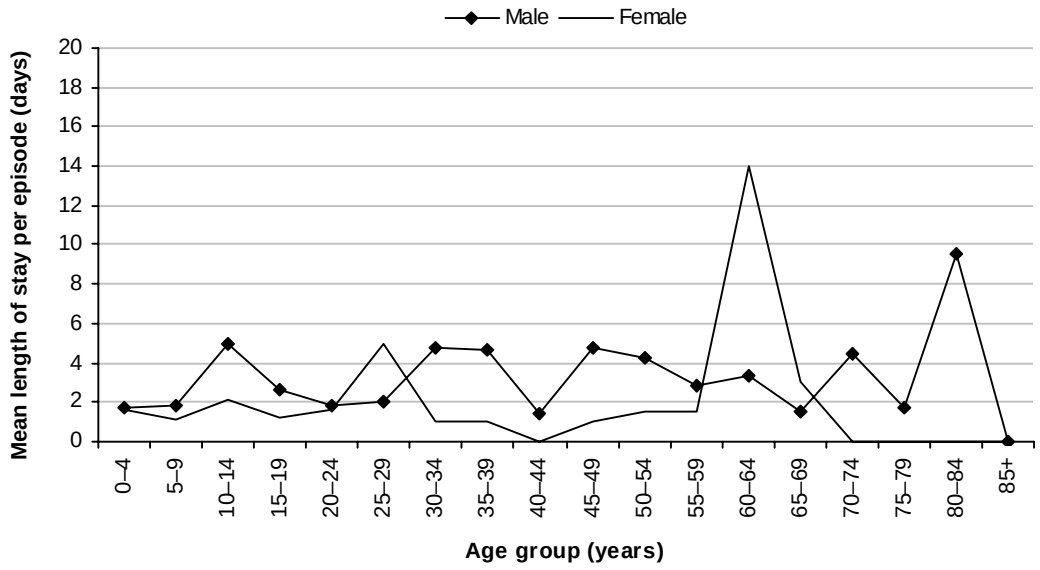


Figure 2.10.3: Length of stay per episode for drowning and near-drowning by age and sex; Australia 2001–02

Remoteness zones

Male and female age-standardised rates of hospitalisation for drowning and near-drowning did not increase by remoteness of the person's usual residence (Figure 2.10.4).

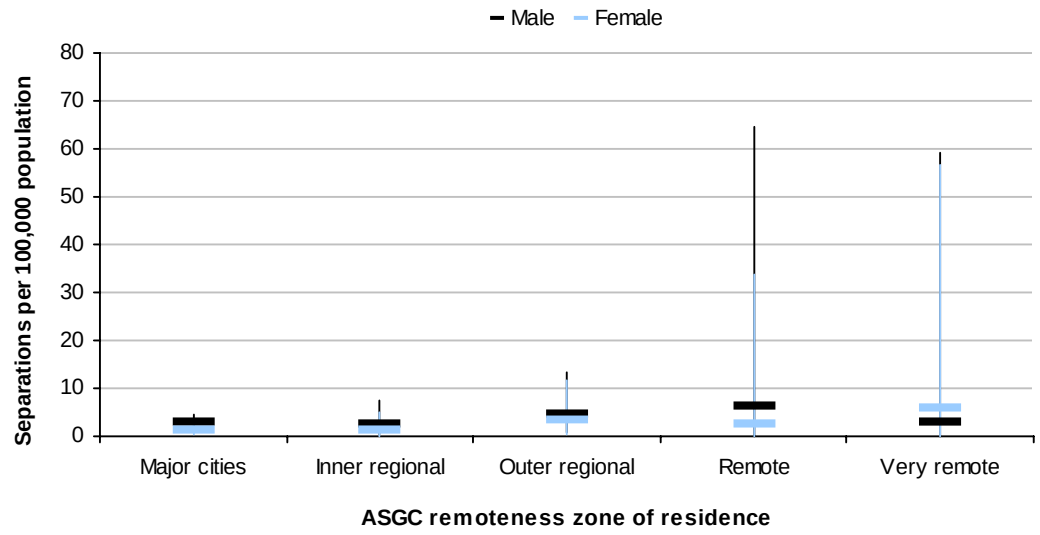


Figure 2.10.4: Age-standardised hospital separation rates for drowning and near-drowning injury by ASGC remoteness zone and sex; Australia 2001–02

Place of occurrence

Location was not specified or reported for 11% of records (unspecified; n=51, not reported/not applicable; n=1). The following observations are restricted to those records in which the place of occurrence was specified. Under half of hospital cases resulted from drowning and near-drowning that occurred in the home (41%; n=167) and 9% occurred in sports and athletic areas (n=37) (Table 2.10.5). Places such as rivers, dams, lakes and the ocean are included in the category *other specified places*.

Table 2.10.5: Place of occurrence of drowning and near-drowning; Australia 2001–02

Place	Persons	%
Home	167	40.7
Residential institution	*	*
School	0	0.0
Health service area	0	0.0
Other specified institution and public administrative area	*	*
Sports and athletics area	37	9.0
Street and highway	*	*
Trade and service area	8	2.0
Industrial and construction area	*	*
Farm	5	1.2
Other specified places	188	45.9
Total	**410**	**100.0**

2.11 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, Y85, Y86, Y89.9

Table 2.11.1: Key indicators for other unintentional injury cases; Australia 2001–02

Indicator	Males	Females	Persons
Cases	75,292	30,786	106,079[(a)]
Percentage of all injury hospitalisations	38.5%	22.3%	31.8%
Mean length of stay (days)	1.9	2.8	2.2
Total patient days	145,591	86,886	232,479[(b)]
Crude rate/100,000 population	781.8	314.7	546.4
Age-standardised rate/100,000 population	778.1	310.8	546.4

[(a)] Includes 1 separation and [(b)] 2 patient days for which sex was not reported.

