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# Hospital separations due to injury and poisoning 2005–06

**Renate Kreisfeld & James E Harrison**

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# Summary

During the twelve-month period 2005–06, community injury was responsible for 371,297 cases of hospitalisation (216,158 males and 155,133 females). Injury consumed a total of 1,498,862 bed days equating to a mean length of stay of 4.0 days per hospitalised case.

For very young children aged 0–4 years, the most common specific causes of injury were falls (39%) and poisoning by drugs (7%). Falls were also the most common injury for older children aged 5–14 years (43%), followed by transport accidents (19%). The most common causes of injury for young adults aged 15–24 years were transport accidents (21%), falls (12%), assault (11%) and intentional self-harm (10%). A similar pattern was seen in adults aged 25–44 where transport accidents accounted for 17% of hospitalisations, falls for 14%, and assault and intentional self-harm for 11% each. With the arrival of older adulthood (45–64 years), unintentional falls become prominent, accounting for 31% of hospitalisations, followed by transport accidents (14%) and intentional self-harm (8%). For those aged 65 years and over, around three-quarters of hospitalisations are the result of falls. From 85 years onwards the proportion of falls as a cause of hospitalisation reached 87%.

The age-standardised rate of community injury has risen over time from 1,724 cases per 100,000 population in 1999–00 to 1,790 cases per 100,000 in 2005–06. The upward trend was observed for both males and females.

Upward trends were not seen for all major types of community injury. Between 1999–00 and 2005–06, upward trends were observed for falls (from 602 to 624 per 100,000 population); for transport accidents (249 to 255); for poisoning by other substances (15 to 12); intentional self-harm (105 to 116); and assault (98 to 109). There was a large downward trend for poisoning by drugs (from 100 to 63 per 100,000 population) and slight downward trends for fire, burns and scalds (from 27.6 to 26.9) and drowning (from 2.6 to 2.5). The downward trend in poisoning by drugs was mainly due to a reduction in rates in the 0–4 year age group (from 340 to 198 per 100,000) and the 15–49 year age group (from 116 to 63 per 100,000). However, despite falling rates in all other age groups in this category of injury, age standardised rates increased for those aged 70 years and over from 80 to 98 per 100,000 population.

Eighteen per cent of community injury cases resulted in injuries to the head. The next most commonly injured body regions were the knee and lower leg (12%) and the elbow and forearm (11%).

The Northern Territory's age-standardised community injury rate of 2,852 per 100,000 population was substantially higher than rates for all other jurisdictions. The next highest rate of 1,902 per 100,000, found in Queensland, was higher than the all-Australia rate of 1,790 per 100,000. Age adjusted rates were higher in the Northern Territory for all major causes of injury with the exception of poisoning by drugs and intentional self-harm. The difference between rates for the Northern Territory and Australia as a whole was most striking in relation to hospitalisations due to assault where age standardised rates were 691 and 109 per 100,000 respectively.

# Abbreviations used

| | |
|---|---|
| ABS | Australian Bureau of Statistics |
| AIHW | Australian Institute of Health and Welfare |
| ASGC | Australian Standard Geographical Classification |
| CI | Confidence Interval |
| 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 |
| NSAID | Non-steroidal anti-inflammatory drugs |
| 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 2005–06 (1st July 2005 to 30th June 2006) to describe the occurrence of hospitalised injury in Australia. It follows on from the previous in the series which examines hospitalised injury in Australia during 2004–05 (Bradley & Harrison 2008). Hospitalised injury is described according to major types of injury and poisoning and detailed analysis of the external causes of injury is undertaken.

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

## Hospital separations data

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

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

Hospital separations reported here were coded according to the 4th edition of ICD-10-AM (NCCH 2004).

## Selecting injury and poisoning cases

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

- Australian hospital separations occurring 1st July 2005 to 30th June 2006; and
- Principal Diagnosis in the ICD-10-AM range S00–T98 using Chapter XIX *Injury, poisoning and certain other consequences of external causes* codes.

Cases referred to as 'injury' can be defined in many ways, usually on the basis of the presence of certain types of injury diagnosis. The presence of information about the external causes of injury may also be required, especially if analysis focuses on causes and prevention of injury. The starting point for this report was a file containing records of all separations from Australian hospitals in the study period that contain any ICD-10-AM diagnosis code in the range S00–T98 <u>or</u> 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 2005–06, could include up to 50 Additional Diagnosis codes, *Community injury* and *Complications of surgical and medical care* can be specified in various ways.

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

We have used Principal Diagnosis as the basis of case inclusion (Table 1.1). The case selection criteria used in this report have the effect of almost completely restricting the cases included to the acute care type (99.6% of *Community injury*, 99.6% of *Complications of surgical and medical care* and 99.9% of *residual groups*).

# Injury hospitalisations 2005–06 overview

For public and private hospitals combined, episodes of care separating from hospital between 1st July 2005 and 30th June 2006 attributed to *Injury and poisoning and certain other consequences of external causes* (S00–T98) ranked fourth in the total number of hospitalisations after *Factors influencing health status & contact with health services* (Z00–Z99), *Diseases of the digestive system* (K00–K93) and *Neoplasms* (C00–D48) when records are groups as in (AIHW 2006). This ranking is the same as in the previous year (Bradley & Harrison 2008).

Nearly half a million hospital separations were directly attributed to injury and poisoning in 2005–06 (Table 1.1). These separations accounted for 6.6% of all episodes of care in Australian hospitals in this year. Approximately two million hospital bed-days were utilised by injury separations in 2005–06. These bed-days accounted for a higher proportion of all hospital bed-days (8.1%) than injury separations contributed to all separations. This difference was most apparent for injuries involving females; injury separations accounted for 5.4% of all hospital separations involving females but the episodes of care associated with these injuries accounted for 7.7% of all hospital bed-days. This is related to the high rate of hospitalised injury for older females and the prevalence of serious injuries to the hip and thigh, often due to a fall, for this population.

**Table 1.1: Injury hospitalisations overview: males, females and persons, Australia 2005–06**

| | Males | Females | Persons [b] |
|---|---|---|---|
| **Total number of hospital separations for any cause[a]** | 3,438,248 | 3,873,645 | 7,311,983 |
| Total number of hospital bed-days[a] | 11,291,263 | 13,038,976 | 24,330,653 |
| | | | |
| **Separations due to injury and poisoning (S00–T98[c])** | 275,425 | 208,705 | 484,136 |
| Percentage of all separations | 8.0 | 5.4 | 6.6 |
| Bed-days due to injury and poisoning | 973,363 | 1,001,244 | 1,974,621 |
| Percentage of all bed-days | 8.6 | 7.7 | 8.1 |
| | | | |
| **Community injury separations (S00–T75 or T79[c])** | 232,666 | 167,347 | 400,019 |
| Percentage of all injury separations | 84.5 | 80.2 | 82.6 |
| Bed-days due to community injury | 728,853 | 769,995 | 1,498,862 |
| Percentage of injury bed-days | 74.9 | 76.9 | 75.9 |
| | | | |
| **Complications of surgical & medical care separations (T80–T88[c])** | 40,155 | 38,529 | 78,684 |
| Percentage of all injury separations | 14.6 | 18.5 | 16.3 |
| Bed-days due to complications injury | 240,897 | 227,428 | 468,325 |
| Percentage of injury bed-days | 24.7 | 22.7 | 23.7 |
| | | | |
| **Residual injury separations (T78, T89 or T90–T98[c])** | 2,604 | 2,829 | 5,433 |
| Percentage of all injury separations | 0.9 | 1.4 | 1.1 |
| Bed-days due to residual injury separations | 3,613 | 3,821 | 7,434 |
| Percentage of injury bed-days | 0.4 | 0.4 | 0.4 |

(a) Source: Australian Hospital Statistics 2004–05 (AIHW 2006).

(b) Includes 90 separations where sex was not reported.

(c) Separations defined according to principal diagnosis.

Unit records classed as community injury separations (principal diagnosis S00–T75 or T79) accounted for 82.6% ($n$ = 400,019) of all injury separations in 2005–06. More community injury separations involved males (232,666 vs. 167,347 for females), but more bed-days were utilised by females due to community injury (769,995 vs. 728,853 for males). Conversely, males and females were involved in relatively similar numbers of separations and hospital bed-days due to injuries defined as complications of surgical and medical care. The bed-days utilised by complications separations accounted for a much higher proportion of all hospital bed-days due to injury and poisoning (23.7%) than the number of complications separations proportionately contributed to all injury hospitalisations (16.3%).

Residual injury separations accounted for a very small proportion of both all injury separations and hospital bed-days due to injury (1.1% and 0.4%, respectively).

# Profiles of priority injury areas

The National Injury Prevention and Safety Promotion Plan: 2004 Onwards has identified seven national injury prevention areas for action (Pointer et al. 2003; SIPP 2005); 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 cases are not distinguished in this report, largely because limitations of identification of Indigenous status necessitate a special approach. Injury among Aboriginal and Torres Strait Islander Australians is the subject of separate reports (Helps & Harrison 2004; Helps & Harrison 2006). Results for rural and remote populations, according to the Australian Standard Geographical Classification (ASGC) remoteness structure, were presented in the previous report in this series (Bradley & Harrison 2008). 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 (Pidd et al. 2006).

# 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 1999–00, 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 (Helps et al. 2002). Precise enumeration of cases is complicated by use of data organised in terms of separation events rather than in terms of cases of injured persons.

# 2 Community injury, Australia

ICD-10-AM case inclusion

Principal Diagnosis: **S00–T75, T79**

## 2.1 All community injury hospitalisations

**Table 2.1.1: Key indicators for all community injury cases, Australia, 2005–06**

| Indicator | Males | Females | Persons |
|---|---|---|---|
| All hospital separations | 3,438,248 | 3,873,645 | 7,311,983[(a)] |
| Separations from hospital due to community injury | 232,666 | 167,347 | 400,019[(b)] |
| Percentage of all separations | 6.8 | 4.3 | 5.5 |
| Estimated community injury cases* | 216,158 | 155,133 | 371,297 |
| Crude rate/100,000 population | 2,115.5 | 1,500.2 | 1,806.0 |
| Age-standardised rate/100,000 population | 2,141.2 | 1,404.6 | 1,789.8 |
| Total patient days[(c)] | 728,853 | 769,995 | 1,498,862 |
| Mean length of stay (days) | 3.4 | 5.0 | 4.0 |

Includes (a) 90 separations and (b) 6 separations and (c) 14 patient days for which sex was not reported.

* Omits inward transfers from acute hospitals.

### Overview

For public and private hospitals combined, *Injury, poisoning and certain other consequences of external causes* ranked fourth in the number of separations after *Factors influencing health status and contact with health services*, *Diseases of the digestive system* and *Neoplasms* (AIHW 2007). This represents an increase in position; this position is the same as for the previous year (Bradley & Harrison 2008).

In 2005–06, community injury accounted for 400,019 hospital separations, 5.5% of a total of 7,311,983 hospital separations from public, private and psychiatric hospitals in Australia (Table 2.1.1) (AIHW 2007). There were an estimated 371,297 incident injury cases in 2005–06. Community injury accounted for 1,498,862 patient days, at an average of 4.0 days per episode (Table 2.1.1).

The six most commonly reported identifiable causes of injury were:

1. Falls (36%)
2. Transportation (14%)
3. Intentional self-harm (6%)
4. Assault (6%)
5. Poisoning, pharmaceuticals (2%)
6. Fires, burns and scalds (1%)

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 community injury.

Many 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 measurement of the extent of overlap between the NHMD and national mortality database.

Cases with a Principal Diagnosis of S00–T75, T79 are included in Table 2.1.1, even if they lack an external cause or have a first reported external cause code of complications of surgical and medical care (Table 1.1). Cases so defined ($n$ = 1,995 in 2005–06) constitute a small proportion of Community injury (0.5% in 2005–06). There is some difficulty in determining how to treat these cases as they meet the Principal Diagnosis definition of Community injury but lack a meaningful external cause which necessitates coding of these cases as 'other/missing' for analysis of external cause.

## Age and sex distribution

The age and sex profile of community injury in 2005–06 was very similar to 2004–05 (Bradley & Harrison 2008) (Figure 2.1.1). Male age-specific rates were higher than for females until the age of 65 years, after which female rates overtook male rates. Male age-specific rates increased in the teens, peaked in the late teens and early 20s and declined until 65 years of age. The pattern differed for females; there was a small peak in the late teens, after which age-specific rates were relatively constant up to 65 years of age. For both sexes, a steep increment occurred from 70+ years, reaching a peak in the 85+ age group (M:F rate ratio of 1.5:1).

**Figure 2.1.1: Age-specific hospital separation rates for community injury by sex, Australia, 2005–06**

The percentage of community injury hospitalisations attributed to the age groups identified in the National Injury Prevention and Safety Promotion Plan: 2004–2014 (SIPP 2005) were 16% (*n* = 58,015) for children aged 0–14 years, 18% (*n* = 65,783) for youth and young adults aged 15–24 years, 43% (*n* = 159,494) for adults aged 25–64 years and 24% (*n* = 88,005) for older people aged 65 years and over (Table 2.1.2).

**Table 2.1.2: Case counts by age group for all major causes of community injury, Australia, 2005–06**

| | Age group (years) | | | | | | |
|---|---|---|---|---|---|---|---|
| **External cause** | **0–4** | **5–14** | **15–24** | **25–44** | **45–64** | **65+** | **Total** |
| **Unintentional** | | | | | | | |
| Falls | 7,396 | 16,556 | 8,157 | 13,573 | 20,100 | 66,784 | 132,566 |
| Transportation | 991 | 7,213 | 13,899 | 16,590 | 8,940 | 4,621 | 52,254 |
| Poisoning, pharmaceuticals | 1,320 | 217 | 1,107 | 1,819 | 924 | 971 | 6,358 |
| Poisoning, other substances | 437 | 117 | 424 | 680 | 460 | 280 | 2,398 |
| Fires, burns, scalds | 1,433 | 609 | 849 | 1,297 | 793 | 476 | 5,457 |
| Drowning | 232 | 55 | 65 | 67 | 53 | 22 | 494 |
| Other unintentional injuries | 6,876 | 12,939 | 25,807 | 37,681 | 23,687 | 12,497 | 119,487 |
| **Intentional** | | | | | | | |
| Intentional self-harm | 6* | 621 | 6,699 | 10,680 | 4,856 | 916 | 23,778 |
| Assault | 256 | 464 | 7,332 | 10,818 | 2,854 | 356 | 22,080 |
| Undetermined intent | 70 | 122 | 1,295 | 1,940 | 771 | 232 | 4,430 |
| Other | 34 | 51 | 149 | 316 | 595 | 850 | 1,995 |
| **Total** | **19,051** | **38,964** | **65,783** | **95,461** | **64,033** | **88,005** | **371,297** |

*Note:* Shaded area indicates the leading identifiable cause of injury for each column (i.e. it excludes *other unintentional injuries* because it is a miscellaneous category for a diverse range of injuries).

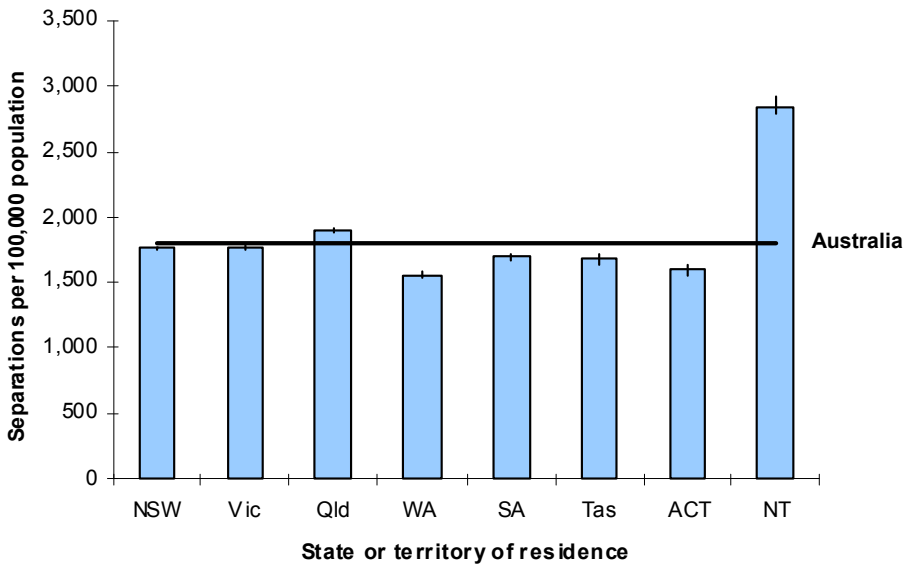
* It is most likely that these cases have resulted from coding errors.

## State and territory differences

Most jurisdictions had rates that were fairly similar to the national age-standardised rate (Figure 2.1.2 and Table 2.1.3). Although the Northern Territory had a noticeably higher rate than that for Australia, the difference was not statistically significant. *State of residence not reported* was only 0.8% (*n* = 3,090) and 0.1% (*n* = 367) were from *Other Territories*. The *Other Territories* consist of the Cocos and Keeling Islands, Christmas Island and Jervis Bay.

**Table 2.1.3: Age-standardised rates of community injury, states and territories, 2005–06**

| Jurisdiction | Age-standardised rate (per 100,000 population) | 95% CI |
|---|---|---|
| NSW | 1,761 | 1,751–1,771 |
| Vic | 1,766 | 1,754–1,777 |
| Qld | 1,902 | 1,889–1,916 |
| WA | 1,558 | 1,541–1,575 |
| SA | 1,700 | 1,680–1,720 |
| Tas | 1,685 | 1,649–1,721 |
| ACT | 1,599 | 1,555–1,643 |
| NT | 2,852 | 2,778–2,925 |
| **Australia** | **1,790** | **1,784–1,796** |




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

**Figure 2.1.2: Age-standardised rates of community injury, states and territories, 2005–06**

## Major types of injury

Falls constituted the largest proportion of injury hospitalisations, and accounted for 87% of hospitalisations in those aged 85+ years (Figure 2.1.3). Transport was reported for 14% of injury hospitalisation cases in early and was a substantial contributor up to and including 25–29 years, thereafter gradually declining to 2% of injury hospitalisations in the 85+ age group. Intentional self-harm was a lesser cause of injury, constituting an average of 11% of injury hospitalisation in each age group from 15–19 years up to and including 50–54 years. Assault accounted for an average of 11% of injury hospitalisations in each age group from 15–19 years up to and including 40–44 years. Poisoning by pharmaceuticals and fires, burns and scalds were most prevalent in children aged 0–4 years, comprising 7% and 8%, respectively of injury hospitalisations in 0–4 year olds.

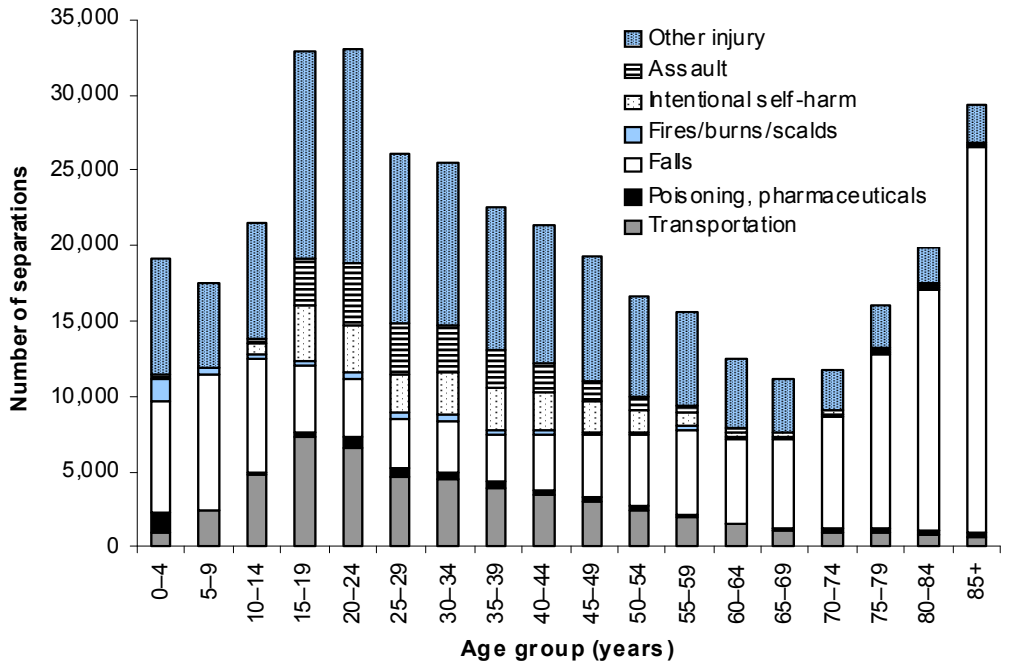



**Figure 2.1.3: Age distribution of cases for selected major causes of injury, Australia, 2005–06**

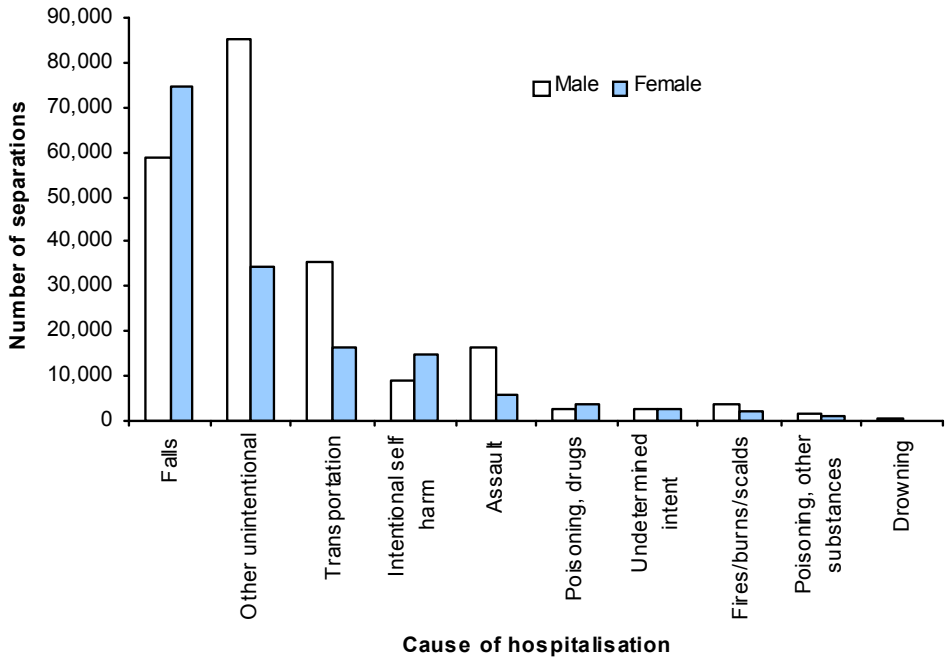



**Figure 2.1.4: Major causes of injury by gender, Australia, 2005–06**

The gender distribution differed according to external cause (Figure 2.1.4). The only external causes of injury where there were more females than males were falls and intentional self-harm.

The *Community injury* category with the largest number of cases in total after falls was other unintentional injuries. This was a heterogeneous category; it contained a large proportion of work- and sports-related injuries, but not all of them. Consistent with the previous report in this series (Bradley & Harrison 2008), other unintentional injuries is retained as the subject of one chapter instead of attempting to separate it into its component injury groups, which creates more problems than it solves.

## Principal diagnosis and body part injured

Body part injured is classified here and in similar tables elsewhere in this report according to Principal Diagnosis. If a patient is admitted due to injury and has injuries to more than one body part, then the most serious injury is normally coded as Principal Diagnosis and others as Additional Diagnoses. The head was the most commonly injured body region overall and in particular, for males (Table 2.1.4).

**Table 2.1.4: Principal diagnosis groups for community injury cases: males, females and persons, Australia 2005–06**

| | Males | Females | Persons† |
|---|---|---|---|
| Injuries to the head | 45,037 (20.8%) | 23,206 (15.0%) | 68,244 (18.4%) |
| Injuries to the neck | 4,453 (2.1%) | 3,227 (2.1%) | 7,681 (2.1%) |
| Injuries to the thorax | 8,903 (4.1%) | 6,162 (4.0%) | 15,066 (4.1%) |
| Injuries to the abdomen, lower back, lumbar spine & pelvis | 10,310 (4.8%) | 11,085 (7.1%) | 21,395 (5.8%) |
| Injuries to the shoulder & upper arm | 13,937 (6.4%) | 10,637 (6.9%) | 24,574 (6.6%) |
| Injuries to the elbow & forearm | 21,781 (10.1%) | 18,426 (11.9%) | 40,207 (10.8%) |
| Injuries to the wrist & hand | 38,309 (17.7%) | 11,506 (7.4%) | 49,815 (13.4%) |
| Injuries to the hip & thigh | 11,353 (5.3%) | 19,288 (12.4%) | 30,642 (8.3%) |
| Injuries to the knee & lower leg | 26,156 (12.1%) | 18,026 (11.6%) | 44,182 (11.9%) |
| Injuries to the ankle & foot | 8,220 (3.8%) | 5,166 (3.3%) | 13,386 (3.6%) |
| Injuries involving multiple body regions | 175 (0.1%) | 128 (0.1%) | 303 (0.1%) |
| Injuries to unspecified parts of trunk, limb or body region | 1,259 (0.6%) | 1,020 (0.7%) | 2,279 (0.6%) |
| Effects of foreign body entering through natural orifice | 4,206 (1.9%) | 2,708 (1.7%) | 6,914 (1.9%) |
| Burns | 4,403 (2.0%) | 2,216 (1.4%) | 6,619 (1.8%) |
| Frostbite | 5 (0.0%) | * | 6 (0.0%) |
| Poisoning by drugs, medicaments & biological substances | 10,661 (4.9%) | 17,949 (11.6%) | 28,612 (7.7%) |
| Toxic effects of non-medical substances | 4,230 (2.0%) | 2,750 (1.8%) | 6,980 (1.9%) |
| Other and unspecified effects of external causes | 1,965 (0.9%) | 1,266 (0.8%) | 3,231 (0.9%) |
| Certain early complications of trauma | 795 (0.4%) | 366 (0.2%) | 1,161 (0.3%) |
| **Total** | **216,158 (100.0%)** | **155,133 (100.0%)** | **371,297 (100.0%)** |

† Persons includes 6 cases for which sex was not reported.

* Small cell counts have been suppressed.

**Table 2.1.5: Principal diagnosis groups for community injury cases by age, Australia 2005–06**

| | 0–4 | 5–14 | 15–24 | 25–44 | 45–64 | 65+ | All ages |
|---|---|---|---|---|---|---|---|
| Injuries to the head | 7,031 | 7,487 | 14,750 | 17,056 | 8,395 | 13,525 | 68,244 |
| Injuries to the neck | 110 | 593 | 1,888 | 2,576 | 1,357 | 1,157 | 7,681 |
| Injuries to the thorax | 68 | 262 | 1,585 | 3,450 | 3,732 | 5,969 | 15,066 |
| Injuries to the abdomen, lower back, lumbar spine & pelvis | 282 | 1,323 | 3,064 | 4,630 | 3,352 | 8,744 | 21,395 |
| Injuries to the shoulder & upper arm | 1,065 | 3,061 | 3,365 | 4,890 | 4,690 | 7,503 | 24,574 |
| Injuries to the elbow & forearm | 1,615 | 12,462 | 5,201 | 6,944 | 6,395 | 7,590 | 40,207 |
| Injuries to the wrist & hand | 1,732 | 4,147 | 12,850 | 17,907 | 9,607 | 3,572 | 49,815 |
| Injuries to the hip & thigh | 476 | 910 | 1,204 | 1,986 | 2,921 | 23,145 | 30,642 |
| Injuries to the knee & lower leg | 552 | 3,523 | 8,066 | 13,262 | 9,838 | 8,941 | 44,182 |
| Injuries to the ankle & foot | 633 | 1,695 | 2,615 | 3,984 | 2,831 | 1,628 | 13,386 |
| Injuries involving multiple body regions | 5 | 17 | 62 | 93 | 40 | 86 | 303 |
| Injuries to unspecified parts of trunk, limb or body region | 55 | 159 | 389 | 615 | 394 | 667 | 2,279 |
| Effects of foreign body entering through natural orifice | 1,529 | 981 | 501 | 1,208 | 1,431 | 1,264 | 6,914 |
| Burns | 1,539 | 758 | 1,113 | 1,687 | 1,011 | 511 | 6,619 |
| Frostbite | 0 | 0 | * | 4 | 0 | * | 6 |
| Poisoning by drugs, medicaments & biological substances | 1,358 | 770 | 7,190 | 11,600 | 5,653 | 2,041 | 28,612 |
| Toxic effects of non-medical substances | 605 | 591 | 1,250 | 2,332 | 1,541 | 661 | 6,980 |
| Other & unspecified effects of external causes | 362 | 157 | 499 | 890 | 609 | 714 | 3,231 |
| Certain early complications of trauma | 34 | 68 | 190 | 347 | 236 | 286 | 1,161 |
| **Total** | **19,051** | **38,964** | **65,783** | **95,461** | **64,033** | **88,005** | **371,297** |

*Note:* Shading denotes highest category for each age group.

* Small cell counts have been suppressed.

## 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 estimated cases are included in the estimation of case counts (as a best available approximation of newly admitted cases). One patient day is counted for same day patients (admitted and discharged from hospital on the same day). LOS provides an approximate indication of case severity, that is, severe injuries are more likely to result in longer episodes of care than minor injuries. The mean length of stay (MLOS) is the average number of days each patient stays in hospital. This is calculated by dividing the total number of patient days for a reporting period (including inward transfers) by the estimated number of actual cases for the same period. Table 2.1.6 presents an aggregate estimate of LOS and MLOS.

**Table 2.1.6: Length of stay for all community injury: case counts, length of stay, percentage of total patient days for acute care of injury and mean length of stay, Australia, 2005–06**

| | Males | | | | Females | | | | Persons | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **External cause** | **Count** | **LOS** | **Per cent** | **MLOS** | **Count** | **LOS** | **Per cent** | **MLOS** | **Count** | **LOS** | **Per cent** | **MLOS** |
| **Unintentional** | | | | | | | | | | | | |
| Falls | 58,323 | 289,178 | 39.7 | 5.0 | 74,242 | 517,163 | 67.2 | 7.0 | 132,566[(a)] | 806,342[(e)] | 53.8 | 6.1 |
| Transportation | 35,779 | 162,857 | 22.3 | 4.6 | 16,472 | 71,917 | 9.3 | 4.4 | 52,254[(b)] | 234,785[(f)] | 15.7 | 4.5 |
| Poisoning, pharmaceuticals | 2,917 | 6,636 | 0.9 | 2.3 | 3,441 | 7,672 | 1.0 | 2.2 | 6,358 | 14,308 | 1.0 | 2.3 |
| Poisoning, other substances | 1,421 | 2,854 | 0.4 | 2.0 | 977 | 1,600 | 0.2 | 1.6 | 2,398 | 4,454 | 0.3 | 1.9 |
| Fires, burns, scalds | 3,542 | 20,402 | 2.8 | 5.8 | 1,915 | 10,498 | 1.4 | 5.5 | 5,457 | 30,900 | 2.1 | 5.7 |
| Drowning | 334 | 1,044 | 0.1 | 3.1 | 160 | 398 | 0.1 | 2.5 | 494 | 1,442 | 0.1 | 2.9 |
| Other unintentional injuries | 84,973 | 165,053 | 22.6 | 1.9 | 34,514 | 96,276 | 12.5 | 2.8 | 119,487 | 261,329 | 17.4 | 2.2 |
| **Intentional** | | | | | | | | | | | | |
| Intentional self-harm | 9,104 | 31,870 | 4.4 | 3.5 | 14,672 | 40,746 | 5.3 | 2.8 | 23,778[(c)] | 72,618[(g)] | 4.8 | 3.1 |
| Assault | 16,572 | 38,441 | 5.3 | 2.3 | 5,508 | 12,854 | 1.7 | 2.3 | 22,080 | 51,295 | 3.4 | 2.3 |
| Undetermined intent | 2,085 | 4,553 | 0.6 | 2.2 | 2,345 | 4,835 | 0.6 | 2.1 | 4,430 | 9,388 | 0.6 | 2.1 |
| Other/missing | 1,108 | 5,965 | 0.8 | 5.4 | 887 | 6,036 | 0.8 | 6.8 | 1,995 | 12,001 | 0.8 | 6.0 |
| **Total** | **216,158** | **728,853** | **100.0** | **3.4** | **155,133** | **769,995** | **100.0** | **5.0** | **371,297[(d)]** | **1,498,862[(h)]** | **100.0** | **4.0** |

Includes (a) 1, (b) 3, (c) 2 and (d) 6 separations, and (e) 1, (f) 11, (g) 2 and (h) 14 patient days where sex was not reported.
*Note:* Shaded areas indicate three highest figures for each column.

The MLOS in 2005–06 for community injury was 4.0 days (1,498,862 patient days for 371,297 estimated cases). Discharge occurred on the same day of admission for 36% ($n$ = 134,858) of these injury cases.

The mean length of stay for all community injury rose with age (Figure 2.1.5). The mean length of stay was 1.8 days for children aged 0–14 years, 2.3 days for young people aged 15–24 years, 2.7 days for adults aged 25–44 years, 3.7 days for adults aged 45–64 years and 8.6 days for older people aged 65+ years.

**Figure 2.1.5: Length of stay per episode for all community injury by age and sex, Australia, 2005–06**

## Time trends

Age-standardised rates for *Community injury* appear to change little over time from 1,724 per 100,000 of the population in 1999–00 (males: 2,069 per 100,000, females: 1,343 per 100,000) to 1,790 per 100,000 of the population in 2005–06 (males: 2,141 per 100,000, females: 1,405 per 100,000). Age-standardised rates for males were consistently higher than for females (Figure 2.1.6).

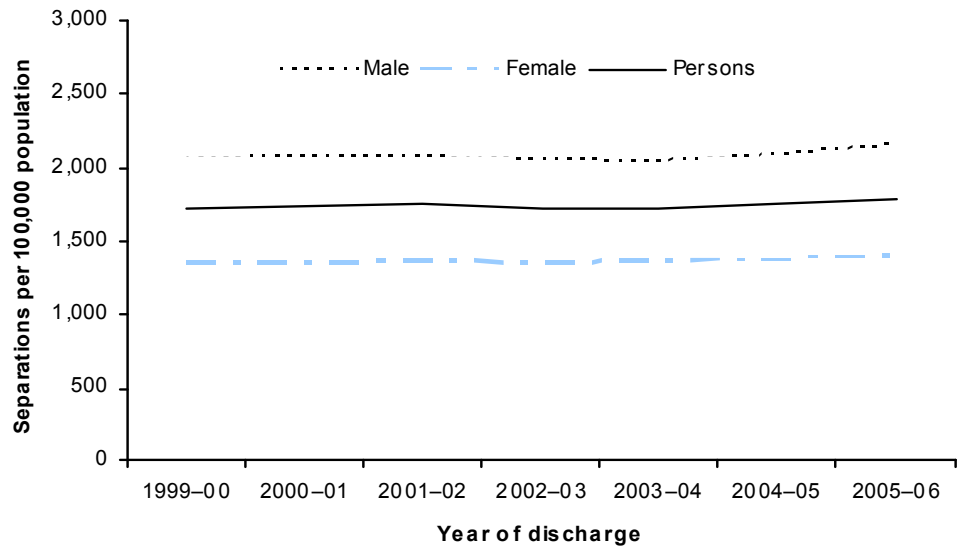



**Figure 2.1.6: Age-standardised rates for Community injury, Australia, 1999–00 to 2005–06**

## Activity and place

Overall, where the type of activity was specified, the highest proportions of cases occurred while playing sports (10.2%) or while working for income (6.3%). This pattern varied between males and females: 13.5% of males were injured while engaged in sports compared with 5.5% of females; and 9.4% of males were injured while working for income compared with only 2.1% of females. Females were more likely to be injured while resting, sleeping, eating or engaging in other vital activities (7.2%) compared with 3.3% of males (Table 2.1.7).

For a high proportion of cases (72.9%) the type of activity being undertaken at the time of injury was recorded as *Other specified activity* or *Unspecified activity*. For a small percentage of cases (0.6%) no activity had been recorded or the case was not eligible to receive an activity code (according to standard ICD-10-AM coding rules, activity codes are applicable within the range of external cause categories V01–Y34) (Table 2.1.7).

**Table 2.1.7: Activity when injury occurred for all Community injury, case counts, Australia, 2005–06**

| Activity | Males | Percentage | Females | Percentage | Persons[(a)] | Percentage |
|---|---|---|---|---|---|---|
| While engaged in sports | 29,190 | 13.5 | 8,609 | 5.5 | 37,800 | 10.2 |
| While engaged in leisure | 4,044 | 1.9 | 2,231 | 1.4 | 6,276 | 1.7 |
| While working for income | 20,269 | 9.4 | 3,295 | 2.1 | 23,564 | 6.3 |
| While engaged in other types of work | 7,480 | 3.5 | 5,123 | 3.3 | 12,603 | 3.4 |
| While resting, sleeping, eating or engaging in other vital activities | 7,223 | 3.3 | 11,208 | 7.2 | 18,431 | 5 |
| Other specified activity | 31,161 | 14.4 | 30,379 | 19.6 | 61,542 | 16.6 |
| Unspecified activity | 115,561 | 53.5 | 93,322 | 60.2 | 208,885 | 56.3 |
| Activity not reported/not applicable | 1,230 | 0.6 | 966 | 0.6 | 2,196 | 0.6 |
| **Total** | **216,158** | **100.0** | **155,133** | **100.0** | **371,297** | **100** |

(a) Includes 6 cases for which sex was not reported.

*Note:* Shading denotes the two most common activities in each column.

Overall, where place of injury was specified, the highest proportions of cases occurred at home (26.3%), on a street or highway (10.4%) on in a sports and athletics area (5.4%). This pattern for place of injury varied between males and females: a substantially higher percentage of females than males were injured at home (35.9% vs 19.4%); males were more likely than females to have been injured in a sports and athletics area (7.4% vs 2.6% (Table 9).

Place was recorded as *Other specified place of occurrence* or *Unspecified place of occurrence* for 44.1% of cases. For a small percentage of cases (0.1%) no place of occurrence had been recorded or the case was not eligible to receive a place code (according to standard ICD-10-AM coding rules, activity codes are applicable within the range of external cause categories V01–Y89) (Table 2.1.8).

**Table 2.1.8: Place of occurrence for all Community injury, case counts, Australia, 2005–06**

| Activity | Males | Percentage | Females | Percentage | Persons[(a)] | Percentage |
|---|---|---|---|---|---|---|
| Home | 41,962 | 19.4 | 55,680 | 35.9 | 97,642 | 26.3 |
| Residential institution | 4,700 | 2.2 | 12,630 | 8.1 | 17,330 | 4.7 |
| School | 4,537 | 2.1 | 2,580 | 1.7 | 7,118 | 1.9 |
| Health Service area | 1,865 | 0.9 | 2,519 | 1.6 | 4,384 | 1.2 |
| Other specified institution and public administrative area | 465 | 0.2 | 568 | 0.4 | 1,033 | 0.3 |
| Sports and athletics area | 15,945 | 7.4 | 4,077 | 2.6 | 20,022 | 5.4 |
| Street and highway | 24,098 | 11.1 | 14,537 | 9.4 | 38,636 | 10.4 |
| Trade and service area | 6,877 | 3.2 | 4,177 | 2.7 | 11,054 | 3.0 |
| Industrial and construction area | 5,837 | 2.7 | 361 | 0.2 | 6,198 | 1.7 |
| Farm | 2,877 | 1.3 | 841 | 0.5 | 3,719 | 1.0 |
| Other specified place of occurrence | 9,672 | 4.5 | 4,414 | 2.8 | 14,087 | 3.8 |
| Unspecified place of occurrence | 97,082 | 44.9 | 52,564 | 33.9 | 149,648 | 40.3 |
| Place not reported/not applicable | 241 | 0.1 | 185 | 0.1 | 426 | 0.1 |
| **Total** | **216,158** | **100.0** | **155,133** | **100.0** | **371,297** | **100.0** |

(a) Includes 6 cases for which sex was not reported.

*Note:* Shading denotes the most common places of occurrence in each column.

