

# **Hospital separations due to injury and poisoning, Australia 2004–05**

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# **Hospital separations due to injury and poisoning, Australia 2004–05**

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# Executive summary

This report, covering injuries resulting in admission to an Australian hospital in the financial year 2004–05, is the third in a series, with previous reports covering 2001–02 and 2003–04 (Berry & Harrison 2006a; Berry & Harrison 2007a).

As in previous years the main group of injury analysed is *community injury*, injuries typically sustained in the home, workplace, street etc.

The report also includes analyses of:

- *complications of surgical and medical care* (e.g. post-operative infections and complications with prosthetic devices, implants and grafts)
- *residual injury separations* (comprises only a small number of injury separations, including adverse effects not elsewhere classified)

The current report includes analyses of rates of injury by the person's place of usual residence. Rates of community injury are presented by the injured person's state of usual residence (as they were in previous reports in the series) and according to the remoteness of the person's place of usual residence. Analysis by remoteness was not included in the previous report in this series (Berry and Harrison 2007a).

The current report also includes chapters specifically dealing with work- and sport-related community injury cases, expanding upon the brief discussion of these topics in 2003–04.

A further feature of the current report is detailed analysis of hospitalised injury cases attributed to transport accidents. The transport injuries section here is very similar to those of Harrison and Berry (2007) and Berry and Harrison (2007b) but covers a year skipped by that series.

Trends are not covered in this report, but were covered in the 2003–04 report.

## Community injury

Around 356,000 community injury cases resulted in hospitalisation in 2004–05. Most (86%) were unintentional injuries, with the remainder considered to be intentional (such as from assaults or incidents of self-harm).

The leading cause of hospitalised injury in 2004–05 was an unintentional fall, accounting for over one-third of all community injury cases (126,800 cases).

Unlike most other types of community injury, females outnumbered males in unintentional fall injury cases (55% to 45%). Rates of hospitalised falls cases were particularly high for older Australians. Slips, trips and stumbles were the most common cause of hospitalised falls.

Transport accidents were the second most common cause of hospitalised community injuries (14% or 51,000 cases). Most hospitalised transport injury cases involved males (68%) and rates were highest for people aged 10–29 years.

Sport-related injuries accounted for around 37,300 cases, with football injuries (Australian Rules, soccer, rugby league and rugby union) being by far the most prevalent (13,600 cases overall, 12,700 for males).

There were an estimated 23,900 hospitalised injury cases due to self-harm. Female cases outnumbered male cases by 14,900 to 9,000.

Nearly 1.5 million patient-days were attributed to hospitalised community injury in 2004–05 and the average length of stay per community injury case was 4.0 days.

## **Complications of surgical and medical care**

An estimated 69,700 hospitalised injury cases in 2004–05 were attributed to complications of surgical and medical care.

As for community injury cases, rates of complications cases increased markedly with age, but unlike community injuries, complications rates for older males were significantly higher than those for females from the age of 60 years onwards.

The vast majority (96%) of cases with complications as a principal diagnosis were attributed to surgical or medical procedures causing an abnormal reaction or later complication in the patient, without mention of misadventure at the time of the procedure.

Nearly half a million patient-days were attributed to hospitalised complications of surgical and medical care in 2004–05 and the average length of stay per case was 6.4 days.

## **Injuries in older Australians**

While most types of injury have a relatively young age profile (e.g. drowning, burns and scalds, assault), the highest rates of hospitalised community injury cases overall are observed for older Australians. This is largely due to extremely high rates of fall-related injuries, but elevated rates for people aged 65 years and older were observed for a number of other injury types in 2004–05.

Rates of transport-related injuries had an almost bi-modal age distribution, with a second peak in rates noted for older people following relatively low rates of transport injuries for middle-aged adults. Rates of cases involving older car drivers and car passengers demonstrated this pattern, as did rates for older pedestrians.

There is some evidence here to suggest that mobility scooter-related injuries might be a growing cause of transport injuries involving older people. Hospital data do not currently contain codes specific to mobility scooters but coding changes have recently been introduced to improve identification of mobility scooters as the cause of transport (and falls) injury from the 2006–07 data year onwards.

Older Australians also had a high rate of hospitalised cases due to accidental poisoning by pharmaceuticals, relative to other adults. Similarly, rates of complications of surgical and medical care cases (including cases attributed to the adverse effects of drugs, medicaments and biological substances in therapeutic use) were much higher for older people than for younger Australians.