This category includes all injury hospitalisation recorded as unintentional and not included in Sections 2.5 to 2.10. It covers many types of injury and is a heterogenous category. It accounted for 32% of all injury hospitalisations in the financial year 2001–02 (Table 2.11.1). A summary of some key components is provided in Table 2.11.2 and a complete listing of the first reported external cause codes for other unintentional injuries is provided in Table 2.11.3.

Table 2.11.2: Summary of key components of other unintentional injury cases; Australia 2001–02

External cause of morbidity and mortality	Persons	%
Struck by or crushed by an object	18,325	17.3
Foreign body	11,129	10.5
Bitten by an animal, insect, reptile or invenomated (including plants)	8,336	7.9
Overexertion and strenuous or repetitive movements	8,200	7.7
Contact with powered hand tools, lawnmowers and household, agricultural and other machinery	7,941	7.5
Struck by another person or a crowd or a human stampede	5,666	5.3
Contact with sharp glass	5,663	5.3
Sub-total of top 7 specific external causes	**65,260**	**61.5**

Other unintentional injuries contains about two-thirds of injuries identified as work-related and over half of sports-related injuries. Therefore, separating the other unintentional injuries category into its component injury groups would create more problems that it solves. It is retained as a chapter which is composed of many different types of injuries (see Table 2.11.3) and includes sections on injuries sustained at work and during sport.

More males were hospitalised for other unintentional injuries than females (based on age-standardised rates) with a M:F rate ratio of 2.5:1.

Age and sex distribution

As with most other external causes of hospitalisation, male rates were higher than female rates. Male rates were lower in childhood and then peaked in young men aged 15–24 years and then steadily declined with age (Figure 2.11.1).

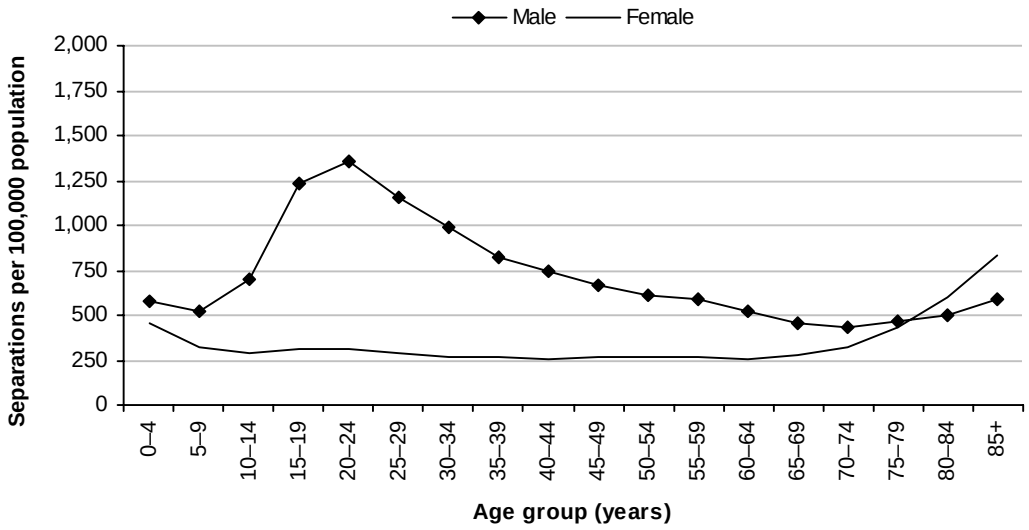
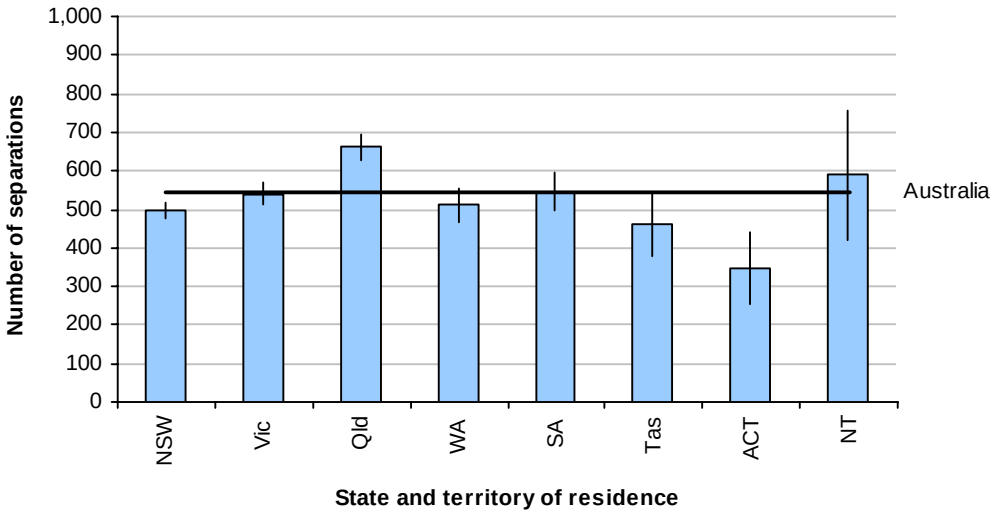


Figure 2.11.1: Age-specific hospital separation rates for other unintentional injury by sex; Australia 2001–02

State and territory differences

The only jurisdictions with rates significantly below the national average were the Australian Capital Territory (346.9 per 100,000) and New South Wales (497.9 per 100,00). Queensland (661.2 per 100,000) exceeded the national average (Figure 2.11.2).



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

Figure 2.11.2: Other unintentional injury cases, states and territories 2001–02; Persons (age-standardised rates)

Length of stay

Mean length of stay for other unintentional injuries rose with age (Figure 2.11.3).