The large number of injury cases lacking detail on the activity code limits meaningful interpretation of these counts. For this reason, activity data are not reported extensively in this report. Coding was more complete for place of occurrence, but over a third 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: Unintentional injuries

## 2.2 Falls

ICD-10-AM case inclusion

Principal Diagnosis: **S00–T75, T79** and

First reported external cause: **W00–W19**

**Table 2.2.1: Key indicators for unintentional fall cases, Australia, 2005–06**

| Indicator | Males | Females | Persons[(a)] |
|---|---|---|---|
| Separations from hospital due to falls | 63,559 | 81,780 | 145,340 |
| Percentage of all community injury separations | 27.3 | 48.9 | 36.3 |
| Estimated cases* | 58,323 | 74,242 | 132,566 |
| Crude rate/100,000 population | 570.8 | 717.9 | 644.8 |
| Age-standardised rate/100,000 population | 597.9 | 622.9 | 624.4 |
| Mean length of stay (days) | 5.0 | 7.0 | 6.1 |
| Total patient days | 289,178 | 517,163 | 806,342 |

* Omits inward transfers from acute hospitals.

(a) Includes 1 case for which sex was not stated.

This chapter covers hospitalised injury due to unintentional falls. Falls were responsible for 36% of all community injury hospitalisations in the financial year 2005–06 (Table 2.2.1).

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; (Helps 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 ($n$ = 142), assault ($n$ = 22) or falls of undetermined intent ($n$ = 33), falls inside or from trains or trams ($n$ = 79), non-collision pedal or motorcycle accidents which can include falls ($n$ = 10,540) falls from watercraft ($n$ = 77) fall in, on or from aircraft ($n$ = 6), parachutist accidents ($n$ = 43) falls from animals or animal-driven vehicles ($n$ = 2,573), exposure to uncontrolled fire in a building or structures which can include falls ($n$ = 196), or falls into water that resulted in drowning or other effects of immersion ($n$ = 150).

## Age and sex distribution

The age-specific rates for males and females were similar until the age of 65 years after which female rates were in excess (Figure 2.2.1). Rates for both sexes rose steeply from 70 years.

**Figure 2.2.1: Age-specific hospital separation rates for unintentional falls by sex, Australia, 2005–06**

Half of all fall injuries occurred in elderly adults aged 65+ years and 18% occurred in children aged 0–14 years (Table 2.2.2). Nearly 2.5 times as many elderly females aged 65+ years sustained a fall injury compared with elderly males aged 65+ years.

**Table 2.2.2: Fall cases by age group, Australia, 2005–06**

| | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| **Age group** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** |
| 0–14 years | 14,617 | 25.1 | 9,334 | 12.6 | 23,952 | 18.1 |
| 15–24 years | 6,172 | 10.6 | 1,985 | 2.7 | 8,157 | 6.2 |
| 25–44 years | 8,581 | 14.7 | 4,992 | 6.7 | 13,573 | 10.2 |
| 45–64 years | 9,468 | 16.2 | 10,632 | 14.3 | 20,100 | 15.2 |
| 65+ years | 19,485 | 33.4 | 47,299 | 63.7 | 66,784 | 50.4 |
| **Total** | **58,323** | **100.0** | **74,242** | **100.0** | **132,566[(a)]** | **100.0** |

(a) Includes 1 case for which sex was not stated.

## State and territory differences

Rates of fall injury for New South Wales, Victoria and the Northern Territory were significantly above the national rate, and those for Western Australia, South Australia and Tasmania significantly below it (Table 2.2.3 and Figure 2.2.2). The rates for Queensland and the Australian Capital Territory were similar to the Australian rate.

**Table 2.2.3: Age-standardised rates of fall injury, states and territories, 2005–06**

| Jurisdiction | Age-standardised rate (per 100,000 population) | 95% CI |
|---|---|---|
| NSW | 650 | 644–656 |
| Vic | 644 | 637–651 |
| Qld | 629 | 622–637 |
| WA | 515 | 505–525 |
| SA | 535 | 524–545 |
| Tas | 537 | 517–557 |
| ACT | 608 | 580–637 |
| NT | 726 | 684–768 |
| **Australia** | **624** | **621–628** |

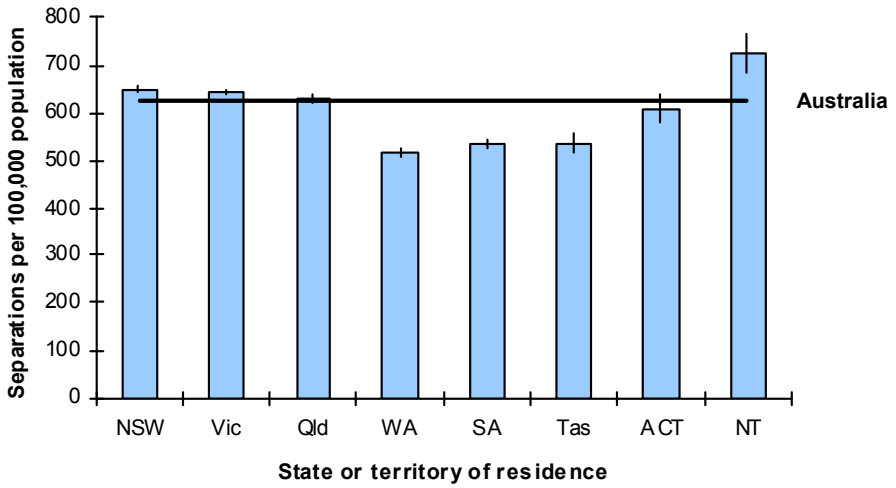



**Figure 2.2.2: Age-standardised rates of fall injury, states and territories, 2005–06**

## Principal diagnosis and body part injured

Close to two-thirds of admitted injury cases due to falls involved injuries to the shoulder and upper limb or hip and lower limb (Table 2.2.4).

**Table 2.2.4: Principal Diagnosis by body region for fall injury, Australia, 2005–06**

| Principal Diagnosis by body region | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| | Count | Per cent | Count | Per cent | Count | Per cent |
| Head | 13,846 | 23.7 | 12,316 | 16.6 | 26,163 | 19.7 |
| Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis) | 8,251 | 14.1 | 10,596 | 14.3 | 18,847 | 14.2 |
| Shoulder and upper limb | 19,368 | 33.2 | 22,829 | 30.7 | 42,197 | 31.8 |
| Hip and lower limb | 16,382 | 28.1 | 27,910 | 37.6 | 44,292 | 33.4 |
| Other injuries not specified by body region | 476 | 0.8 | 591 | 0.8 | 1,067 | 0.8 |
| **All body regions** | **58,323** | **100.0** | **74,242** | **100.0** | **132,566[(a)]** | **100.0** |

(a) Includes 1 case for which sex was not stated.

Seven specific injury types accounted for close to two-thirds ($n$ = 85,221) of all fall injuries ($n$ = 832,566) (Table 2.2.5). Fracture of the limbs accounted for close to two-thirds of all fall injuries (65%; $n$ = 86,489).

*Fracture of forearm* was the most common injury (26%) and the lower end of the radius was most frequently broken (61%; $n$ = 13,734).

For the second most common fall injury—*fracture of femur* (15%), 88% were neck of femur fractures (neck of femur $n$ = 9,180; pertrochanteric fracture $n$ = 7,282; subtrochanteric $n$ = 811). There were 2.4 times as many females as males with a broken femur.

No specific site of injury was commonly involved for *fracture of lower leg, including ankle*.

The upper ($n$ = 4,919) and lower end ($n$ = 3,317) of the humerus were most frequently broken (88%) for *fracture of shoulder and upper arm*.

An open wound of the scalp was most common for *open wound of head* (35%; $n$ = 3,429).

For *fracture of lumbar spine and pelvis*, 52% were fracture of pubis ($n$ = 3,258) and 25% ($n$ = 1,578) were fracture of lumbar vertebra.

For *intracranial injury*, 58% were concussive injury ($n$ = 3,565) the majority of which were loss of consciousness for less than 30 minutes ($n$ = 1,775) or concussion ($n$ = 1,201). Twenty-two per cent of *intracranial injury* cases were traumatic subdural haemorrhage ($n$ = 1,362).

**Table 2.2.5: Top 7 specific injuries for unintentional falls, Australia, 2005–06**

| | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| **Principal Diagnosis** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** |
| Fracture of forearm | 9,995 | 28.8 | 12,543 | 24.8 | 22,538 | 26.4 |
| Fracture of femur | 5,771 | 16.6 | 13,769 | 27.3 | 19,540 | 22.9 |
| Fracture of lower leg, including ankle | 4,996 | 14.4 | 6,724 | 13.3 | 11,720 | 13.8 |
| Open wound of head | 5,040 | 14.5 | 4,643 | 9.2 | 9,683 | 11.4 |
| Fracture of shoulder and upper arm | 3,420 | 9.9 | 5,911 | 11.7 | 9,331 | 10.9 |
| Fracture of lumbar spine and pelvis | 1,847 | 5.3 | 4,378 | 8.7 | 6,225 | 7.3 |
| Intracranial injury | 3,625 | 10.4 | 2,559 | 5.1 | 6,184 | 7.3 |
| **Sub-total of top 7 diagnoses** | **34,694** | **100.0** | **50,527** | **100.0** | **85,221** | **100.0** |

Among children aged 0–14 years of age injured by a fall (*n* = 23,952), *fracture of forearm* (*n* = 10,019) was the most common injury, followed by *fracture of shoulder and upper arm* (*n* = 2,816) and *open wound of head* (*n* = 2,357).

Among youth and young people aged 15–24 years injured by a fall (*n* = 8,157), *fracture of forearm* (*n* = 1,396) was the most common injury, followed by *fracture of lower leg, including ankle* (*n* = 1,173) and *intracranial injury* (*n* = 652).

For adults aged 25–44 years of age (*n* = 13,573), *fracture of lower leg, including ankle* (*n* = 2,315), *fracture of forearm* (*n* = 2,013) and *open wound of head* (*n* = 880) were the most common fall injuries.

Among adults aged 45–64 years (*n* = 20,100), the most common fall injuries were *fracture of forearm* (*n* = 3,614), *fracture of lower leg, including ankle* (*n* = 3,569), *fracture of shoulder and upper arm* (*n* = 1,317), and *fracture of femur* (1,262).

For older people aged 65+ years (*n* = 66,784), *fracture of femur* (*n* = 17,457) was the most common injury, followed by *fracture of forearm* (*n* = 5,496), *fracture of lumbar spine and pelvis* (*n* = 5,207), *open wound of head* (*n* = 4,945), *fracture of shoulder and upper arm* (*n* = 4,430) and *fracture of lower leg, including ankle* (*n* = 3,483).

## Mechanism

The most commonly identified mechanism for all persons was *fall on the same level from slipping, tripping and stumbling* (27% of all fall injuries; *n* = 35,590) for which females outnumbered males 1.8:1 (Table 2.2.6). Most *falls on the same level from slipping, tripping and stumbling* involved older people aged 65+ years (17% of all fall injuries; *n* = 22,801, males *n* = 5,873; females *n* = 16,928), of which 13,940 cases were *fall on the same level from tripping* (males *n* = 3,463; females *n* = 10,477); 6,126 cases (males *n* = 1,548; females *n* = 4,578) were *fall on the same level from slipping* and 2,735 cases were *fall on the same level from stumbling* (males *n* = 862; females *n* = 1,873).

A *fall involving playground equipment* accounted for only 4% of fall injuries (*n* = 5,721), yet it was the most common mechanism of injury for children aged 0–14 years (*n* = 5,523), with 59% of child fall injuries being from playground climbing equipment e.g. the monkey bar or jungle gym (males *n* = 873; females *n* = 1,033) and trampolines (males *n* = 720; females *n* = 654).

Seven per cent of fall injuries (*n* = 9,179) were a *fall on and from stairs and steps* and 45% of such cases occurred in older people aged 65+ years (males *n* = 1,252; females *n* = 2,851).

Three per cent of fall injuries were from *other fall on the same level due to collision with, or pushing, by another person* (*n* = 3,599) and males outnumbered females by nearly 5:1. Although a large number of injury cases lack detail on the activity code, only 15% (*n* = 539) of falls due to collision with or pushing by another person were unspecified or not reported, so the activity code is meaningful in this context. Most cases occurred while engaged in sports (males *n* = 2,507; females *n* = 186).

Two per cent of fall injuries were falls *involving ice-skates, skis, roller-skates or skateboards* (*n* = 2,927) and males outnumbered females 3:1. Most (66%) were falls from a skateboard (male *n* = 1,611; female *n* = 329).

Males outnumbered females 4:1 for fall injuries due to fall on and from ladder, 22:1 for *fall on and from scaffolding*, 4:1 for *fall from, out of or through building or structure*, 4:1 for *fall from tree*, 2:1 for *fall from cliff* and 4:1 for *diving and jumping into water*.

**Table 2.2.6: External causes of unintentional fall injury by sex, Australia, 2005–06**

| ICD-10-AM Code | External cause | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|---|
| | | Count | Per cent | Count | Per cent | Count | Per cent |
| W00 | Fall on same level involving ice and snow | 34 | 0.1 | 40 | 0.1 | 74 | 0.1 |
| W01 | Fall on same level from slipping, tripping and stumbling | 11,565 | 19.8 | 24,024 | 32.4 | 35,590 | 26.8 |
| W01.0 | Fall on same level from slipping | 3,690 | 6.3 | 7,562 | 10.2 | 11,252 | 8.5 |
| W01.1 | Fall on same level from tripping | 6,362 | 10.9 | 14,086 | 19.0 | 20,449 | 15.4 |
| W01.2 | Fall on same level from stumbling | 1,513 | 2.6 | 2,376 | 3.2 | 3,889 | 2.9 |
| W02 | Fall involving ice-skates, skis, roller-skates or skateboards | 2,195 | 3.8 | 732 | 1.0 | 2,927 | 2.2 |
| W02.0 | Fall involving roller skates | 160 | 0.3 | 171 | 0.2 | 331 | 0.2 |
| W02.1 | Fall involving skateboard | 1,611 | 2.8 | 329 | 0.4 | 1,940 | 1.5 |
| W02.2 | Fall involving water ski | 78 | 0.1 | 19 | 0.0 | 97 | 0.1 |
| W02.3 | Fall involving snow ski | 135 | 0.2 | 95 | 0.1 | 230 | 0.2 |
| W02.4 | Fall involving snow board | 131 | 0.2 | 31 | 0.0 | 162 | 0.1 |
| W02.5 | Fall involving ice skates | 80 | 0.1 | 87 | 0.1 | 167 | 0.1 |
| W03 | Other fall on same level due to collision with, or pushing by, another person | 2,976 | 5.1 | 623 | 0.8 | 3,599 | 2.7 |
| W04 | Fall while being carried or supported by other persons | 264 | 0.5 | 240 | 0.3 | 504 | 0.4 |
| W05 | Fall involving wheelchair | 324 | 0.6 | 392 | 0.5 | 716 | 0.5 |
| W06 | Fall involving bed | 1,627 | 2.8 | 2,838 | 3.8 | 4,465 | 3.4 |
| W07 | Fall involving chair | 1,524 | 2.6 | 2,222 | 3.0 | 3,746 | 2.8 |
| W08 | Fall involving other furniture | 486 | 0.8 | 447 | 0.6 | 933 | 0.7 |
| W09 | Fall involving playground equipment | 3,025 | 5.2 | 2,696 | 3.6 | 5,721 | 4.3 |
| W09.0 | Fall involving tree house | 65 | 0.1 | 29 | 0.0 | 94 | 0.1 |
| W09.1 | Fall involving flying fox | 183 | 0.3 | 183 | 0.2 | 366 | 0.3 |
| W09.2 | Fall involving playground climbing apparatus | 876 | 1.5 | 1,038 | 1.4 | 1,914 | 1.4 |
| W09.3 | Fall involving slide | 342 | 0.6 | 202 | 0.3 | 544 | 0.4 |
| W09.4 | Fall involving swing | 296 | 0.5 | 243 | 0.3 | 539 | 0.4 |
| W09.5 | Fall involving seesaw | 20 | 0.0 | 25 | 0.0 | 45 | 0.0 |
| W09.6 | Fall involving trampoline | 779 | 1.3 | 681 | 0.9 | 1,460 | 1.1 |
| W09.8 | Fall involving other specified playground equipment | 208 | 0.4 | 118 | 0.2 | 326 | 0.2 |
| W09.9 | Fall involving unspecified playground equipment | 256 | 0.4 | 177 | 0.2 | 433 | 0.3 |
| W10 | Fall on and from stairs and steps | 3,549 | 6.1 | 5,630 | 7.6 | 9,179 | 6.9 |
| W11 | Fall on and from ladder | 3,165 | 5.4 | 744 | 1.0 | 3,909 | 2.9 |
| W12 | Fall on and from scaffolding | 291 | 0.5 | 13 | 0.0 | 304 | 0.2 |
| W13 | Fall from, out of or through building or structure | 2,777 | 4.8 | 643 | 0.9 | 3,420 | 2.6 |
| W14 | Fall from tree | 925 | 1.6 | 249 | 0.3 | 1,174 | 0.9 |
| W15 | Fall from cliff | 229 | 0.4 | 102 | 0.1 | 331 | 0.2 |
| W16 | Diving or jumping into water causing injury other than drowning or submersion | 386 | 0.7 | 105 | 0.1 | 491 | 0.4 |
| W17 | Other fall from one level to another | 3,360 | 5.8 | 1,910 | 2.6 | 5,270 | 4.0 |
| W18 | Other fall on same level | 9,132 | 15.7 | 13,118 | 17.7 | 22,250 | 16.8 |
| W19 | Unspecified fall | 10,489 | 18.0 | 17,474 | 23.5 | 27,963 | 21.1 |
| **Total** | | **58,323** | **100.0** | **74,242** | **100.0** | **132,566[(a)]** | **100.0** |

(a) Includes 1 case for which sex was not stated.

Figure 2.2.3 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, particularly in the 5–9 year age group (age-specific rate of 250 per 100,000 for males and 260 per 100,000 for females).

The most frequent cause of injury for male children aged 10–14 years was falls involving ice-skates, skis, roller-skates or skateboards (age-specific rate of 120 per 100,000) followed by falls on the same level due to collision with, or pushing by, another person (age-specific rate of 115 per 100,000). Cases in the former category were most frequently falls involving a skateboard—101 males per 100,000). For female children aged 10–14 years, the most frequent cause of injury was falls from slipping, tripping and stumbling (age-specific rate of 60 per 100,000).

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 reaching a peak in the 15–19 year age group (106 per 100,000). Among males aged 30–34 years, slipping, tripping and stumbling was the most common cause of falls (42 per 100,000), and emerged as the predominant cause of injury in older age groups, incrementally increasing up to 1,829 per 100,000 in males aged 85+ years. The most common cause of injury in females aged 15–19 years was slipping, tripping and stumbling (27 per 100,000) and this became the predominant cause of injury in older ages, incrementally increasing up to 2,914 per 100,000 in the 85+ age group.

Falls from a bed increased sharply in prevalence from 65+ years and reached a peak in the 85+ age group with age-specific rates of 379 per 100,000 for males and 571 per 100,000 for females. A not dissimilar pattern was observed for falls from stairs and falls involving a chair. In the former category, rates rose sharply for males from 70+ years and for females from 65+ years. Rates peaked for both sexes in the 85+ age group with 262 per 100,000 for males and 327 per 100,000 for females. In the latter category—falls involving a chair—male rates rose sharply from 70+ years and females rates showed a dramatic rise from 75+ years. Rates for both sexes peaked in the 85+ age group with 211 per 100,000 for males and 279 per 100,000 for females.

Injuries involving a fall from a ladder were more common in males than females and occurred mostly from middle age onwards, particularly in males aged 60–84 years of age (with peaks of 80 per 100,000 in males aged 65–69 years and 79 per 100,000 in males aged 75–79 years).

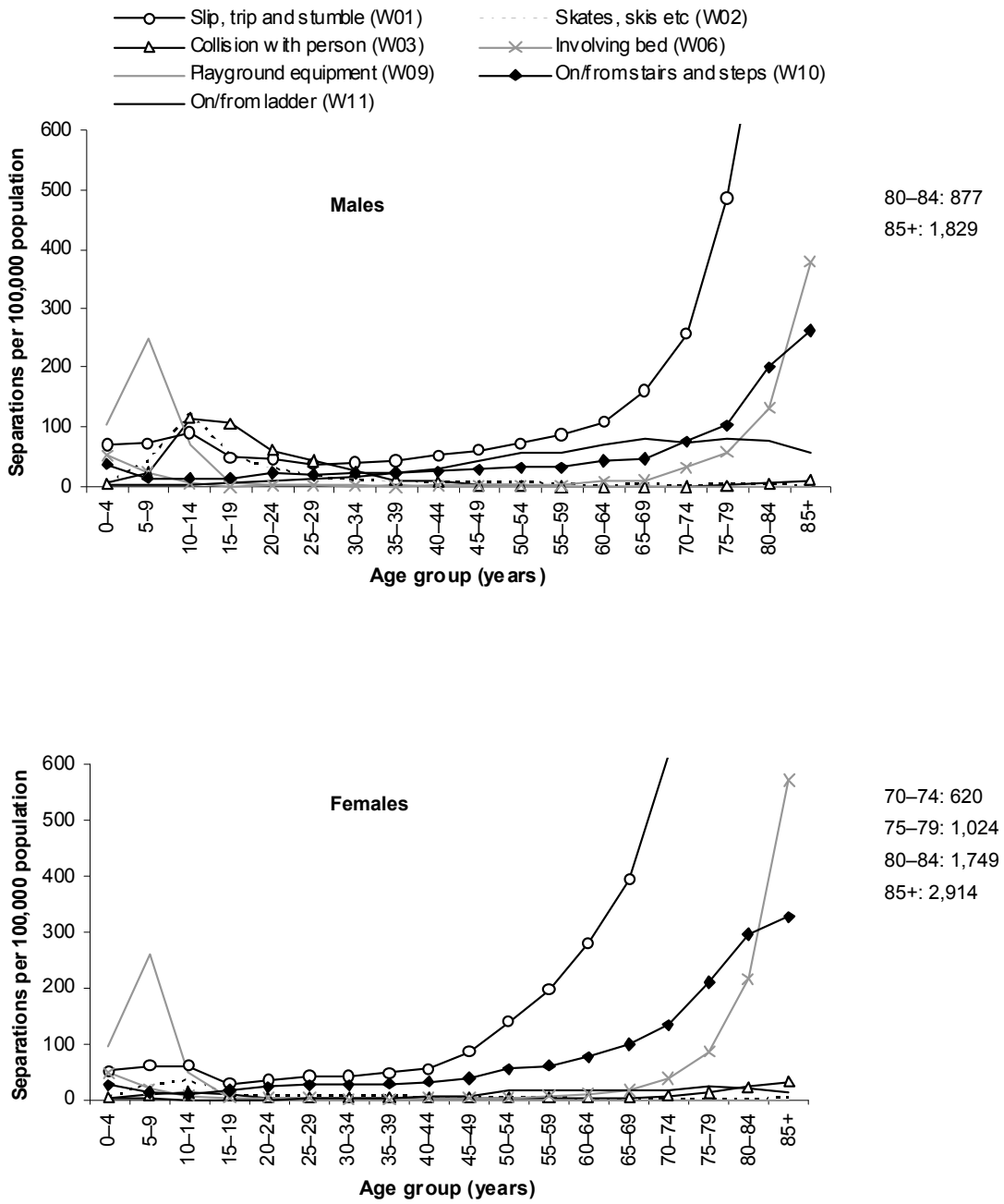



**Figure 2.2.3: Age-specific hospital separation rates for fall injury by sex, Australia, 2005–06**

## Length of stay

Mean length of stay (all ages) was longer for unintentional falls than for any of the other types of *Community injury* that are the topics of chapters in this report. This reflects the long mean length of stay for falls cases at older ages (Figure 2.2.4) which are numerous (Table 2.2.7). The mean length of stay for fall injury hospital cases rose with age (Figure 2.2.4). The mean length of stay was 1.5 days for children aged 0–14 years, 2.2 days for young people aged 15–24 years, 3.0 days for adults aged 25–44 years, 4.5 days for adults aged 45–64 years and 9.3 days for older people aged 65+ years.

**Figure 2.2.4: Length of stay per episode for fall injury by age and sex, Australia, 2005–06**

## Time trends

Age-standardised rates of hospitalised fall injury increased only slightly over recent years; rates for Australia were 602 per 100,000 of the population in 1999–00 and 624 per 100,000 in 2005–06 (Figure 2.2.5). Age-standardised rates were similar each year for males and females.

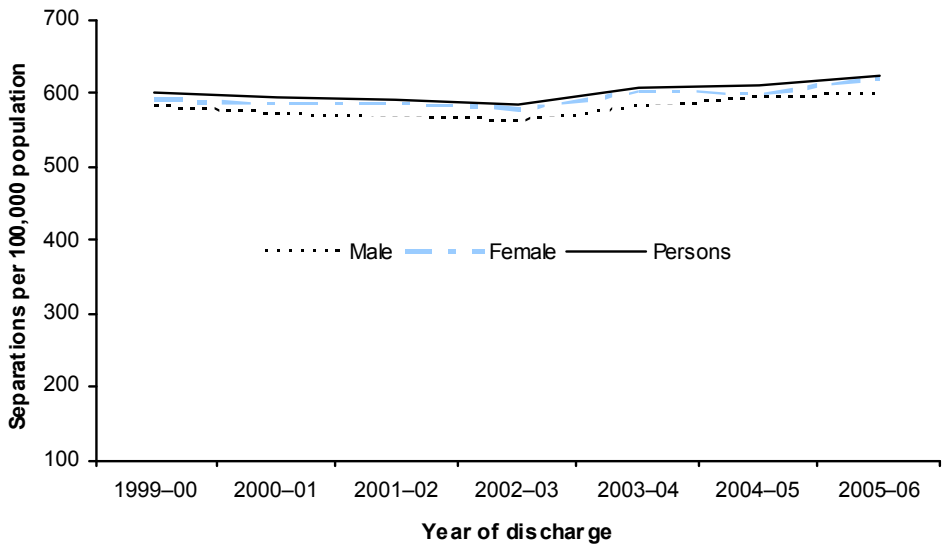



**Figure 2.2.5: Age-standardised rates for fall injury, Australia, 1999–00 to 2005–06**

For older people aged 65+ years, age-standardised rates of fall injury increased in recent years; from 2,218 per 100,000 population in 1999–00 to 2,420 per 100,000 in 2005–06 (Figure 2.2.6). Age-standardised rates for females aged 65+ years were higher than for males aged 65+ years; female rates increased from 2,661 per 100,000 in 1999–00 to 2,866 per 100,000, and male rates increased from 1,532 per 100,000 to 1,768 per 100,000.

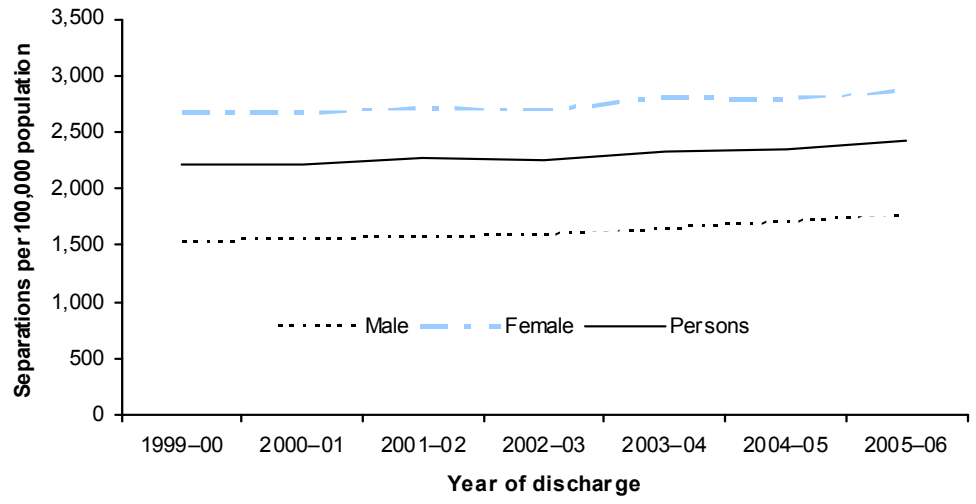



**Figure 2.2.6: Age-standardised rates for fall injury in older people aged 65+ years, Australia, 1999–00 to 2005–06**

## Place of occurrence

Falls resulting in hospitalisation due to unintentional falls injury occurred in diverse locations. Many were unspecified (29%; *n* = 37,847) or not reported (*n* = 27). The following observations are restricted to those cases in which the place of occurrence was specified (Table 2.2.7).

Children aged 0–14 years were most likely to sustain fall injuries in the home (males: 41%, females: 47%), followed by at school (males: 29%, females: 30%), and in sports and athletic areas (males: 17%, females: 10%).

Young men (15–24 years) sustained fall injuries most often in sports and athletic areas (49%), followed by home (14%), whereas the location for females of the same age was most commonly at home (36%), followed by sports and athletic areas (25%) and trade and service areas [14%—61% (*n* = 200) of which sustained fall injuries in cafés, hotels and restaurants].

Males aged 25–44 years were most commonly injured in the home (35%), followed by sports and athletic areas (23%) and trade and service areas (10%). Over half of females aged 25–44 years were injured in the home (54%), followed by sports and athletic areas (12%) and trade and service areas [11%—close to half (*n* = 141) were injured in cafés, hotel and restaurants].

Males and females aged 45–64 years were most commonly injured in the home (58% and 63%, respectively). For males, this was followed by a trade and service area (9%) and a street or highway (8%). For females, the most common places of occurrence after the home (63%) were a street or highway (9%) and a trade and service area (8%). About 63% of fall injuries on a street or highway for persons aged 45–64 years occurred on the sidewalk (males *n* = 249, females *n* = 410). A considerable proportion of fall injuries that occurred in a trade and service area for people aged 45–64 years were in cafés, hotel and restaurants (males *n* = 238, females *n* = 177) or in a shop or store (males *n* = 111, females *n* = 280.

Older males and females aged 65+ were most commonly injured in the home (61% and 58%, respectively) followed by residential institutions (22% and 29% respectively). Most fall injuries in the residential institutions were in aged care facilities for those aged 65+ years (males *n* = 3,402, females *n* = 11,169).

Falls in aged care facilities accounted for 30% (*n* = 13,785) of hospitalised fall injuries at ages 75 and older in which place of occurrence was specified (*n* = 45,770) and 57% occurred at home (*n* = 26,017). Falls in aged care facilities accounted for 40% (*n* = 9,091) of hospitalised fall injuries at ages 85 and older in which place of occurrence was specified (*n* = 22,823) and 51% occurred in the home (*n* = 11,618).

**Table 2.2.7: Place of occurrence of fall injury cases by age and sex, Australia, 2005–06**

| Place | 0–14 yrs | Per cent | 15–24 yrs | Per cent | 25–44 yrs | Per cent | 45–64 yrs | Per cent | 65+ yrs | Per cent | Total | Per cent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Male** | | | | | | | | | | | | |
| Home | 3,602 | 41.0 | 510 | 14.3 | 1,672 | 35.4 | 3,259 | 58.2 | 9,588 | 60.8 | 18,631 | 48.5 |
| Residential institution | 9 | 0.1 | 23 | 0.6 | 88 | 1.9 | 174 | 3.1 | 3,473 | 22.0 | 3,767 | 9.8 |
| School | 2,518 | 28.6 | 228 | 6.4 | 18 | 0.4 | 23 | 0.4 | 9 | 0.1 | 2,796 | 7.3 |
| Health Service area | 21 | 0.2 | 6 | 0.2 | 39 | 0.8 | 41 | 0.7 | 379 | 2.4 | 486 | 1.3 |
| Other specified institution | 52 | 0.6 | 13 | 0.4 | 24 | 0.5 | 31 | 0.6 | 88 | 0.6 | 208 | 0.5 |
| Sports and athletics area | 1,529 | 17.4 | 1,754 | 49.2 | 1,061 | 22.5 | 239 | 4.3 | 126 | 0.8 | 4,709 | 12.2 |
| Street and highway | 122 | 1.4 | 222 | 6.2 | 344 | 7.3 | 434 | 7.8 | 985 | 6.2 | 2,107 | 5.5 |
| Trade and service area | 165 | 1.9 | 200 | 5.6 | 458 | 9.7 | 478 | 8.5 | 632 | 4.0 | 1,933 | 5.0 |
| Industrial and construction area | 12 | 0.1 | 131 | 3.7 | 351 | 7.4 | 345 | 6.2 | 31 | 0.2 | 870 | 2.3 |
| Farm | 16 | 0.2 | 21 | 0.6 | 54 | 1.1 | 87 | 1.6 | 66 | 0.4 | 244 | 0.6 |
| Other specified places | 744 | 8.5 | 460 | 12.9 | 611 | 12.9 | 487 | 8.7 | 396 | 2.5 | 2,698 | 7.0 |
| **Total** | **8,790** | **100.0** | **3,568** | **100.0** | **4,720** | **100.0** | **5,598** | **100.0** | **15,773** | **100.0** | **38,449** | **100.0** |
| **Female** | | | | | | | | | | | | |
| Home | 2,574 | 46.6 | 396 | 36.2 | 1,539 | 53.6 | 4,307 | 62.8 | 23,182 | 58.1 | 31,998 | 56.9 |
| Residential institution | 5 | 0.1 | 5 | 0.5 | 30 | 1.0 | 212 | 3.1 | 11,352 | 28.5 | 11,604 | 20.6 |
| School | 1,663 | 30.1 | 58 | 5.3 | 33 | 1.2 | 86 | 1.3 | 18 | 0.0 | 1,858 | 3.3 |
| Health Service area | 16 | 0.3 | 11 | 1.0 | 44 | 1.5 | 113 | 1.6 | 721 | 1.8 | 905 | 1.6 |
| Other specified institution | 40 | 0.7 | 10 | 0.9 | 32 | 1.1 | 62 | 0.9 | 294 | 0.7 | 438 | 0.8 |
| Sports and athletics area | 559 | 10.1 | 272 | 24.8 | 346 | 12.1 | 264 | 3.9 | 174 | 0.4 | 1,615 | 2.9 |
| Street and highway | 76 | 1.4 | 54 | 4.9 | 204 | 7.1 | 616 | 9.0 | 1,912 | 4.8 | 2,862 | 5.1 |
| Trade and service area | 141 | 2.6 | 154 | 14.1 | 303 | 10.6 | 576 | 8.4 | 1,509 | 3.8 | 2,683 | 4.8 |
| Industrial and construction area | * | 0.1 | * | 0.3 | 30 | 1.0 | 34 | 0.5 | 19 | 0.0 | 90 | 0.2 |
| Farm | 10 | 0.2 | * | 0.4 | 23 | 0.8 | 48 | 0.7 | 36 | 0.1 | 121 | 0.2 |
| Other specified places | 437 | 7.9 | 128 | 11.7 | 285 | 9.9 | 536 | 7.8 | 682 | 1.7 | 2,068 | 3.7 |
| **Total** | **5,525** | **100.0** | **1,095** | **100.0** | **2,869** | **100.0** | **6,854** | **100.0** | **39,899** | **100.0** | **56,242** | **100.0** |

*Note:* Shaded areas indicate the highest 2 or 3 figures for a column. Cases are restricted to those where place of occurrence is specified.

## 2.3 Transportation

ICD-10-AM case inclusion

Principal Diagnosis: **S00–T75, T79** and

First reported external cause: **V01–V99**

**Table 2.3.1: Key indicators for transport cases, Australia, 2005–06**

| Indicator | Males | Females | Persons |
|---|---|---|---|
| Separations from hospital due to transportation | 39,533 | 17,877 | 57,413[(a)] |

## Table 2.3.3: Injured person's vehicle by age group, Australia, 2005–06

| Place | 0–14 yrs | Per cent | 15–24 yrs | Per cent | 25–44 yrs | Per cent | 45–64 yrs | Per cent | 65+ yrs | Per cent | Total[c] | Per cent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Male** | | | | | | | | | | | | |
| Pedestrian | 410 | 17.6 | 457 | 19.6 | 722 | 31.0 | 398 | 17.1 | 342 | 14.7 | 2,329 | 100.0 |
| Pedal cycle | 2,745 | 38.4 | 1,545 | 21.6 | 1,696 | 23.7 | 906 | 12.7 | 250 | 3.5 | 7,142 | 100.0 |
| Motorcycle | 1,403 | 12.3 | 3,672 | 32.1 | 4,721 | 41.3 | 1,459 | 12.8 | 168 | 1.5 | 11,423 | 100.0 |
| Three-wheeled motor vehicle | * | 9.0 | 9 | 13.4 | 7 | 10.4 | * | 9.0 | 39 | 58.2 | 67 | 100.0 |
| Car | 542 | 5.5 | 3,333 | 34.1 | 3,135 | 32.0 | 1,684 | 17.2 | 1,092 | 11.2 | 9,786 | 100.0 |
| Pick-up truck or van | 27 | 6.3 | 106 | 24.7 | 154 | 35.8 | 124 | 28.8 | 19 | 4.4 | 430 | 100.0 |
| Heavy transport vehicle | 8 | 1.2 | 42 | 6.2 | 331 | 48.8 | 277 | 40.9 | 20 | 2.9 | 678 | 100.0 |
| Bus | 14 | 8.9 | 16 | 10.2 | 23 | 14.6 | 37 | 23.6 | 67 | 42.7 | 157 | 100.0 |
| Animal or animal-driven vehicle | 352 | 13.4 | 533 | 20.3 | 863 | 32.8 | 664 | 25.2 | 220 | 8.4 | 2,632 | 100.0 |
| Other land transport | 39 | 6.2 | 118 | 18.8 | 265 | 42.1 | 147 | 23.4 | 60 | 9.5 | 629 | 100.0 |
| Water transport | * | 0.7 | 15 | 11.0 | 73 | 53.7 | * | 27.9 | 9 | 6.6 | 136 | 100.0 |
| Air and space transport | 128 | 34.6 | 82 | 22.2 | 81 | 21.9 | 53 | 14.3 | 26 | 7.0 | 370 | 100.0 |
| **Total[a]** | **5,675** | **15.9** | **9,928** | **27.7** | **12,071** | **33.7** | **5,793** | **16.2** | **2,312** | **6.5** | **35,779** | **100.0** |
| **Female** | | | | | | | | | | | | |
| Pedestrian | 248 | 15.8 | 267 | 17.1 | 315 | 20.1 | 311 | 19.9 | 424 | 27.1 | 1,565 | 100.0 |
| Pedal cycle | 773 | 46.0 | 188 | 11.2 | 370 | 22.0 | 286 | 17.0 | 64 | 3.8 | 1,681 | 100.0 |
| Motorcycle | 199 | 18.4 | 280 | 25.8 | 396 | 36.5 | 182 | 16.8 | 27 | 2.5 | 1,084 | 100.0 |
| Three-wheeled motor vehicle | 4 | 13.3 | 5 | 16.7 | 0 | 0.0 | 4 | 13.3 | 17 | 56.7 | 30 | 100.0 |
| Car | 466 | 5.4 | 2,480 | 28.5 | 2,549 | 29.3 | 1,808 | 20.8 | 1,403 | 16.1 | 8,706 | 100.0 |
| Pick-up truck or van | 14 | 12.8 | 28 | 25.7 | 35 | 32.1 | 26 | 23.9 | 6 | 5.5 | 109 | 100.0 |
| Heavy transport vehicle | * | 9.8 | 6 | 11.8 | 16 | 31.4 | 16 | 31.4 | * | 15.7 | 51 | 100.0 |
| Bus | 8 | 2.9 | 22 | 8.1 | 27 | 9.9 | 44 | 16.1 | 172 | 63.0 | 273 | 100.0 |
| Animal or animal-driven vehicle | 715 | 27.3 | 631 | 24.1 | 728 | 27.8 | 396 | 15.1 | 148 | 5.7 | 2,618 | 100.0 |
| Other land transport | 30 | 14.9 | 38 | 18.9 | 53 | 26.4 | 59 | 29.4 | 21 | 10.4 | 201 | 100.0 |
| Water transport | * | 0.0 | 6 | 26.1 | 9 | 39.1 | 7 | 30.4 | * | 4.3 | 23 | 100.0 |
| Air and space transport | 66 | 50.4 | 19 | 14.5 | 21 | 16.0 | 7 | 5.3 | 18 | 13.7 | 131 | 100.0 |
| **Total[b]** | **2,528** | **15.3** | **3,970** | **24.1** | **4,519** | **27.4** | **3,146** | **19.1** | **2,309** | **14.0** | **16,472** | **100.0** |

*Note:* Shaded areas indicate the highest figure(s) for a row. Excludes (a) 370 and (b) 131 injury cases that are other and unspecified transport, and (c) 3 for which sex was not reported.