# 1 Introduction

This report describes the incidence of injuries newly occurring in Australia and resulting in admission to a hospital in the financial year 1st July 2004 to 30th June 2005. It is the third in a series, with previous reports addressing injury hospitalisations for the years 2001–02 and 2003–04 (Berry & Harrison 2006a; Berry & Harrison 2007a).

## 1.1 Data selection

The data underpinning this report were hospital separation unit records for 2004–05, extracted from the National Hospital Morbidity Database (NHMD, see AIHW 2006). Unit records for episodes of care in Australian hospitals in 2004–05 were coded to the fourth edition of the Australian Modification of the International Classification of Diseases (ICD-10-AM). All separation records containing codes from either Chapter XIX (*injury, poisoning and certain other consequences of external causes*) and/or Chapter XX (*external causes of morbidity and mortality*) of the ICD-10-AM were provided to the National Injury Surveillance Unit (NISU) by the Australian Institute of Health and Welfare (AIHW).

For this report, separation records with a principal diagnosis in the range S00–T98 (Chapter XIX) were extracted for analysis. Records fitting this criterion were considered to represent all hospitalisations *directly* attributable to an injury of some kind. This selection criterion matches that applied by Berry and Harrison (2007a) but differs slightly to that applied by Berry and Harrison (2006a), when a small number of separations lacking external cause coding were excluded.

Consistent with Berry and Harrison (2006a; 2007a), this report also applies a further criterion for most analyses; the exclusion of separations with a mode of admission indicating a transfer from another acute hospital to minimise the double-counting of cases. A single event that results in an injury requiring inpatient hospital care may generate multiple unit records for various reasons. Accordingly, the total number of hospital separations identifiable as being directly attributable to injury overestimates the actual number of events that provoked these hospitalisations. Without a date of injury variable or readmission flag in the de-identified NHMD records, the number of discrete injury cases (incidence) is estimated here by excluding records explicitly categorised as second or subsequent episodes of care (i.e. mode of admission is transfer from another acute hospital). This approach does not account for multiple separations generated by readmissions to hospital after the person had been discharged to their place of usual residence, but (currently) unpublished work by NISU using person-linked hospital data suggests that the effect of this is small for injury cases.

## 1.2 Report structure

This report categorises injury hospitalisations into three main groups; community injury, complications of surgical and medical care and residual injury separations.

Community injury separations have been defined in this report as unit records with a principal diagnosis in the range S00–T75 or T79 (consistent with Berry & Harrison 2006a; Berry & Harrison 2007a). These injuries are generally sustained in the community setting; the home, the workplace, an educational institution, the street, the natural environment etc. Community injuries have been divided into two main types on the basis of the

first-occurring external cause code in the record; unintentional injuries (e.g. motor vehicle accidents, falls) and intentional injuries (e.g. assault, self-harm).

Injuries classed as complications of surgical and medical care have been defined in this report as unit records with a principal diagnosis in the range T80–T88. These injuries are thought to be the result of adverse events of a health intervention and include post-operative infections, complications associated with prosthetic devices, implants and grafts, and failure or rejection of transplanted organs. While injuries classed as complications of surgical and medical care provide a rudimentary measure of the incidence of adverse events related to hospital care, records with principal diagnosis codes outside the range of T80–T88 may also be related to adverse events (e.g. where external cause codes explicitly describe complications when the diagnoses codes do not). As such, the estimates of adverse events related to surgical and medical care are lower in this report than stated elsewhere (e.g. AIHW 2006).

The residual group of injury cases analysed in this report includes records with principal diagnoses T78 (adverse effects not elsewhere classified), T89 (other specified complications of trauma), and T90–T98 (sequelae of injuries, of poisoning and of other consequences of external causes). This group comprises a relatively small proportion of the total number of injury hospitalisations (about one per cent) and the relationship between diagnoses of these types and the circumstances of the injurious event provoking the hospitalisation is not well understood.

The topics covered in each section of this edition of the report are similar to those covered by the previous editions (Berry & Harrison 2006a; Berry & Harrison 2007a). A difference is that this edition examines rates of community injury by remoteness of usual residence, but not trends over time. The immediately previous edition (Berry & Harrison 2007a) discusses trends and not remoteness.