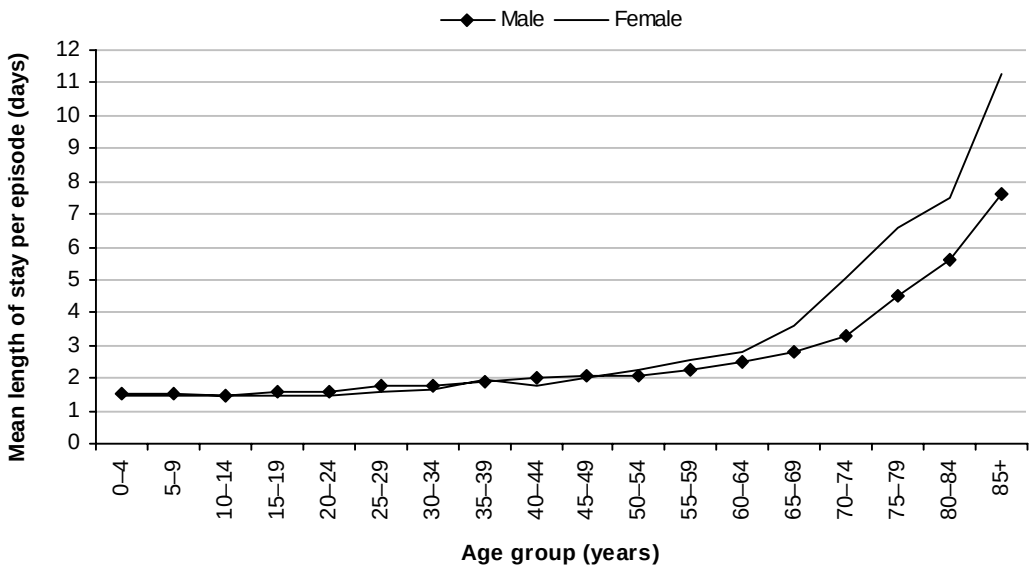


Figure 2.11.3: Length of stay per episode for other unintentional injury by age and sex; Australia 2001–02

Remoteness zones

Male and female age-standardised rates of hospitalisation for other unintentional injuries increased by remoteness of the person's usual residence and male rates were significantly higher (Figure 2.11.4).

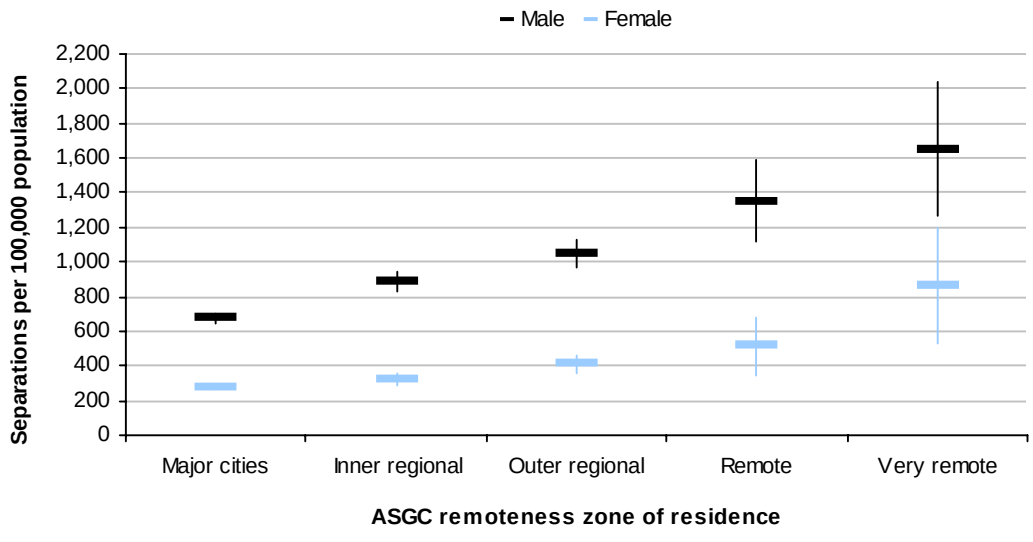


Figure 2.11.4: Age-standardised hospital separation rates for other unintentional injury by ASGC remoteness zone and sex; Australia 2001–02

Table 2.11.3: External causes of other unintentional injury cases; Australia 2001–02

ICD-10-AM Code	External cause of morbidity and mortality	Frequency	%
W20	Struck by thrown, projected or falling object	3,747	4
W21	Striking against or struck by sports equipment	2,215	2
W22	Striking against or struck by other objects	7,418	7
W23	Caught, crushed, jammed or pinched in or between objects	4,945	5
W24	Contact with lifting and transmission devices, not elsewhere classified	533	1
W25	Contact with sharp glass	5,663	5
W26	Contact with knife, sword or dagger	3,240	3
W27	Contact with nonpowered hand tool	1,788	2
W28	Contact with powered lawnmower	520	0
W29	Contact with other powered hand tools and household machinery	3,210	3
W30	Contact with agricultural machinery	398	0
W31	Contact with other and unspecified machinery	3,813	4
W32	Handgun discharge	28	0
W34	Discharge from other and unspecified firearms	166	0
W35	Explosion and rupture of boiler	11	0
W36	Explosion and rupture of gas cylinder	86	0
W37	Explosion and rupture of pressurised tyre, pipe or hose	28	0
W38	Explosion and rupture of other specified pressurised devices	29	0
W39	Discharge of firework	71	0
W40	Explosion of other materials	212	0
W41	Exposure to high-pressure jet	17	0
W42	Exposure to noise	*	*
W43	Exposure to vibration	*	*
W44	Foreign body entering into or through eye or natural orifice	5,776	5
W45	Foreign body or object entering through skin	5,353	5
W49	Exposure to other and unspecified inanimate mechanical forces	1,827	2
W50	Hit, struck, kicked, twisted, bitten or scratched by another person	3,231	3
W51	Striking against or bumped into by another person	2,376	2
W52	Crushed, pushed or stepped on by crowd or human stampede	59	0
W53	Bitten by a rat	6	0
W54	Bitten or struck by dog	1,819	2
W55	Bitten or struck by other mammals	1,751	2
W56	Contact with marine animal	123	0
W57	Bitten or stung by nonvenomous insect and other nonvenomous arthropods	615	1
W58	Bitten or struck by crocodile or alligator	5	0
W59	Bitten or crushed by other reptiles	529	1
W60	Contact with plant thorns and spines and sharp leaves	227	0
W64	Exposure to other and unspecified animate mechanical forces	183	0
W75	Accidental suffocation and strangulation in bed	*	*
W76	Other accidental hanging and strangulation	25	0
W78	Inhalation of gastric contents	18	0
W79	Inhalation and ingestion of food causing obstruction of respiratory tract	354	0
W80	Inhalation and ingestion of other objects causing obstruction of respiratory tract	171	0
W81	Confined to or trapped in a low-oxygen environment	*	*
W83	Other specified threats to breathing	*	*
W84	Unspecified threat to breathing	6	0
W85	Exposure to electric transmission lines	49	0
W86	Exposure to other specified electric current	294	0
W87	Exposure to unspecified electric current	218	0
W88	Exposure to ionising radiation	*	*
W89	Exposure to man-made visible and ultraviolet light	13	0
W90	Exposure to other non-ionising radiation	*	*