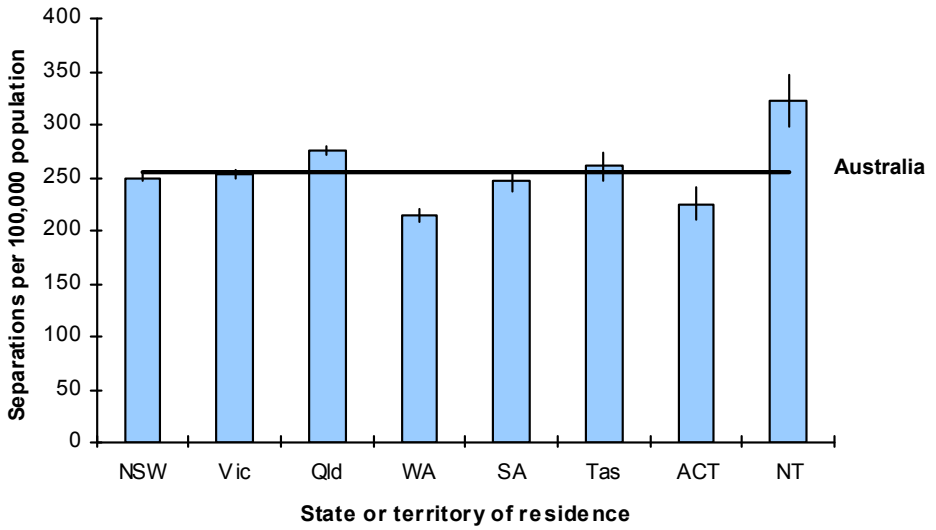
* Small cell counts have been suppressed.

## State and territory differences

The rate of transport injury for the Northern Territory was significantly higher than that for Australia as a whole. Western Australia and the Australian Capital Territory had rates that were significantly below the national rate (Table 2.3.4 and Figure 2.3.2).

**Table 2.3.4: Age-standardised rates of transport injury, states and territories, 2005–06**

| Jurisdiction | Age-standardised rate (per 100,000 population) | 95% CI |
|---|---|---|
| NSW | 250 | 246–253 |
| Vic | 253 | 249–257 |
| Qld | 275 | 270–280 |
| WA | 213 | 207–219 |
| SA | 244 | 237–252 |
| Tas | 260 | 245–274 |
| ACT | 224 | 209–240 |
| NT | 323 | 298–347 |
| **Australia** | **255** | **253–257** |




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

**Figure 2.3.2: Age-standardised rates of transport injury, states and territories, 2005–06**

## Body part

Injuries sustained in transportation accidents involved all major body regions with similar frequency (Table 2.3.5).

**Table 2.3.5: Principal Diagnosis by body region and sex for transport injury, Australia, 2005–06**

| | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| **Principal Diagnosis by body region** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** |
| Head | 8,038 | 22.5 | 3,504 | 21.3 | 11,542 | 22.1 |
| Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis) | 8,535 | 23.9 | 6,170 | 37.5 | 14,707 | 28.1 |
| Shoulder and upper limb | 10,184 | 28.5 | 3,461 | 21.0 | 13,645 | 26.1 |
| Hip and lower limb | 8,406 | 23.5 | 3,022 | 18.3 | 11,429 | 21.9 |
| Other injuries not specified by body region | 616 | 1.7 | 315 | 1.9 | 931 | 1.8 |
| **All body regions** | **35,779** | **100.0** | **16,472** | **100.0** | **52,254[(a)]** | **100.0** |

(a) Includes 3 separations for which sex was not reported.

## Length of stay

Mean length of stay for transportation injury cases rose with age (Figure 2.3.3). The mean length of stay was 2.7 days for children aged 0–14 years, 3.9 days for young people aged 15–24 years, 4.4 days for adults aged 25–44 years, 5.2 days for adults aged 45–64 years and 8.3 days for older people aged 65+ years.

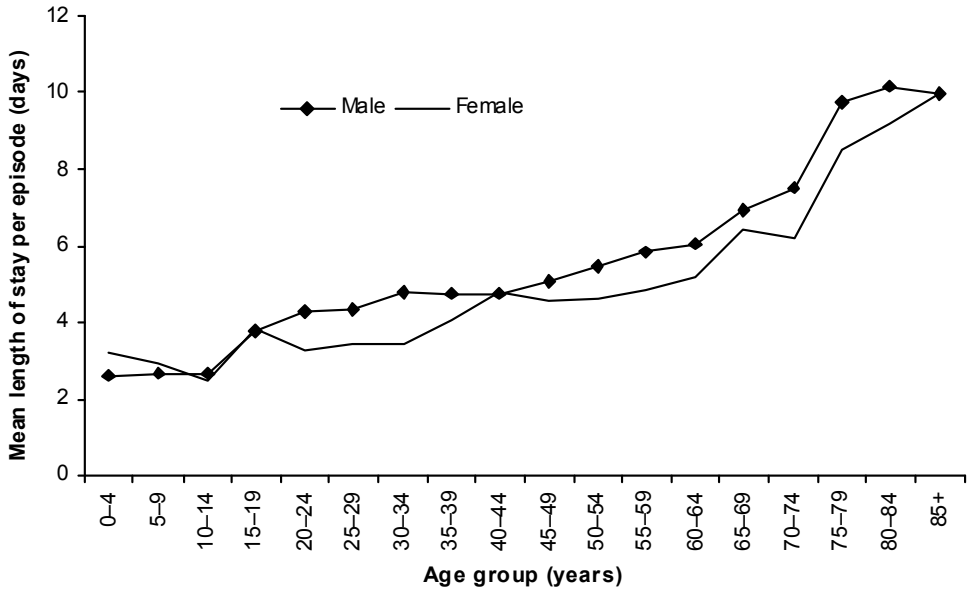



**Figure 2.3.3: Length of stay per episode for transport injury by age and sex, Australia, 2005–06**

## Time trends

Age-standardised rates for hospitalised transport injury rose from 249 per 100,000 of the population in 1999–00 to 255 per 100,000 in 2005–06, with fluctuations in intervening years (Figure 2.3.4). Age-standardised rates for males underwent a similar pattern of fluctuation, increasing from 337 per 100,000 in 1999–00 to 350 per 100,000 in 2005–06. Male rates were consistently higher than female rates which fell only slightly from 160 per 100,000 in 1999–00 to 159 per 100,000 in 2005–06.

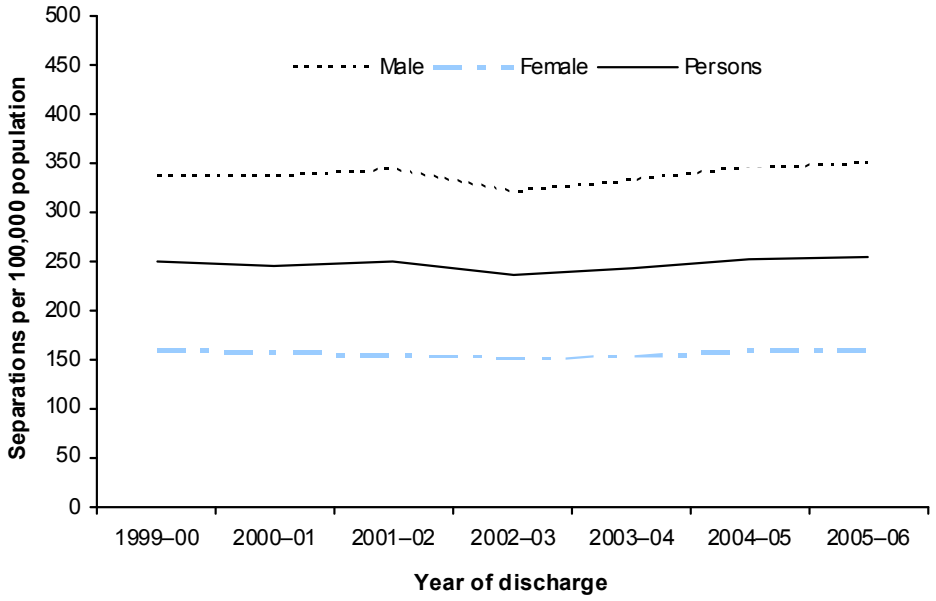



**Figure 2.3.4: Age-standardised rates for transport injury, Australia, 1999–00 to 2005–06**

### 2.3.1 Land transportation

ICD-10-AM case inclusion

Principal Diagnosis: **S00–T75, T79** and

First reported external cause: **V01–V89**

The following section concentrates on land transport accidents (*n* = 50,763; see Table 2.3.6); 36% of people hospitalised due to land transport accidents were car occupants (*n* = 18,492); 25% (*n* = 12,508) were motorcyclists; 17% (*n* = 8,823) were pedal cyclists; and 8% (*n* = 3,894) were pedestrians. More males than females were injured in land transportation accidents (based on age-standardised rates), with a M:F rate ratio of 2.2:1.0.

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, 62% were injured in traffic accidents (see Table 2.3.6).

Table 2.3.6 and Figure 2.3.5 describe modes of transport for traffic and non-traffic cases. For traffic accident cases (*n* = 31,530), the most frequent mode of transport of the injured person was a car (51.7%; *n* = 16,304) followed by a motorcycle (20.7%; *n* = 6,531). There were gender differences; 73% of females injured in traffic accidents were car occupants (*n* = 7,805) and 10% were pedestrians (*n* = 1,120), whereas 41% of males were car occupants (*n* = 8,499) and 29% were on a motorcycle (*n* = 5,952).

For non-traffic accidents (*n* = 13,578), the most frequent mode of transport was a motorcycle (40.7%; *n* = 5,533) followed by a pedal cycle (30.4%; *n* = 4,130). There were gender differences; the most common mode of transport for females injured in non-traffic accidents were pedal cycles (32%; *n* = 771) followed by cars (25%; *n* = 606), whereas the most common for males were motorcycles (46%; *n* = 5,073) followed by pedal cycles (30%; *n* = 3,359).

Of accidents designated unspecified as to whether traffic or non-traffic (Table 2.3.6), the majority (58%; *n* = 3,278) involved an animal rider or occupant of an animal-drawn vehicle.

Male case numbers exceeded females in most instances; exceptions were bus occupant injuries and animal rider or occupant of animal-driven vehicle injuries (Table 2.3.6).

**Table 2.3.6: Mode of transport for land transport injury cases, Australia, 2005–06**

| Injured person's vehicle | Non-traffic accident | Traffic accident | Unspecified | Total |
|---|---|---|---|---|
| **Males** | | | | |
| Car | 995 | 8,499 | 292 | 9,786 |
| Motorcycle | 5,073 | 5,952 | 398 | 11,423 |
| Pedal cycle | 3,359 | 3,534 | 249 | 7,142 |
| Pedestrian | 444 | 1,622 | 263 | 2,329 |
| Animal or animal-drawn vehicle | 0 | 0 | 1,162 | 1,162 |
| Heavy transport vehicle | 191 | 388 | 99 | 678 |
| Pick-up truck or van | 121 | 272 | 37 | 430 |
| Bus | 27 | 82 | 48 | 157 |
| Three-wheeled motor vehicle | 37 | 30 | 0 | 67 |
| Other land transport | 885 | 388 | 197 | 1,470 |
| **Total** | **11,132** | **20,767** | **2,745** | **34,644** |
| **Females** | | | | |
| Car | 606 | 7,805 | 295 | 8,706 |
| Motorcycle | 460 | 578 | 46 | 1,084 |
| Pedal cycle | 771 | 844 | 66 | 1,681 |
| Pedestrian | 289 | 1,120 | 156 | 1,565 |
| Animal or animal-drawn vehicle | 0 | 0 | 2,115 | 2,115 |
| Heavy transport vehicle | 16 | 23 | 12 | 51 |
| Pick-up truck or van | 26 | 74 | 9 | 109 |
| Bus | 54 | 117 | 102 | 273 |
| Three-wheeled motor vehicle | 22 | 6 | * | 30 |
| Other land transport | 202 | 195 | 106 | 503 |
| **Total** | **2,446** | **10,762** | **2,909** | **16,117** |
| **Persons** | | | | |
| Car | 1,601 | 16,304 | 587 | 18,492 |
| Motorcycle | 5,533 | 6,531 | 444 | 12,508 |
| Pedal cycle | 4,130 | 4,378 | 315 | 8,823 |
| Pedestrian | 733 | 2,742 | 419 | 3,894 |
| Animal or animal-drawn vehicle | 0 | 0 | 3,278 | 3,278 |
| Heavy transport vehicle | 207 | 411 | 111 | 729 |
| Pick-up truck or van | 147 | 346 | 46 | 539 |
| Bus | 81 | 199 | 150 | 430 |
| Three-wheeled motor vehicle | 59 | 36 | * | 97 |
| Other land transport[(a)] | 1,087 | 583 | 303 | 1,973 |
| **Total[(b)]** | **13,578** | **31,530** | **5,655** | **50,763** |

*Note:* Shaded areas indicate the 1 or 2 highest figures for a column.

(a) The injured person was an occupant of a railway train or railway vehicle (*n* = 116), tram (*n* = 72), special industrial vehicle (*n* = 152), special agricultural vehicle (*n* = 219), special construction vehicle (*n* = 60), special all-terrain or off-road vehicle (*n* = 682) and victim's mode of transport unknown (*n* = 672).

(b) Includes 2 separations for which sex was not reported.

* Small cell counts have been suppressed.

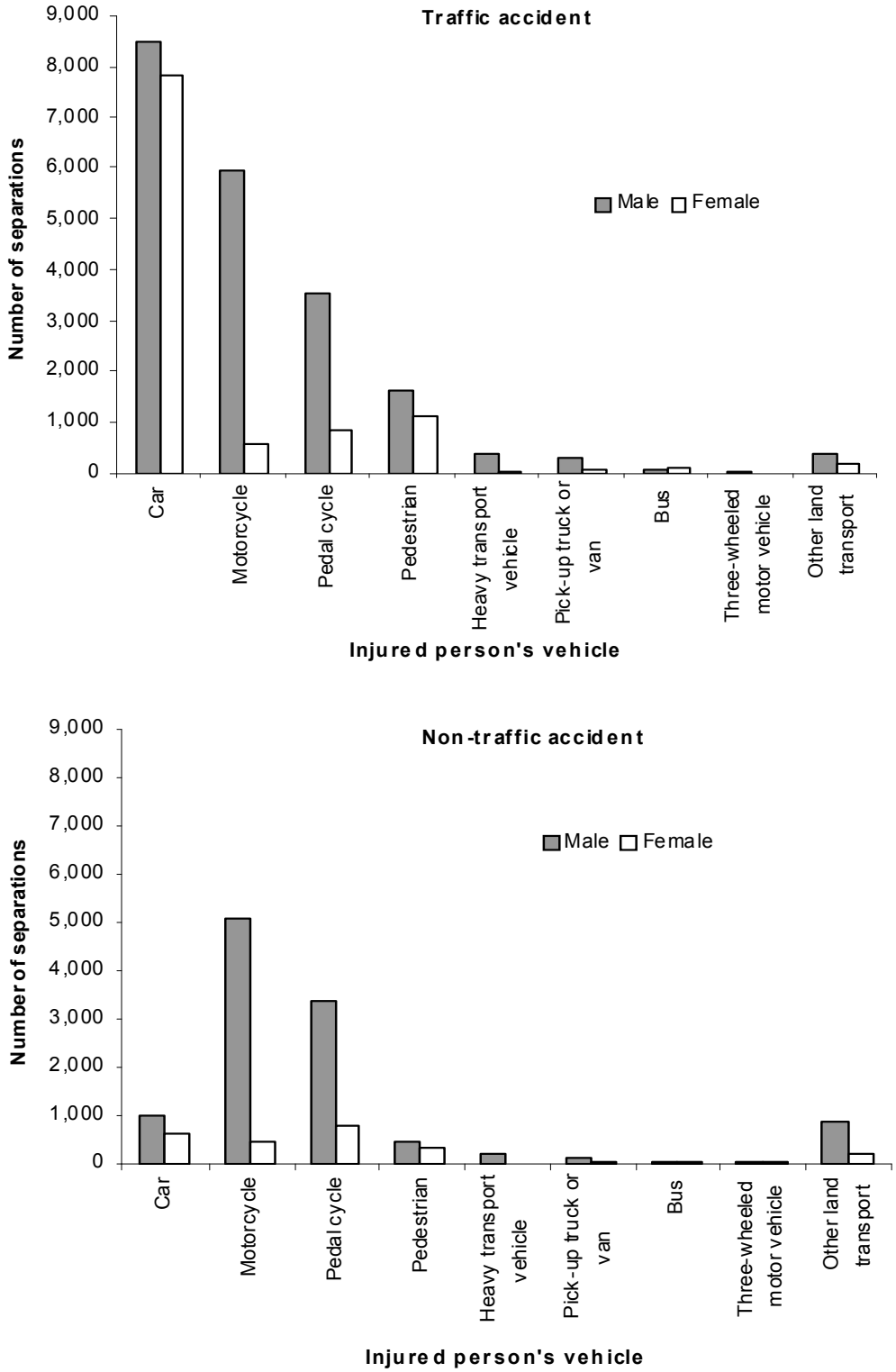



**Figure 2.3.5: Mode of transport for land transport injury cases, Australia, 2005–06**

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 2.3.7 details the counterpart in land transport crashes.

Table 2.3.7 lists the five most common mechanisms of injury in land transport crashes as being 1) a collision of a car with either a car, pick-up truck or van, 2) a motorcycle in a non-collision transport accident, 3) a pedal cycle in a non-collision transport accident, 4) a collision of a car with a fixed or stationary object, and 5) a car in a non-collision transport accident.

Tables 2.3.8 to 2.3.10 characterise the road user group (e.g. the position of the injured in the vehicle) for land transport accidents according to whether they were traffic, non-traffic or unspecified as to whether traffic or non-traffic.

**Table 2.3.7: Mechanism of injury for land transport injury cases, Australia, 2005–06**

| | 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** |
| Car occupant | 97 | 4 | 43 | 7,823 | 606 | 28 | 18 | 4,478 | 3,916 | 1,479 |
| Motorcyclist | 213 | 8 | 360 | 1,697 | 72 | * | 9 | 1,261 | 6,058 | 2,829 |
| Pedal cyclist | 65 | 223 | 23 | 1,101 | 37 | 0 | 4 | 419 | 4,482 | 2,469 |
| Pedestrian | 0 | 99 | 105 | 2,937 | 137 | 22 | 41 | 0 | 0 | 553 |
| Animal rider or occupant of animal-driven vehicle | 11 | 0 | 0 | 0 | 0 | 0 | 14 | 31 | 2,573 | 649 |
| Occupant of heavy transport vehicle[(b)] | * | * | * | 53 | 68 | * | 0 | 53 | 404 | 146 |
| Occupant of pick-up truck or van | * | 0 | * | 82 | 24 | * | 0 | 80 | 247 | 102 |
| Bus occupant | * | 0 | 0 | 42 | 10 | 0 | 0 | 10 | 245 | 122 |
| Occupant of three-wheeled motor vehicle | 0 | 0 | * | 12 | * | 0 | * | 8 | 50 | 21 |
| **Total (*n* = 50,763)[(a)]** | **391** | **335** | **536** | **13,747** | **955** | **53** | **88** | **6,340** | **17,975** | **8,370** |

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

* Small counts have been suppressed.

(a) Excludes 1,973 cases that are 'Other land transport accidents' (V81–V89) and 1,491 cases due to water, air and space, and other and unspecified transport.

(b) These categories are grouped together in ICD-10-AM classification as rider or occupant injured in collision with car, pick-up truck, van, heavy transport vehicle or bus.

Nearly half (48%) of motorcyclists were involved in a non-collision transport accident, 14% were hit by a car, pick-up truck or van and 10% collided with a fixed or stationary object.

Over half (51%) of pedal cyclists were involved in a non-collision transport accident and 13% were hit by a car, pick-up truck or van.

Of pedestrians injured, 75% were hit by a car, pick-up truck or van.

For animal riders or occupants of an animal-driven vehicles, 79% were injured in a non-collision accident. (These cases would usually be the result of falling from, or being thrown from, a horse.)

Of heavy transport vehicle occupants, 55% were involved in a non-collision transport accident, 9% collided with another heavy transport vehicle or bus, 7% collided with a fixed or stationary object and 7% hit a car, pick-up truck or van.

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

Twenty-four per cent of car occupants were involved in a collision with a fixed or stationary object and 21% were involved in a non-collision transport accident.

Fifty-seven per cent of bus occupants were involved in a non-collision transport accident.

Fifty-two per cent of three-wheeled motor vehicle occupants were involved in non-collision transport accidents, 12% collided with a car, pick-up truck or van and 8% collided with a fixed or stationary object.

**Table 2.3.8: Mode of transport for traffic land transport injury cases, Australia, 2005–06**

| Injured person's vehicle | Pedestrian | Driver | Passenger | Person on outside of vehicle | Other and unspecified | Total |
|---|---|---|---|---|---|---|
| Pedestrian | 2,742 | 0 | 0 | 0 | 0 | 2,742 |
| Pedal cycle | 0 | 2,421 | 29 | 0 | 1,928 | 4,378 |
| Motorcycle | 0 | 4,282 | 221 | 0 | 2,028 | 6,531 |
| 3-wheeled motor vehicle | 0 | 20 | * | * | 14 | 36 |
| Car | 0 | 10,078 | 5,087 | 82 | 1,057 | 16,304 |
| Pick-up truck or van | 0 | 178 | 106 | 27 | 35 | 346 |
| Heavy transport vehicle | 0 | 321 | 40 | 13 | 37 | 411 |
| Bus | 0 | 19 | 141 | 6 | 33 | 199 |
| Other land transport | 0 | 73 | * | * | 483 | 583 |
| **Total** | **2,742** | **17,392** | **5,646** | **135** | **5,615** | **31,530** |

* Small cell counts have been suppressed.

**Table 2.3.9: Mode of transport for non-traffic land transport injury cases, Australia, 2005–06**

| Injured person's vehicle | Pedestrian | Driver | Passenger | Person on outside of vehicle | Other and unspecified | Total |
|---|---|---|---|---|---|---|
| Pedestrian | 733 | 0 | 0 | 0 | 0 | 733 |
| Pedal cycle | 0 | 3,122 | 55 | 0 | 953 | 4,130 |
| Motorcycle | 0 | 4,573 | 123 | 0 | 837 | 5,533 |
| Three-wheeled motor vehicle | 0 | 48 | * | * | 9 | 59 |
| Car | 0 | 888 | 421 | 123 | 169 | 1,601 |
| Pick-up truck or van | 0 | 28 | 32 | 47 | 40 | 147 |
| Heavy transport vehicle | 0 | 67 | 5 | 74 | 61 | 207 |
| Bus | 0 | * | * | * | 33 | 81 |
| Other land transport | 0 | 615 | 82 | 135 | 255 | 1,087 |
| **Total** | **733** | **9,343** | **763** | **382** | **2,357** | **13,578** |

* Small cell counts have been suppressed.

**Table 2.3.10: Mode of transport for land transport injury cases unspecified as to whether traffic or non-traffic, Australia, 2005–06**

| Injured person's vehicle | Pedestrian | Boarding or alighting | Animal-rider or occupant of animal-driven vehicle | Other and unspecified | Total |
|---|---|---|---|---|---|
| Pedestrian | 419 | 0 | 0 | 0 | 419 |
| Pedal cycle | 0 | 18 | 0 | 297 | 315 |
| Motorcycle | 0 | 31 | 0 | 413 | 444 |
| Car | 0 | 348 | 0 | 239 | 587 |
| Pick-up truck or van | 0 | 17 | 0 | 29 | 46 |
| Heavy transport vehicle | 0 | 49 | 0 | 62 | 111 |
| Bus | 0 | 94 | 0 | 56 | 150 |
| Animal or animal-drawn vehicle | 0 | 0 | 3,278 | 0 | 3,278 |
| Other land transport | 0 | 124 | 0 | 181 | 305 |
| **Total** | **419** | **681** | **3,278** | **1,277** | **5,655** |

* Three-wheeled motor vehicle has been included with the land transport, due to small cell counts.

## Age and sex distribution

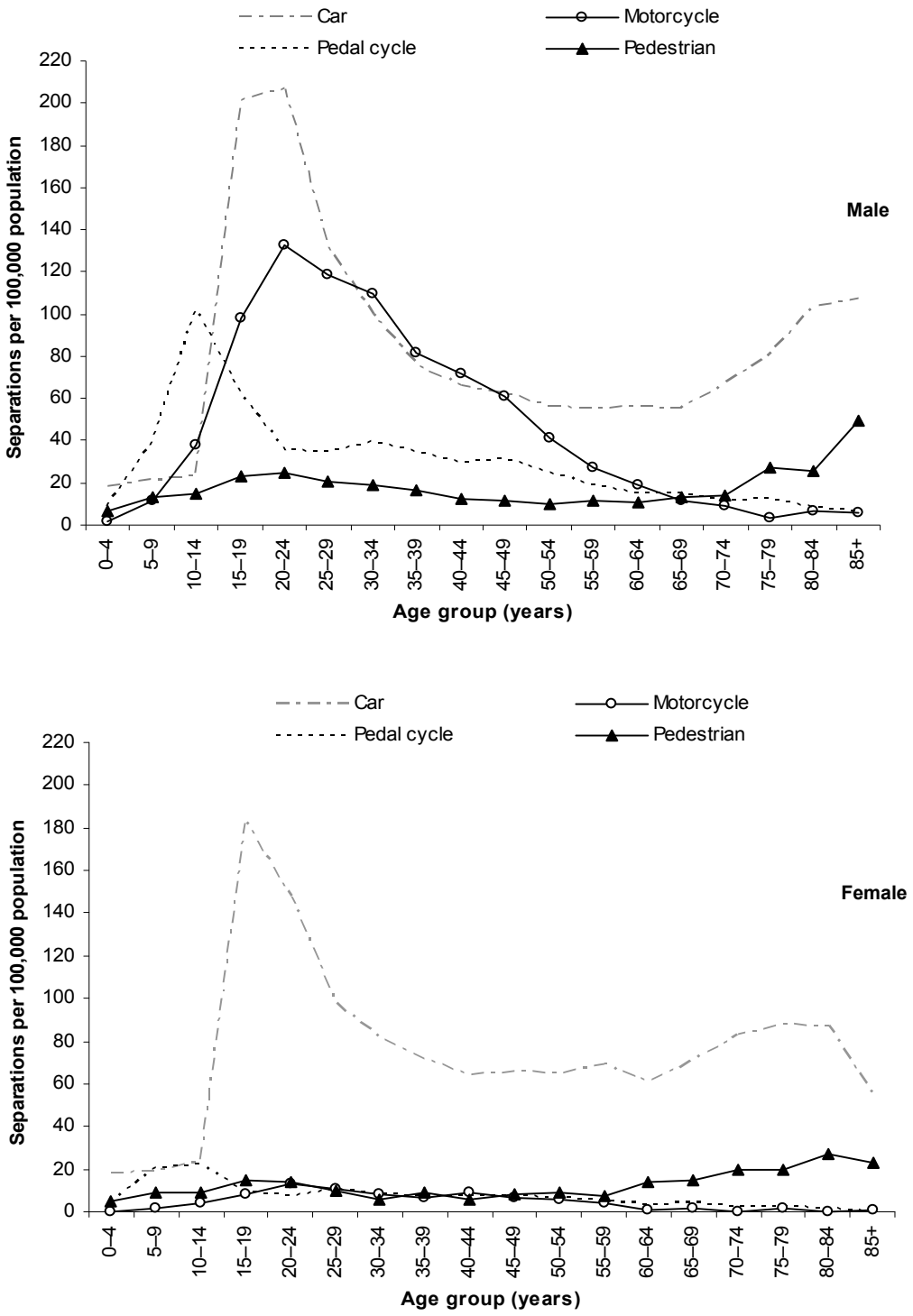



**Figure 2.3.6: Traffic accidents—age-specific hospital separation rates by sex, Australia, 2005–06**

For traffic accidents, car occupants were the group most commonly injured—male and female motor vehicle occupant rates of hospitalisation were highest between ages 15–24 years. Rates peaked for males in the 15–19 year age group (age-specific rate of 201 per 100,000). An equivalent peak was not observed for females where rates for 15–19 and 20–24 year olds were 182 and 147 per 100,000, respectively. Motorcyclists were the second most commonly injured group in traffic for males, peaking at 20–24 years with a rate of 133 per 100,000, but it was relatively uncommon for females (peaking at 13 per 100,000 for 20–24 year olds). Rates of pedal cycle injury in traffic peaked in the 10–14 year age group (102 and 22 per 100,000 for males and females, respectively). Pedestrian injury rates in traffic peaked at older ages (50 per 100,000 for males aged 85+ years and 27 per 100,000 for females aged 80–84 years).

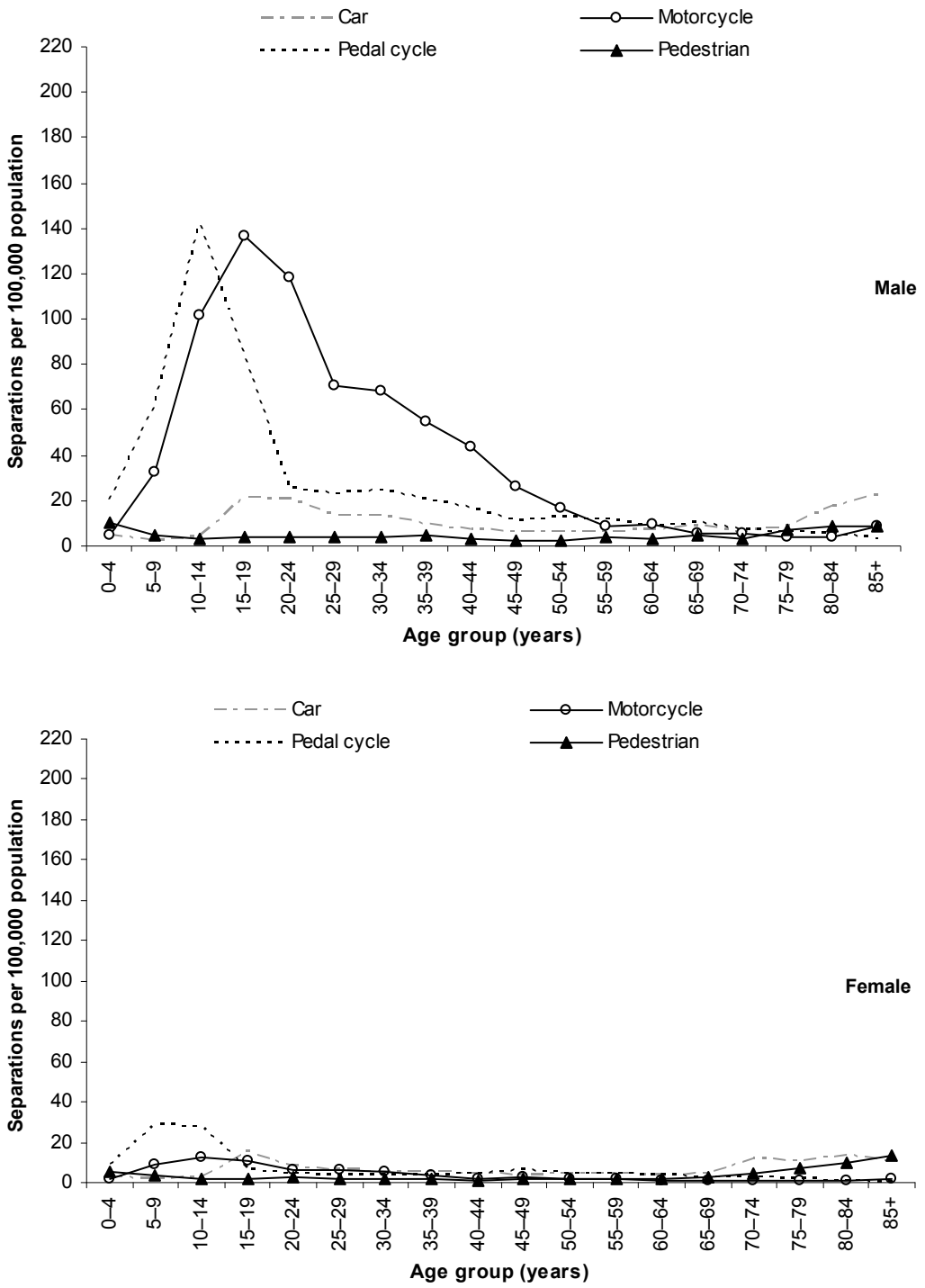



**Figure 2.3.7: Non-traffic accidents—age-specific hospital separation rates by sex, Australia, 2005–06**

For both males and females, pedal cyclists were the group most commonly injured in non-traffic accidents (Figure 2.3.7), reaching a peak for males at 10–14 years with an age-specific rate of 142 per 100,000 and, for females, 29 per 100,000 for 5–9 year olds). Motorcyclists were the second most commonly injured group in non-traffic for males, peaking at 15–19 years with a rate of 136 per 100,000, but hospitalisation due to non-traffic motorcycle accidents were relatively uncommon for females (peaking at 12 per 100,000 for 10–14 year olds). Injury rates for pedestrians, car drivers and car passengers were low for non-traffic accidents.

## Time trends by road user group

Age-standardised rates for injury hospitalisation of car occupants declined from 96 per 100,000 of the population in 1999–00 to 90 per 100,000 in 2005–06 (Figure 2.3.8). Rates for motorcyclists increased from 48 per 100,000 in 1999–00 to 62 per 100,000 in 2005–06. Pedal cyclist rates increased from 40 per 100,000 in 1999–00 to 44 per 100,000 in 2005–06). Rates for pedestrians declined from 24 per 100,000 of the population in 1999–00 to 19 per 100,000 in 2005–06.

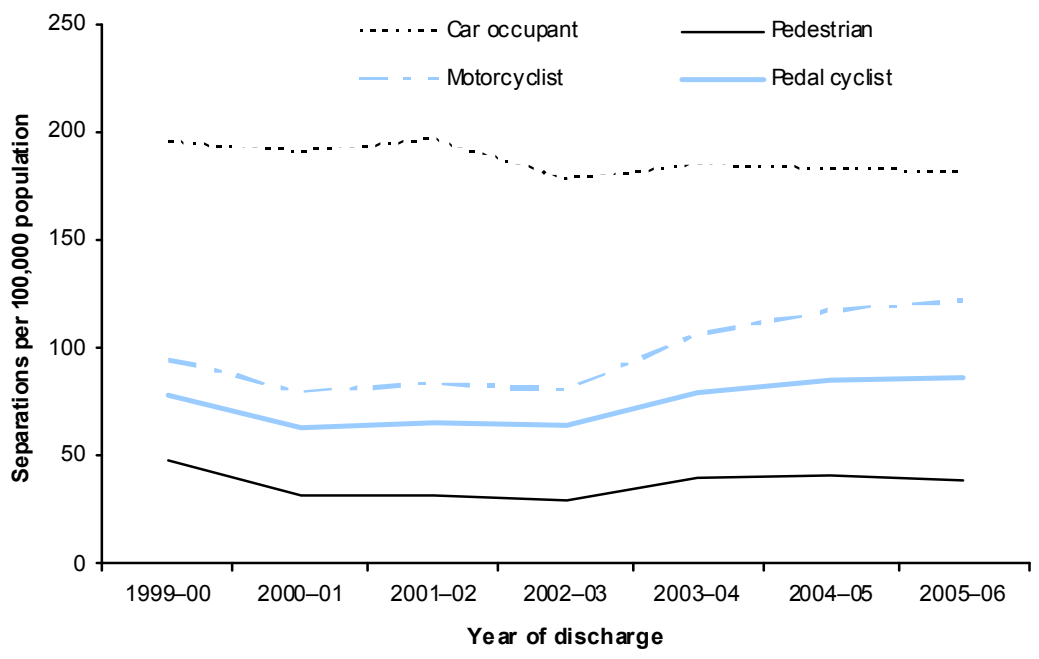



**Figure 2.3.8: Age-standardised rates by road user group, Australia, 1999–00 to 2005–06**

# 2.4 Poisoning, pharmaceuticals

ICD-10-AM case inclusion

Principal Diagnosis: **S00–T75, T79** and

First reported external cause: **X40–X44**

**Table 2.4.1: Key indicators for poisoning by pharmaceutical cases, Australia, 2005–06**

| Indicator | Males | Females | Persons |
|---|---|---|---|
| Separations from hospital due to poisoning by pharmaceuticals | 3,041 | 3,582 | 6,623 |
| Percentage of all community injury separations | 1.3 | 2.1 | 1.7 |
| Estimated cases* | 2,917 | 3,441 | 6,358 |
| Crude rate/100,000 population | 28.5 | 33.3 | 30.9 |
| Age-standardised rate/100,000 population | 29.0 | 33.1 | 31.1 |
| Mean length of stay (days) | 2.3 | 2.2 | 2.3 |
| Total patient days | 6,636 | 7,672 | 14,308 |

* Omits inward transfers from acute hospitals.

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 community injury hospitalisations in the financial year 2005–06 (Table 2.4.1).

This chapter does not include poisoning from non-pharmaceutical substances (*n* = 2,398; see Chapter 2.5), intentional self-poisoning (*n* = 19,529; see Chapter 2.9), assault by poisoning (*n* = 80; see Chapter 2.10), or poisoning of undetermined intent (*n* = 3,783; see Chapter 2.11).

## Age and sex distribution

More females than males were hospitalised for accidental poisoning by pharmaceuticals (based on age-standardised rates) with a M:F rate ratio of 0.9:1. Age-specific rates of poisoning by pharmaceuticals were highest in children aged 0–4 years (males: 101 per 100,000, females: 102 per 100,000) but much lower in older children (Figure 2.4.1). Rates were higher for youth and young people (15–24 years) and lower for older age groups—up to about 70 years, after which rates were higher for each older group.

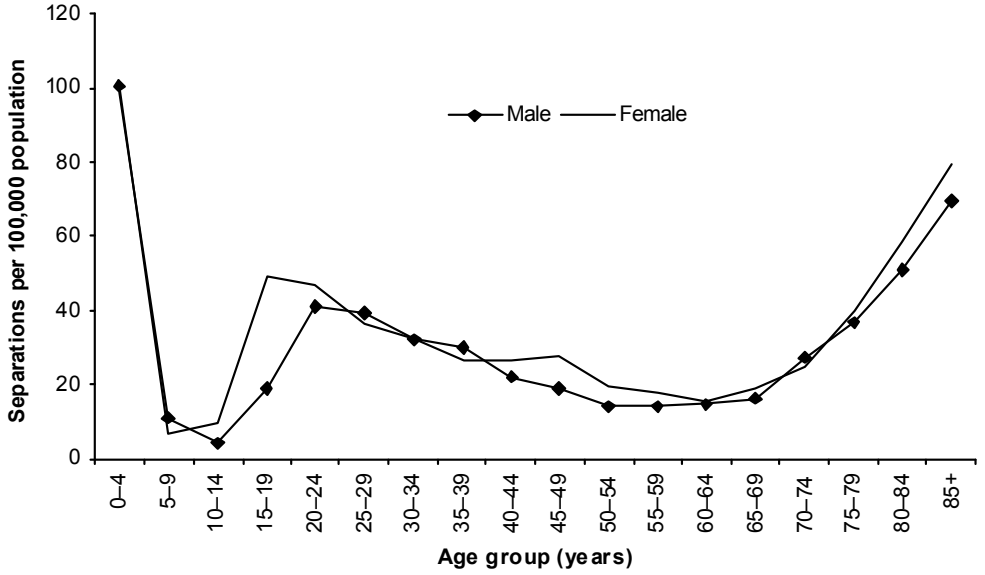



**Figure 2.4.1: Age-specific hospital separation rates for poisoning by pharmaceuticals by sex, Australia, 2005–06**

A fifth of poisoning by pharmaceuticals occurred in young children aged 0–4 years of age and over one-quarter occurred in adults aged 25–44 years (Table 2.4.2).