Table 2.11.3 continued: External causes of other unintentional injury cases; Australia 2001–02

W91	Exposure to unspecified type of radiation	*	*
W92	Exposure to excessive heat of man-made origin	10	0
W93	Exposure to excessive cold of man-made origin	6	0
W94	Exposure to high and low air pressure and changes in air pressure	614	1
W99	Exposure to other and unspecified man-made environmental factors	*	*
X20	Contact with venomous snakes and lizards	804	1
X21	Contact with venomous spiders	960	1
X22	Contact with scorpions	6	0
X23	Contact with hornets, wasps and bees	778	1
X24	Contact with centipedes and venomous millipedes (tropical)	10	0
X25	Contact with other specified venomous arthropods	190	0
X26	Contact with venomous marine animals and plants	441	0
X27	Contact with other specified venomous animals	5	0
X28	Contact with other specified venomous plants	7	0
X29	Contact with unspecified venomous animal or plant	60	0
X30	Exposure to excessive natural heat	273	0
X31	Exposure to excessive natural cold	168	0
X32	Exposure to sunlight	16	0
X33	Victim of lightning	19	0
X35	Victim of volcanic eruption	*	*
X36	Victim of avalanche, landslide and other earth movements	6	0
X37	Victim of cataclysmic storm	9	0
X39	Exposure to other and unspecified forces of nature	24	0
X50	Overexertion and strenuous or repetitive movements	8,200	8
X51	Travel and motion	28	0
X53	Lack of food	*	*
X54	Lack of water	*	*
X57	Unspecified privation	12	0
X58	Exposure to other specified factors	1,139	1
X59	Exposure to unspecified factor	28,639	27
Y85	Sequelae of transport accidents	99	0
Y86	Sequelae of other accidents	314	0
Y899	Sequelae of unspecified external cause	50	0
Total		**106,079**	**100**

*Small counts are omitted.

Work-related injury

For almost three-quarters of all records of injury admission, the activity code was not specified. The large number of cases lacking detail on activity (*other specified, unspecified, not reported/not applicable*) constrains meaningful interpretation of work-relatedness.

Two-thirds of all injury cases where activity was recorded as *while working for income* come within the scope of the other unintentional injuries category (Table 2.11.4).

Most work-related injury cases are male (87%; n=19,063) (Table 2.11.4).

Fourteen per cent (n=14,697) of other unintentional injuries (n=106,079) were work-related. There were 6,972 hospitalisations with an external cause code outside this range that were work-related (Table 2.11.4). A further 280 hospital cases had an activity code of work-related although they lacked an external cause code, and 26 had an external cause code of *Complications of surgical and medical care*.

For other unintentional injuries the top 5 causes of work-related injury were W31, *contact with other and unspecified machinery* (males n=2,124; females n=177), X59, *exposure to unspecified factor* (males n=1,698; females n=305), W23, *caught, crushed, jammed or pinched in or between objects* (males n=1,248; females n=108), W20, *struck by thrown, projected or falling object* (males n=1,063; females n=69), and X50, *overexertion and strenuous or repetitive movement* (males n=809; females n=260).

For falls injuries the most common causes of work-related injury were W01, *fall on the same level from slipping, tripping and stumbling* (males n=453; females n=308), W11, *fall on and from ladder* (males n=563; females n=44) and W17, *other fall from one level to another* e.g. fall from or into a cavity, pit, shaft, tank etc. (males n=521; females n=32).

For transportation injuries the most common cause of work-related injuries were V80, *animal-rider or occupant of animal-drawn vehicle injured in transport accident* (males n=229; females n=82), V43, *Car occupant injured in collision with car, pick-up truck or van* (males n=130; females n=71) and V68, *Occupant of heavy transport vehicle injured in noncollision transport accident* (n=200, almost all were males).