**Table 2.4.2: Cases of poisoning by pharmaceuticals by age group, Australia, 2005–06**

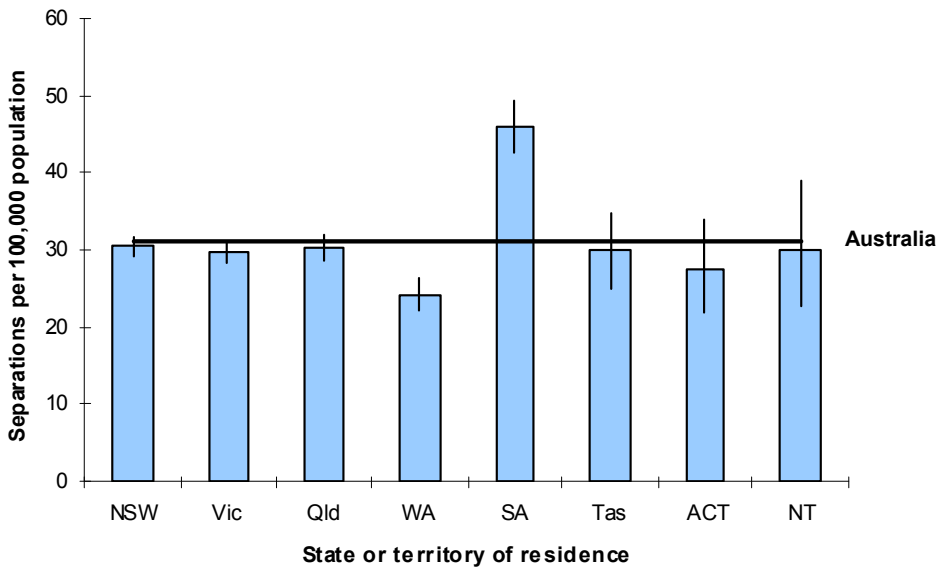
| | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| **Age group** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** |
| 0–4 years | 673 | 23.1 | 647 | 18.8 | 1,320 | 20.8 |
| 5–14 years | 105 | 3.6 | 112 | 3.3 | 217 | 3.4 |
| 15–24 years | 437 | 15.0 | 670 | 19.5 | 1,107 | 17.4 |
| 25–44 years | 914 | 31.3 | 905 | 26.3 | 1,819 | 28.6 |
| 45–64 years | 398 | 13.6 | 526 | 15.3 | 924 | 14.5 |
| 65+ years | 390 | 13.4 | 581 | 16.9 | 971 | 15.3 |
| **Total** | **2,917** | **100.0** | **3,441** | **100.0** | **6,358** | **100.0** |

## State and territory differences

Only two states, Western Australia and South Australia, had rates of poisoning by pharmaceuticals that differed significantly from the national rate. The comparatively high rate observed for South Australia was consistent with that state's rate in 2004–05 but not in 2003–04 where South Australia had a lower relative rate. The 2005–06 rate distribution also differs from the previous two years in that the rate for the Australian Capital Territory has increased relative to other jurisdictions. The rate for the Northern Territory moved from being considerably higher than the all-Australia rate in 2004–05 to being below the national rate during 2005–06 (Berry & Harrison 2007; Bradley & Harrison 2008). The rates for the smaller-population jurisdictions can be expected to show the greatest year-to-year variation due to relatively small case numbers.

**Table 2.4.3: Age-standardised rates of poisoning by pharmaceuticals, states and territories, 2005–06**

| Jurisdiction | Age-standardised rate (per 100,000 population) | 95% CI |
|---|---|---|
| NSW | 30.5 | 29.2–31.9 |
| Vic | 29.8 | 28.3–31.3 |
| Qld | 30.3 | 28.6–32.0 |
| WA | 24.3 | 22.2–26.5 |
| SA | 46.1 | 42.7–49.5 |
| Tas | 30.1 | 25.1–35.0 |
| ACT | 27.5 | 22.1–33.8 |
| NT | 30.1 | 22.7–39.2 |
| **Australia** | **31.1** | **30.3–31.9** |




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

**Figure 2.4.2: Age-standardised rates of poisoning by pharmaceuticals, states and territories, 2005–06**

## Mechanism

Almost all (99.8%; *n* = 6,343) admitted injury cases did not specify a particular body part that was injured due to the mechanism being poisoning.

Forty-two per cent (*n* = 2,674) of hospital cases were *accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs* (Table 2.4.4). This category includes benzodiazepines (17% of all pharmaceutical poisonings cases; *n* = 1,053), other and unspecified antidepressants—likely to be selective serotonin reuptake inhibitors (6% of all cases; *n* = 363), other and unspecified antipsychotics and neuroleptics (4% of all cases; *n* = 265) and psychostimulants with potential for use disorder (4% of all cases; *n* = 243).

Twenty-five per cent (*n* = 1,582) of injury cases were *accidental poisoning by and exposure to other and unspecified drugs, medicaments, and biological substances*. This is a diverse group which includes a range of drugs in the broad categories of *poisoning by agents primarily affecting the cardiovascular system* (*n* = 397), *systemic and haematological agents, not elsewhere classified* (*n* = 362), *poisoning by diuretics and other unspecified drugs, medicaments and biological substances* (*n* = 224) and various others.

Sixteen per cent (*n* = 1,048) of cases were *accidental poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics*—most of which were 4-aminophenol derivatives such as paracetamol (12% of all pharmaceutical poisoning cases; *n* = 760) and other non-steroidal anti-inflammatory drugs (3% of all poisoning cases; *n* = 204).

Thirteen per cent (*n* = 826) were *accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified*—of which 127 were heroin (2% of all pharmaceutical poisoning cases), 261 were other opioids such as codeine and morphine (4% of all poisoning cases) and 126 were other and unspecified psychodysleptics [hallucinogens] (2% of all poisoning cases).

Four per cent (*n* = 228) were *accidental poisoning by and exposure to other drugs acting on the autonomic nervous system*.

## Table 2.4.4: Mechanism of pharmaceutical poisoning by age and sex, Australia, 2005–06

| ICD-10-AM Code | Accidental poisoning by and exposure to: | 0–14 yrs | Per cent | 15–24 yrs | Per cent | 25–44 yrs | Per cent | 25–44 yrs | Per cent | 65+ yrs | Per cent | Total | Per cent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Male** | | | | | | | | | | | | | |
| X40 | Nonopioid analgesics, antipyretics and antirheumatics | 127 | 16.3 | 61 | 14.0 | 137 | 15.0 | 53 | 13.3 | 24 | 6.2 | 402 | 13.8 |
| X41 | Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs | 244 | 31.4 | 212 | 48.5 | 452 | 49.5 | 176 | 44.2 | 98 | 25.1 | 1,182 | 40.5 |
| X42 | Narcotics and psychodysleptics [hallucinogens] | 41 | 5.3 | 98 | 22.4 | 211 | 23.1 | 61 | 15.3 | 56 | 14.4 | 467 | 16.0 |
| X43 | Other drugs acting on the autonomic nervous system | 43 | 5.5 | 11 | 2.5 | 14 | 1.5 | 14 | 3.5 | 25 | 6.4 | 107 | 3.7 |
| X44 | Other and unspecified drugs, medicaments and biological substances | 323 | 41.5 | 55 | 12.6 | 100 | 10.9 | 94 | 23.6 | 187 | 47.9 | 759 | 26.0 |
| **Total** | | **778** | **100.0** | **437** | **100.0** | **914** | **100.0** | **398** | **100.0** | **390** | **100.0** | **2,917** | **100.0** |
| **Female** | | | | | | | | | | | | | |
| X40 | Nonopioid analgesics, antipyretics and antirheumatics | 141 | 18.6 | 224 | 33.4 | 177 | 19.6 | 71 | 13.5 | 33 | 5.7 | 646 | 18.8 |
| X41 | Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs | 284 | 37.4 | 282 | 42.1 | 497 | 54.9 | 286 | 54.4 | 143 | 24.6 | 1,492 | 43.4 |
| X42 | Narcotics and psychodysleptics [hallucinogens] | 26 | 3.4 | 90 | 13.4 | 116 | 12.8 | 72 | 13.7 | 55 | 9.5 | 359 | 10.4 |
| X43 | Other drugs acting on the autonomic nervous system | 55 | 7.2 | 4 | 0.6 | 14 | 1.5 | 7 | 1.3 | 41 | 7.1 | 121 | 3.5 |
| X44 | Other and unspecified drugs, medicaments and biological substances | 253 | 33.3 | 70 | 10.4 | 101 | 11.2 | 90 | 17.1 | 309 | 53.2 | 823 | 23.9 |
| **Total** | | **759** | **100.0** | **670** | **100.0** | **905** | **100.0** | **526** | **100.0** | **581** | **100.0** | **3,441** | **100.0** |

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

## Young children aged 0–4 years

A considerable proportion of accidental pharmaceutical poisonings occurred in young children aged 0–4 years (21%; *n* = 1,320), and most of these (89%) occurred in young children aged 1–3 years, whereas only 5% occurred in infants aged less than 1 year (Table 2.4.5).

*Accidental poisoning by and exposure to other and unspecified drugs, medicaments, and biological substances* in children aged 0–4 years (*n* = 509) accounted for 8% of all hospital cases due to poisoning by pharmaceuticals. The drugs implicated were a diverse group, and included the broad categories of *poisoning by systemic and haematological agents, not elsewhere classified* (*n* = 131), *agents primarily affecting the cardiovascular system* (*n* = 119), *poisoning by topical agents primarily affecting skin and mucous membranes and by ophthalmological, otorhinolaryngological and dental drugs* (*n* = 89) and various others.

*Accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs* in children aged 0–4 years (*n* = 450) accounted for 7% of all hospital cases due to poisoning by pharmaceuticals. This category included benzodiazepines (*n* = 235), other and unspecified antidepressants—likely to be selective serotonin reuptake inhibitors (*n* = 72).

*Accidental poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics* in children aged 0–4 years (*n* = 217) accounted for 3% of all hospital cases due to poisoning by pharmaceuticals. Most were poisoning by 4-aminophenol derivatives such as paracetamol (*n* = 153) and other non-steroidal anti-inflammatory drugs (*n* = 45).

*Accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified* and *other drugs acting on the autonomic nervous system* in children aged 0–4 years constituted only a small proportion of all hospital cases due to poisoning by pharmaceuticals; 0.8% and 1.4%, respectively.

**Table 2.4.5: Mechanism of poisoning by pharmaceuticals in children 0–4 years, Australia, 2005–06**

| | | Age at admission | | | | | |
|---|---|---|---|---|---|---|---|
| **ICD-10-AM Code** | **Accidental poisoning by and exposure to:** | **0–11 months** | **1 year** | **2 years** | **3 years** | **4 years** | **Total** |
| X40 | Nonopioid analgesics, antipyretics and antirheumatics | 20 | 44 | 102 | 34 | 17 | 217 |
| X41 | Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs | 10 | 93 | 229 | 88 | 30 | 450 |
| X42 | Narcotics and psychodysleptics [hallucinogens] | * | 15 | 21 | 11 | * | 53 |
| X43 | Other drugs acting on the autonomic nervous system | * | 22 | 38 | 18 | * | 91 |
| X44 | Other and unspecified drugs, medicaments and biological substances | 22 | 138 | 213 | 106 | 30 | 509 |
| **Total** | | **60** | **312** | **603** | **257** | **88** | **1,320** |
| **Per cent** | | **4.5** | **23.6** | **45.7** | **19.5** | **6.7** | **100.0** |

* Small cell counts have been suppressed.

## Length of stay

Mean length of stay for poisoning by pharmaceuticals increased with age (Figure 2.4.3). The mean length of stay was 1.2 days for children aged 0–14 years, 1.5 days for young people aged 15–24 years, 2.0 days for adults aged 25–44 years, 2.9 days for adults aged 45–64 years and 4.7 days for older people aged 65+ years.

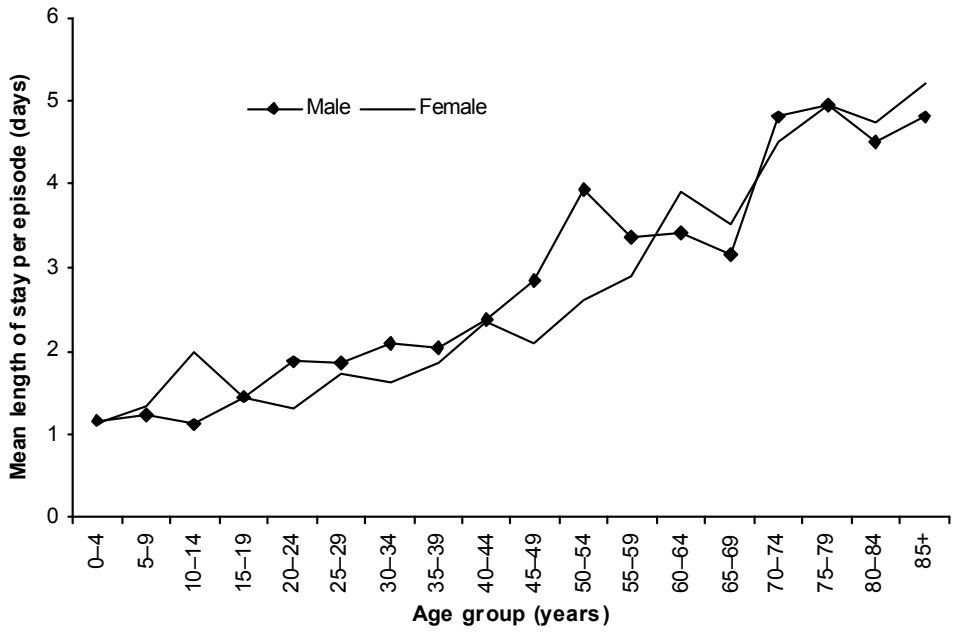



**Figure 2.4.3: Length of stay per episode for poisoning by pharmaceuticals by age and sex, Australia, 2005–06**

## Time trends

Age-standardised rates for hospitalised unintentional poisoning by pharmaceuticals decreased in recent years from 49.5 per 100,000 of the population in 1999–00 to 31.1 per 100,000 in 2005–06 (Figure 2.4.4). Age-standardised rates decreased for both males and females (males: from 49.7 per 100,000 in 1999–00 to 29.0 per 100,000 in 2005–06, females: from 49.4 per 100,000 in 1999–00 to 33.1 per 100,000 in 2005–06).

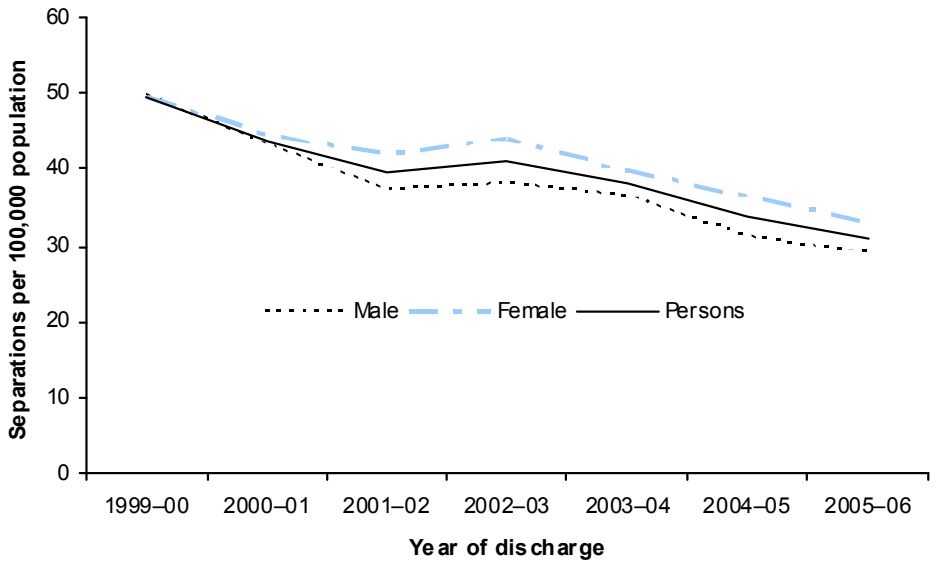



**Figure 2.4.4: Age-standardised rates for poisoning by pharmaceuticals by sex, Australia, 1999–00 to 2005–06**

The decrease in age-standardised rates for all ages in recent years was mainly attributable to a decline in age-standardised rates for people aged less than 45 years (Figure 2.4.5).

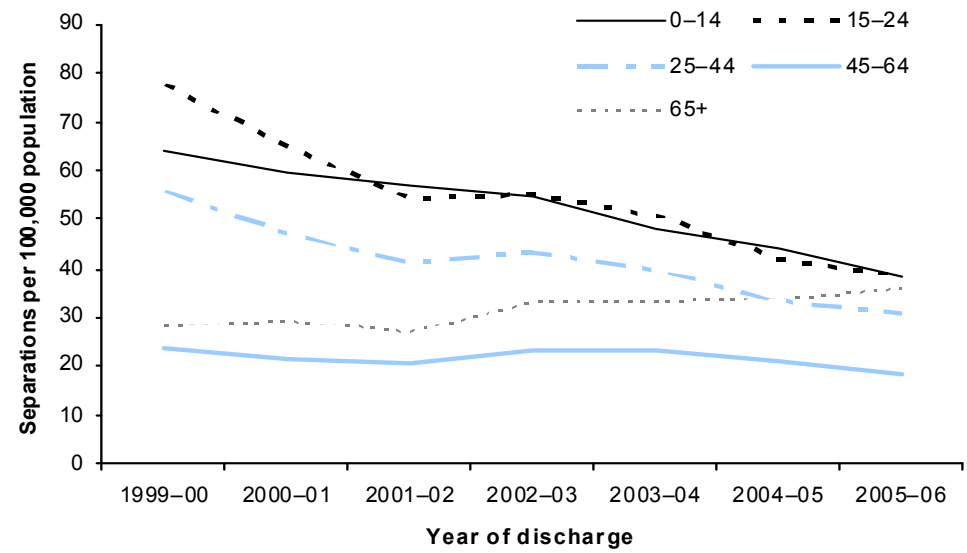



**Figure 2.4.5: Age-standardised rates for poisoning by pharmaceuticals by age group, Australia, 1999–00 to 2005–06**

## Place of occurrence

Location was not specified or reported for 30% of cases (unspecified; *n* = 1,919, not reported/not applicable; *n* = 12). The following observations are restricted to those cases in which the place of occurrence was specified. The majority of hospitalised cases due to poisoning by pharmaceuticals occurred in the home (82%; *n* = 3,639) (Table 2.4.6). Of the 139 cases that occurred in a residential institution, nearly 73% (*n* = 102) occurred in aged care facilities. Of the 123 cases that occurred in a trade and service area, two-thirds occurred in a café, hotel or restaurant (*n* = 83).

For children aged 0–4 years for whom a place of occurrence was specified (*n* = 1,020), almost all poisoning by pharmaceuticals occurred in the home (97%; *n* = 986).

**Table 2.4.6: Place of occurrence for cases of poisoning by pharmaceuticals, Australia, 2005–06**

| Place | Persons | Per cent |
|---|---|---|
| Home | 3,639 | 82.2 |
| Residential institution | 139 | 3.1 |
| School | 12 | 0.3 |
| Health Service area | 376 | 8.5 |
| Other specified institution and public administrative area | 15 | 0.3 |
| Sports and athletics area | * | |
| Street and highway | 37 | 0.8 |
| Trade and service area | 123 | 2.8 |
| Industrial and construction area | 9 | 0.2 |
| Farm | * | |
| Other specified place of occurrence | 71 | 1.6 |
| **Total** | **4,427** | **100.0** |

* Small cell counts have been suppressed.

# 2.5 Poisoning, other substances

ICD-10-AM case inclusion

Principal Diagnosis: **S00–T75, T79** and

First reported external cause: **X45–X49**

**Table 2.5.1: Key indicators for poisoning by other substances cases, Australia, 2005–06**

| Indicator | Males | Females | Persons |
|---|---|---|---|
| Separations from hospital due to poisoning, other substances | 1,489 | 1,005 | 2,494 |
| Percentage of all community injury separations | 0.6 | 0.6 | 0.6 |
| Estimated cases* | 1,421 | 977 | 2,398 |
| Crude rate/100,000 population | 13.9 | 9.4 | 11.7 |
| Age-standardised rate/100,000 population | 13.9 | 9.4 | 11.7 |
| Mean length of stay (days) | 2.0 | 1.6 | 1.9 |
| Total patient days | 2,854 | 1,600 | 4,454 |

* Omits inward transfers from acute hospitals.

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 community injury separations in the financial year 2005–06 (Table 2.5.1).

This chapter does not include unintentional poisoning by pharmaceuticals (*n* = 6,358; see Chapter 2.4), intentional self-poisoning by other substances (*n* = 1,144, see Chapter 2.9), assault by poisoning (*n* = 80; see Chapter 2.10), or poisoning of undetermined intent (*n* = 3,783; see Chapter 2.11).

## Age and sex distribution

More males than females were hospitalised for accidental poisoning by other substances (based on age-standardised rates) with a M:F rate ratio of 1.5:1 (Figure 2.5.1). Rates of poisoning from non-medicinal sources were highest in children aged 0–4 years (males: 37.7 per 100,000, females: 29.2 per 100,000) but much lower in older children. Rates rose for youth and young people (15–24 years) and then declined gradually until the age of 75 when rates rose again for both sexes.

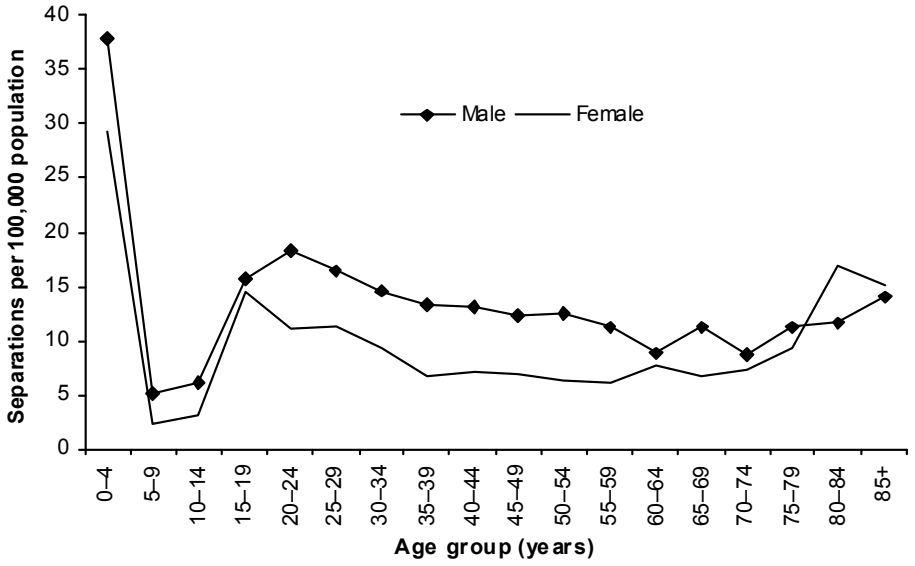



**Figure 2.5.1: Age-specific hospital separation rates for poisoning by other substances by sex, Australia, 2005–06**

Close to one-fifth of poisoning by other substances occurred in young children aged 0–4 years of age and over one-quarter occurred in adults aged 25–44 years (Table 2.5.2).

**Table 2.5.2: Cases of poisoning by other substances by age group, Australia, 2005–06**

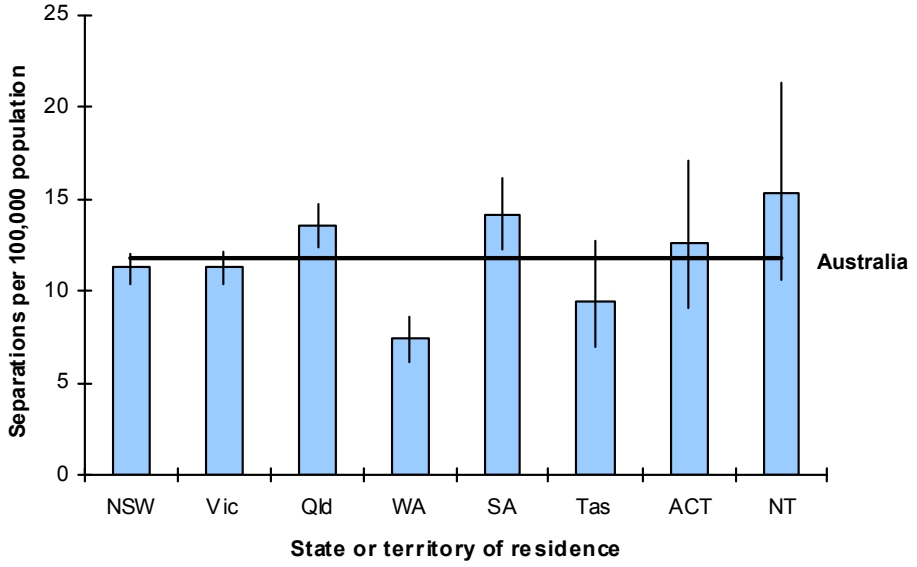
| | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| **Age group** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** |
| 0–4 years | 252 | 17.7 | 185 | 18.9 | 437 | 18.2 |
| 5–14 years | 80 | 5.6 | 37 | 3.8 | 117 | 4.9 |
| 15–24 years | 247 | 17.4 | 177 | 18.1 | 424 | 17.7 |
| 25–44 years | 423 | 29.8 | 257 | 26.3 | 680 | 28.4 |
| 45–64 years | 289 | 20.3 | 171 | 17.5 | 460 | 19.2 |
| 65+ years | 130 | 9.1 | 150 | 15.4 | 280 | 11.7 |
| **Total** | **1,421** | **100.0** | **977** | **100.0** | **2,398** | **100.0** |

## State and territory differences

Western Australia and Tasmania had rates of poisoning by other substances that were below the national rate (Table 2.5.3 and Figure 2.5.2), although the slight overlap of the confidence interval for the latter with the line showing the Australian rate suggests that the difference was not statistically significant. New South Wales and Victoria had rates that were similar to the national rate. Rates that were above the national rate were found in Queensland, South Australia, the Australian Capital Territory and the Northern Territory. The confidence intervals for these jurisdictions suggest that the difference from the national rate was only significant for Queensland and South Australia.

**Table 2.5.3: Age-standardised rates of poisoning by other substances, states and territories, 2005–06**

| Jurisdiction | Age-standardised rate (per 100,000 population) | 95% CI |
|---|---|---|
| NSW | 11.3 | 10.5–12.1 |
| Vic | 11.3 | 10.3–12.2 |
| Qld | 13.6 | 12.4–14.7 |
| WA | 7.4 | 6.2–8.6 |
| SA | 14.2 | 12.3–16.1 |
| Tas | 9.5 | 6.9–12.7 |
| ACT | 12.7 | 9.2–17.0 |
| NT | 15.3 | 10.7–21.3 |
| **Australia** | **11.7** | **11.2–12.2** |




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

**Figure 2.5.2: Age-standardised rates of poisoning by other substances, states and territories, 2005–06**

## Mechanism

Almost all (97.7%; *n* = 2,342) of admitted injury cases did not specify a particular body part that was injured due to the mechanism being poisoning.

Around two-thirds of hospital cases of non-medicinal poisoning were as a result of *accidental poisoning by and exposure to other and unspecified chemicals and noxious substances* (*n* = 1,596). This is a diverse category that includes corrosive and caustic agents, glues and adhesives, paints, dyes, soaps and detergents, poisonous foodstuffs and poisonous plants, among others.

Eleven per cent of hospital cases were as a result of *accidental poisoning by and exposure to alcohol*.

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

Seven per cent of hospital cases were from *accidental poisoning by and exposure to pesticides.*

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

Table 2.5.4 shows the distribution of cases of poisoning by other substances by gender and age group. Poisoning by *organic solvents and halogenated hydrocarbon and their vapours* and *poisoning by pesticides* was most common in children aged 0–14 years. *Alcohol* poisoning occurred mostly in youth and young people (15–24 years) and adults aged 25–44 years. Poisoning by *other and unspecified chemicals and noxious substances* was most common in adults aged 25–44 years.

**Table 2.5.4: External causes of poisoning by other substances by age and sex, Australia, 2005–06**

| 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 % |
| **Male** | | | | | | | | | | | | | |
| X45 | Alcohol | 17 | 11.3 | 61 | 40.4 | 47 | 31.1 | * | 14.6 | * | 2.6 | 151 | 100.0 |
| X46 | Organic solvents and halogenated hydrocarbons and their vapours | 63 | 54.3 | 17 | 14.7 | 18 | 15.5 | * | 12.9 | * | 2.6 | 116 | 100.0 |
| X47 | Other gases and vapours | 12 | 8.1 | 19 | 12.8 | 62 | 41.9 | 44 | 29.7 | 11 | 7.4 | 148 | 100.0 |
| X48 | Pesticides | 48 | 41.4 | 9 | 7.8 | 23 | 19.8 | 24 | 20.7 | 12 | 10.3 | 116 | 100.0 |
| X49 | Other and unspecified chemicals and noxious substances | 192 | 21.6 | 141 | 15.8 | 273 | 30.7 | 184 | 20.7 | 100 | 11.2 | 890 | 100.0 |
| **Total** | | **332** | **23.4** | **247** | **17.4** | **423** | **29.8** | **289** | **20.3** | **130** | **9.1** | **1,421** | **100.0** |
| **Female** | | | | | | | | | | | | | |
| X45 | Alcohol | 16 | 11.5 | 57 | 41.0 | 41 | 29.5 | 20 | 14.4 | 5 | 3.6 | 139 | 100.0 |
| X46 | Organic solvents and halogenated hydrocarbons and their vapours | 23 | 65.7 | * | 14.3 | * | 11.4 | * | 8.6 | 0 | 0.0 | 35 | 100.0 |
| X47 | Other gases and vapours | 5 | 10.4 | 6 | 12.5 | 20 | 41.7 | 10 | 20.8 | 7 | 14.6 | 48 | 100.0 |
| X48 | Pesticides | 27 | 55.1 | * | 8.2 | * | 14.3 | * | 14.3 | * | 8.2 | 49 | 100.0 |
| X49 | Other and unspecified chemicals and noxious substances | 151 | 21.4 | 105 | 14.9 | 185 | 26.2 | 131 | 18.6 | 134 | 19.0 | 706 | 100.0 |
| **Total** | | **222** | **22.7** | **177** | **18.1** | **257** | **26.3** | **171** | **17.5** | **150** | **15.4** | **977** | **100.0** |

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

* Small cell counts have been suppressed.

## Young children aged 0–4 years

A considerable proportion of accidental poisonings from non-medicinal sources occurred in young children aged 0–4 years (18%; *n* = 437), and most of these (84%) occurred before the third birthday (Table 2.5.5).

*Accidental poisoning by and exposure to other and unspecified chemicals and noxious substances* in children aged 0–4 years of age accounted for 61% (*n* = 267) of all cases of poisoning due to other substances. This category included the toxic effects of; corrosive substances (*n* = 64), soaps and detergents (*n* = 26), tobacco and nicotine (*n* = 18), noxious substances eaten as food (*n* = 16), among others. *Organic solvents and halogenated hydrocarbons and their vapours* accounted for 18% (*n* = 77) of all cases of poisoning by other substances; most cases were petroleum products (*n* = 35) and other specified organic solvents (*n* = 31). *Accidental poisoning and exposure to pesticides* accounted for 16% (*n* = 70) of all cases of poisoning by other substances; most cases were rodenticides (*n* = 19) and organophosphate and carbamate insecticides (*n* = 18). *Accidental poisoning by and exposure to alcohol* and *other gases and vapours* in children aged 0–4 years constituted only a small proportion of poisoning by other substances, 3.7% and 1.6%, respectively.

**Table 2.5.5: Mechanism of poisoning by other substances in children 0–4 years, Australia, 2005–06**

| | | Age at admission | | | | | |
|---|---|---|---|---|---|---|---|
| **ICD-10-AM Code** | **Accidental poisoning by and exposure to:** | **0–11 months** | **1 year** | **2 years** | **3 years** | **4 years** | **Total** |
| X45 | Alcohol | * | * | * | * | * | 16 |
| X46 | Organic solvents and halogenated hydrocarbons and their vapours | * | 44 | 19 | 7 | * | 77 |
| X47 | Other gases and vapours | * | * | * | 0 | * | 7 |
| X48 | Pesticides | 7 | 27 | 25 | 7 | * | 70 |
| X49 | Other and unspecified chemicals and noxious substances | 23 | 139 | 63 | 22 | 20 | 267 |
| **Total** | | **39** | **216** | **113** | **38** | **31** | **437** |
| **Per cent** | | **8.9** | **49.4** | **25.9** | **8.7** | **7.1** | **100.0** |

* Small cell counts have been suppressed.

## Length of stay

Mean length of stay was shorter for unintentional poisoning by other substances (1.9 days for persons, all ages) than for the types of cases reported in any other chapter of this report. Mean length of stay for poisoning by other substances increased with age, though less than for most types of *Community injury* (Figure 2.5.3). The mean length of stay was 1.5 days for children aged 0–14 years, 1.3 days for young people aged 15–24 years, 1.8 days for adults aged 25–44 years, 2.1 days for adults aged 45–64 years and 3.0 days for older people aged 65+ years.

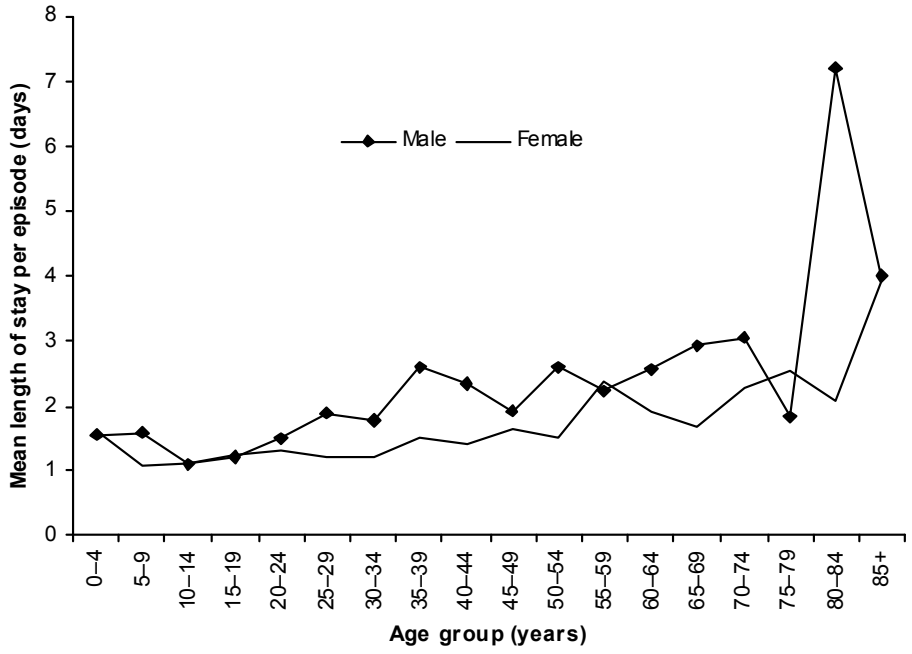



**Figure 2.5.3: Length of stay per episode for poisoning by other substances by age and sex, Australia, 2005–06**

## Time trends

Age-standardised rates for poisoning by other substances declined in recent years from 15.0 per 100,000 of the population in 1999–00 to 11.7 per 100,000 in 2005–06 (Figure 2.5.4). Male rates declined from 18.6 per 100,000 in 1999–00 to 13.9 per 100,000 in 2005–06. Male rates were consistently higher than female rates, which showed less change over time; 11.4 per 100,000 in 1999–00 and 9.4 per 100,000 in 2005–06.

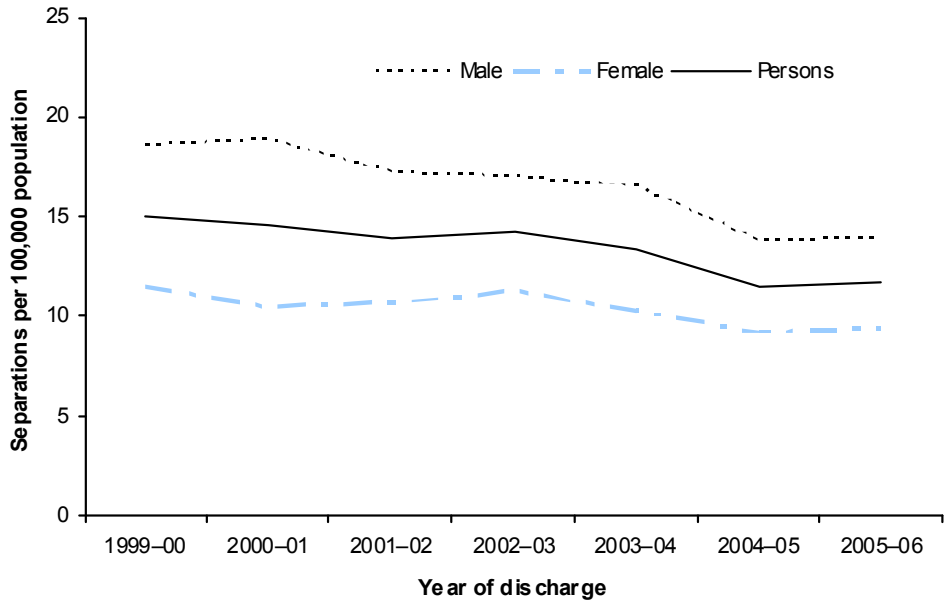



**Figure 2.5.4: Age-standardised rates for poisoning by other substances, Australia, 1999–00 to 2005–06**

## Place of occurrence

Location was not specified or reported for 42% of cases (unspecified; *n* = 1,013, not reported/not applicable; *n* = 2). The following observations are restricted to those cases in which the place of occurrence was specified. Sixty-three per cent of injuries from poisoning by other substances occurred in the home (*n* = 871) (Table 2.5.6).

For children aged 0–4 years for whom a place of occurrence was specified (*n* = 336), almost all poisoning by other substances occurred in the home (95.2%; *n* = 320).

**Table 2.5.6: Place of occurrence for cases of poisoning by other substances, Australia, 2005–06**

| Place | Persons | Per cent |
|---|---|---|
| Home | 871 | 63.0 |
| Residential institution | 25 | 1.8 |
| School | 18 | 1.3 |
| Health Service area | 21 | 1.5 |
| Other specified institution and public administrative area | 5 | 0.4 |
| Sports and athletics area | 8 | 0.6 |
| Street and highway | 10 | 0.7 |
| Trade and service area | 203 | 14.7 |
| Industrial and construction area | 133 | 9.6 |
| Farm | 27 | 2.0 |
| Other specified place of occurrence | 62 | 4.5 |
| **Total** | **1,383** | **100.0** |

# 2.6 Fires, burns and scalds

ICD-10-AM case inclusion

Principal Diagnosis: **S00–T75, T79** and

First reported external cause: **X00–X19**

**Table 2.6.1: Key indicators for fires burns and scalds cases, Australia, 2005–06**

| Indicator | Males | Females | Persons |
|---|---|---|---|
| Separations from hospital due to fires, burns and scalds | 4,073 | 2,166 | 6,239 |
| Percentage of all injury separations | 1.8 | 1.3 | 1.6 |
| Estimated cases* | 3,542 | 1,915 | 5,457 |
| Crude rate/100,000 population | 34.7 | 18.5 | 26.5 |
| Age-standardised rate/100,000 population | 34.8 | 18.9 | 26.9 |
| Mean length of stay (days) | 5.8 | 5.5 | 5.7 |
| Total patient days | 20,402 | 10,498 | 30,900 |

* Omits inward transfers from acute hospitals.

This chapter includes *Community injury* cases in which the first reported external cause is unintentional *exposure to smoke, fire and flames* (ICD-10-AM X00–X09) or *contact with heat and hot substances* (X10–X19). These include most, but not all, injuries due to thermal and related external causes. Fire, burns and scalds injury accounted for 1.6% of all injury hospitalisations in the financial year 2005–06 (Table 2.6.1).

This chapter does not include injuries due to explosion and rupture of boilers ($n$ = 8), explosion and rupture of gas cylinder ($n$ = 99), discharge of fireworks ($n$ = 52), explosion of other materials (e.g. munitions, blasting material) ($n$ = 197), exposure to electric current ($n$ = 589), exposure to extreme heat of man-made origin, natural heat or volcanic eruption ($n$ = 476), sunlight ($n$ = 21), or lightning ($n$ = 22), all of which are covered by Chapter 2.8. Injuries attributable to intentional self-harm by explosive material ($n$ = 2), smoke, fire and flames ($n$ = 86) or steam, hot vapours and hot objects ($n$ = 21) are covered by Chapter 2.9. Injuries resulting from assault by means of explosive material ($n$ = 25), smoke, fire and flames ($n$ = 35) or steam, hot vapours and hot objects ($n$ = 36) are covered by Chapter 2.10 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). Events of undetermined intent—contact with explosive material or smoke, fire and flames ($n$ = 85) or steam, hot vapours and hot objects ($n$ = 15) are included in Chapter 2.11.

## Age and sex distribution

More males than females were injured by fires, burns and scalds (based on age-standardised rates) by 1.8:1 (Figure 2.6.1). Rates were highest for young children aged 0–4 years (males: 121.4 per 100,000, females: 98.3 per 100,000).

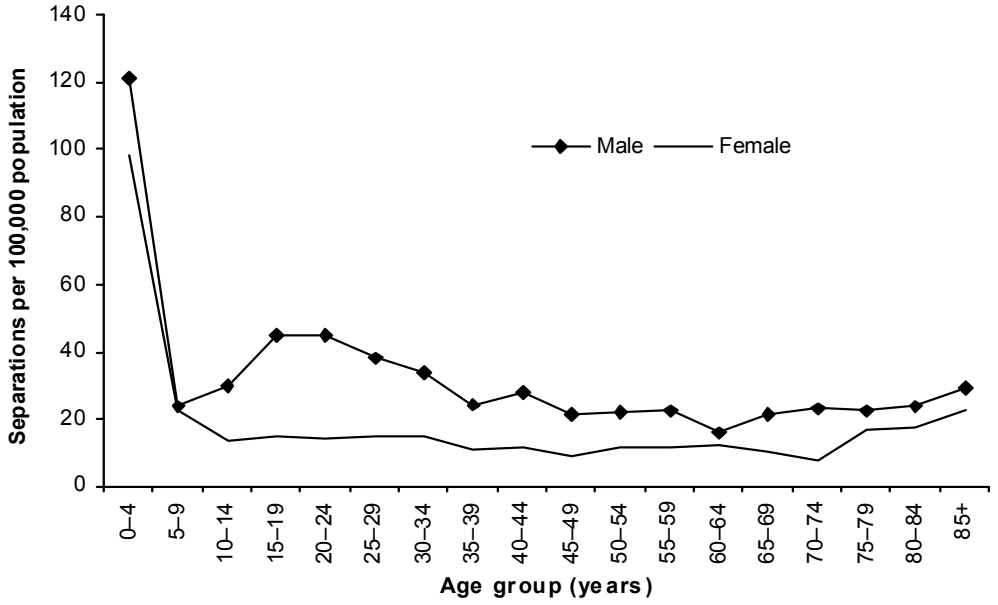



**Figure 2.6.1: Age-specific hospital separation rates for fire, burns and scalds injury by sex, Australia, 2005–06**

Close to 40% of those injured were children aged 0–14 years; young children aged 0–4 years comprised over a quarter of injury cases due to fires, burns and scalds. Nearly a quarter of hospital cases were adults aged 25–44 years, whereas only 9% of those injured were older people aged 65+ years (Table 2.6.2). Sixty-five per cent of those injured were male.

**Table 2.6.2: Fires, burns and scalds cases by age group, Australia, 2005–06**

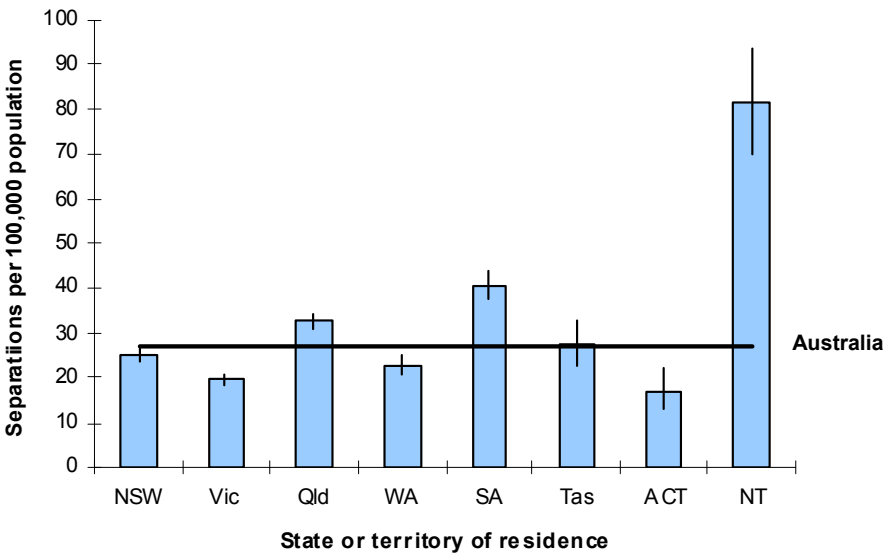
| | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| Age group | Count | Per cent | Count | Per cent | Count | Per cent |
| 0–4 years | 811 | 22.9 | 622 | 32.5 | 1433 | 26.3 |
| 5–14 years | 373 | 10.5 | 236 | 12.3 | 609 | 11.2 |
| 15–24 years | 652 | 18.4 | 197 | 10.3 | 849 | 15.6 |
| 25–44 years | 915 | 25.8 | 382 | 19.9 | 1297 | 23.8 |
| 45–64 years | 518 | 14.6 | 275 | 14.4 | 793 | 14.5 |
| 65+ years | 273 | 7.7 | 203 | 10.6 | 476 | 8.7 |
| **Total** | **3,542** | **100.0** | **1,915** | **100.0** | **5,457** | **100.0** |

## State and territory differences

The most notable aspect of Table 2.6.3 and Figure 2.6.2 is the extent to which the Northern Territory's rate of injury due to fires, burns and scalds exceeded the national rate. With the exception of Tasmania, rates for all jurisdictions were significantly higher or lower than the rate for Australia as a whole. Of the 180 hospital cases of residents in the Northern Territory, well over half ($n$ = 112) were recorded as being Aboriginal and Torres Strait Islander persons.

**Table 2.6.3: Age-standardised rates of fires, burns and scalds, states and territories, 2005–06**

| Jurisdiction | Age-standardised rate (per 100,000 population) | 95% CI |
|---|---|---|
| NSW | 24.9 | 23.7–26.1 |
| Vic | 19.5 | 18.3–20.7 |
| Qld | 32.4 | 30.7–34.2 |
| WA | 22.8 | 20.7–24.9 |
| SA | 40.6 | 37.4–43.8 |
| Tas | 27.7 | 23.0–32.4 |
| ACT | 17.1 | 13.0–22.1 |
| NT | 81.9 | 69.9–93.8 |
| **Australia** | **26.9** | **26.2–27.6** |




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

**Figure 2.6.2: Age-standardised rates of fire, burns and scalds injury, states and territories, 2005–06**

## Principal diagnosis and body part injured

Six specific body areas accounted for 90% (*n* = 4,926) of all fire, burn and scald injuries (*n* = 5,457) (Table 2.6.4). Fires, burns and scalds involved all major body regions with similar frequency—the top two being *burn of wrist and hand* (20%) and *burn of head and neck* (17%). *Burn of wrist and hand* was most common for males (21%) and *burn of trunk* was most common for females (21%).

**Table 2.6.4: Top 6 specific injuries for fires, burns and scalds, Australia, 2005–06**

| | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| **Principal Diagnosis** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** |
| Burn of wrist and hand | 727 | 20.5 | 335 | 17.5 | 1062 | 19.5 |
| Burn of head and neck | 679 | 19.2 | 262 | 13.7 | 941 | 17.2 |
| Burn of trunk | 456 | 12.9 | 406 | 21.2 | 862 | 15.8 |
| Burn of hip and lower limb, except wrist and hand | 543 | 15.3 | 310 | 16.2 | 853 | 15.6 |
| Burn of shoulder and upper limb, except wrist and hand | 388 | 11.0 | 233 | 12.2 | 621 | 11.4 |
| Burn of ankle and foot | 407 | 11.5 | 180 | 9.4 | 587 | 10.8 |
| **Sub-total of top 6 diagnoses** | **3,200** | **90.3** | **1,726** | **90.1** | **4,926** | **90.3** |

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* (21%), followed by *contact with other hot fluids* e.g. water heated on a stove (14%) and *exposure to ignition of highly flammable material* e.g. gasoline, kerosene, petrol (14%) (Table 2.6.5). There were some differences by gender; although the most common cause of hospitalisation for both sexes was *contact with hot drinks, food, fats and cooking oils* (18% for males and 29% for females), the second most common cause of hospitalisation for males was *exposure to ignition of highly flammable materials* such as gasoline, kerosene, petrol etc (19%) whereas for females it was *contact with other hot fluids* e.g. hot water heated on a stove (19%).

In the context of the broader age groups identified in the National Injury Prevention and Promotion Plan: 2004–2014 (Pointer et al. 2003; SIPP 2005) the leading causes of fires, burns and scald hospitalisations were *contact with hot drinks, food, fats and cooking oils* for children aged 0–14 years (*n* = 665, 12.2% of all cases), *contact with other hot fluids* such as water heated on a stove for children aged 0–14 years (*n* = 343; 6.3% of all cases), *exposure to ignition of highly flammable material* in adults aged 25–44 years (*n* = 249; 4.6% of all cases) and youth and young adults aged 15–24 years (*n* = 239; 4.4% of all cases) and *contact with hot tap-water* in children aged 0–14 years (*n* = 185; 3.4% of all cases).

Admissions to hospital due to house fires (i.e. *exposure to uncontrolled fire in building or structure*) constituted only 3.6% of all fires, burns and scalds cases in 2005–06 (*n* = 196). Young children aged 0–14 years comprised only 0.5% of all *exposure to uncontrolled fire in building or structure* (*n* = 28), 0.5% were youth and young people aged 15–24 years (*n* = 30), 1.4% were adults aged 25–44 years (*n* = 77), 0.6% were adults aged 45–64 years (*n* = 32) and 0.5% were older people aged 65+ years (*n* = 29).

The main causes of fires, burns and scalds injury in older people aged 65+ years were *contact with hot drinks, food, fats and cooking oils* (*n* = 69; 1.3% of all cases), *contact with other hot fluids* such as water heated on a stove (*n* = 61; 1.1% of all fires, burns and scalds cases), and *contact with hot tap-water* (*n* = 59; 1.1% of all cases).

**Table 2.6.5: External causes of fire, burns and scalds injury by sex, Australia, 2005–06**

| ICD-10-AM Code | External cause | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|---|
| | | Count | Per cent | Count | Per cent | Count | Per cent |
| X00 | Exposure to uncontrolled fire in building or structure | 124 | 3.5 | 72 | 3.8 | 196 | 3.6 |
| X01 | Exposure to uncontrolled fire, not in building or structure (e.g. forest fire) | 71 | 2.0 | 11 | 0.6 | 82 | 1.5 |
| X02 | Exposure to controlled fire in building or structure (e.g. fireplace, stove) | 72 | 2.0 | 40 | 2.1 | 112 | 2.1 |
| X03 | Exposure to controlled fire, not in building or structure (e.g. camp-fire) | 205 | 5.8 | 51 | 2.7 | 256 | 4.7 |
| X04 | Exposure to ignition of highly flammable material (e.g. gasoline, kerosene, petrol) | 666 | 18.8 | 77 | 4.0 | 743 | 13.6 |
| X05 | Exposure to ignition or melting of nightwear | * | 0.0 | * | 0.4 | 9 | 0.2 |
| X06 | Exposure to ignition or melting of other clothing and apparel | 70 | 2.0 | 35 | 1.8 | 105 | 1.9 |
| X08 | Exposure to other specified smoke, fire and flames | 97 | 2.7 | 57 | 3.0 | 154 | 2.8 |
| X09 | Exposure to unspecified smoke, fire and flames | 267 | 7.5 | 105 | 5.5 | 372 | 6.8 |
| X10 | Contact with hot drinks, food, fats and cooking oils | 620 | 17.5 | 547 | 28.6 | 1,167 | 21.4 |
| X11 | Contact with hot tap-water | 181 | 5.1 | 186 | 9.7 | 367 | 6.7 |
| X12 | Contact with other hot fluids (e.g. water heated on stove) | 385 | 10.9 | 357 | 18.6 | 742 | 13.6 |
| X13 | Contact with steam and hot vapours | 112 | 3.2 | 47 | 2.5 | 159 | 2.9 |
| X14 | Contact with hot air and gases | * | 0.4 | * | 0.1 | 15 | 0.3 |
| X15 | Contact with hot household appliances | 144 | 4.1 | 84 | 4.4 | 228 | 4.2 |
| X16 | Contact with hot heating appliances, radiators and pipes | 152 | 4.3 | 88 | 4.6 | 240 | 4.4 |
| X17 | Contact with hot engines, machinery and tools | 94 | 2.7 | 33 | 1.7 | 127 | 2.3 |
| X18 | Contact with other hot metals | 64 | 1.8 | 21 | 1.1 | 85 | 1.6 |
| X19 | Contact with other and unspecified heat and hot substances | 204 | 5.8 | 94 | 4.9 | 298 | 5.5 |
| **Total** | | **3,542** | **100.0** | **1,915** | **100.0** | **5,457** | **100.0** |

*Note:* Shaded areas indicate the highest 2 or 3 figures for a column.

*Small cell counts have been suppressed.

### Young children aged 0–4 years

The greatest proportion of fires, burns and scalds injury occurred in young children aged 0–4 years (26.3%; *n* = 1,433), and most of these (83%) occurred before the third birthday (Table 2.6.6). Over a third of injuries were from *contact with hot drinks, foods, fats and cooking oils*, and over one-quarter were from *contact with hot tap-water* and *contact with other hot fluids* (e.g. water heated on a stove). The number of injuries was highest at one year and declined after two years of age. This is the age range during which children become mobile and manipulate objects, yet lack awareness of the hazardous nature of hot liquids and hot objects. The other leading causes of fire, burns and scalds injury for young children were *contact with hot household appliances* such as hotplates, stoves and toasters (10.3%), *contact with hot heating appliances* such as radiators and pipes (5.6%). There were 5 cases of *exposure to ignition or melting of nightwear* among children (1 case in young children aged 0–4 years, and 4 cases in 5–9 year olds). There were also cases among adults (1 case in the 50–54 year age group, 2 cases among 65–69 year olds, and 1 case in the 80–84 year age group).

**Table 2.6.6: Top 5 mechanisms of fires, burns and scalds for young children aged 0–4 years, Australia, 2005–06**

| | | Age at admission | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **ICD-10-AM Code** | **Accidental poisoning by and exposure to:** | **0–11 months** | **1 year** | **2 years** | **3 years** | **4 years** | **Total** | **Per cent** |
| X10 | Contact with hot drinks, food, fats and cooking oils | 96 | 294 | 65 | 26 | 30 | 511 | 35.7 |
| X12 | Contact with other hot fluids (e.g. water heated on stove) | 60 | 99 | 57 | 27 | 21 | 264 | 18.4 |
| X15 | Contact with hot household appliances | 32 | 58 | 36 | 17 | 8 | 151 | 10.5 |
| X11 | Contact with hot tap-water | 44 | 59 | 30 | * | * | 148 | 10.3 |
| X16 | Contact with hot heating appliances, radiators and pipes | * | 29 | 9 | * | * | 80 | 5.6 |
| X19 | Contact with other and unspecified heat and hot substances | * | 32 | 24 | 12 | * | 78 | 5.4 |
| | **Sub-total** | 265 | 571 | 221 | 100 | 75 | 1,232 | 86.0 |
| X00–X09, X13, X17–X18 | Other | 19 | 66 | 48 | 32 | 36 | 201 | 14.0 |
| **Total** | | **284** | **637** | **269** | **132** | **111** | **1,433** | **100.0** |

Small cell counts have been suppressed.

## Length of stay

Of *Community injury* chapters in this report, only unintentional falls has a longer all ages mean length of stay than this chapter. The mean length of stay for fires, burns and scalds injury increased with age (Figure 2.6.3). The mean length of stay was 3.9 days for children aged 0–14 years, 4.7 days for young people aged 15–24 years, 5.2 days for adults aged 25–44 years, 7.1 days for adults aged 45–64 years and 13.7 days for older people aged 65+ years.

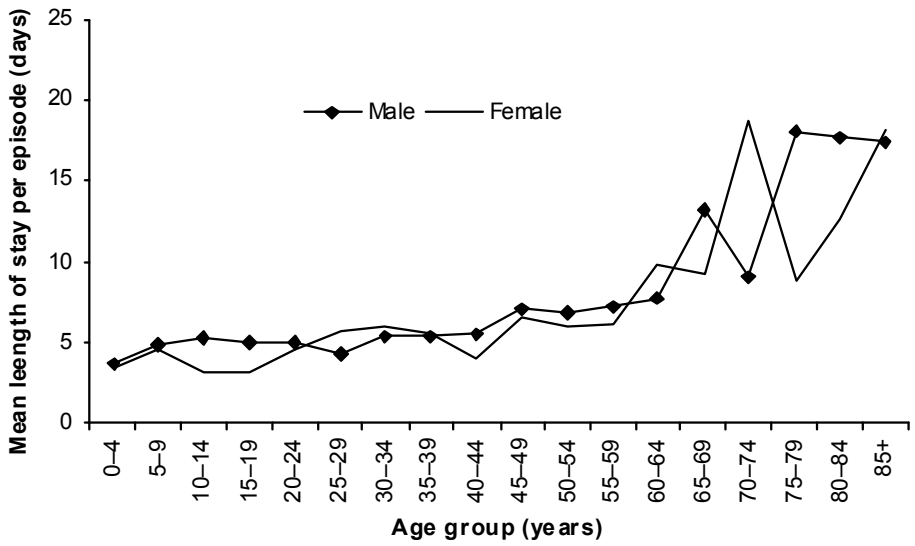



**Figure 2.6.3: Length of stay per episode for fire, burns and scalds injury by age and sex, Australia, 2005–06**

## Time trends

Although there was a gradual decline in age-standardised rates for fires, burns and scalds between 1999–00 and 2003–04 from 27.6 persons per 100,000 population to 25.8 per 100,000, that downward trend has not continued over the past two years. In 2004–05 the age-standardised rate rose to 27.0 per 100,000 and was 26.9 in 2005–06 (Figure 2.6.4). Male rates declined from 37.5 per 100,000 in 1999–00 to 34.8 per 100,000 in 2005–06. Male rates were consistently higher than female rates, which showed small fluctuations over time; 17.5 per 100,000 in 1999–00 and 18.9 per 100,000 in 2005–06.

**Figure 2.6.4: Age-standardised rates for fire, burns and scalds injury, Australia, 1999–00 to 2005–06**

## Place of occurrence

Location was not specified or reported for 33% of cases (unspecified; *n* = 1,804, not reported/not applicable; *n* = 2). The following observations are restricted to those cases in which the place of occurrence was specified. Over three-quarters of hospital cases resulted from injuries that occurred in the home (79%; *n* = 2,872) (Table 2.6.7).

Of the 159 cases that occurred in a trade and service area, 85 (53%) occurred in a café, hotel or restaurant. Of the 150 cases that occurred in an industrial or construction area, 81 occurred in a factory or plant. Of the 42 cases that occurred in a residential institution, 29 occurred in aged care facilities.

For children aged 0–4 years for whom a place of occurrence was specified (*n* = 1,118), almost all fire, burns and scalds injuries occurred in the home (92%; *n* = 1,033).

**Table 2.6.7: Place of occurrence for cases of fires, burns and scalds, Australia, 2005–06**

| Place | Persons | Per cent |
|---|---|---|
| Home | 2,872 | 78.7 |
| Residential institution | 42 | 1.2 |
| School | 20 | 0.5 |
| Health service area | 19 | 0.5 |
| Other specified institution and public administrative area | 4 | 0.1 |
| Sports and athletics area | 17 | 0.5 |
| Street and highway | 59 | 1.6 |
| Trade and service area | 159 | 4.4 |
| Industrial and construction area | 150 | 4.1 |
| Farm | 61 | 1.7 |
| Other specified places | 248 | 6.8 |
| **Total** | **3,651** | **100.0** |

## 2.7 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 2.7.2):

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

**Table 2.7.1: Key indicators for drowning and near-drowning cases, Australia, 2005–06**

| Indicator | Males | Females | Persons |
|---|---|---|---|
| Separations from hospital due to drowning and near-drowning | 373 | 172 | 545 |
| Percentage of all community injury separations | 0.2 | 0.1 | 0.1 |
| Estimated cases* | 334 | 160 | 494 |
| Crude rate/100,000 population | 3.3 | 1.5 | 2.4 |
| Age-standardised rate/100,000 population | 3.3 | 1.6 | 2.5 |
| Mean length of stay (days) | 3.1 | 2.5 | 2.9 |
| Total patient days | 1,044 | 398 | 1,442 |

* Omits inward transfers from acute hospitals.

Drowning and near-drowning accounted for 0.1% of all injury hospitalisations in the financial year 2005–06 (Table 2.7.1). This chapter predominantly focuses on estimated cases of *Accidental drowning and submersion* that have an external cause in the ICD-10-AM range W65–W74 (*n* = 494). There are 30 additional hospital cases that have an external cause code outside the range of *Accidental Drowning and submersion* (ICD-10-AM W65–W74) but have a Principal Diagnosis of T75.1 *Drowning and nonfatal submersion*. Section 2.7.1 provides an overview of all drowning and near-drowning cases (*n* = 524) (Table 2.7.2).

## 2.7.1 Overview of all drowning and near-drowning cases

All identifiable hospitalised drowning and near-drowning cases in Australia in 2005–06 are summarised in Tables 2.7.2 and 2.7.3. Note that the total of 524 cases includes 30 cases that are also in the data for other chapters, since they involved both (near) drowning and another external cause.

**Table 2.7.2: All identifiable drowning and near-drowning cases, Australia, 2005–06**

| No in 2005–06 | Percentage of all drowning cases in 2005–06 | ICD-10-AM Code | ICD Category | Coverage in this report | Terminology in this report |
|---|---|---|---|---|---|
| 494 | 94.3 | W65–W74 | Accidental drowning and submersion | Drowning | Accidental drowning |
| 11 | 2.1 | V90, V92, V94 | Water transport accident | Other transport | |
| 8 | 1.5 | 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 |
| **524** | **100.0** | | | | **Total drowning with an external cause code** |

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

* Small counts have been suppressed.

Most hospitalised drowning and near-drowning (47%) occurred in the 0–4 year age group (Table 2.7.3). Swimming pools were the most common setting of drowning and near-drowning for children aged 0–4 years (70%) and children aged 5–14 years (53%). Natural water (e.g. rivers, lakes, the ocean) was the most common setting of drowning and near-drowning for those aged 15 years and over (percentages ranging from 46% in older people aged 65 years and over 69% in people aged 25–44 year). Swimming pool-related cases in adults were less frequent (percentages ranging from 11% in young people aged 15–24 years to 27% in older people aged 65+ years). A greater proportion of older people aged 65+ years drowned or nearly drowned in swimming pools (27%) compared with other adults. Bathtub-related cases most commonly occurred in young children aged 0–4 years (17%). Overall, swimming pools were the most common setting for drowning-related cases (44%), followed by natural water (31%) and other or unspecified settings (16%).

**Table 2.7.3: Circumstances of accidental drowning and near-drowning cases by age, Australia, 2005–06**

| | Age group (years) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0–4 | | 5–14 | | 15–24 | | 25–44 | | 45–64 | | 65+ | | All ages | |
| **Circumstances of drowning** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** | **Total** | **Per cent** |
| Swimming pool | 153 | 65.9 | 29 | 52.7 | 7 | 10.8 | 9 | 13.4 | 11 | 20.8 | 6 | 27.3 | 215 | 43.5 |
| Natural water | 13 | 5.6 | 15 | 27.3 | 43 | 66.2 | 46 | 68.7 | 28 | 52.8 | 10 | 45.5 | 155 | 31.4 |
| Bathtub | 40 | 17.2 | * | 1.8 | * | 1.5 | 0 | 0.0 | * | 1.9 | 0 | 0.0 | 43 | 8.7 |
| Other or unspecified | 26 | 11.2 | * | 18.2 | * | 21.5 | 12 | 17.9 | * | 24.5 | 6 | 27.3 | 81 | 16.4 |
| **Group Total** | **232** | **100.0** | **55** | **100.0** | **65** | **100.0** | **67** | **100.0** | **53** | **100.0** | **22** | **100.0** | **494** | **100.0** |

* Small cell counts have been suppressed.

## Age and sex distribution

The following sections focus on the *Accidental drowning and submersion* (ICD-10-AM W65–W74) category ($n$ = 494). The highest rates were in children aged 0–4 years (males: 20.5 per 100,000, females: 15.0 per 100,000) (Figure 2.7.1) and rates were much lower at older ages.

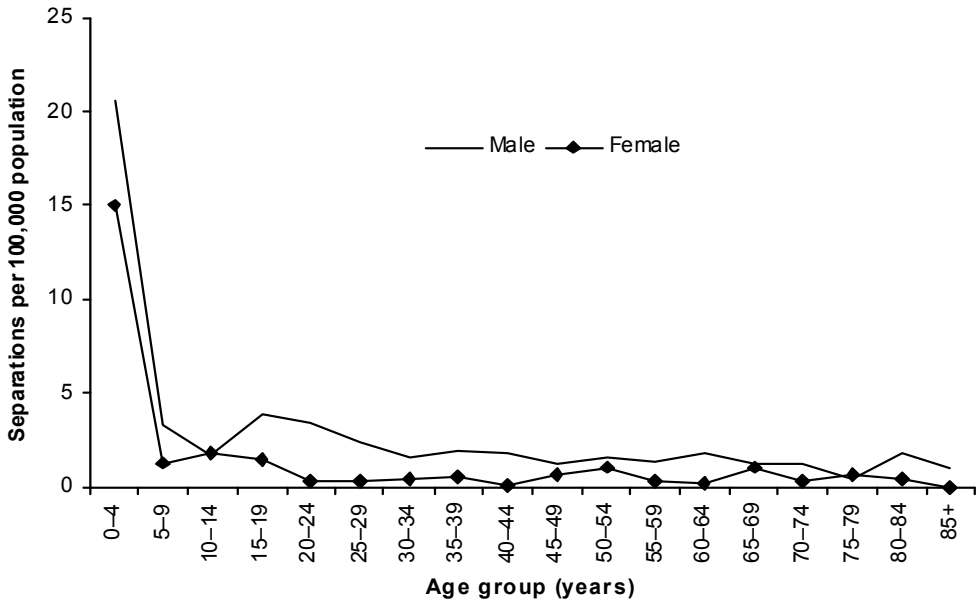



**Figure 2.7.1: Age-specific hospital separation rates for drowning and near-drowning by sex, Australia, 2005–06**

More males than females were hospitalised for drowning and near-drowning (based on age-standardised rates), by 2:1. Close to half of the drowning and near-drowning injury cases occurred in young children aged 0–4 years (Table 2.7.4).

**Table 2.7.4: Drowning and near-drowning cases by age group, Australia, 2005–06**

| | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| Age group | Count | Per cent | Count | Per cent | Count | Per cent |
| 0–4 years | 137 | 41.0 | 95 | 59.4 | 232 | 47.0 |
| 5–14 years | 35 | 10.5 | 20 | 12.5 | 55 | 11.1 |
| 15–24 years | 53 | 15.9 | 12 | 7.5 | 65 | 13.2 |
| 25–44 years | 57 | 17.1 | 10 | 6.3 | 67 | 13.6 |
| 45–64 years | 38 | 11.4 | 15 | 9.4 | 53 | 10.7 |
| 65+ years | 14 | 4.2 | 8 | 5.0 | 22 | 4.5 |
| **Total** | **334** | **100.0** | **160** | **100.0** | **494** | **100.0** |

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

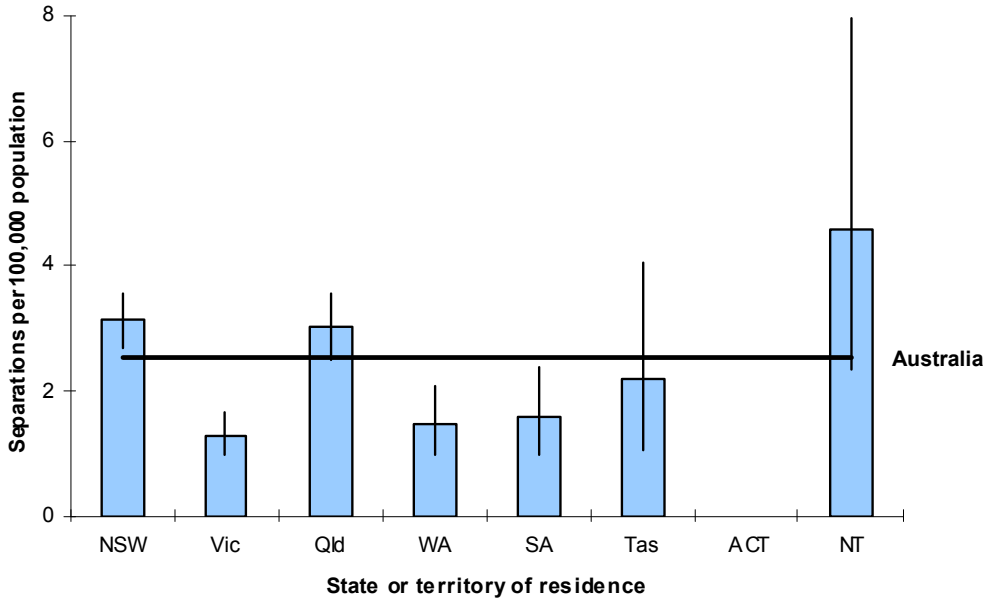
## State and territory differences

Victoria, Western Australia and South Australia had rates of drowning and near-drowning that were significantly below the national rate, and the New South Wales' rate was significantly above it (Table 2.7.5 and Figure 2.7.2). Tasmania's rate was consistent with the national rate. The rate for the Northern Territory was 84% above the national rate although note should be taken of the wide confidence intervals for that jurisdiction which suggest that considerable year to year variation can be expected. Rates for the Northern Territory in the two previous years, 2003–04 and 2004–05, were 1.9 and 3.6 per 100,000 respectively.

**Table 2.7.5: Age-standardised rates of drowning and near-drowning, states and territories, 2005–06**

| Jurisdiction | Age-standardised rate (per 100,000 population) | 95% CI |
|---|---|---|
| NSW | 2.4 | 2.1–2.8 |
| Vic | 1.7 | 1.4–2.1 |
| Qld | 3.4 | 2.8–3.9 |
| WA | 1.7 | 1.2–2.4 |
| SA | 2.1 | 1.4–3.0 |
| Tas | 1.3 | 0.5–2.7 |
| ACT | * | |
| NT | 5.1 | 2.7–8.8 |
| **Australia** | **2.4** | **2.2–2.7** |

* The rate for the ACT has been suppressed because case numbers were less than 5.




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

**Figure 2.7.2: Age-standardised rates of drowning and near-drowning, states and territories, 2005–06**

## Mechanism

The majority (84.6%; *n* = 418) of admitted injury cases did not specify a particular body part that was injured due to the mechanism being drowning.

Overall, swimming pools were the most common setting for drowning-related hospital cases (44% of all drowning cases) and especially for young children aged 0–4 years (47% of all drowning cases and 71% of all drownings that occurred in swimming pools), followed by natural water (31% of all drowning cases) and other or unspecified settings (16%). Drowning and near-drowning in bathtubs (9%) occurred less frequently (Table 2.7.6).

**Table 2.7.6: Circumstances of drowning and near-drowning by age group, Australia, 2005–06**

| | Age group (years) | | | | | | All ages | |
|---|---|---|---|---|---|---|---|---|
| **Circumstances of drowning** | **0–4** | **5–14** | **15-24** | **25-44** | **45-64** | **65+** | **Total** | **Per cent** |
| Swimming pool | 153 | 29 | 7 | 9 | 11 | 6 | 215 | 43.5 |
| Natural water | 13 | 15 | 43 | 46 | 28 | 10 | 155 | 31.4 |
| Bathtub | 40 | * | * | 0 | * | 0 | 43 | 8.7 |
| Other or unspecified | 26 | * | * | 12 | * | 6 | 81 | 16.4 |
| **Total** | **232** | **55** | **65** | **67** | **53** | **22** | **494** | **100.0** |

* Small cell counts have been suppressed.

## Length of stay

The mean length of stay due to drowning and near-drowning showed no strong trend with age; large fluctuations for both sexes at older ages reflecting small case numbers (Figure 2.7.3). The mean length of stay was 1.9 days for children aged 0–14 years, 1.7 days for young people aged 15–24 years, 3.0 days for adults aged 25–44 years, 3.7 days for adults aged 45–64 years and 4.0 days for older people aged 65+ years.

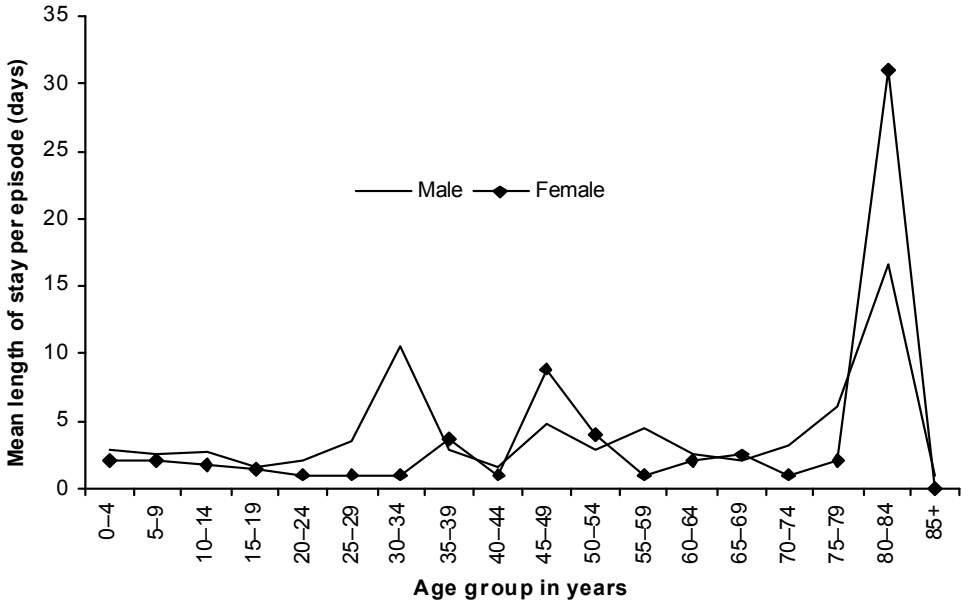



**Figure 2.7.3: Length of stay per episode for drowning and near-drowning by age and sex, Australia, 2005–06**

## Time trends

Age-standardised rates for hospitalised drowning and near-drowning decreased very slightly from 2.6 per 100,000 of the population in 1999–00 to 2.5 per 100,000 in 2005–06 (Figure 2.7.4). For each year, age-standardised rates for males were higher than for females (male rates were 3.4 per 100,000 in 1999–00 to 3.3 per 100,000 in 2005–06; female rates were 1.8 per 100,000 in 1999–00 and 1.6 per 100,000 in 2005–06).

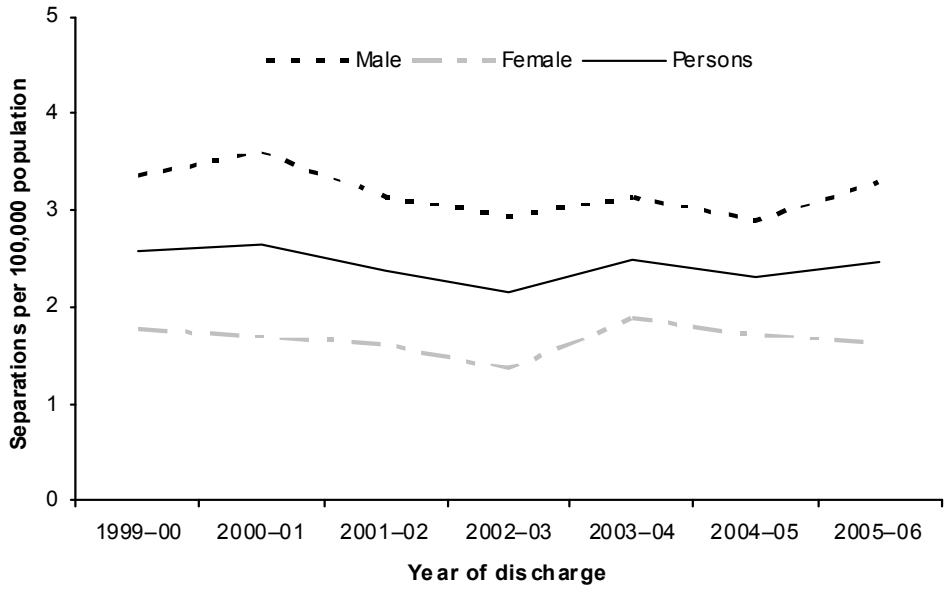



**Figure 2.7.4: Age-standardised rates for drowning and near-drowning, Australia, 1999–00 to 2005–06**

## Place of occurrence

Location was not specified or reported for 8.9% of cases (unspecified; *n* = 44). The following observations are restricted to those cases in which the place of occurrence was specified. (Table 2.7.7). Forty-one per cent (*n* = 188) of drowning and near-drowning cases occurred in the home and the majority (*n* = 128) occurred in a home swimming pool. Other common places of occurrence were bodies of natural water (*n* = 152) which included the beach (*n* = 53), a large area of water such as a bay, lake or ocean (*n* = 66), a stream of water e.g. river, creek, canal etc. (*n* = 15) and an area of still water e.g. dam, pond etc. (*n* = 7). Nine per cent (*n* = 41) of drowning and near-drowning cases occurred in a sports and athletics area and the majority of these (*n* = 29) were in a swimming pool.

**Table 2.7.7: Place of occurrence for cases of drowning and near-drowning, Australia, 2005–06**

| Place | Swimming pool | Natural water | Bathtub | Other or unspecified | Total | Per cent |
|---|---|---|---|---|---|---|
| Home | 128 | * | 41 | * | 188 | 41.3 |
| School | * | 0 | 0 | * | * | * |
| Health Service area | * | 0 | 0 | 0 | * | * |
| Other specified institution and public administrative area | 0 | * | 0 | 0 | * | * |
| Sports and athletics area | 29 | 7 | * | * | 41 | 9.0 |
| Trade and service area | 16 | 0 | * | * | 18 | 4.0 |
| Industrial and construction area | 0 | 0 | * | * | * | * |
| Farm | 0 | 0 | * | * | * | * |
| Other specified place of occurrence | 11 | 143 | 0 | 47 | 201 | 44.2 |
| **Total** | **187** | **152** | **43** | **73** | **455** | **100.0** |

* Small cell counts have been suppressed.

# 2.8 Other unintentional injuries

ICD-10-AM case inclusion

Principal Diagnosis: **S00–T75, T79** and

First reported external cause: **W20–W64, W75–W99, X20–X39, X50–X59, Y85, Y86, Y89.9**

**Table 2.8.1: Key indicators for other unintentional injury cases, Australia, 2005–06**

| Indicator | Males | Females | Persons |
|---|---|---|---|
| Separations from hospital due to other unintentional injuries | 90,006 | 36,360 | 126,366 |
| Percentage of all injury separations | 38.7 | 21.7 | 31.6 |
| Estimated cases* | 84,973 | 34,514 | 119,487 |
| Crude rate/100,000 population | 830.2 | 332.8 | 580.0 |
| Age-standardised rate/100,000 population | 828.4 | 328.8 | 581.0 |
| Mean length of stay (days) | 1.9 | 2.8 | 2.2 |
| Total patient days | 165,053 | 96,276 | 261,329 |

* Omits inward transfers from acute hospitals.

This category includes all injury hospitalisation recorded as unintentional and not included in chapters 2.2 to 2.7. It covers many types of injury and is a heterogeneous category. It accounted for 32% of all injury hospitalisations in the financial year 2005–06 (Table 2.8.1). A summary of some key components is provided in Table 2.8.2 and a complete listing of the first reported external cause codes for other unintentional injuries is provided in Table 2.8.5.