Table 2.11.4: Case counts and proportions by sex for work-related injury cases; Australia 2001–02

	Males		Females		Persons	
Major group of injury	**Count**	**%**	**Count**	**%**	**Count**	**%**
Coverage in this report						
Intentional self-harm	7	0.0	10	0.3	17	0.1
Assault	389	2.0	44	1.5	433	2.0
Undetermined intent	11	0.1	4	0.1	15	0.1
Falls	2,649	13.9	751	25.8	3,400	15.5
Transportation	1,974	10.4	318	10.9	2,292	10.4
Poisoning, pharmaceuticals	11	0.1	11	0.4	22	0.1
Poisoning, other substances	333	1.8	77	2.6	410	1.9
Fires, burns, scalds	313	1.6	65	2.2	378	1.7
Drowning and near-drowning	5	0.0	0	0.0	5	0.0
Other unintentional	13,097	68.7	1,600	55.0	14,697	66.9
Out of scope						
No external cause code	250	1.3	30	1.0	280	1.3
Complications of surgical and medical care	*	*	*	*	26	0.1
Total	**19,063**	**100.0**	**2,912**	**100.0**	**21,975**	**100.0**

Note: Shaded areas indicate the highest figure for a column.
*Small counts are omitted.

Sports-related injury

As for work-related injury, the large number of cases lacking meaningful codes concerning activity (*other specified, unspecified, not reported/not applicable*) limits assessment of sports-related injury.

Half of all injury cases where activity was recorded as *while engaged in sports* were within the scope of the other unintentional injuries category (Table 2.11.5).

Most sports-related injury hospitalisations were male (80%; n=19,827) (Table 2.11.5).

Twelve per cent (n=12,362) of other unintentional injuries (n=106,079) were sports-related injury. There were 11,877 hospitalisations that had an external cause code outside this range that were sport-related (Table 2.11.5). A further 468 hospital cases had an activity code of sport-related although they lacked an external cause code, and 27 had an external cause code of *Complications of surgical and medical care*.

For other unintentional injuries the top 5 causes of sports-related injury were X59, *exposure to unspecified factor* (males n=2,520; females n=570), X50, *overexertion and strenuous or repetitive movement* (males n=1,812; females n=679), W50, *hit, struck, kicked, twisted, bitten or scratched by another person* (males n=1,798; females n=141), W51, *striking against or bumped into by another person* (males n=1,578; females n=148), and W21, *striking against or struck by sports equipment* (males n=1,385; females n=299).

For falls injuries the most common causes of sport-related injury were W03, *other fall on same level due to collision with, or pushing by, another person* (males n=3,148; females n=308), W01, *fall on the same level from slipping, tripping and stumbling* (males n=974; females n=568) and W02, *fall involving ice-skates, skis, roller-skates or skateboards* (males n=1,013; females n=315).

For transportation injuries the most common causes of sport-related injuries were V80, *animal-rider or occupant of animal-drawn vehicle injured in transport accident* (males n=235; females n=384), V18, *Pedal cyclist injured in non-collision transport accident* (males n=498; females n=107) and V28, *Motorcycle rider injured in noncollision transport accident* (males n=481; females n=12).

Table 2.11.5: Case counts and proportions by sex for sports injury cases; Australia 2001–02

	Males		Females		Persons	
Major group of injury	**Count**	**%**	**Count**	**%**	**Count**	**%**
Coverage in this report						
Assault	101	0.5	3	0.1	104	0.4
Undetermined intent	6	0.0	0	0.0	6	0.0
Falls	6,984	35.2	2,013	41.0	8,998[(a)]	36.4
Transportation	2,068	10.4	645	13.2	2,714[(a)]	11.0
Drowning and near-drowning	33	0.2	10	0.2	43	0.2
Fires, burns, scalds	8	0.0	0	0.0	8	0.0
Remaining chapters	4	0.0	0	0.0	4	0.0
Other unintentional	10,199	51.4	2,163	44.1	12,362	50.0
Out of scope						
No external cause code	401	2.0	67	1.4	468	1.9
Complications of surgical and medical care	23	0.1	4	0.1	27	0.1
Total	**19,827**	**100.0**	**4,905**	**100.0**	**24,734[(b)]**	**100.0**

Note: Shaded areas indicate the highest figure for a column.
Includes [(a)] 1 and [(b)] 2 separations for which sex was not reported.
*Small counts are omitted by combining numbers for intentional self-harm, poisoning, pharmaceuticals, and poisoning, other substances into the category 'remaining chapters'.

3 Complications of surgical and medical care, Australia

ICD-10-AM case inclusion

Principal Diagnosis: T80–T88 and

First reported external cause: Y40–Y84, Y88

Table 3.1: Key indicators for cases due to *Complications of surgical and medical care*; Australia 2001–02

Indicator	Males	Females	Persons
All hospital separations	2,974,106	3,420,234	6,394,498[(a)]
Hospital cases due to *Complications of surgical and medical care*	32,525	31,068	63,594[(b)]
Hospital cases due to *Complications of surgical and medical care* as % of all separations	1.1%	0.9%	1.0%
Mean length of stay (days)	6.5	6.6	6.5
Total patient days	209,883	204,385	414,269[(c)]
Crude rate/100,000 population	337.7	317.6	327.6
Age-standardised rate/100,000 population	355.4	308.3	327.6

Includes [(a)] 158 and [(b)] 1 separation(s) and [(c)] 1 patient day for which sex was not reported.

Overview

Hospital separations with a Principal Diagnosis of T80–T88 *Complications of surgical and medical care, not elsewhere classified* and external cause within the range Y40–Y84, Y88 can provide a rudimentary measure of the frequency of occurrence of adverse events related to medical care. However, the findings of this chapter should be interpreted with caution as the ICD coding and classification system and the available data have important limitations for this purpose.

Data coded using ICD-10-AM classification provides an indication of only some classes of iatrogenic injury, due to narrow definitions of what constitutes an adverse event (Runciman & Moller 2001). Furthermore, clinical coders are trained to adhere to a standard which specifies that only information in the medical records that is explicitly described can be coded. Adverse events that are not explicitly described or recorded in hospital case records will thus usually not be assigned the ICD-10-AM codes specified in this chapter, leading to a likely underestimate of the true frequency of adverse events (Runciman & Moller 2001).