**Table 2.8.2: Summary of key components of other unintentional injury cases, Australia, 2005–06**

| External cause of morbidity and mortality | Persons | Per cent |
|---|---|---|
| Struck by or crushed by an object | 20,179 | 17 |
| Foreign body | 11,562 | 10 |
| Contact with machinery | 10,230 | 9 |
| Overexertion and strenuous or repetitive movements | 9,224 | 8 |
| Bitten by an animal, insect, reptile or envenomated (including plants) | 9,179 | 8 |
| Struck by another person or a crowd or a human stampede | 7,145 | 6 |
| Contact with sharp glass | 5,783 | 5 |
| **Sub-total of top 7 specific external causes** | **73,302** | **61** |

## Age and sex distribution

More males than females were injured by other unintentional injuries (based on age-standardised rates) by 2.5:1 (Figure 2.8.1). Male rates were lower in childhood and then peaked in youth and young men aged 15–24 years and then steadily declined with age. Female rates were constant between the ages of 10 and 74 after which they increased steadily.

Much of the large excess in male rates, especially between the ages of 15–59, are associated with injuries that occur at work or during sport. This has been demonstrated in the two previous reports in this series (Berry & Harrison 2007; Bradley & Harrison 2008).

**Figure 2.8.1: Age-specific hospital separation rates for other unintentional injury by sex, Australia, 2005–06**

Seventy-one per cent of those injured were male (Table 2.8.3).

**Table 2.8.3: Other unintentional injury cases by age group, Australia, 2005–06**

| | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| **Age group** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** |
| 0–14 years | 12,635 | 14.9 | 7,180 | 20.8 | 19,815 | 16.6 |
| 15–24 years | 21,180 | 24.9 | 4,627 | 13.4 | 25,807 | 21.6 |
| 25–44 years | 29,001 | 34.1 | 8,680 | 25.1 | 37,681 | 31.5 |
| 45–64 years | 16,326 | 19.2 | 7,361 | 21.3 | 23,687 | 19.8 |
| 65+ years | 5,831 | 6.9 | 6,666 | 19.3 | 12,497 | 10.5 |
| **Total** | **84,973** | **100.0** | **34,514** | **100.0** | **119,487** | **100.0** |

## State and territory differences

As for many major causes of injury, the Northern Territory had the highest rate of hospitalised cases due to 'Other unintentional injury', a rate that differed significantly from the national rate. With the exception of Victoria (which had a rate that was very similar to the national rate), rates for all other jurisdictions differed significantly from the rate for Australia as a whole (Table 2.8.4 and Figure 2.8.2).

**Table 2.8.4: Age-standardised rates of other unintentional injury, states and territories, 2005–06**

| Jurisdiction | Age-standardised rate (per 100,000 population) | 95% CI |
|---|---|---|
| NSW | 554 | 549–560 |
| Vic | 575 | 568–581 |
| Qld | 660 | 652–668 |
| WA | 526 | 516–536 |
| SA | 547 | 535–559 |
| Tas | 514 | 494–535 |
| ACT | 497 | 473–521 |
| NT | 821 | 783–859 |
| **Australia** | **582** | **579–585** |

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

**Figure 2.8.2: Age-standardised rates of other unintentional injury, states and territories, 2005–06**

## Principal diagnosis and body part injured

Other unintentional injuries occurred most commonly to either the shoulder and upper limb (44%) or the hip and lower limb (26%) (Table 2.8.5).

**Table 2.8.5: Principal Diagnosis by body region for other unintentional injury, Australia, 2005–06**

| | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| **Principal Diagnosis by body region** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** |
| Head | 11,271 | 13.3 | 4,214 | 12.2 | 15,485 | 13.0 |
| Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis) | 4,374 | 5.1 | 2,473 | 7.2 | 6,847 | 5.7 |
| Shoulder and upper limb | 40,666 | 47.9 | 11,928 | 34.6 | 52,594 | 44.0 |
| Hip and lower limb | 19,886 | 23.4 | 10,910 | 31.6 | 30,796 | 25.8 |
| Other injuries not specified by body region | 8,776 | 10.3 | 4,989 | 14.5 | 13,765 | 11.5 |
| **All body regions** | **84,973** | **100.0** | **34,514** | **100.0** | **119,487** | **100.0** |

## Length of stay

Mean length of stay for other unintentional injuries rose with age (Figure 2.8.3). The mean length of stay was 1.5 days for children aged 0–14 years, 1.6 days for young people aged 15–24 years, 1.8 days for adults aged 25–44 years, 2.4 days for adults aged 45–64 years and 5.4 days for older people aged 65+ years.

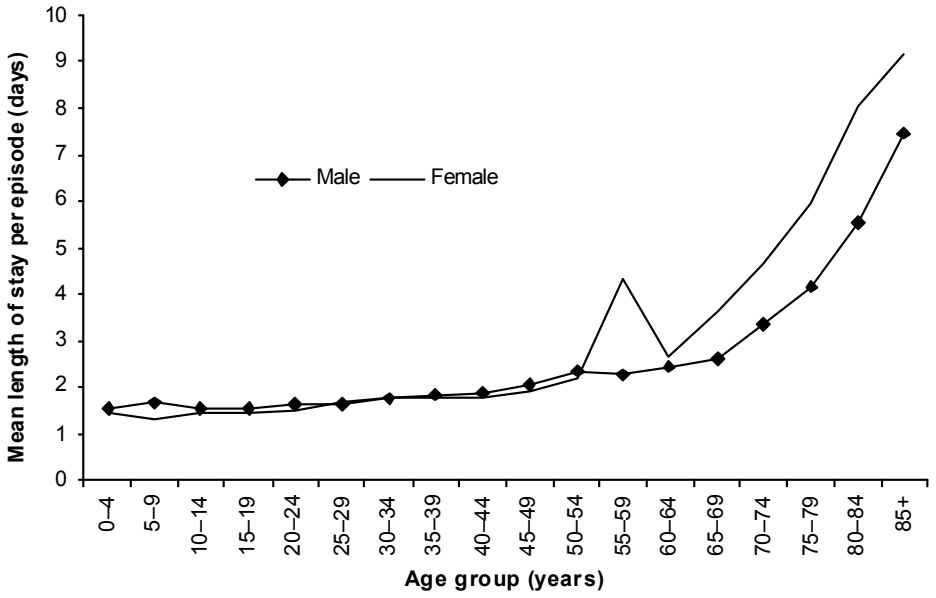



**Figure 2.8.3: Length of stay per episode for other unintentional injury by age and sex, Australia, 2005–06**

## Time trends

There was an increase in age-standardised rates for other unintentional injuries in recent years from 544 per 100,000 of the population in 1999–00 to 582 per 100,000 in 2005–06 (Figure 2.8.4). Male rates increased from 778 per 100,000 in 1999–00 to 830 per 100,000 in 2005–06. Male rates were consistently higher than female rates, which also showed an increase; 305 per 100,000 in 1999–00 to 330 per 100,000 in 2005–06.

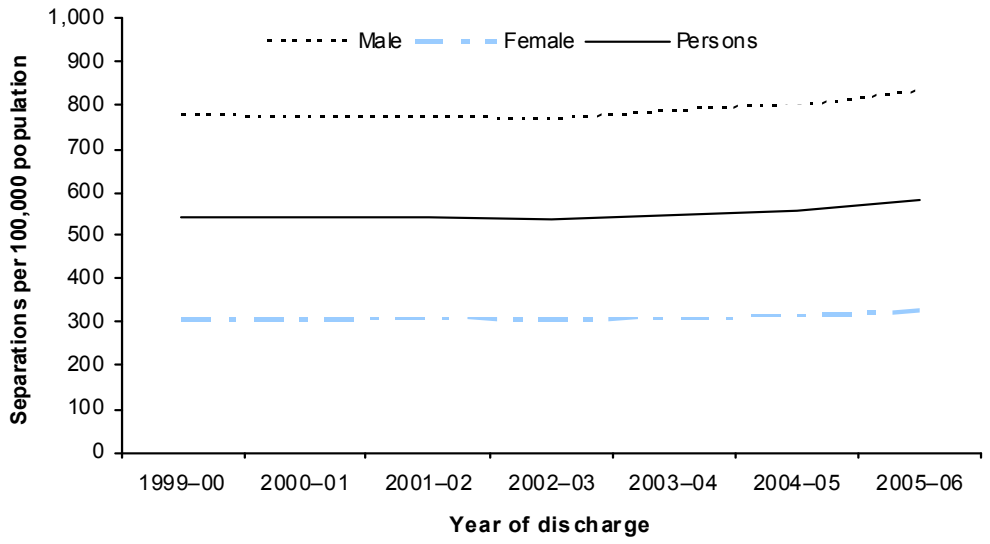



**Figure 2.8.4: Age-standardised rates for other unintentional injury, Australia, 1999–00 to 2005–06**

**Table 2.8.6: External causes of other unintentional injury cases, Australia, 2005–06**

| ICD-10-AM Code | External cause of morbidity and mortality | Frequency | Per cent |
|---|---|---|---|
| W20 | Struck by thrown, projected or falling object | 4,840 | 4 |
| W21 | Striking against or struck by sports equipment | 2,683 | 2 |
| W22 | Striking against or struck by other objects | 7,287 | 6 |
| W23 | Caught, crushed, jammed or pinched in or between objects | 5,369 | 4 |
| W24 | Contact with lifting and transmission devices, not elsewhere classified | 530 | 0 |
| W25 | Contact with sharp glass | 5,783 | 5 |
| W26 | Contact with knife, sword or dagger | 3,543 | 3 |
| W27 | Contact with nonpowered hand tool | 1,711 | 1 |
| W28 | Contact with powered lawnmower | 639 | 1 |
| W29 | Contact with other powered hand tools and household machinery | 2,803 | 2 |
| W30 | Contact with agricultural machinery | 347 | 0 |
| W31 | Contact with other and unspecified machinery | 5,079 | 4 |
| W32 | Handgun discharge | 16 | 0 |
| W34 | Discharge from other and unspecified firearms | 91 | 0 |
| W35 | Explosion and rupture of boiler | 8 | 0 |
| W36 | Explosion and rupture of gas cylinder | 99 | 0 |
| W37 | Explosion and rupture of pressurised tyre, pipe or hose | 27 | 0 |
| W38 | Explosion and rupture of other specified pressurised devices | 26 | 0 |
| W39 | Discharge of firework | 52 | 0 |
| W40 | Explosion of other materials | 197 | 0 |
| W41 | Exposure to high-pressure jet | 26 | 0 |
| W44 | Foreign body entering into or through eye or natural orifice | 6,318 | 5 |
| W45 | Foreign body or object entering through skin | 5,244 | 4 |
| W49 | Exposure to other and unspecified inanimate mechanical forces | 1,974 | 2 |
| W50 | Hit, struck, kicked, twisted, bitten or scratched by another person | 3,726 | 3 |
| W51 | Striking against or bumped into by another person | 3,342 | 3 |
| W52 | Crushed, pushed or stepped on by crowd or human stampede | 77 | 0 |
| W53 | Bitten by a rat | 6 | 0 |
| W54 | Bitten or struck by dog | 2,046 | 2 |
| W55 | Bitten or struck by other mammals | 1,924 | 2 |
| W56 | Contact with marine animal | 114 | 0 |
| W57 | Bitten or stung by nonvenomous insect and other nonvenomous arthropods | 604 | 1 |
| W58 | Bitten or struck by crocodile or alligator | 5 | 0 |
| W59 | Bitten or crushed by other reptiles | 953 | 1 |
| W60 | Contact with plant thorns and spines and sharp leaves | 234 | 0 |
| W64 | Exposure to other and unspecified animate mechanical forces | 156 | 0 |
| W75 | Accidental suffocation and strangulation in bed | 6 | 0 |
| W76 | Other accidental hanging and strangulation | 13 | 0 |
| W78 | Inhalation of gastric contents | 40 | 0 |
| W79 | Inhalation and ingestion of food causing obstruction of respiratory tract | 512 | 0 |
| W80 | Inhalation and ingestion of other objects causing obstruction of respiratory tract | 166 | 0 |
| W81 | Confined to or trapped in a low-oxygen environment | * | 0 |
| W83 | Other specified threats to breathing | 8 | 0 |

*(continued)*

**Table 2.8.6 (continued): External causes of other unintentional injury cases, Australia, 2005–06**

| ICD-10-AM Code | External cause of morbidity and mortality | Frequency | Per cent |
|---|---|---|---|
| W84 | Unspecified threat to breathing | 56 | 0 |
| W85 | Exposure to electric transmission lines | 38 | 0 |
| W86 | Exposure to other specified electric current | 361 | 0 |
| W87 | Exposure to unspecified electric current | 190 | 0 |
| W89 | Exposure to man-made visible and ultraviolet light | 8 | 0 |
| W90 | Exposure to other non-ionising radiation | * | 0 |
| W91 | Exposure to unspecified type of radiation | * | 0 |
| W92 | Exposure to excessive heat of man-made origin | 17 | 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 | 353 | 0 |
| W99 | Exposure to other and unspecified man-made environmental factors | * | 0 |
| X20 | Contact with venomous snakes and lizards | 599 | 1 |
| X21 | Contact with venomous spiders | 1,012 | 1 |
| X22 | Contact with scorpions | 6 | 0 |
| X23 | Contact with hornets, wasps and bees | 957 | 1 |
| X24 | Contact with centipedes and venomous millipedes (tropical) | 11 | 0 |
| X25 | Contact with other specified venomous arthropods | 304 | 0 |
| X26 | Contact with venomous marine animals and plants | 299 | 0 |
| X27 | Contact with other specified venomous animals | * | 0 |
| X28 | Contact with other specified venomous plants | * | 0 |
| X29 | Contact with unspecified venomous animal or plant | 33 | 0 |
| X30 | Exposure to excessive natural heat | 455 | 0 |
| X31 | Exposure to excessive natural cold | 197 | 0 |
| X32 | Exposure to sunlight | 21 | 0 |
| X33 | Victim of lightning | 22 | 0 |
| X34 | Victim of earthquake | * | 0 |
| X35 | Victim of volcanic eruption | * | 0 |
| X36 | Victim of avalanche, landslide and other earth movements | 11 | 0 |
| X37 | Victim of cataclysmic storm | * | 0 |
| X39 | Victim of flood | 21 | 0 |
| X50 | Exposure to other and unspecified forces of nature | 9,224 | 8 |
| X51 | Travel and motion | 36 | 0 |
| X52 | Prolonged stay in weightless environment | * | 0 |
| X53 | Lack of food | 14 | 0 |
| X54 | Lack of water | * | 0 |
| X58 | Exposure to other specified factors | 1,753 | 1 |
| X59 | Exposure to unspecified factor | 34,593 | 29 |
| Y85 | Sequelae of transport accidents | 55 | 0 |
| Y86 | Sequelae of other accidents | 168 | 0 |
| Y899 | Sequelae of unspecified external cause | 22 | 0 |
| **Total** | | **119,487** | **100** |

* Small cell counts have been suppressed.

## 2.9 Work-related injury

According to standard ICD-10-AM coding rules, activity codes are applicable within the range of external cause categories V01–Y34. For almost three-quarters of injury cases within this range, the activity code was not specified (i.e. coded as *other specified, unspecified,* and *not reported/not applicable*) which constrains meaningful interpretation of work-relatedness.

Sixty-nine per cent of all injury cases where activity was recorded as *while working for income* were within the scope of the other unintentional injuries category (Table 2.9.1).

Most work-related injury cases are male (86%; *n* = 20,251) (Table 2.9.1).

Fourteen per cent (*n* = 16,253) of other unintentional injuries (*n* = 119,487) were work-related. There were 7,291 hospital cases that have an external cause code outside this range that were work-related (Table 2.9.1).

For other unintentional injuries the top five causes of work-related injury were X59, *exposure to unspecified factor* (males *n* = 2,326, females *n* = 472), W31, *contact with other and unspecified machinery* (males *n* = 2,589, females *n* = 171), W20, *struck by thrown, projected or falling object* (males *n* = 1,379, females *n* = 85), W23, *caught, crushed, jammed or pinched in or between objects* (males *n* = 1,305, females *n* = 88), X50, *overexertion and strenuous or repetitive movement* (males *n* = 868, females *n* = 265) and

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* = 467, females *n* = 405), W11, *fall on and from ladder* (males *n* = 569, females *n* = 43), and W17, *other fall from one level to another* e.g. fall from or into a cavity, pit, shaft or tank etc. (males *n* = 486, females *n* = 51).

For transportation injuries the most common cause of work-related injuries were V80, *animal-rider or occupant of animal-driven vehicle injured in transport accident* (males *n* = 176, females *n* = 111), V68, *occupant of heavy transport vehicle injured in noncollision transport accident* (males *n* = 238, females *n* = 4) and V28, *motorcycle rider injured in noncollision transport accident* (males *n* = 157, females *n* = 10).

**Table 2.9.1: Case counts and proportions by sex for work-related injury cases, Australia, 2005–06**

| | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| **Major group of injury** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** |
| **Coverage in this report** | | | | | | |
| Not an external cause | * | 0.0 | * | 0.0 | 8 | 0.0 |
| Transportation | 1,974 | 9.7 | 360 | 10.9 | 2,334 | 9.9 |
| Poisoning, pharmaceuticals | 17 | 0.1 | 8 | 0.2 | 25 | 0.1 |
| Poisoning, other substances | 276 | 1.4 | 50 | 1.5 | 326 | 1.4 |
| Falls | 2,744 | 13.5 | 954 | 29.0 | 3,698 | 15.7 |
| Fires, burns, scalds | 381 | 1.9 | 70 | 2.1 | 451 | 1.9 |
| Other unintentional | 14,476 | 71.5 | 1,777 | 54.0 | 16,253 | 69.0 |
| Intentional self-harm | 9 | 0.0 | 9 | 0.3 | 18 | 0.1 |
| Assault | 341 | 1.7 | 59 | 1.8 | 400 | 1.7 |
| Undetermined intent | 26 | 0.1 | 5 | 0.2 | 31 | 0.1 |
| **Total** | **20,251** | **100.0** | **3,293** | **100.0** | **23,544** | **100.0** |

*Note:* Shading indicates other unintentional work-related injury cases.

This table excludes 20 cases for which an activity code is not applicable (ICD-10-AM range was outside V01–Y34).

* Small cell counts have been suppressed.

## 2.10 Sports-related injury

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

Forty-nine per cent of all injury cases where activity was recorded as *while engaged in sports* were within the scope of the other unintentional injuries category (Table 2.10.1).

Most sports-related injury hospitalisations were male (77%; *n* = 29,188) (Table 2.10.1).

Fifteen per cent (*n* = 18,332) of other unintentional injuries (*n* = 119,487) were sports-related injury. There were 19,464 hospital cases that had an external cause code outside this range that were sport-related (Table 2.10.1).

For other unintentional injuries the top five causes of sports-related injury were X59, *exposure to unspecified factor* (males *n* = 4,312; females *n* = 1,146), X50, *overexertion and strenuous or repetitive movement* (males *n* = 2,298; females *n* = 912), W50, *hit, struck, kicked, twisted, bitten or scratched by another person* (males *n* = 2,214; females *n* = 197), W51, *striking against or bumped into by another person* (males *n* = 2,192; females *n* = 209) and W21, *striking against or struck by sports equipment* (males *n* = 1,705; females *n* = 432).

For falls injuries the most common causes of sport-related injury were W18, *other fall on same level* (males *n* = 2,029; females *n* = 880), W03, *other fall on same level due to collision with, or pushing by, another person* (males *n* = 2,507; females *n* = 186), W02, *fall involving ice-skates, skis, roller-skates or skateboards* (males *n* = 1,467; females *n* = 467), and W01, *fall on the same level from slipping, tripping and stumbling* (males *n* = 945; females *n* = 710).

For transportation injuries the most common causes of sport-related injuries were V28, *Motorcycle rider injured in noncollision transport accident* (males *n* = 1,466; females *n* = 56), V18, *Pedal cyclist injured in non-collision transport accident* (males *n* = 1,256; females *n* = 262), V80, *animal-rider or occupant of animal-drawn vehicle injured in transport accident* (males *n* = 415; females *n* = 1,017), and V19, *Pedal cyclist injured in other and unspecified transport accidents* (males *n* = 563; females *n* = 116).

**Table 2.10.1: Case counts and proportions by sex for sports injury cases, Australia, 2005–06**

| | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| **Major group of injury** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** |
| **Coverage in this report** | | | | | | |
| Transportation | 5,604 | 19.2 | 1,776 | 20.6 | 7,381 | 19.5 |
| Drowning | 119 | 0.4 | 39 | 0.5 | 158 | 0.4 |
| Poisoning, pharmaceuticals | * | 0.0 | * | 0.0 | * | 0.0 |
| Poisoning, other substances | * | 0.0 | * | 0.0 | 8 | 0.0 |
| Falls (excluding X59+fracture) | 8,539 | 29.3 | 3,219 | 37.4 | 11,758 | 31.1 |
| Fires/burns/scalds | 22 | 0.1 | 0 | 0.0 | 22 | 0.1 |
| Other unintentional | 14,780 | 50.6 | 3,552 | 41.3 | 18,332 | 48.5 |
| Intentional, self inflicted | * | 0.0 | * | 0.0 | * | 0.0 |
| Intentional, inflicted by another | 80 | 0.3 | 7 | 0.1 | 87 | 0.2 |
| Undetermined intent | 9 | 0.0 | 6 | 0.1 | 15 | 0.0 |
| Other | 24 | 0.1 | 6 | 0.1 | 30 | 0.1 |
| **Total** | **29,188** | **100.0** | **8,607** | **100.0** | **37,796** | **100.0** |

*Note:* Shading indicates other unintentional sports injury cases.

This table excludes 4 cases for which an activity code is not applicable (ICD-10-AM range was outside V01–Y34).

* Small cell counts have been suppressed.

# Part B: Intentional injuries

## 2.11 Intentional self-harm

ICD-10-AM case inclusion

Principal Diagnosis: **S00–T75, T79** and

First reported external cause: **X60–X84**

**Table 2.11.1: Key indicators for intentional self-harm cases, Australia, 2005–06**

| Indicator | Males | Females | Persons |
|---|---|---|---|
| Separations from hospital due to intentional self-harm | 9,638 | 15,284 | 24,924[(a)] |
| Percentage of all injury separations | 4.1 | 9.1 | 6.2 |
| Estimated cases* | 9,104 | 14,672 | 23,778[(b)] |
| Crude rate/100,000 population | 89.1 | 141.9 | 115.7 |
| Age-standardised rate/100,000 population | 89.3 | 144.2 | 116.3 |
| Mean length of stay (days) | 3.5 | 2.8 | 3.1 |
| Total patient days | 31,867 | 40,738 | 72,607[(c)] |

* Omits inward transfers from acute hospitals.

(a) Includes 2 separations, (b) 2 estimated cases and (c) 2 patient days for which sex was not reported,

Intentional self-harm accounted for 6% of all injury hospitalisations in the financial year 2005–06 (Table 2.11.1). 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. This chapter does not include cases where the intent was unspecified, unstated or cannot be determined (see Chapter 2.13).

### Age and sex distribution

The cases that have been coded to the 0–4 ($n$ = 6) and 5–9 ($n$ = 6) year age groups are not considered to be valid. The most likely explanation is incorrect coding of age or external cause.

Females have higher rates of hospitalised intentional self-harm compared with males up to the age of 60 years (Figure 2.11.1 and Table 2.11.2). The difference in female rates was greatest for adolescents aged 15–19 years (age-specific rate of 75 per 100,000 for females compared with 15 per 100,000 for males). More females than males were hospitalised for intentional self-harm (based on age-standardised rates), with a M:F ratio of 0.6:1.

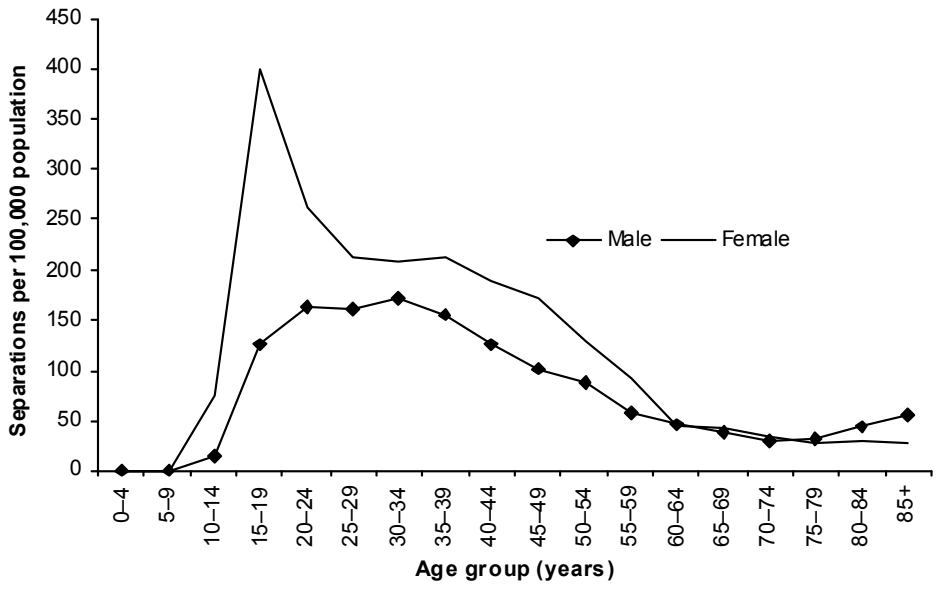



**Figure 2.11.1: Age-specific hospital separation rates for intentional self-harm by sex, Australia, 2005–06**

**Table 2.11.2: Intentional self-harm cases by age group, Australia, 2005–06**

| | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| **Age group** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** |
| 0–14 years | 114 | 1.3 | 513 | 3.5 | 627 | 2.6 |
| 15–24 years | 2,102 | 23.1 | 4,597 | 31.3 | 6,699 | 28.2 |
| 25–44 years | 4,532 | 49.8 | 6,146 | 41.9 | 10,680 | 44.9 |
| 45–64 years | 1,918 | 21.1 | 2,938 | 20.0 | 4,856 | 20.4 |
| 65+ years | 438 | 4.8 | 478 | 3.3 | 916 | 3.9 |
| **Total** | **9,104** | **100.0** | **14,672** | **100.0** | **23,778[(a)]** | **100.0** |

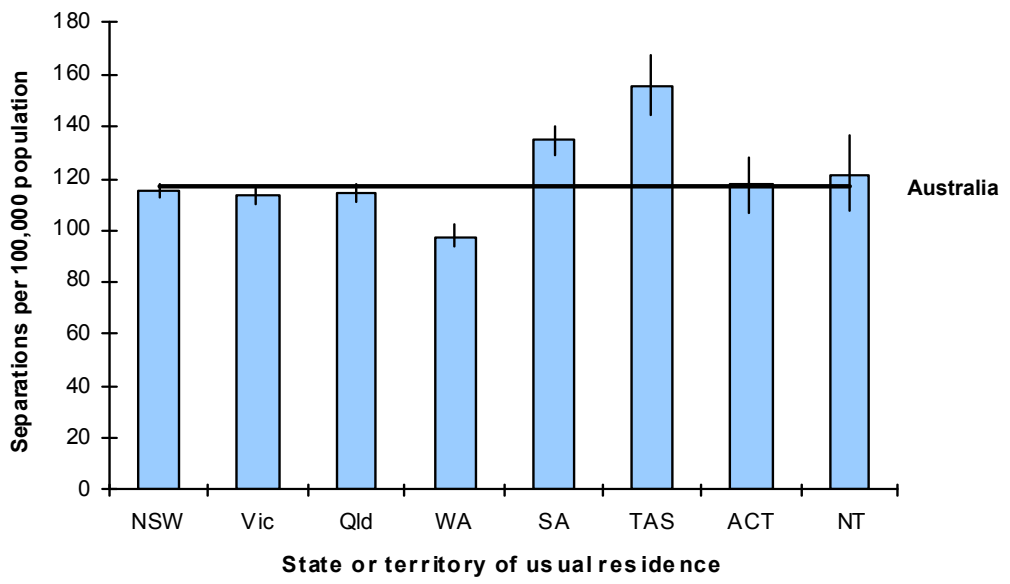
(a) Includes 2 cases for which sex was not reported,

## State and territory differences

Tasmania and South Australia reported the highest rates of intentional self-harm. Rates for both jurisdictions differed significantly from the national rate (Table 2.11.3 and Figure 2.11.2). Western Australia had the lowest rate, differing significantly from the rate for Australia as a whole. The relative distribution of rates for states and territories was fairly similar to that in the previous two years except for the Australian Capital Territory for which there was a notable increase in the age standardised rate in 2005–06 (Berry & Harrison 2007; Bradley & Harrison 2008).

**Table 2.11.3: Age-standardised rates of intentional self-harm, states and territories, 2005–06**

| Jurisdiction | Age-standardised rate (per 100,000 population) | 95% CI |
|---|---|---|
| NSW | 115 | 112–118 |
| Vic | 113 | 110–116 |
| Qld | 114 | 111–118 |
| WA | 98 | 94–102 |
| SA | 135 | 129–141 |
| Tas | 156 | 144–167 |
| ACT | 117 | 106–128 |
| NT | 121 | 107–136 |
| **Australia** | **116** | **115–118** |




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

**Figure 2.11.2: Age-standardised rates of intentional self-harm, states and territories, 2005–06**

## Principal diagnosis and body part injured

The majority of admitted injury cases due to intentional self-harm did not specify a particular body region that was injured (Table 2.11.4). This reflects the fact that the mechanism in most cases was poisoning.

**Table 2.11.4: Principal Diagnosis by body region and sex for intentional self-harm cases, Australia, 2005–06**

| | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| **Principal Diagnosis by body region** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** |
| Head | 149 | 1.6 | 50 | 0.3 | 199 | 0.8 |
| Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis) | 443 | 4.9 | 280 | 1.9 | 723 | 3.0 |
| Shoulder and upper limb | 1,202 | 13.2 | 1,286 | 8.8 | 2,488 | 10.5 |
| Hip and lower limb | 119 | 1.3 | 107 | 0.7 | 226 | 1.0 |
| Other injuries not specified by body region | 7,191 | 79.0 | 12,949 | 88.3 | 20,142 | 84.7 |
| **All body regions** | **9,104** | **100.0** | **14,672** | **100.0** | **23,778[(a)]** | **100.0** |

(a) Includes 2 cases for which sex was not reported,

## Mechanism

There were 23,778 cases of hospitalised intentional self-harm in the financial year 2005–06 (Table 2.11.5). The large majority of cases (82%) of self-harm were intentional self-poisoning and almost twice as many females as males used this method. Intentional self-harm by a sharp object accounted for 13% of cases of self-harm and slightly more females than males used this method. Hanging, strangulation and suffocation accounted for 2% of self-harm cases (of which 72% were males) and shooting by handgun or firearm was even less common (0.1%—almost all were males).

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

The second most frequent category of self-poisoning was poisoning with nonopioid analgesics, antipyretics and antirheumatics ($n$ = 4,617; 19%). This category includes 4-aminophenol derivatives such as paracetamol, nonsteroidal anti-inflammatory drugs and salicylates such as aspirin.

Two per cent of self-harm cases were the result of poisoning by other gases and vapours ($n$ = 387). This category includes the toxic effects of carbon monoxide.

Intentional pesticide poisoning was an uncommon cause of hospitalisation (less than 1%; $n$ = 135).

The second most common cause of self-harm was intentional self-harm by a sharp object (13% of self-harm cases; $n$ = 3,116).

The profile of mechanisms reported here partly reflects the profile of mechanisms used in episodes of intentional self-harm, but it also reflects the fact that some means of self-harm are

more likely than others to result in an injury in which the person attends hospital and is admitted.

**Table 2.11.5: External cause of intentional self-harm injury cases, Australia, 2005–06**

| ICD-10-AM Code | External cause | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|---|
| | | Count | Per cent | Count | Per cent | Count | Per cent |
| | Intentional self-poisoning by and exposure to: | | | | | | |
| X60 | • nonopioid analgesics, antipyretics and antirheumatics | 1,137 | 12.5 | 3,480 | 23.7 | 4,617 | 19.4 |
| X61 | • antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs | 3,846 | 42.2 | 6,995 | 47.7 | 10,843 | 45.6 |
| X62 | • narcotics and psychodysleptics [hallucinogens] | 498 | 5.5 | 677 | 4.6 | 1175 | 4.9 |
| X63 | • other drugs acting on the autonomic nervous system | 93 | 1.0 | 142 | 1.0 | 235 | 1.0 |
| X64 | • other and unspecified drugs, medicaments and biological substances | 588 | 6.5 | 927 | 6.3 | 1,515 | 6.4 |
| X65 | • alcohol | 144 | 1.6 | 138 | 0.9 | 282 | 1.2 |
| X66 | • organic solvents and their halogenated hydrocarbons and their vapours | 34 | 0.4 | 23 | 0.2 | 57 | 0.2 |
| X67 | • other gases and vapours (e.g. carbon monoxide) | 274 | 3.0 | 113 | 0.8 | 387 | 1.6 |
| X68 | • pesticides | 85 | 0.9 | 50 | 0.3 | 135 | 0.6 |
| X69 | • other and unspecified chemicals and noxious substances | 116 | 1.3 | 167 | 1.1 | 283 | 1.2 |
| X70 | Intentional self-harm by hanging, strangulation and suffocation | 352 | 3.9 | 139 | 0.9 | 491 | 2.1 |
| X71 | Intentional self-harm by drowning and submersion | 8 | 0.1 | 10 | 0.1 | 18 | 0.1 |
| X72 | Intentional self-harm by handgun discharge | 7 | 0.1 | 0 | 0.0 | 7 | 0.0 |
| X74 | Intentional self-harm by other and unspecified firearm discharge | * | 0.3 | * | 0.0 | 27 | 0.1 |
| X75 | Intentional self-harm by explosive material | * | 0.0 | * | 0.0 | * | 0.0 |
| X76 | Intentional self-harm by smoke, fire and flames | 48 | 0.5 | 38 | 0.3 | 86 | 0.4 |
| X77 | Intentional self-harm by steam, hot vapours and hot objects | * | 0.1 | 12 | 0.1 | * | 0.1 |
| X78 | Intentional self-harm by sharp object | 1,534 | 16.8 | 1,582 | 10.8 | 3,116 | 13.1 |
| X79 | Intentional self-harm by blunt object | 38 | 0.4 | 14 | 0.1 | 52 | 0.2 |
| X80 | Intentional self-harm by jumping from a high place | 55 | 0.6 | 41 | 0.3 | 96 | 0.4 |
| X81 | Intentional self-harm by jumping or lying before moving object | 34 | 0.4 | 12 | 0.1 | 46 | 0.2 |
| X82 | Intentional self-harm by crashing of motor vehicle | 31 | 0.3 | 22 | 0.1 | 53 | 0.2 |
| X83 | Intentional self-harm by other specified means | 115 | 1.3 | 48 | 0.3 | 163 | 0.7 |
| X84, Y87.0 | Intentional self-harm by unspecified means and sequelae of intentional self-harm | 31 | 0.3 | 40 | 0.3 | 71 | 0.3 |
| **Total** | | **9,104** | **100.0** | **14,672** | **100.0** | **23,778** | **100.0** |

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

## Length of stay

Mean length of stay for intentional self-harm hospital cases rose with age up to 75 years. Thereafter, MLOS fell slightly but still remained higher than at younger age groups (Figure 2.11.3). The mean length of stay was 3.0 days for children aged 0–14 years, 2.4 days for young people aged 15–24 years, 2.9 days for adults aged 25–44 years, 3.7 days for adults aged 45–64 years and 6.7 days for older people aged 65+ years.

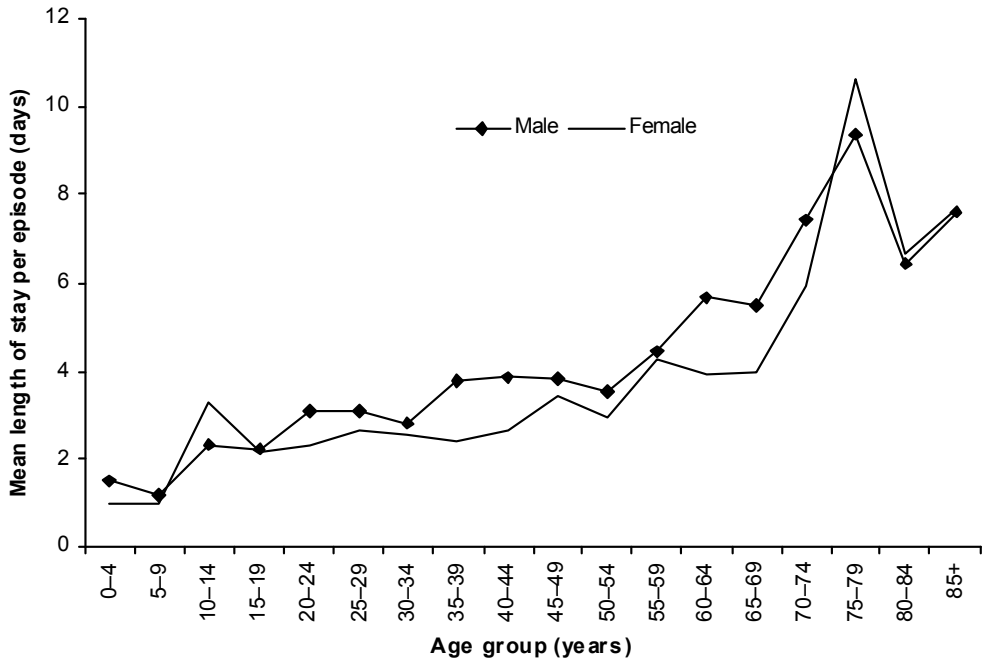



**Figure 2.11.3: Length of stay per episode for intentional self-harm by age and sex, Australia, 2005–06**

## Time trends

Age-standardised rates for intentional self-harm increased over the period reported, from 105 per 100,000 of the population in 1999–00 to 116 per 100,000 in 2005–06. However, apart from a rise in rates from 1999–00 to 2000–01, annual changes have been small. The increase in intentional self-harm was mainly attributable to female cases; female age-standardised rates increased from 124 per 100,000 in 1999–00 to 144 per 100,000 in 2005–06, whereas male age-standardised rates stayed relatively constant (87 per 100,000 in 1999–00 and 89 per 100,000 in 2005–06) (Figure 2.11.4).

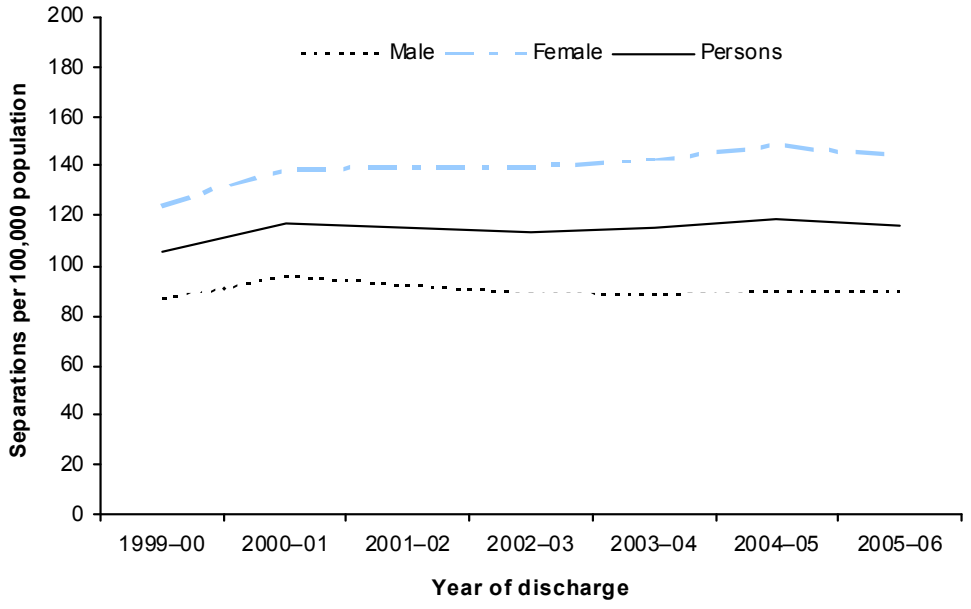



**Figure 2.11.4: Age-standardised rates for intentional self-harm, Australia, 1999–00 to 2005–06**

## Place of occurrence

For almost a third of records, place of occurrence was unspecified (31.2%; *n* = 7,408) or not reported (0.3%; *n* = 61). The following observations are restricted to those records in which the place of occurrence was specified (Table 2.11.6). The majority of the intentional self-harm injury hospitalisations occurred in the home (87%; *n* = 14,199).