Variations in coding practice between states and territories and between hospitals may also contribute to deficiencies in the completeness, accuracy and coverage of adverse events (Runciman & Moller 2001). Hospital morbidity databases are routinely collected and fully cover hospital separations in Australia, but uncertainty remains about the quality of data and therefore the validity of using administrative data to ascertain adverse events (Hargreaves 2001), even if clinical coders are carefully hired, supervised and trained.

It should be noted that the method used in this chapter to describe adverse events uses different specifications from those used in Australian Hospital Statistics 2003–04, which can be expected to result in lower estimates than in that publication (for more information see p47, Australian Hospital Statistics 2003–04) (Australian Institute of Health and Welfare 2005a).

In 2001–02, *Complications of surgical and medical care, not elsewhere classified* was the Principal Diagnosis assigned to 63,594 hospital cases, 1% of a total of 6,394,498 hospital separations from public, private and psychiatric hospitals in Australia (Table 3.1). About as many again have an Additional Diagnosis in the range T80–T88 *Complications of surgical and medical care, not elsewhere classified*. International and national literature has estimated that adverse events occur in between 2.9% (Thomas et al, 2000) and 16.6% (Wilson et al, 1995) of acute-care hospital admissions. The broad range of the estimate can be attributed to the definition of an adverse event used in each study; the Australian study was concerned with quality of care (Wilson et al, 1995), and was more inclusive in its definition of what constituted an adverse event, compared with the US study which focused primarily on negligence (Thomas et al, 2000).

Major types of injury

Table 3.2: Major types of injury for *Complications of surgical and medical care*; Australia 2001–02

	Males		Females		Persons	
Indicator	**Count**	**%**	**Count**	**%**	**Count**	**%**
Complications following infusion, transfusion and therapeutic injection	227	0.7	256	0.8	483	0.8
Complications of procedures, not elsewhere classified	13,910	42.8	13,633	43.9	27,543	43.3
Complications of cardiac and vascular prosthetic devices, implants and grafts	4,179	12.8	3,028	9.7	7,208[(a)]	11.3
Complications of genitourinary prosthetic devices, implants and grafts	1,713	5.3	873	2.8	2,586	4.1
Complications of internal orthopaedic prosthetic devices, implants and grafts	6,211	19.1	6,104	19.6	12,315	19.4
Complications of other internal prosthetic devices, implants and grafts	3,475	10.7	5,129	16.5	8,604	13.5
Failure and rejection of transplanted organs and tissues	1,627	5.0	866	2.8	2,493	3.9
Complications peculiar to reattachment and amputation	584	1.8	226	0.7	810	1.3
Other complications of surgical and medical care, not elsewhere classified	599	1.8	953	3.1	1,552	2.4
Total	**32,525**	**100.0**	**31,068**	**100.0**	**63,594[(a)]**	**100.0**

[(a)] Includes 1 separation for which sex was not reported.

The ICD-10-AM Principal Diagnoses T81, *Complications of procedures, not elsewhere classified* (n=27,543), T84, *Complications of internal prosthetic devices, implants and grafts* (n=12,315) and T85, *Complications of other internal prosthetic devices, implants and grafts* (n=8,604) accounted for over three-quarters of all *Complications of surgical and medical care*.

The most commonly recorded specific adverse event was T81.4, *Infection following a procedure, not elsewhere classified* (n=12,767; 20% of all adverse events). Most of these infections (n=12,082; 19% of all adverse events) were given an external cause of Y83; indicating a *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*.

The second most common adverse event was T81.0, *Haemorrhage and haematoma complicating a procedure, not elsewhere classified* (n=8,358; 13% of all adverse events). Most of these haemorrhages and haematomas (n=7,453; 12% of all adverse events) resulted from a surgical

operation or surgical procedure, without mention of misadventure at the time of the procedure (external cause of Y83).

The third most common adverse event was T84.0, *Mechanical complication of internal joint prosthesis* (n=4,751; 7.5% of all adverse events). Most of these (n=4,574; 7% of all adverse events) resulted from a surgical operation with implant of artificial internal device (Y83.1) without mention of misadventure at the time of the procedure.

Length of stay

Mean length of stay due to *Complications of surgical and medical care* increased with age (Figure 3.1).

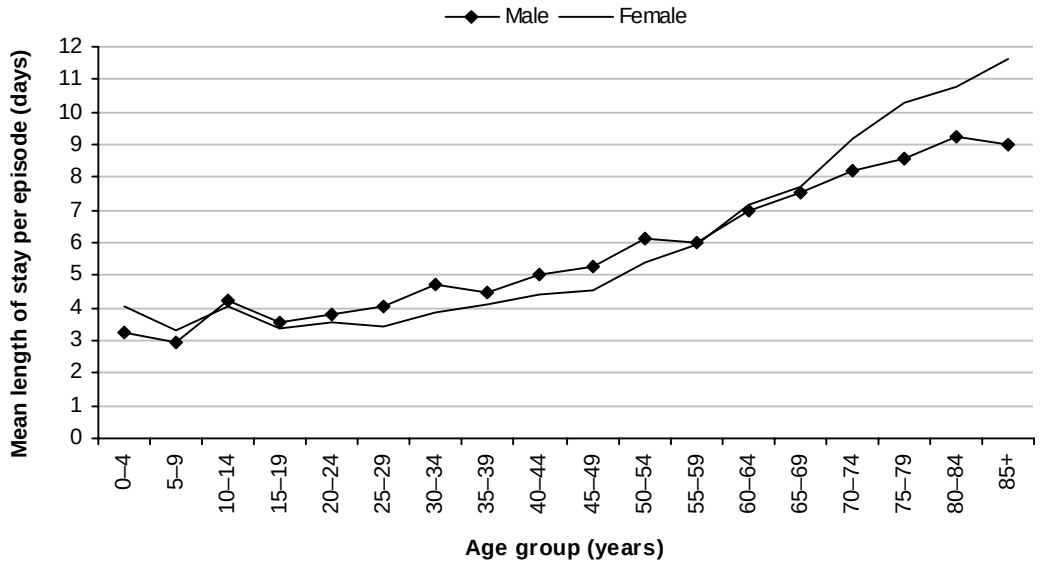


Figure 3.1: Length of stay per episode for *Complications of surgical and medical care* by age and sex; Australia 2001–02

Place of occurrence

As expected, where a place of occurrence was recorded (n=58,289), the great majority occurred in a health service area (96%; n=55,773). The remaining 4% occurred in the home or in another location, but these are difficult to interpret due to the limited information available. It may be that these records refer to the place of occurrence of the original condition or disease, to the place where the complication became apparent, or to complications of care delivered at home.