**Table 2.11.6: Place of occurrence for cases of intentional self-harm, Australia, 2005–06**

| Place | Persons | Per cent |
|---|---|---|
| Home | 14,199 | 87.1 |
| Residential institution | 304 | 1.9 |
| School | 116 | 0.7 |
| Health service area | 576 | 3.5 |
| Other specified institution and public administrative area | 61 | 0.4 |
| Sports and athletics area | 15 | 0.1 |
| Street and highway | 296 | 1.8 |
| Trade and service area | 260 | 1.6 |
| Industrial and construction area | 20 | 0.1 |
| Farm | 12 | 0.1 |
| Other specified places | 450 | 2.8 |
| **Total** | **16,309** | **100.0** |

## Ascertainment of intentional self-harm

According to inclusion notes in ICD-10-AM, cases should be assigned codes in the range X60–X84 if they are purposely self-inflicted poisoning or injury, suicide, or attempted suicide [see page 483 (NCCH 2002)]. 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), other 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 Chapter 2.13).

# 2.12 Assault

ICD-10-AM case inclusion

Principal Diagnosis: **S00–T75, T79** and

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

**Table 2.12.1: Key indicators for assault cases, Australia, 2005–06**

| Indicator | Males | Females | Persons |
|---|---|---|---|
| Separations from hospital due to assault | 17,623 | 5,746 | 23,369 |
| Percentage of all injury separations | 7.6 | 3.4 | 5.8 |
| Estimated cases* | 16,572 | 5,508 | 22,080 |
| Crude rate/100,000 population | 162.2 | 53.3 | 107.4 |
| Age-standardised rate/100,000 population | 161.8 | 54.5 | 108.5 |
| Mean length of stay (days) | 2.3 | 2.3 | 2.3 |
| Total patient days | 38,398 | 12,846 | 51,244 |

* Omits inward transfers from acute hospitals.

Assault accounted for 6% of all injury hospitalisations in the financial year 2005–06 (Table 2.12.1). As defined here, this category includes all cases in which a person, or more than one person, intentionally injured another person. This chapter does not include cases where the intent was unspecified, unstated or cannot be determined (see Chapter 2.13).

## Age and sex distribution

Three times as many males as females were hospitalised for injury resulting from assault with a M:F ratio of 3.0:1.0 (based on age-standardised rates) (Figure 2.12.1 and Table 2.12.2). Male rates peaked in the 20–24 year age group with an age-specific rate of 463 hospitalisations for assault per 100,000 compared with 116 per 100,000 for females in the same age range. From 25 years onwards, age-specific rates of assault declined with age for both sexes.

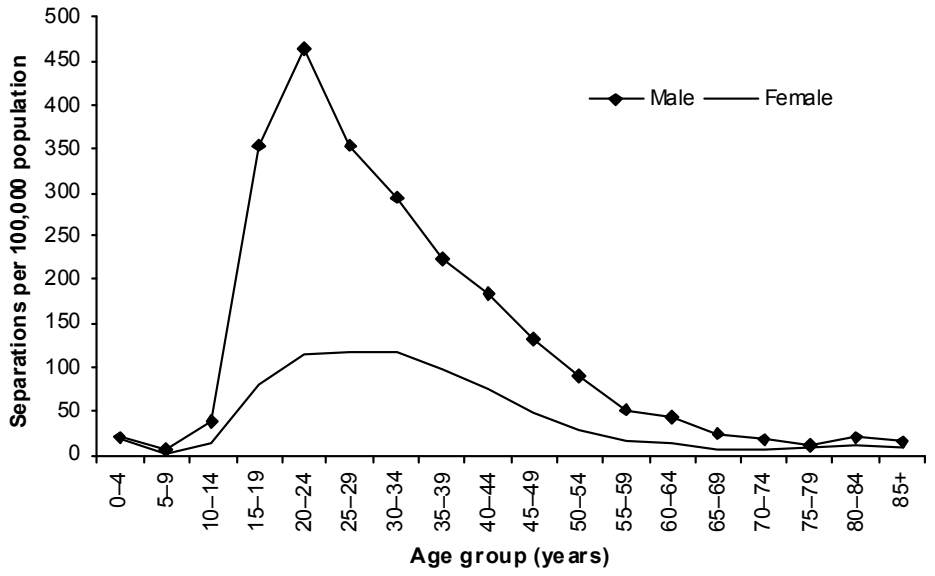



**Figure 2.12.1: Age-specific hospital separation rates for assault by sex, Australia, 2005–06**

Thirty-six per cent of male assault cases occurred in youth and young people aged 15–24 years and 47% were in adults aged 25–44 years (Table 2.12.2). Twenty-five per cent of female assault cases were in youth and young people aged 15–24 years and 55% involved adults aged 25–44 years. Only 3% involved children aged 0–14 years.

**Table 2.12.2: Assault cases by age group, Australia, 2005–06**

| | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| **Age group** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** |
| 0–14 years | 481 | 2.9 | 239 | 4.3 | 720 | 3.3 |
| 15–24 years | 5,961 | 36.0 | 1,371 | 24.9 | 7,332 | 33.2 |
| 25–44 years | 7,773 | 46.9 | 3,045 | 55.3 | 10,818 | 49.0 |
| 45–64 years | 2,128 | 12.8 | 726 | 13.2 | 2,854 | 12.9 |
| 65+ years | 229 | 1.4 | 127 | 2.3 | 356 | 1.6 |
| **Total** | **16,572** | **100.0** | **5,508** | **100.0** | **22,080** | **100.0** |

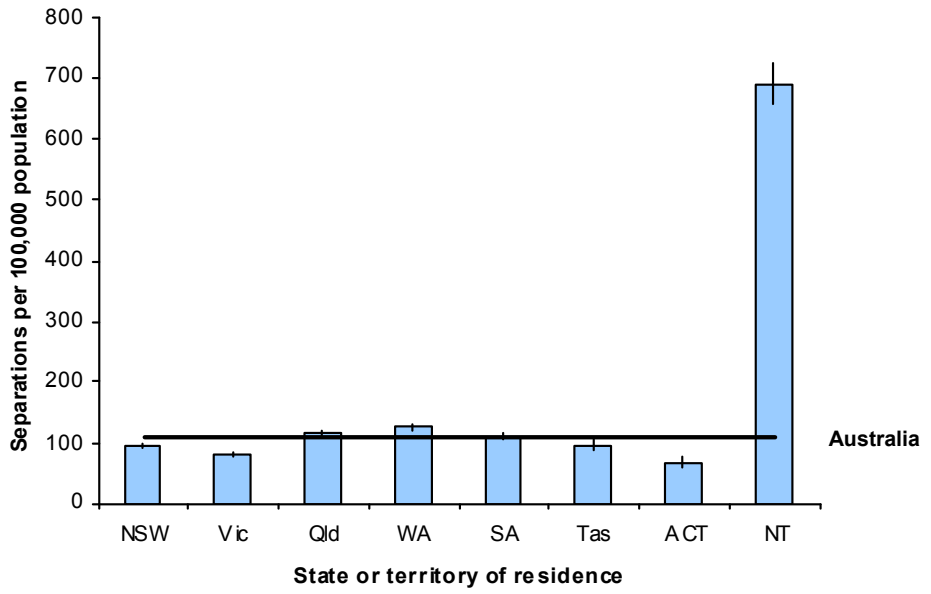
## State and territory differences

The rate of hospitalisation due to assault in the Northern Territory was 6.4 times higher than the national rate (Table 2.12.3 and Figure 2.12.2). Of the 1,579 hospital cases of residents in the Northern Territory, 88% ($n$ = 1,387) were recorded as being Aboriginal and Torres Strait Islander persons.

The 2005–06 pattern of relative rates for states and territories is very similar to that observed in the previous two years, with the Northern Territory having a much higher rate than the other jurisdictions and the Australian Capital Territory having a comparatively lower rate. The age standardised rates for the remaining states were similar in all three years to the all-Australia rate (Berry & Harrison 2007; Bradley & Harrison 2008).

**Table 2.12.3: Age-standardised rates of assault, states and territories, 2005–06**

| Jurisdiction | Age-standardised rate (per 100,000 population) | 95% CI |
|---|---|---|
| NSW | 96 | 94–99 |
| Vic | 82 | 79–84 |
| Qld | 114 | 111–118 |
| WA | 128 | 123–132 |
| SA | 109 | 104–115 |
| Tas | 96 | 87–105 |
| ACT | 66 | 58–74 |
| NT | 691 | 657–725 |
| **Australia** | **109** | **107–110** |




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

**Figure 2.12.2: Age-standardised rates of assault, states and territories, 2005–06**

## Principal diagnosis and body part injured

Over two-thirds of hospital cases due to assault involved injuries to the head (Table 2.12.4).

**Table 2.12.4: Principal Diagnosis by body region for assault cases, Australia, 2005–06**

| | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| **Principal Diagnosis by body region** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** |
| Head | 11,484 | 69.3 | 3,040 | 55.2 | 14,524 | 65.8 |
| Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis) | 1,829 | 11.0 | 804 | 14.6 | 2,633 | 11.9 |
| Shoulder and upper limb | 2,297 | 13.9 | 923 | 16.8 | 3,220 | 14.6 |
| Hip and lower limb | 711 | 4.3 | 357 | 6.5 | 1,068 | 4.8 |
| Other injuries not specified by body region | 251 | 1.5 | 384 | 7.0 | 635 | 2.9 |
| **All body regions** | **16,572** | **100.0** | **5,508** | **100.0** | **22,080** | **100.0** |

## Mechanism

Of the 16,572 male cases, 60% (*n* = 9,914) were due to *Assault by bodily force* (Table 2.12.5), 13% (*n* = 2,203) were due to *Assault by blunt object,* 12% were *Assault by sharp object* (*n* = 2,022) and 11% (*n* = 1,798) were *Assault by unspecified means.*

For the 5,508 female cases, *Assault by bodily force* accounted for 54% of the assault hospitalisations (*n* = 2,992), 17% were due to *Assault by blunt object* (*n* = 918), 9% (*n* = 478) were *Assault by unspecified means,* and 9% were *Assault by sharp object* (*n* = 470).

Seventy-six per cent of assault cases in children aged 0–14 years (*n* = 550) were due to *Assault by bodily force* (males *n* = 251; females *n* = 66), *Other maltreatment syndromes* (males *n* = 100; females *n* = 72) and *Assault by blunt object* (males *n* = 47; females *n* = 14).

Eighty-seven per cent of assault cases in youth and young people aged 15–24 years (*n* = 6,360) were due to *Assault by bodily force* (males *n* = 3,854; females *n* = 790), *Assault by blunt object* (males *n* = 642; females *n* = 198), and *Assault by sharp object* (males *n* = 747; females *n* = 129).

Eighty-four per cent of assault cases in adults aged 25–44 years (*n* = 9,062) were due to *Assault by bodily force* (males *n* = 4,416; females *n* = 1,623), *Assault by blunt object* (males *n* = 1,157; females *n* = 557), and *Assault by sharp object* (males *n* = 1,020; females *n* = 289).

Eighty-six per cent of assault cases in adults aged 45–64 years (*n* = 2,458) were due to *Assault by bodily force* (males *n* = 1,254; females *n* = 433), *Assault by blunt object* (males *n* = 322; females *n* = 135) and *Assault by unspecified means* (males *n* = 252; females *n* = 62).

Eighty-seven per cent of assault cases in older people aged 65+ years (*n* = 309) were due to *Assault by bodily force* (males *n* = 139; females *n* = 80), *Assault by blunt object* (males *n* = 35; females *n* = 14) and *Assault by unspecified means* (males *n* = 27; females *n* = 14).

**Table 2.12.5: External cause of assault cases, Australia, 2005–06**

| ICD-10-AM Code | External cause | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|---|
| | | Count | Per cent | Count | Per cent | Count | Per cent |
| X85 | Assault by drugs, medicaments and biological substances | 18 | 0.1 | 41 | 0.7 | 59 | 0.3 |
| X86–X90 | Assault by corrosive substances, pesticides, gases and vapours, other specified or unspecified chemicals and noxious substances | 13 | 0.1 | 8 | 0.1 | 21 | 0.1 |
| X91 | Assault by hanging, strangulation and suffocation | 10 | 0.1 | 15 | 0.3 | 25 | 0.1 |
| X93 | Assault by handgun discharge | 28 | 0.2 | 5 | 0.1 | 33 | 0.1 |
| X95 | Assault by other and unspecified firearm discharge | 56 | 0.3 | 15 | 0.3 | 71 | 0.3 |
| X96 | Assault by explosive material | 10 | 0.1 | 15 | 0.3 | 25 | 0.1 |
| X97 | Assault by smoke, fire and flames | 19 | 0.1 | 16 | 0.3 | 35 | 0.2 |
| X98 | Assault by steam, hot vapours and hot objects | 24 | 0.1 | 12 | 0.2 | 36 | 0.2 |
| X99 | Assault by sharp object | 2,022 | 12.2 | 470 | 8.5 | 2,492 | 11.3 |
| Y00 | Assault by blunt object | 2,203 | 13.3 | 918 | 16.7 | 3,121 | 14.1 |
| Y01 | Assault by pushing from a high place | 9 | 0.1 | 4 | 0.1 | 13 | 0.1 |
| Y02 | Assault by pushing or placing victim before moving object | * | 0.0 | * | 0.1 | 9 | 0.0 |
| Y03 | Assault by crashing of motor vehicle | 19 | 0.1 | 14 | 0.3 | 33 | 0.1 |
| Y04 | Assault by bodily force | 9,914 | 59.8 | 2,992 | 54.3 | 12,906 | 58.5 |
| Y05 | Sexual assault by bodily force | 12 | 0.1 | 139 | 2.5 | 151 | 0.7 |
| Y06 | Neglect and abandonment | 21 | 0.1 | 31 | 0.6 | 52 | 0.2 |
| Y07 | Other maltreatment syndromes | 108 | 0.7 | 208 | 3.8 | 316 | 1.4 |
| Y08 | Assault by other specified means | 214 | 1.3 | 111 | 2.0 | 325 | 1.5 |
| Y09 | Assault by unspecified means | 1,798 | 10.8 | 478 | 8.7 | 2,276 | 10.3 |
| Y35 | Legal intervention | 47 | 0.3 | 4 | 0.1 | 51 | 0.2 |
| Y36 | Operations of war | * | 0.1 | * | 0.0 | 15 | 0.1 |
| Y87.1 | Sequelae of assault | * | 0.1 | * | 0.1 | 15 | 0.1 |
| **Total** | | **16,572** | **100.0** | **5,508** | **100.0** | **22,080** | **100.0** |

*Note:* Shaded areas indicate the highest 2 figures for a column.
* Small cell counts have been suppressed.

## Perpetrator

Codes for the relationship of the victim of assault to the perpetrator was added to ICD-10-AM 3rd edition. The perpetrator code is applicable within the range of external cause categories X85–Y09. According to this criterion, 21,999 hospital cases were eligible to receive a perpetrator code. A perpetrator was specified for only 42% ($n$ = 9,234) of eligible cases and varied by age and gender (e.g. the perpetrator was an *unspecified person* in 66% of male cases and 35% of female cases). The large number of separations lacking detail on the perpetrator code limits meaningful interpretation of these counts. The following observations are restricted to those records in which the perpetrator was specified.

**Table 2.12.6: Relationship of the perpetrator to the victim of assault, Australia, 2005–06**

| | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| **Perpetrator** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** |
| Spouse or domestic partner | 433 | 7.7 | 2,200 | 61.1 | 2,633 | 28.5 |
| Parent | 190 | 3.4 | 156 | 4.3 | 346 | 3.7 |
| Other family member | 609 | 10.8 | 428 | 11.9 | 1,037 | 11.2 |
| Carer | 10 | 0.2 | 8 | 0.2 | 18 | 0.2 |
| Acquaintance or friend | 968 | 17.2 | 313 | 8.7 | 1,281 | 13.9 |
| Official authorities | 173 | 3.1 | 16 | 0.4 | 189 | 2.0 |
| Person unknown to the victim | 1,269 | 22.5 | 176 | 4.9 | 1,445 | 15.6 |
| Multiple persons unknown to the victim | 1,262 | 22.4 | 107 | 3.0 | 1,369 | 14.8 |
| Other specified person | 718 | 12.7 | 198 | 5.5 | 916 | 9.9 |
| **Total of cases where perpetrator is specified** | **5,632** | **100.0** | **3,602** | **100.0** | **9,234** | **100.0** |

*Note:* Shaded areas indicate three highest figures for each column.

## Length of stay

Mean length of stay for assault was higher in young children 0–4 years than for other age groups (below 60 years of age). The mean length of stay was 3.2 days for children aged 0–14 years, 1.8 days for young people aged 15–24 years, 2.3 days for adults aged 25–44 years, 3.1 days for adults aged 45–64 years and 4.9 days for older people aged 65+ years (Figure 2.12.3).

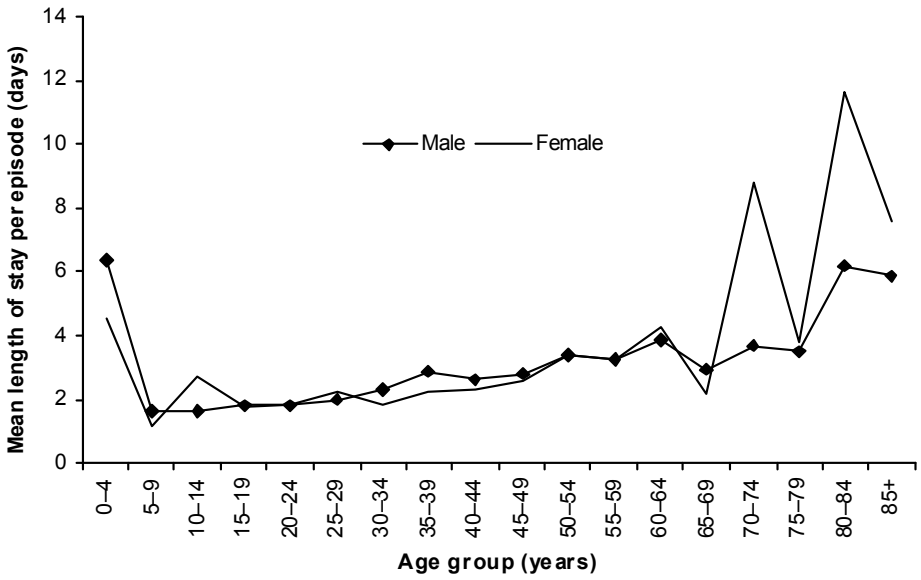



**Figure 2.12.3: Length of stay per episode for assault by age and sex, Australia, 2005–06**

## Time trends

Age-standardised rates for assault were 98 per 100,000 of the population in 1999–00 and 109 per 100,000 in 2005–06, with a slight increase in intervening years. For each year, age-standardised rates for males were about three times higher than for females (Figure 2.12.4).

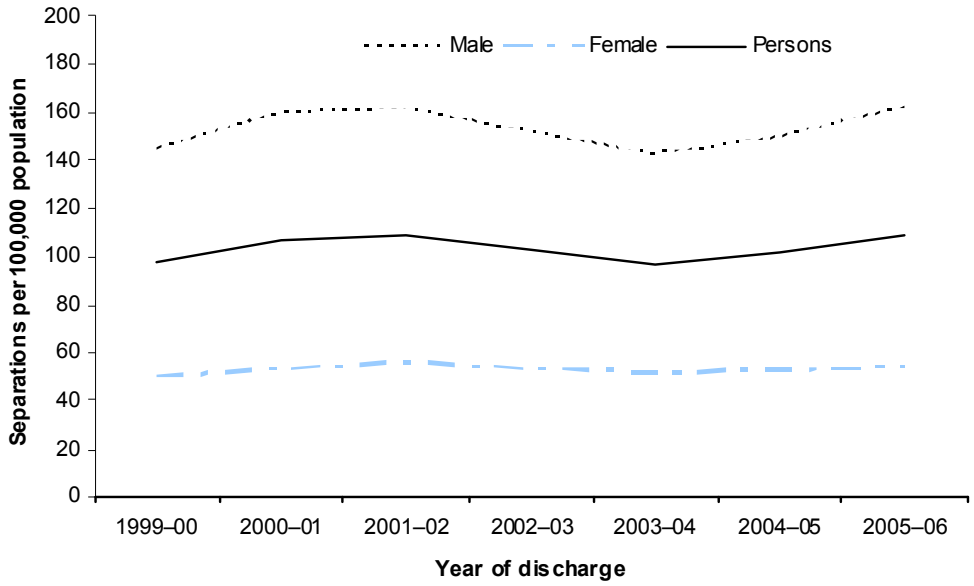



**Figure 2.12.4: Age-standardised rates for assault, Australia, 1999–00 to 2005–06**

## Place of occurrence

The hospitalisations from assault injury occurred in diverse locations. Most were unspecified (58%; *n* = 12,716) or not reported (0.1%; *n* = 22).

The following observations are restricted to those cases in which the place of occurrence was specified. Overall, about 69% of females were assaulted in the home (Table 2.12.7). Trade and service areas (which includes hotels and many other entertainment venues) and a street or highway were the second (11%) and third (9%) most common places of injury for young women.

The most common place of occurrence for males was a trade or service area (34%), followed by the home (26%) and a street or highway (21%).

## Ascertainment of assault

As for intentional self-harm, there are reasons to think that the identification of admitted injury cases as being due to inter-personal violence is not entirely complete. Feelings of shame or embarrassment may underlie reticence to admit to both types of intentional injury. In addition, most injury due to inter-personal violence has potential legal implications. Pressures or incentives not to reveal assault are particularly likely in circumstances such as injury of a child or other dependent person by a care-giver, and injury of one spouse by the other. Cases recognised as possibly being due to assault, but where doubt remains, can be coded as undetermined intent (see Chapter 2.13).

**Table 2.12.7: Place of occurrence for assault cases by age and sex, Australia, 2005–06**

| Place | 0–14 yrs | Per cent | 15–24 yrs | Per cent | 25–44 yrs | Per cent | 45–64 yrs | Per cent | 65+ yrs | Per cent | Total | Per cent |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Male** | | | | | | | | | | | | |
| Home | 128 | 47.1 | 332 | 15.0 | 824 | 25.2 | 417 | 40.4 | 80 | 51.9 | 1,781 | 25.7 |
| Residential institution | * | 0.4 | 35 | 1.6 | 135 | 4.1 | 39 | 3.8 | * | 14.9 | 233 | 3.4 |
| School | 85 | 31.3 | 54 | 2.4 | * | 0.1 | * | 0.0 | * | 1.3 | 144 | 2.1 |
| Health service area | * | 1.1 | 5 | 0.2 | 19 | 0.6 | 9 | 0.9 | * | 0.0 | 36 | 0.5 |
| Other specified institution | * | 0.0 | 18 | 0.8 | 42 | 1.3 | 12 | 1.2 | * | 0.6 | 73 | 1.1 |
| Sports and athletics area | 12 | 4.4 | 62 | 2.8 | 55 | 1.7 | * | 1.1 | * | 1.3 | 142 | 2.0 |
| Street and highway | 16 | 5.9 | 546 | 24.7 | 716 | 21.9 | 190 | 18.4 | 12 | 7.8 | 1,480 | 21.4 |
| Trade and service area | 9 | 3.3 | 885 | 40.1 | 1,190 | 36.4 | 251 | 24.3 | 23 | 14.9 | 2,358 | 34.0 |
| Industrial and construction area | * | 0.4 | * | 0.2 | 17 | 0.5 | 11 | 1.1 | 0 | 0.0 | 33 | 0.5 |
| Farm | 0 | 0.0 | 0 | 0.0 | * | 0.1 | * | 0.1 | * | 1.3 | 7 | 0.1 |
| Other specified places | 17 | 6.3 | 267 | 12.1 | 260 | 8.0 | 92 | 8.9 | 9 | 5.8 | 645 | 9.3 |
| **Total** | **272** | **100.0** | **2,208** | **100.0** | **3,265** | **100.0** | **1,033** | **100.0** | **154** | **100.0** | **6,932** | **100.0** |
| **Female** | | | | | | | | | | | | |
| Home | 84 | 69.4 | 343 | 60.4 | 888 | 71.5 | 282 | 75.2 | 70 | 67.3 | 1,667 | 69.2 |
| Residential institution | * | 0.8 | 8 | 1.4 | 15 | 1.2 | * | 0.8 | 15 | 14.4 | 42 | 1.7 |
| School | 10 | 8.3 | 7 | 1.2 | * | 0.1 | 0 | 0.0 | * | 0.0 | 18 | 0.7 |
| Health service area | 0 | 0.0 | * | 0.4 | 8 | 0.6 | 8 | 2.1 | * | 1.0 | 19 | 0.8 |
| Other specified institution | * | 0.8 | * | 0.5 | 7 | 0.6 | 0 | 0.0 | 0 | 0.0 | 11 | 0.5 |
| Sports and athletics area | * | 0.8 | * | 0.2 | 5 | 0.4 | * | 0.8 | 0 | 0.0 | 10 | 0.4 |
| Street and highway | 7 | 5.8 | 68 | 12.0 | 109 | 8.8 | 30 | 8.0 | 11 | 10.6 | 225 | 9.3 |
| Trade and service area | 11 | 9.1 | 98 | 17.3 | 124 | 10.0 | 32 | 8.5 | 5 | 4.8 | 270 | 11.2 |
| Industrial and construction area | 0 | 0.0 | 0 | 0.0 | * | 0.1 | * | 0.3 | 0 | 0.0 | * | 0.1 |
| Farm | 0 | 0.0 | 0 | 0.0 | * | 0.1 | * | 0.3 | 0 | 0.0 | * | 0.1 |
| Other specified places | * | 5.0 | 38 | 6.7 | 83 | 6.7 | 15 | 4.0 | * | 1.9 | 144 | 6.0 |
| **Total** | **121** | **100.0** | **568** | **100.0** | **1,242** | **100.0** | **375** | **100.0** | **104** | **100.0** | **2,410** | **100.0** |

*Note:* Shaded areas indicate the highest 2 figures for a column. Cases are restricted to those where place of occurrence is specified.
* Small cell counts have been suppressed.

# 2.13 Undetermined intent

ICD-10-AM case inclusion

Principal Diagnosis: **S00–T75, T79** and

First reported external cause: **Y10–Y34**

**Table 2.13.1: Key indicators for undetermined intent cases, Australia, 2005–06**

| Indicator | Males | Females | Persons |
|---|---|---|---|
| Separations from hospital due to undetermined intent | 2,157 | 2,419 | 4,576 |
| Percentage of all injury separations | 0.9 | 1.4 | 1.1 |
| Estimated cases* | 2,085 | 2,345 | 4,430 |
| Crude rate/100,000 population | 20.4 | 22.7 | 21.5 |
| Age-standardised rate/100,000 population | 20.4 | 22.9 | 21.7 |
| Mean length of stay (days) | 2.1 | 2.0 | 2.1 |
| Total patient days | 4,479 | 4,791 | 9,270 |

* Omits inward transfers from acute hospitals.

Injuries where the intent is undetermined accounted for 1.1% of all injury hospitalisations in the financial year 2005–06 (Table 2.13.1). This chapter includes cases where intent was unspecified, unstated or could not be determined. Most such cases are uncertain self-harm or uncertain assault.

A note to coders in ICD-10-AM states that codes in the undetermined intent section (Y10–Y34) 'are designed for use when the intent is unspecified, unstated or cannot be determined. That is, the injuries are not specified as accidental (unintentional), self-inflicted with intent to self-harm, or assault.'

This differs from the way that undetermined intent categories are usually applied in ICD-10 when coding injury deaths. In that context, those codes are normally only used if intent has been explicitly stated to be undetermined, after a formal process (i.e. investigation by a coroner). If a death has not been specified as being due to intentional self-harm or assault, nor specified as being of undetermined intent, then it is supposed to be coded as accidental, even if there are reasons to think that it might have been intentional. In hospitals data, such doubtful cases can be coded to undetermined intent.

## 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 0.9:1 (Figure 2.13.1). Rates were low for children and peaked in youth and young people aged 15–24 years and declined with age.

The male and female profiles of age-specific rates for undetermined intent appears to be similar to that of intentional self-harm, rather than assault, except for children. Very similar cases can be coded so they appear in this chapter or in Chapter 2.11 (intentional self-harm), depending on the extent of evidence in the record concerning intent and how this is interpreted by clinical coders. Hence, there is the possibility that changes in information or coding over time could result in apparent trends which are, in fact, due to these data issues.

In practice, this does not appear to have occurred to an important extent: the undetermined intent category is small in relation to the intentional self-harm group and the assault group, and all three groups have tended to rise in the most recent years covered by this report.

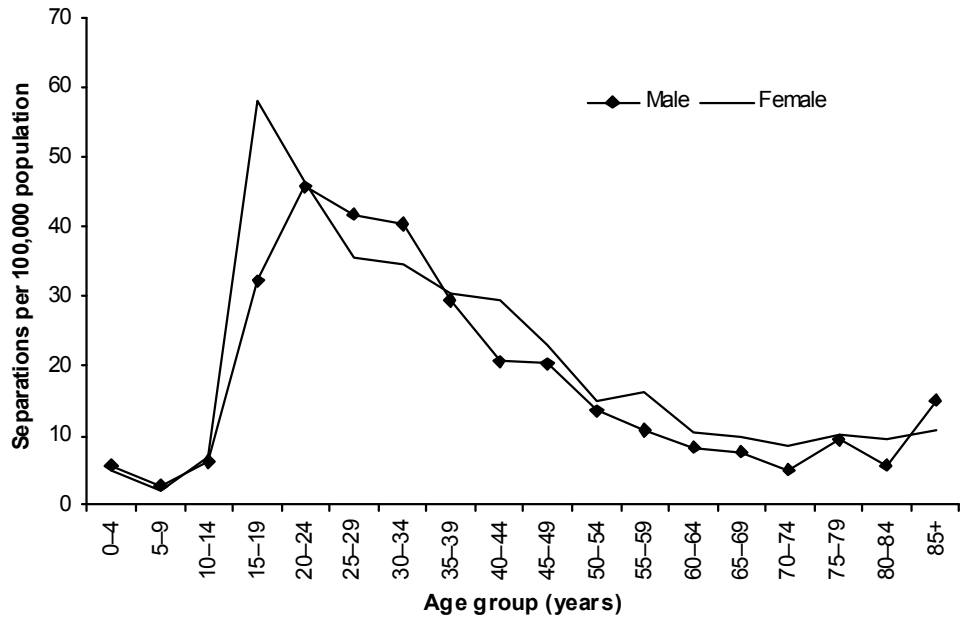



**Figure 2.13.1: Age-specific hospital separation rates for injuries of undetermined intent by sex, Australia, 2005–06**

Forty-four per cent of injuries of undetermined event occurred in adults aged 25–44 years (Table 2.13.2).

**Table 2.13.2: Injuries of undetermined intent by age group, Australia, 2005–06**

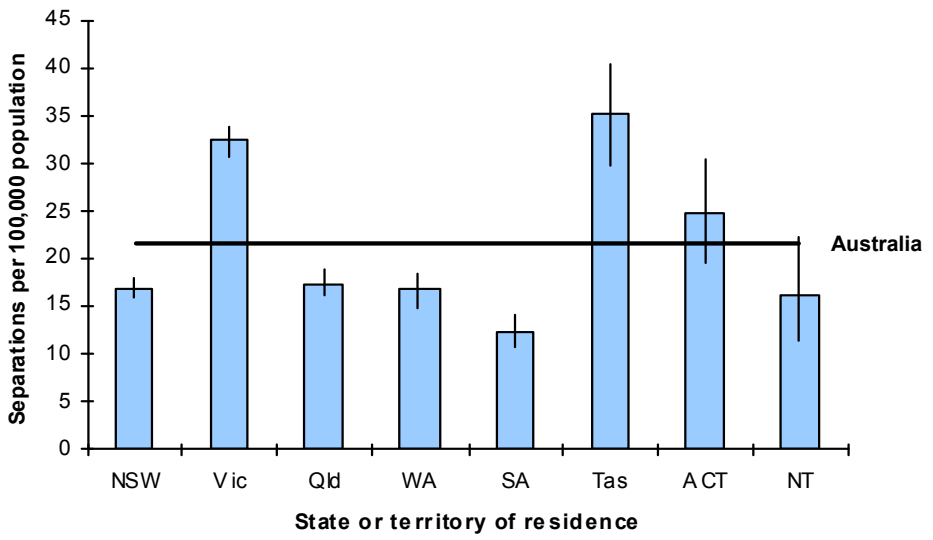
| | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| **Age group** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** |
| 0–14 years | 101 | 4.8 | 91 | 3.9 | 192 | 4.3 |
| 15–24 years | 569 | 27.3 | 726 | 31.0 | 1,295 | 29.2 |
| 25–44 years | 975 | 46.8 | 965 | 41.2 | 1,940 | 43.8 |
| 45–64 years | 349 | 16.7 | 422 | 18.0 | 771 | 17.4 |
| 65+ years | 91 | 4.4 | 141 | 6.0 | 232 | 5.2 |
| **Total** | **2,085** | **100.0** | **2,345** | **100.0** | **4,430** | **100.0** |

## State and territory differences

There was considerable variation between jurisdictional rates. Rates for Victoria and Tasmania were significantly higher than the national rate, and those for New South Wales, Queensland, Western Australia and South Australia were significantly below it (Table 2.13.3 and Figure 2.13.2).

**Table 2.13.3: Age-standardised rates of injuries of undetermined intent, states and territories, 2005–06**

| Jurisdiction | Age-standardised rate (per 100,000 population) | 95% CI |
|---|---|---|
| NSW | 17.0 | 16.0–18.0 |
| Vic | 32.4 | 30.8–33.9 |
| Qld | 17.5 | 16.2–18.7 |
| WA | 16.7 | 14.9–18.5 |
| SA | 12.3 | 10.6–14.1 |
| Tas | 35.1 | 29.8–40.5 |
| ACT | 24.6 | 19.8–30.3 |
| NT | 16.1 | 11.4–22.3 |
| **Australia** | **21.7** | **21.0–22.3** |




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

**Figure 2.13.2: Age-standardised rates for injuries of undetermined intent, states and territories, 2005–06**

## Length of stay

The mean length of stay for injuries of undetermined intent was highest for males aged 0–4 years (Figure 2.13.3). From the age of 5 years, the mean length of stay tends to increase with age. The comparatively large fluctuations at older ages reflect small case numbers.

The mean length of stay was 3.4 days for children aged 0–14 years, 1.5 days for young people aged 15–24 years, 1.9 days for adults aged 25–44 years, 2.6 days for adults aged 45–64 years and 4.4 days for older people aged 65+ years.

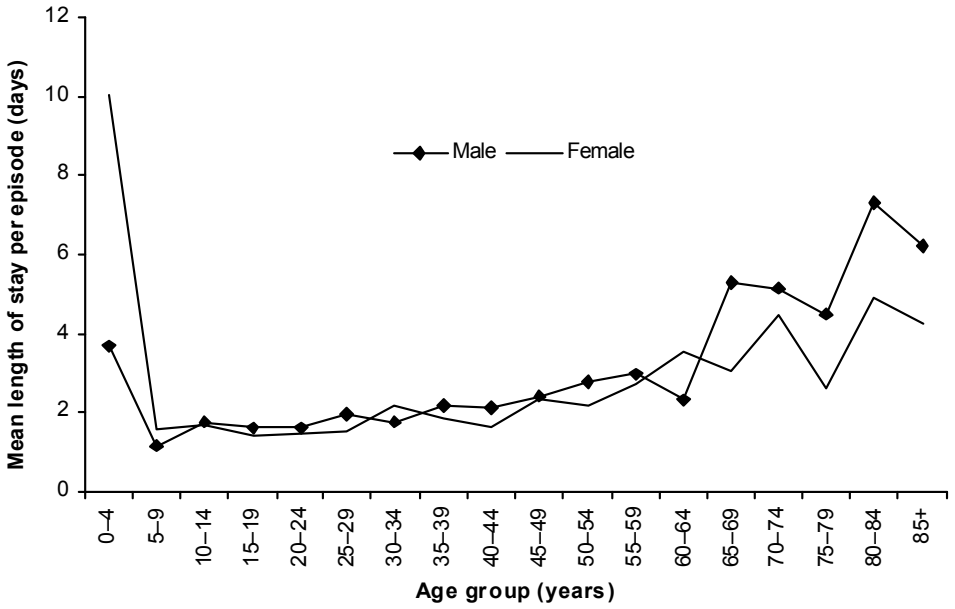



**Figure 2.13.3: Length of stay per episode for injuries of undetermined intent by age and sex, Australia, 2005–06**

## Time trends

Age-standardised annual rates for injuries of undetermined intent showed minimal annual fluctuations between 1999–00 and 2003–04. Rates rose from 14.5 per 100,000 of the population in 2003–04 to 21.7 per 100,000 in 2005–06 (Figure 2.13.4). Growth in the number of cases in all jurisdictions, with the exception of the Northern Territory, contributed to the increase in rates from 2003–04.

The upward trend in rates was also associated with a steep increase in the number of poisoning cases. Case numbers for other mechanisms of injury remained reasonably stable over the period.

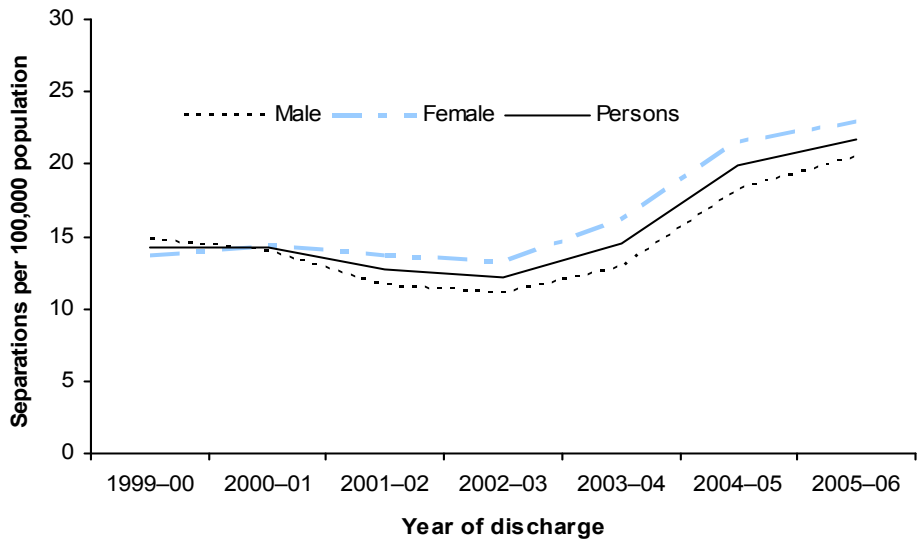



**Figure 2.13.4: Age-standardised rates for injuries of undetermined intent, Australia, 1999–00 to 2005–06**

## Principal diagnosis and body part injured

The majority of admitted injury cases due to undetermined intent did not specify a particular body region that was injured (Table 2.13.4). This reflects the fact that the mechanism in most cases was poisoning.

**Table 2.13.4: Principal Diagnosis by body region for injuries of undetermined intent, Australia, 2005–06**

| | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| **Principal Diagnosis by body region** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** |
| Head | 63 | 3.0 | 21 | 0.9 | 84 | 1.9 |
| Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis) | 49 | 2.4 | 18 | 0.8 | 67 | 1.5 |
| Shoulder and upper limb | 180 | 8.6 | 74 | 3.2 | 254 | 5.7 |
| Hip and lower limb | 64 | 3.1 | 41 | 1.7 | 105 | 2.4 |
| Other injuries not specified by body region | 1,729 | 82.9 | 2,191 | 93.4 | 3,920 | 88.5 |
| **All body regions** | **2,085** | **100.0** | **2,345** | **100.0** | **4,430** | **100.0** |

## Mechanism

Overall, 85% of injuries of undetermined intent resulted from poisoning (Table 2.13.5). Poisoning by antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs comprised 40% ($n$ = 1,752) of injuries of undetermined intent, and mainly consisted of poisoning by benzodiazepines ($n$ = 726), other and unspecified antidepressants—likely to be selective serotonin reuptake inhibitors ($n$ = 234) and other and unspecified antipsychotics and neuroleptics with potential for use disorder ($n$ = 197).