4 Residual groups

This chapter includes cases where the Principal Diagnosis was in 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* (n=4,174). Most were coded as ICD-10-AM Principal Diagnosis T78 *Adverse effects, not elsewhere classified* (n=3,949) (Table 4.1). The remainder were T89, Other *specified complications of trauma* (n=212) or T90–T98, *Sequelae of injuries, of poisoning and of other consequences of external causes* (n=13).

Table 4.1: Case counts for ICD-10-AM Principal Diagnosis T78, *Adverse effects, not elsewhere classified*; Australia 2001–02

	Males		Females		Persons	
Indicator	**Count**	**%**	**Count**	**%**	**Count**	**%**
Anaphylactic shock due to adverse food reaction	270	14.9	274	12.8	544	13.8
Other adverse food reactions, not elsewhere classified	236	13.0	216	10.1	452	11.4
Anaphylactic shock, unspecified	304	16.8	364	17.0	668	16.9
Angioneurotic oedema	456	25.2	699	32.7	1,155	29.2
Allergy, unspecified	535	29.6	572	26.7	1,107	28.0
Other adverse effects, not elsewhere classified or unspecified	8	0.4	15	0.7	23	0.6
Total	**1,809**	**100.0**	**2,140**	**100.0**	**3,949**	**100.0**

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Appendix 1: 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).

Population data were obtained from the AIHW and are the same as data presented by the Australian Bureau of Statistics (Australian Bureau of Statistics 2003). Rates were calculated using final estimates of the estimated resident population as at 31 December 2001.

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 records to achieve this purpose.

Period

This report is restricted to inpatient episodes that ended in the period 1 July 2001 to 30 June 2002.

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 (e.g. spinal cord injuries, for which mean length of stay is several months).

Scope

We included data from all hospitals that contributed to the NHMD in 2001–02. This includes nearly all public and private hospitals in Australia that provide acute care services. Further information on inclusion scope can be found in Australian Hospital Statistics 2001–02 (Australian Institute of Health and Welfare 2003).

Injury

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

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

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* (Strategic Injury Prevention Partnership 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=2,415) or a Principal Diagnosis in the *Complications of surgical and medical care* range and a first reported external cause code indicating *Community injury* (n=459). These records, shown in Table A1, were omitted from analysis.

Injury solely as Additional Diagnosis (excluded)

Records in the NHMD for 2001–02 can report up to 31 Additional Diagnosis codes as well as a Principal Diagnosis code. Hence, records can occur that have a Principal Diagnosis code outside the range designating *Community injury*, but have one or more Additional Diagnosis codes within that range. The same is true for *Complications of surgical and medical care*. The numbers of records of these types are shown in Table A1.

Records in which injury codes appear only as Additional Diagnoses have not been used in the analysis presented in this report, mainly because injury was not recorded as being the 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…' (Australian Institute of Health and Welfare 2005b). Hence, while many or all of the people represented by these records will, at some time, have sustained an injury as defined above, that injury was not recorded as being the main reason for their current episode in hospital.

Many of these records with an Additional Diagnosis of injury will have been counted in incidence estimates on the basis of a previous episode in hospital for acute care, the current episode being for rehabilitation. In some other instances, the Additional Diagnosis injury referred to in the record may have been incidental to the reason for admission and would not, on its own, have prompted admission. Further investigation may identify a sub-set of these records that do represent newly incident injuries resulting in admission to a hospital, which would be included in future reports.

External cause codes

According to Australian Coding Standards (National Centre for Classification in Health 2000), 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, a little over 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, these records of injury cases were of limited analytic value. We omitted them, except from Table A1.

Records that have a Principal Diagnosis within a specified injury range, but no accompanying external cause code, numbered 4,541 (1.3%) of the *Community injury* subset,

and 732 (1.1%) of the *Complications of surgical and medical care* subset. Most of the injury records without an external cause code are from New South Wales. These records do not differ greatly from records with external cause codes in terms of diagnoses, age or sex.

Estimating incident cases

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

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

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=27,149) were omitted from our estimates of incident cases (Table A1).

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

The patient days reported during the episodes omitted to reduce overestimation of incident cases are part of the burden of hospital care provided to the incident cases. Hence, these patient days were retained when calculating mean and total length of stay.

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 a method elsewhere described (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.

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 2001 as the standard (Australian Bureau of Statistics 2003) (Table A2). Where crude rates or age-specific rates are reported, this is noted.

Table A1: Selection criteria for cases due to injury and poisoning; Australia 2001–02

Selection criteria	Males	Females	Persons
Community injury (ICD-10-AM Principal Diagnosis range S00–T75, T79)	199,443	140,955	340,405[(a)]
Meet the definition of *Community injury* (i.e. Principal Diagnosis S00–T75, T79) but omitted from analyses because they:			
• lack any external cause code	2,909	1,632	4,541
• have a first reported external cause code of *Complications of surgical and medical care**	1,103	1,312	2,415
Total case numbers for *Community injury*	**195,431**	**138,011**	**333,449[(a)]**
Do not have a Principal Diagnosis of *Community injury*, but Additional Diagnosis codes are in range (ICD-10-AM range S00–T75, T79)	30,165	33,477	63,644[(b)]
Total case numbers where there is a code for *Community injury* in the Principal or Additional Diagnosis fields	**229,608**	**174,432**	**404,049[(c)]**
Complications of surgical and medical care (ICD-10-AM Principal Diagnosis range T80–T88)	33,113	31,671	64,785[(d)]
Meet the definition of *Complications of surgical and medical care* (i.e. Principal Diagnosis range T80–T88) but omitted from analyses because they:			
• lack any external cause code	349	383	732
• have a first reported external cause code of *Community injury***	239	220	459
Total case numbers for *Complications of surgical and medical care*	**32,525**	**31,068**	**63,594[(d)]**
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)	35,059	33,664	68,725[(b)]
Total case numbers where there is a code for *Complications of surgical and medical care* in the Principal or Additional Diagnosis fields	**68,172**	**65,335**	**133,510[(e)]**
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*	**1,956**	**2,218**	**4,174**
• Adverse effects, not elsewhere classified (ICD-10-AM Principal Diagnosis T78)—includes adverse food reactions e.g. analphylactic shock.	1,809	2,140	3,949
• Other complications of trauma not elsewhere classified (ICD-10-AM Principal Diagnosis T89)	137	75	212
• Sequelae of injuries, of poisoning and of other consequences of external causes (ICD-10-AM Principal Diagnosis T90–T98)	10	3	13
All separations with Principal Diagnosis in the ICD-10-AM range S00–T98	**234,512**	**174,844**	**409,364[(f)]**

Includes [(a)] 7, [(b)] 2, [(c)] 9, [(d)] 1, [(e)] 3, and [(f)] 8 separations for which sex was not reported.
*180 (7.5%) of these records have one or more external cause codes of *Community injury* (external cause of morbidity and mortality fields in the range V01–Y36).
** 46 (10.0%) of these records have one or more external cause codes of *Complications of surgical and medical care* (external cause of morbidity and mortality fields in the range Y40–Y84).

Remoteness zones

In this report, remoteness is defined in terms of the 6 zone Australian Standard Geographical Classification (ASGC) Remoteness structure (Australian Bureau of Statistics 2001), which is based on the Accessibility/Remoteness Index for Australia (ARIA+ version) developed by the National Key Centre for the Social Applications of Geographical Information Systems (GISCA). The zones are:

0 *Major cities of Australia*

1 *Inner regional Australia*

2 *Outer regional Australia*

3 *Remote Australia*

4 *Very Remote Australia*

5 *Migratory*

Not all jurisdictions have areas in all ASGC Remoteness zones. The Australian Capital Territory comprises only zones 0 and 1, the Northern Territory does not have any areas in zone 0 or 1, Tasmania does not include zone 1, and Victoria does not include zone 4.

Remoteness was allocated to separation records on the basis of Statistical Local Area of residence, as recorded in the NHMD. Zone 5 *Migratory* was excluded from analyses of remoteness of residence in this report.

Suppression of small cell counts in data tables

Cell counts in tables that are 3 cases or fewer have been suppressed as have rates derived from them, to protect confidentiality and because values based on very small numbers are sometimes difficult to interpret. In the instances where only one cell in a row or column has a count 3 or less, counts of one or more other cells in the same row or column have generally also been suppressed.

Errors, inconsistencies and uncertainties

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

'Remoteness area classification of the patient's usual residence' and 'statistical local area' was missing for less than 1% of records. The corresponding value for the remoteness area of the treating hospital was used to replace these missing values. This substitution assumes that these people are likely to have lived near the hospital in which they were treated. This assumption will not always have been true, but the effect is likely to be small. After this correction, the set of NHMD records with Principal Diagnosis codes in the range S00–T98 (n=409,364), contained few missing values for the variables used extensively in analysis: 'age' (n=10), 'sex' (n=8), 'remoteness area classification of the patient's usual residence' (n=589), and 'state of usual residence' (n=3,153, which is likely to include many non-residents of Australia).

Appendix 2: Population data table

The estimated resident population of persons in 2001 (Australian Bureau of Statistics 2003) was used for direct age-standardisation.

Table A2: Estimated resident population by age and sex; Australia 2001

Age group	Male	Female	Persons
0–4	657,499	624,858	1,282,357
5–9	693,790	657,874	1,351,664
10–14	693,083	660,094	1,353,177
15–19	690,668	662,077	1,352,745
20–24	660,776	641,636	1,302,412
25–29	700,910	706,171	1,407,081
30–34	726,919	739,696	1,466,615
35–39	741,434	750,770	1,492,204
40–44	734,436	744,821	1,479,257
45–49	675,055	683,539	1,358,594
50–54	652,540	648,237	1,300,777
55–59	512,888	495,911	1,008,799
60–64	413,982	408,042	822,024
65–69	335,590	346,923	682,513
70–74	303,554	334,826	638,380
75–79	227,356	292,000	519,356
80–84	128,250	201,800	330,050
85+	81,922	183,313	265,235
All ages	**9,630,652**	**9,782,588**	**19,413,240**

INJURY RESEARCH & STATISTICS

This report presents national statistics on injuries that resulted in admission to hospitals in Australia. It includes cases discharged during the year to 30 June 2002. The report has been designed to complement *Injury Deaths, Australia 2002*.

Falls, transport-related injury, intentional self-harm and assault are common causes of hospitalised injury in the Australian community. Injuries due to these and other causes are described, in terms of case numbers and rates, by age and sex, remoteness of usual residence, length of stay in hospital, external causes of injury, and other characteristics.

The report will be relevant to anyone interested in gaining an insight into patterns of injury morbidity and the burden it imposes on the Australian community.

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