Thirteen per cent ($n$ = 591) of injuries of undetermined intent were poisoning by nonopioid analgesics, antipyretics and antirheumatics, and mainly consisted of 4-aminophenol derivatives such as paracetamol ($n$ = 464) and other non-steroidal anti-inflammatory drugs (NSAID) ($n$ = 88).

Eleven per cent ($n$ = 497) of injuries of undetermined intent were from narcotics and hallucinogens, and mainly consisted of heroin ($n$ = 123), and other opioids such as codeine and morphine ($n$ = 108).

**Table 2.13.5: External cause of injuries of undetermined intent, Australia, 2005–06**

| ICD-10-AM Code | External cause | Males Count | Males Per cent | Females Count | Females Per cent | Persons Count | Persons Per cent |
|---|---|---|---|---|---|---|---|
| | Poisoning by and exposure to: | | | | | | |
| Y10 | • nonopioid analgesics, antipyretics and antirheumatics | 158 | 7.6 | 433 | 18.5 | 591 | 13.3 |
| Y11 | • antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs | 712 | 34.1 | 1,040 | 44.3 | 1,752 | 39.5 |
| Y12 | • narcotics and psychodysleptics [hallucinogens] | 289 | 13.9 | 208 | 8.9 | 497 | 11.2 |
| Y13 | • other drugs acting on the autonomic nervous system | 30 | 1.4 | 26 | 1.1 | 56 | 1.3 |
| Y14 | • other and unspecified drugs, medicaments and biological substances | 218 | 10.5 | 261 | 11.1 | 479 | 10.8 |
| Y15 | • alcohol | 90 | 4.3 | 103 | 4.4 | 193 | 4.4 |
| Y16 | • organic solvents and their halogenated hydrocarbons and their vapours | 55 | 2.6 | 20 | 0.9 | 75 | 1.7 |
| Y17 | • other gases and vapours (e.g. Carbon monoxide) | 25 | 1.2 | 11 | 0.5 | 36 | 0.8 |
| Y18 | • pesticides | 22 | 1.1 | 5 | 0.2 | 27 | 0.6 |
| Y19 | • other and unspecified chemicals and noxious substances | 43 | 2.1 | 34 | 1.4 | 77 | 1.7 |
| Y20 | Hanging, strangulation and suffocation | 13 | 0.6 | 7 | 0.3 | 20 | 0.5 |
| Y21 | Drowning and submersion | * | 0.1 | * | 0.1 | 5 | 0.1 |
| Y22 | Handgun discharge | * | 0.0 | * | 0.0 | * | 0.0 |
| Y24 | Other and unspecified firearm discharge | * | 1.4 | * | 0.1 | 31 | 0.7 |
| Y25 | Contact with explosive material | * | 0.0 | * | 0.0 | * | 0.0 |
| Y26 | Exposure to smoke, fire and flames | 57 | 2.7 | 27 | 1.2 | 84 | 1.9 |
| Y27 | Contact with steam, hot vapours and hot objects | * | 0.2 | * | 0.5 | 15 | 0.3 |
| Y28 | Contact with sharp object | 188 | 9.0 | 76 | 3.2 | 264 | 6.0 |
| Y29 | Contact with blunt object | 20 | 1.0 | 7 | 0.3 | 27 | 0.6 |
| Y30 | Falling, jumping or pushed from a high place | * | 1.0 | * | 0.2 | 24 | 0.5 |
| Y31 | Falling, lying or running before or into moving object | * | 0.3 | * | 0.1 | 9 | 0.2 |
| Y32 | Crashing of motor vehicle | * | 0.1 | * | 0.0 | 4 | 0.1 |
| Y33 | Other specified events | 12 | 0.6 | 11 | 0.5 | 23 | 0.5 |
| Y34 | Unspecified event | 67 | 3.2 | 39 | 1.7 | 106 | 2.4 |
| Y87.2 | Sequelae of events of undetermined intent | 20 | 1.0 | 12 | 0.5 | 32 | 0.7 |
| **Total** | | **2,085** | **100.0** | **2,345** | **100.0** | **4,430** | **100.0** |

Note: Shaded areas indicate the highest 2 figures for a column.
* Small cell counts have been suppressed.

## Place of occurrence

Location was not specified or reported for 52% of cases (unspecified; *n* = 2,286, not reported/not applicable; *n* = 9). The following observations are restricted to those cases in which the place of occurrence was specified. The majority of hospital cases resulted from injuries that occurred in the home (77%; *n* = 1,634) (Table 2.13.6).

**Table 2.13.6: Place of occurrence for injury cases of undetermined intent, Australia, 2005–06**

| Place | Persons | Per cent |
|---|---|---|
| Home | 1,634 | 76.5 |
| Residential institution | 48 | 2.2 |
| School | 22 | 1.0 |
| Health service area | 119 | 5.6 |
| Other specified institution and public administrative area | * | 0.5 |
| Sports and athletics area | 14 | 0.7 |
| Street and highway | 57 | 2.7 |
| Trade and service area | 143 | 6.7 |
| Industrial and construction area | 15 | 0.7 |
| Farm | * | 0.1 |
| Other specified places | 69 | 3.2 |
| **Total** | **2,135** | **100.0** |

* Small cell counts have been suppressed.

# 3 Complications of surgical and medical care, Australia

ICD-10-AM case inclusion

Principal Diagnosis: **T80–T88**

**Table 3.1: Key indicators for cases due to *Complications of surgical and medical care*, Australia, 2005–06**

| Indicator | Males | Females | Persons |
|---|---|---|---|
| All hospital separations | 3,438,248 | 3,873,645 | 7,311,983[(a)] |
| Separations from hospital due to complications of surgical and medical care | 40,155 | 38,529 | 78,684 |
| Percentage of all separations | 1.2 | 1.0 | 1.1 |
| Estimated cases* | 37,085 | 35,960 | 73,045 |
| Crude rate/100,000 population | 362.9 | 347.7 | 355.3 |
| Age-standardised rate/100,000 population | 370.4 | 330.2 | 345.8 |
| Mean length of stay (days) | 5.6 | 5.5 | 5.6 |
| Total patient days | 208,631 | 197,299 | 405,930 |

* Omits inward transfers from acute hospitals.

(a) Includes 90 separations where sex was not reported.

## Overview

Hospital separations with a Principal Diagnosis of T80–T88 *Complications of surgical and medical care, not elsewhere classified* can provide a rudimentary measure of the frequency of occurrence of adverse events related to medical care. However, other ICD-10-AM codes outside the Principal Diagnosis range of T80–T80 may also indicate that an adverse event has occurred. Hence, the method used in this chapter uses different specifications to those used in the Australian Hospital Statistics 2005–06, which results in lower estimates here than in that publication (AIHW 2007). The wide diversity of estimates of the incidence of adverse events reported in the national and international literature is due to divergence in definitions, methods and conceptual focus (Wilson et al. 1995; Thomas et al. 2000; Vincent et al. 2001).

Caution is needed when interpreting the data in this chapter due to uncertainty about the completeness of coding, difficulties in identifying some complications as well as limitations of the classification and data systems. The limitations of these data are elsewhere described (Berry & Harrison 2006).

In 2005–06, *Complications of surgical and medical care, not elsewhere classified* was the Principal Diagnosis assigned to 78,684 separate episodes of hospital inpatient care, 1.1% of all hospital separations from public, private and psychiatric hospitals in Australia (Table 3.1). An estimated 73,045 separations were incident injury cases in 2005–06. About as many again had an Additional Diagnosis in the range T80–T88 *Complications of surgical and medical care, not elsewhere classified* (see Table A1). The male to female rate ratio (M:F rate ratio), based on age-standardised rates was 1.1:1.0, indicating slightly more males than females were hospitalised for complications of surgical and medical care.

## Major types of injury

**Table 3.2: Major types of injury for *Complications of surgical and medical care*, Australia, 2005–06**

| | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| **Principal Diagnosis** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** |
| Complications following infusion, transfusion and therapeutic injection | 251 | 0.7 | 281 | 0.8 | 532 | 0.7 |
| Complications of procedures, not elsewhere classified | 15,177 | 40.9 | 14,454 | 40.2 | 29,631 | 40.6 |
| Complications of cardiac and vascular prosthetic devices, implants and grafts | 5,160 | 13.9 | 3,694 | 10.3 | 8,854 | 12.1 |
| Complications of genitourinary prosthetic devices, implants and grafts | 2,535 | 6.8 | 1,477 | 4.1 | 4,012 | 5.5 |
| Complications of internal orthopaedic prosthetic devices, implants and grafts | 6,993 | 18.9 | 6,841 | 19.0 | 13,834 | 18.9 |
| Complications of other internal prosthetic devices, implants and grafts | 3,913 | 10.6 | 6,715 | 18.7 | 10,628 | 14.5 |
| Failure and rejection of transplanted organs and tissues | 1,756 | 4.7 | 1,111 | 3.1 | 2,867 | 3.9 |
| Complications peculiar to reattachment and amputation | 650 | 1.8 | 335 | 0.9 | 985 | 1.3 |
| Other complications of surgical and medical care, not elsewhere classified | 650 | 1.8 | 1,052 | 2.9 | 1,702 | 2.3 |
| **Total** | **37,085** | **100.0** | **35,960** | **100.0** | **73,045** | **100.0** |

All (100%; *n* = 73,045) admitted injury cases did not specify a particular body part that was injured.

The ICD-10-AM Principal Diagnoses T81, *Complications of procedures, not elsewhere classified* (*n* = 29,631), T82 *Complications of cardiac and vascular prosthetic devices, implants and grafts* (*n* = 8,854), T84, *Complications of internal orthopaedic prosthetic devices, implants and grafts* (*n* = 13,834), and T85 *Complications of other internal prosthetic devices, implants and grafts* (*n* = 10,628) accounted for 86%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* = 14,429; 20% of all adverse events). The overwhelming majority of cases with a principal diagnosis of T81.4 were coded as T81.41 *Wound infection following a procedure* (*n* = 13,855, 96%). The second most common adverse event was T81.0, *Haemorrhage and haematoma complicating a procedure, not elsewhere classified* (*n* = 9,333; 13% of all adverse events). The third most common adverse event was T84.0, *Mechanical complication of internal joint prosthesis* (*n* = 4,976; 7% of all adverse events).

Most of these common adverse events were given an external cause code of Y83 (*n* = 70,307, 96%), indicating a surgical operation and other surgical procedure was the cause of the abnormal reaction of the patient, or of later complication, without mention of misadventure at the time of the procedure.

## Age and sex distribution

Rates of hospitalised injury were similar for males and females at ages up to 30 years (Figure 3.1). Female rates exceeded male rates at ages 30–59 years. At ages 60 years and older, male rates exceeded those for females (Figure 3.1).

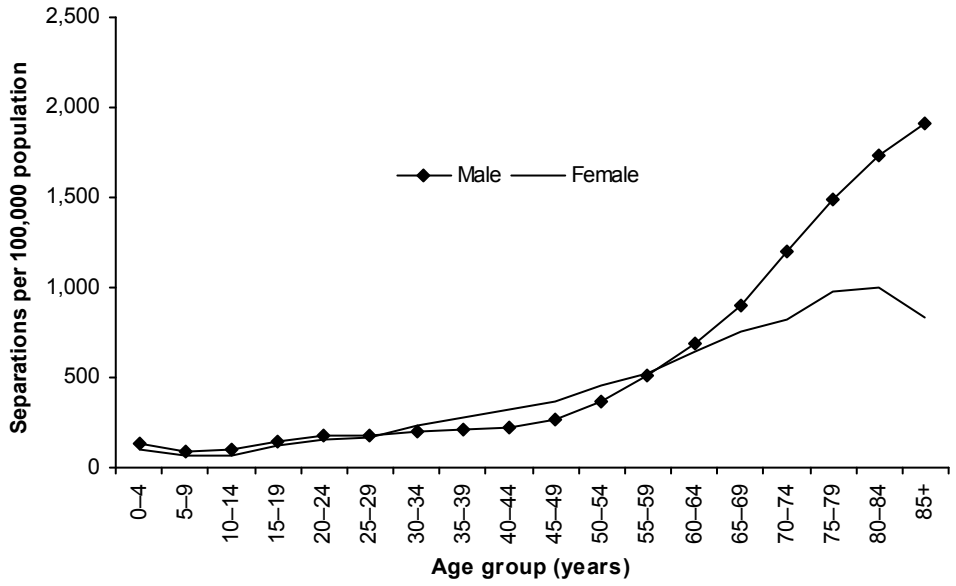



**Figure 3.1: Age-specific hospital separation rates for *Complications of surgical and medical care* by sex, Australia, 2005–06**

## Length of stay

In general, mean length of stay due to *Complications of surgical and medical care* increased with age (Figure 3.2).

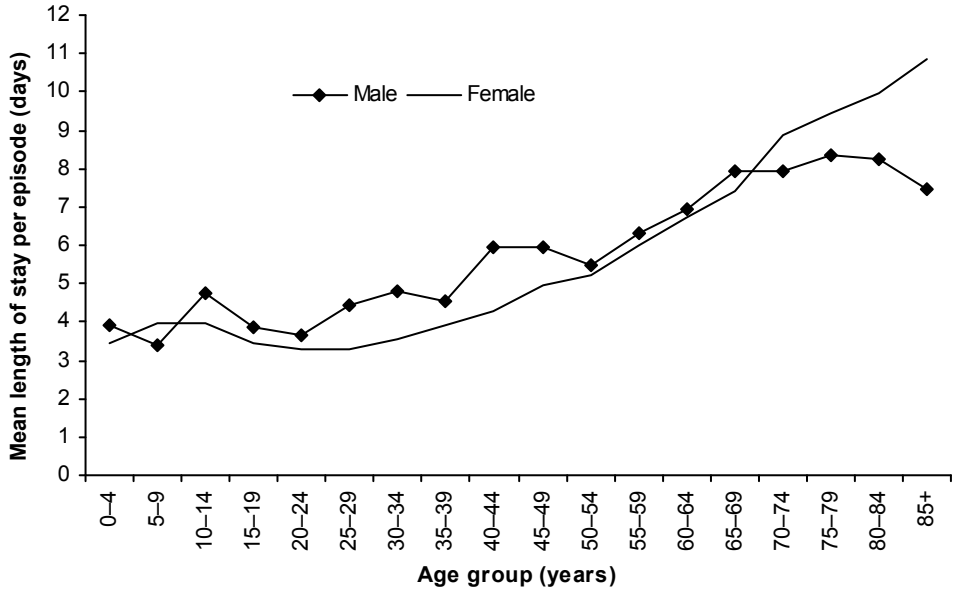



**Figure 3.2: Length of stay per episode for *Complications of surgical and medical care* by age and sex, Australia, 2005–06**

## Time trends

Age-standardised rates for *Complications of surgical and medical care* showed a small and gradual increase over time from 329 per 100,000 of the population in 1999–00 to 346 per 100,000 in 2005–06. Age-standardised rates are higher for males than females (Figure 3.3).

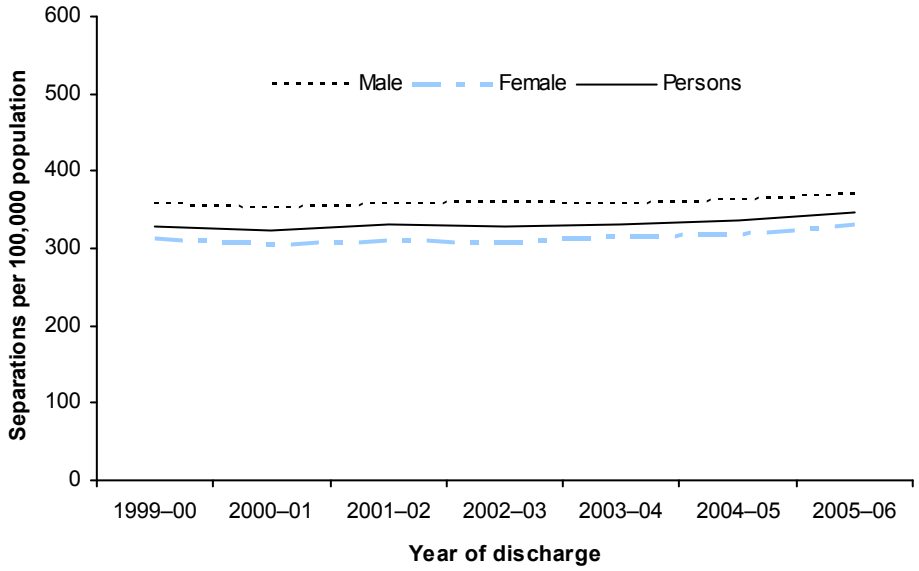



**Figure 3.3: Age-standardised rates of *Complications of surgical and medical care*, Australia, 1999–00 to 2005–06**

## Place of occurrence

As expected, where a place of occurrence was recorded ($n$ = 71,714), the great majority of cases occurred in a health service area (98.9%; $n$ = 70,911). The remaining 0.9% 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 cases 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 hospital separations where the Principal Diagnosis was in ICD-10-AM Chapter XIX *Injury, poisoning and certain other consequences of external causes* but were not classified as *Community injury* or *Complications of surgical and medical care* (*n* = 5,433) and estimated cases (*n* = 5,320) were derived by omitting separations which were inward transfer from another acute care hospital. Most of these 5,320 estimated cases were coded as ICD-10-AM Principal Diagnosis T78 *Adverse effects, not elsewhere classified* (*n* = 5,155) (Table 4.1). The remainder were T89, *Other specified complications of trauma* (*n* = 154) or T90–T98, *Sequelae of injuries, of poisoning and of other consequences of external causes* (*n* = 11).

**Table 4.1: Case counts for ICD-10-AM Principal Diagnosis T78, *Adverse effects, not elsewhere classified*, Australia, 2005–06**

| | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| **Principal Diagnosis** | **Count** | **Per cent** | **Count** | **Per cent** | **Count** | **Per cent** |
| Anaphylactic shock due to adverse food reaction | 546 | 22.5 | 559 | 20.5 | 1,105 | 21.4 |
| Other adverse food reactions, not elsewhere classified | 423 | 17.5 | 429 | 15.7 | 852 | 16.5 |
| Anaphylactic shock, unspecified | 327 | 13.5 | 374 | 13.7 | 701 | 13.6 |
| Angioneurotic oedema | 647 | 26.7 | 744 | 27.2 | 1,391 | 27.0 |
| Allergy, unspecified | 475 | 19.6 | 614 | 22.5 | 1,089 | 21.1 |
| Other adverse effects, not elsewhere classified or unspecified | 6 | 0.2 | 11 | 0.4 | 17 | 0.3 |
| **Total** | **2,424** | **100.0** | **2,731** | **100.0** | **5,155** | **100.0** |

# 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).

Crude and age-specific rates were calculated using as population data the final estimate of the estimated resident population as at 31 December 2003, obtained from the AIHW.

## Selection criteria

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

Period

This report is restricted to inpatient episodes that ended in the period 1 July 2005 to 30 June 2006.

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 (Helps et al. 2002)).

Scope

We included data from all hospitals that contributed to the NHMD in 2005–06. 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 2005–06 (AIHW 2007).

Injury

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

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

## Table A1: Selection criteria for cases due to injury and poisoning, Australia, 2005–06

| Selection criteria | Males | Females | Persons |
|---|---|---|---|
| *Community injury* (ICD-10-AM Principal Diagnosis range S00–T75, T79), and | | | |
| • lack any external cause code | 285 | 160 | 445 |
| • have a first reported external cause code of *Complications of surgical and medical care*** | 823 | 727 | 1,550 |
| • have a first reported external cause code in the range V01–Y36, Y85–Y87, Y89 | 215,050 | 154,246 | 369,302[(a)] |
| **Total case numbers for Community injury** | **216,158** | **155,133** | **371,297[(a)]** |
| Do not have a Principal Diagnosis of *Community injury*, but Additional Diagnosis codes are in range (ICD-10-AM range S00–T75, T79) | 36,661 | 41,758 | 78,419[(b)] |
| **Total case numbers where there is a code for Community injury in the Principal or Additional Diagnosis fields** | **252,819** | **196,891** | **449,716[(a)]** |
| *Complications of surgical and medical care* (ICD-10-AM Principal Diagnosis range T80–T88), and | | | |
| • lack any external cause code | 64 | 44 | 108 |
| • have a first reported external cause code of *Community injury**** | 151 | 131 | 282 |
| • have a first reported external cause in the range Y40–T84, Y88 | 36,870 | 35,785 | 72,655 |
| **Total case numbers for Complications of surgical and medical care** | **37,085** | **35,960** | **73,045** |
| 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) | 41,168 | 38,020 | 79,190[(b)] |
| **Total case numbers where there is a code for *Complications of surgical and medical care* in the Principal or Additional Diagnosis fields** | **78,253** | **73,980** | **152,235[(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*** | **2,545** | **2,775** | **5,320** |
| • Adverse effects, not elsewhere classified (ICD-10-AM Principal Diagnosis T78)—includes adverse food reactions e.g. anaphylactic shock. | 2,424 | 2,731 | 5,155 |
| • Other complications of trauma not elsewhere classified (ICD-10-AM Principal Diagnosis T89) | 111 | 43 | 154 |
| • Sequelae of injuries, of poisoning and of other consequences of external causes (ICD-10-AM Principal Diagnosis T90–T98) | 10 | 1 | 11 |
| **All cases with Principal Diagnosis in the ICD-10-AM range S00–T98** | **255,788** | **193,868** | **449,662[(a)]** |

Includes (a) 6, and (b) 2 separations for which sex was not reported.

* To correct for double-counting, 34,474 separations were omitted from the estimate of incident cases as they were inward transfers from another acute care hospital. Without this exclusion, the separations from hospital according to Principal Diagnosis were 400,019 for Community injury, 78,684 for Complications of surgical and medical care and 5,433 for the remainder of separations in the Chapter XIX Injury and poisoning chapter.

** 34 (2.8%) of these cases have one or more external cause codes of Community injury (external cause of morbidity and mortality fields in the range V01–Y36).

*** 38 (13.5%) of these cases 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).

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

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

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

A small proportion of records were ambiguous as to whether they should be treated as *Community injury* or *Complications of surgical and medical care*. These records have a Principal Diagnosis in the *Community injury* range and a first reported external cause code meaning *Complications of surgical and medical care* ($n$ = 1,550) or a Principal Diagnosis in the *Complications of surgical and medical care* range and a first reported external cause code indicating *Community injury* ($n$ = 282). These records, shown in Table A1, were included in the analysis according to their Principal Diagnosis.

Consideration was given to amending the selection criteria for community injury in this report to include cases with the ICD-10-AM code T89 *Other complications of trauma not elsewhere classified* as the principal diagnosis. This category encompasses *Complications of open wounds, unspecified*; *Open wound with foreign body (with or without infection)*; *Open wound with infection*; *Other complications of open wounds* (e.g. delayed healing or delayed treatment). T89 is likely to include incident cases where a person sustained an injury but was not admitted to hospital until after complications of the injury had occurred. The inclusion of such cases within community injury would contribute to arriving at the best estimate of the population incidence of hospitalised injury. However, the inclusion criteria for T89 are somewhat ambiguous in that the category may also contain cases where an initial injury was treated in hospital, apparently successfully, and infection or other complication occurred after discharge requiring a second admission. Ambiguity concerning these cases would be reduced by person-based linkage of the hospital separations data and, further, by the presence in records of the date of injury. This information was not available to us. The number of cases with a principal diagnosis of T89 in 2005–06 was small ($n$ = 154). On this basis, and because of the unresolved ambiguity, it was decided not to add cases with principal diagnosis = T89 to community injury. However, this category should be kept in mind, especially when investigating types of injury in which infection of wounds or complications of retained foreign bodies might be important (e.g. dog bites).

Injury solely as Additional Diagnosis (excluded)

Records in the NHMD for 2005–06 can report up to 50 Additional Diagnosis codes as well as a Principal Diagnosis code. Hence, records can occur that have a Principal Diagnosis code outside the range designating *Community injury*, but have one or more Additional Diagnosis codes within that range. The same is true for *Complications of surgical and medical care*. The numbers of records of these types are shown in Table A1.

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…' (AIHW 2005). Hence, while many or all of the people represented by these records will, at some time, have sustained an injury as defined above, that injury was not recorded as being the main reason for their current episode in hospital.

Many of these records with an Additional Diagnosis of injury will have been counted in incidence estimates on the basis of a previous episode in hospital for acute care, the current episode being for rehabilitation. In some other instances, the Additional Diagnosis injury referred to in the record may have been incidental to the reason for admission and would not, on its own, have prompted admission. Availability of person-linked hospital morbidity data would do much to enable appropriate assignment of this group of records.

External cause codes

According to Australian Coding Standards (NCCH 2002), all records in the NHMD that meet either of the injury definitions stated above should include one or more ICD-10-AM external cause codes. In practice, only 0.1% of NHMD records that met all other selection criteria had no external cause code. Since the main focus of this report is to describe injury cases in terms of the external causes that brought them about, injury cases without an external cause code are only included in the *Community injury* and *Complications of surgical and medical care* chapters.

Records that have a Principal Diagnosis within a specified injury range, but no accompanying external cause code, numbered 445 (0.1%) of the *Community injury* subset, and 108 (0.1%) of the *Complications of surgical and medical care* subset (see Table A1).

Estimating incident cases

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

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

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 ($n$ = 34,474) were omitted from the estimates of incident cases that are shown in Table A1 and elsewhere in this report.

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

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

## 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 (ABS 2003) (Table A2). Where crude rates or age-specific rates are reported, this is noted.

## Suppression of small cell counts in data tables

Cell counts in tables that are fewer than 4 cases have been suppressed as have rates derived from them, to protect confidentiality and because values based on very small numbers are sometimes difficult to interpret. In the instances where only one cell in a row or column has a count of less than 4, counts of one or more other cells in the same row or column have generally also been suppressed.

## State and territory information

The NHMD contains information on state or territory in two senses: jurisdiction of usual residence and the jurisdiction in which the treating hospital is located. There are reasons to prefer each of these for statistical reporting of injury, in certain circumstances. The population data used for rates are framed in terms of place of usual residence, which has good conceptual fit with case data framed in the same way. Hence, it is usually preferable to calculate injury incidence rates in terms of usual residence. Analysis of some injury issues benefits from use of jurisdiction of hospital, despite its poorer correspondence to usual

population data. For example, truck drivers and holiday makers may be injured far from home, and analysis in terms of location of hospital sometimes gives insight into where injuries occurred. (Unfortunately the NHMD lacks data on geographic place of occurrence, which would be a better basis for analysing such topics.) In this report, analysis is solely in terms of state or territory of usual residence.

## Errors, inconsistencies and uncertainties

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

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

# Appendix 2: Population data table

The estimated resident population of persons in 2001 (ABS 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** |

**Table A3.1: Age-specific rates and age-standardised rates of separations due to external causes in males, Australia, 2005–06**

| | Age group (years) | | | | | | | | | | | | | | | | | | All ages (crude) | Age Std |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ICD-10-AM E-code** | **0–4** | **5–9** | **10–14** | **15–19** | **20–24** | **25–29** | **30–34** | **35–39** | **40–44** | **45–49** | **50–54** | **55–59** | **60–64** | **65–69** | **70–74** | **75–79** | **80–84** | **85+** | | |
| **Major groups** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** |
| **Unintentional** | | | | | | | | | | | | | | | | | | | | |
| Falls | 633.0 | 741.0 | 736.9 | 461.2 | 387.7 | 322.6 | 288.0 | 266.3 | 281.8 | 305.1 | 350.9 | 394.8 | 489.1 | 609.3 | 911.4 | 1,523.7 | 2,844.1 | 5,951.4 | 570.8 | 597.9 |
| Transportation | 94.6 | 218.9 | 492.2 | 711.7 | 653.0 | 490.7 | 451.0 | 371.7 | 320.5 | 279.7 | 234.6 | 200.3 | 184.3 | 171.5 | 164.3 | 194.3 | 235.2 | 293.6 | 350.2 | 350.0 |
| Poisoning, pharmaceuticals | 100.7 | 11.1 | 4.0 | 18.8 | 41.0 | 39.6 | 32.3 | 30.0 | 22.1 | 19.0 | 14.3 | 14.4 | 14.6 | 16.3 | 27.5 | 36.7 | 51.1 | 69.7 | 28.5 | 29.0 |
| Poisoning, other substances | 37.7 | 5.2 | 6.1 | 15.6 | 18.3 | 16.4 | 14.5 | 13.2 | 13.1 | 12.4 | 12.5 | 11.3 | 8.9 | 11.3 | 8.6 | 11.2 | 11.7 | 13.9 | 13.9 | 13.9 |
| Fires, burns and scalds | 121.4 | 23.6 | 29.3 | 44.7 | 44.9 | 37.7 | 34.0 | 24.1 | 27.9 | 21.2 | 21.8 | 22.2 | 15.5 | 21.0 | 23.2 | 22.3 | 23.4 | 28.9 | 34.7 | 34.8 |
| Drowning and near-drowning | 20.5 | 3.4 | 1.7 | 3.9 | 3.4 | 2.4 | 1.6 | 1.9 | 1.8 | 1.2 | 1.6 | 1.4 | 1.9 | 1.3 | 1.3 | 0.4 | 1.8 | 1.0 | 3.3 | 3.3 |
| Other unintentional injuries | 588.2 | 473.0 | 757.2 | 1,447.2 | 1,458.5 | 1,189.4 | 1,033.0 | 888.8 | 808.6 | 730.3 | 634.8 | 623.9 | 556.3 | 501.9 | 442.1 | 450.8 | 493.7 | 634.0 | 830.2 | 828.4 |
| **Intentional** | | | | | | | | | | | | | | | | | | | | |
| Intentional self-harm | 0.6 | 0.7 | 14.6 | 125.3 | 163.0 | 160.4 | 170.9 | 154.3 | 126.2 | 101.6 | 87.5 | 57.6 | 45.1 | 37.0 | 30.2 | 31.5 | 43.7 | 55.7 | 89.1 | 89.3 |
| Assault | 21.0 | 7.9 | 39.9 | 354.2 | 463.4 | 353.4 | 294.2 | 222.7 | 184.7 | 131.3 | 91.9 | 52.8 | 43.3 | 25.2 | 18.9 | 11.6 | 19.7 | 14.9 | 162.2 | 161.8 |
| Undetermined intent | 5.7 | 2.8 | 6.1 | 32.3 | 45.7 | 41.9 | 40.3 | 29.5 | 20.6 | 20.3 | 13.7 | 10.8 | 8.2 | 7.6 | 5.0 | 9.2 | 5.5 | 14.9 | 20.4 | 20.4 |
| **Community Injury** | **1,625.9** | **1,489.2** | **2,092.4** | **3,223.8** | **3,289.1** | **2,661.2** | **2,367.4** | **2,008.8** | **1,816.1** | **1,631.2** | **1,471.6** | **1,403.2** | **1,398.2** | **1,422.1** | **1,665.7** | **2,354.7** | **3,790.3** | **7,126.7** | **2,115.5** | **2,141.2** |
| Complications of surgical and medical care | 132.0 | 85.4 | 94.8 | 145.5 | 177.9 | 180.2 | 204.9 | 211.2 | 227.8 | 265.9 | 362.3 | 509.1 | 685.9 | 901.6 | 1,202.1 | 1,489.4 | 1,730.5 | 1,906.8 | 362.9 | 370.4 |

*Note:* Rates per 100,000 population.

**Table A3.2: Age-specific rates and age-standardised rates of separations due to external causes in females, Australia, 2005–06**

| ICD-10-AM E-code | Age group (years) | | | | | | | | | | | | | | | | | | All ages (crude) | Age Std |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0–4 | 5–9 | 10–14 | 15–19 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80–84 | 85+ | | |
| **Major groups** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** |
| **Unintentional** | | | | | | | | | | | | | | | | | | | | |
| Falls | 500.1 | 599.1 | 331.6 | 140.5 | 144.5 | 146.4 | 156.5 | 169.1 | 194.5 | 247.9 | 364.9 | 493.9 | 667.7 | 923.3 | 1,463.4 | 2,613.6 | 4,838.3 | 9,278.7 | 717.9 | 622.9 |
| Transportation | 56.6 | 131.3 | 192.7 | 313.6 | 257.7 | 181.5 | 154.0 | 145.2 | 127.9 | 134.8 | 125.3 | 120.6 | 110.9 | 123.8 | 153.0 | 167.4 | 195.8 | 171.9 | 159.3 | 159.5 |
| Poisoning, pharmaceuticals | 102.2 | 6.9 | 9.8 | 49.4 | 46.9 | 36.1 | 32.8 | 26.5 | 26.4 | 27.8 | 19.7 | 17.7 | 15.2 | 18.7 | 24.9 | 40.1 | 58.6 | 79.3 | 33.3 | 33.1 |
| Poisoning, other substances | 29.2 | 2.5 | 3.1 | 14.5 | 11.0 | 11.3 | 9.5 | 6.7 | 7.2 | 7.1 | 6.3 | 6.1 | 7.7 | 6.7 | 7.4 | 9.4 | 16.9 | 15.1 | 9.4 | 9.4 |
| Fires, burns and scalds | 98.3 | 22.2 | 13.4 | 14.2 | 14.1 | 14.7 | 14.2 | 10.7 | 11.7 | 9.2 | 11.2 | 11.3 | 12.3 | 10.3 | 7.4 | 16.7 | 17.7 | 22.2 | 18.5 | 18.9 |
| Drowning and near-drowning | 15.0 | 1.2 | 1.8 | 1.5 | 0.3 | 0.3 | 0.4 | 0.5 | 0.1 | 0.7 | 1.0 | 0.3 | 0.2 | 1.0 | 0.3 | 0.7 | 0.4 | 0.0 | 1.5 | 1.6 |
| Other unintentional injuries | 464.6 | 336.4 | 298.3 | 341.9 | 321.3 | 305.0 | 278.2 | 287.1 | 291.1 | 287.4 | 289.1 | 293.1 | 289.1 | 305.0 | 339.4 | 432.3 | 579.3 | 793.4 | 332.8 | 328.8 |
| **Intentional** | | | | | | | | | | | | | | | | | | | | |
| Intentional self-harm | 0.3 | 0.2 | 74.8 | 400.2 | 262.7 | 213.1 | 209.3 | 213.2 | 188.8 | 171.1 | 128.7 | 91.5 | 44.3 | 41.6 | 33.2 | 27.1 | 29.1 | 27.4 | 141.9 | 144.2 |
| Assault | 18.3 | 3.4 | 14.8 | 80.6 | 115.6 | 118.7 | 117.8 | 98.5 | 74.9 | 47.3 | 29.2 | 16.6 | 14.8 | 6.9 | 8.0 | 8.4 | 12.2 | 9.4 | 53.3 | 54.5 |
| Undetermined intent | 5.1 | 1.8 | 6.9 | 58.2 | 46.3 | 35.5 | 34.4 | 30.5 | 29.3 | 22.8 | 15.0 | 16.0 | 10.4 | 9.8 | 8.6 | 10.0 | 9.3 | 10.9 | 22.7 | 22.9 |
| **Community injury** | **1,293.2** | **1,107.0** | **949.1** | **1,418.4** | **1,223.9** | **1,066.0** | **1,011.0** | **994.9** | **959.0** | **975.5** | **999.6** | **1,074.7** | **1,184.2** | **1,461.5** | **2,064.2** | **3,363.2** | **5,791.9** | **10,457.5** | **1,500.2** | **1,404.6** |
| Complications of surgical and medical care | 101.8 | 66.7 | 64.6 | 125.6 | 160.8 | 171.4 | 232.8 | 283.0 | 323.8 | 367.0 | 459.2 | 518.7 | 640.3 | 750.0 | 825.7 | 975.4 | 995.3 | 830.2 | 347.7 | 330.2 |

*Note:* Rates per 100,000 population.

**Table A3.3: Age-specific rates and age-standardised rates of separations due to external causes in persons, Australia, 2005–06**

| ICD-10-AM E-code | Age group | | | | | | | | | | | | | | | | | | All ages (crude) | Age Std |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0–4 | 5–9 | 10–14 | 15–19 | 20–24 | 25–29 | 30–34 | 35–39 | 40–44 | 45–49 | 50–54 | 55–59 | 60–64 | 65–69 | 70–74 | 75–79 | 80–84 | 85+ | | |
| **Major groups** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** | **Rate** |
| **Unintentional** | | | | | | | | | | | | | | | | | | | | |
| Falls | 568.4 | 671.8 | 539.7 | 305.0 | 268.3 | 235.1 | 221.8 | 217.4 | 237.9 | 276.3 | 357.9 | 444.2 | 578.0 | 768.1 | 1,198.0 | 2,116.9 | 4,027.3 | 8,207.9 | 644.8 | 624.4 |
| Transportation | 76.2 | 176.2 | 346.5 | 517.8 | 459.0 | 337.1 | 301.6 | 257.8 | 223.6 | 206.7 | 179.7 | 160.6 | 147.8 | 147.4 | 158.4 | 179.6 | 211.8 | 211.1 | 254.2 | 255.2 |
| Poisoning, pharmaceuticals | 101.5 | 9.0 | 6.9 | 33.7 | 43.9 | 37.8 | 32.5 | 28.2 | 24.3 | 23.5 | 17.0 | 16.1 | 14.9 | 17.5 | 26.2 | 38.5 | 55.6 | 76.2 | 30.9 | 31.1 |
| Poisoning, other substances | 33.6 | 3.9 | 4.6 | 15.1 | 14.7 | 13.8 | 12.0 | 9.9 | 10.1 | 9.7 | 9.4 | 8.7 | 8.3 | 9.0 | 8.0 | 10.2 | 14.8 | 14.7 | 11.7 | 11.7 |
| Fires, burns and scalds | 110.1 | 22.9 | 21.6 | 29.8 | 29.8 | 26.3 | 24.1 | 17.4 | 19.8 | 15.2 | 16.5 | 16.8 | 13.9 | 15.6 | 15.0 | 19.3 | 20.0 | 24.3 | 26.5 | 26.9 |
| Drowning and near-drowning | 17.8 | 2.3 | 1.7 | 2.7 | 1.9 | 1.4 | 1.0 | 1.2 | 1.0 | 0.9 | 1.3 | 0.9 | 1.0 | 1.2 | 0.8 | 0.5 | 1.0 | 0.3 | 2.4 | 2.5 |
| Other unintentional injuries | 528.1 | 406.4 | 533.9 | 908.9 | 900.4 | 750.0 | 653.5 | 586.4 | 548.2 | 507.1 | 461.2 | 459.1 | 423.3 | 402.4 | 388.8 | 440.7 | 544.5 | 742.1 | 580.0 | 581.0 |
| **Intentional** | | | | | | | | | | | | | | | | | | | | |
| Intentional self-harm | 0.5 | 0.4 | 43.9 | 259.2 | 211.9 | 186.6 | 190.4 | 183.9 | 157.7 | 136.6 | 108.2 | 74.5 | 44.7 | 39.3 | 31.7 | 29.1 | 35.0 | 36.5 | 115.7 | 116.3 |
| Assault | 19.7 | 5.7 | 27.7 | 221.0 | 292.7 | 236.8 | 205.5 | 160.3 | 129.5 | 89.0 | 60.4 | 34.8 | 29.1 | 16.0 | 13.2 | 9.8 | 15.3 | 11.2 | 107.4 | 108.5 |
| Undetermined intent | 5.4 | 2.3 | 6.5 | 44.9 | 46.0 | 38.7 | 37.3 | 30.0 | 25.0 | 21.5 | 14.3 | 13.4 | 9.3 | 8.7 | 6.9 | 9.6 | 7.8 | 12.2 | 21.5 | 21.7 |
| **Community injury** | **1,464.2** | **1,303.0** | **1,536.2** | **2,344.5** | **2,275.6** | **1,868.7** | **1,685.4** | **1,499.2** | **1,384.9** | **1,300.8** | **1,234.6** | **1,239.5** | **1,291.8** | **1,442.1** | **1,872.7** | **2,903.6** | **4,977.9** | **9,385.6** | **1806.0** | **1789.8** |
| Complications of surgical and medical care | 117.3 | 76.2 | 80.1 | 135.8 | 169.5 | 175.8 | 218.9 | 247.3 | 276.1 | 316.9 | 410.9 | 513.8 | 663.2 | 825.0 | 1,006.6 | 1,209.6 | 1,294.3 | 1,176.7 | 355.3 | 345.8 |

*Note:* Rates per 100,000 population.

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