### **1.3 Profiles of priority injury areas**

The National Injury Prevention and Safety Promotion Plan: 2004–2014 (Pointer et al. 2003; NPHP 2005) identified seven national injury prevention areas for action; 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 groups. However, injuries involving Aboriginal and Torres Strait Islander people have not been distinguished in this report, as issues surrounding the identification of indigenous status necessitate a special approach. Information regarding injury morbidity among Aboriginal and Torres Strait Islander Australians is the subject of another NISU report (Helps & Harrison 2006). Similarly, the contribution of alcohol to hospitalised injury in Australia has not been considered in this report as it is not yet possible to assess the alcohol-relatedness of this data with adequate reliability (see Pidd et al. 2006).

## 1.4 Injury hospitalisations 2004–05 overview

For public and private hospitals combined, episodes of care separating from hospital between 1st July 2004 and 30th June 2005 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 and contact with health services* (Z00–Z99), *diseases of the digestive system* (K00–K93) and *neoplasms* (C00–D48) when records are grouped as in *Australian hospital statistics 2004–05* (AIHW 2006). This represents an increase in position; in previous years, injury ranked fifth after hospitalisations due to *pregnancy, childbirth and the puerperium* (O00–O99, see Berry & Harrison 2006a; Berry & Harrison 2007a).

**Table 1.1: Injury hospitalisations overview: males, females and persons, Australia 2004–05**

	Males	Females	Persons <sup>(b)</sup>
<b>Total number of hospital separations for any cause <sup>(a)</sup></b>	3,292,736	3,726,032	7,018,850
Total number of hospital bed-days <sup>a</sup>	11,061,645	12,765,911	23,828,612
<b>Separations due to injury and poisoning (S00–T98 <sup>(c)</sup>)</b>	264,139	199,410	463,554
Percentage of all separations	8.0	5.4	6.6
Bed-days due to injury and poisoning	924,212	960,194	1,884,422
Percentage of all bed-days	8.4	7.5	7.9
<b>Community injury separations (S00–T75 or T79 <sup>(c)</sup>)</b>	223,634	160,463	384,102
Percentage of all injury separations	84.7	80.5	82.9
Bed-days due to community injury	690,814	738,897	1,429,727
Percentage of injury bed-days	74.7	77.0	75.9
<b>Complications of surgical &amp; medical care separations (T80–T88 <sup>(c)</sup>)</b>	38,199	36,427	74,626
Percentage of all injury separations	14.5	18.3	16.1
Bed-days due to complications injury	227,589	217,768	445,357
Percentage of injury bed-days	24.6	22.7	23.6
<b>Residual injury separations (T78, T89 or T90–T98 <sup>(c)</sup>)</b>	2,306	2,520	4,826
Percentage of all injury separations	0.9	1.3	1.0
Bed-days due to residual injury separations	5,809	3,529	9,338
Percentage of injury bed-days	0.6	0.4	0.5

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

(b) Includes separations where sex was not reported.

(c) Separations defined according to principal diagnosis.

Nearly half a million hospital separations were directly attributed to injury and poisoning in 2004–05 (Table 1.1). These separations accounted for 6.6% of all episodes of care in Australian hospitals in this year. Approximately 1.9 million hospital bed-days were utilised by injury separations in 2004–05. These bed-days accounted for a higher proportion of all hospital bed-days (7.9%) 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 7.5% 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.

Unit records classed as community injury separations (principal diagnosis S00–T75 or T79) accounted for 82.9% ( $n = 384,102$ ) of all injury separations in 2004–05 (Table 1.1). More community injury separations involved males (223,634 vs. 160,463 for females), but more bed-days were utilised by females due to community injury (738,897 vs. 690,814 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 (23.6%) than the number of complications separations contributed to all injury separations (16.1%).

Residual injury separations accounted for a very small proportion of both injury separations and hospital bed-days due to injury (1.0% and 0.5%, respectively).

## 2 Community injury, Australia

ICD-10-AM inclusion criteria:

- Principal diagnosis [S00–T75](#) or [T79](#).

Hospital separations with a principal diagnosis in the ICD-10-AM range S00–T75 or T79 are injuries most likely sustained in the community (as opposed to injuries resulting from complications of medical care or sequelae of trauma). Using this criterion, 384,102 community injury separations were identified for the period 2004–05 (Table 2.1). These separations represented 82.9% of all hospital separations due to injury and poisoning in 2004–05 and 5.5% of the 7,018,850 episodes of hospital care, for any cause, in Australia in this year.

Due to inter-hospital transfers and re-admissions, the total number of hospital separations attributed to injury and poisoning in the community does not equate to the number of injurious events resulting in serious injury. As in previous years (see Berry & Harrison 2006a; Berry & Harrison 2007a), this report minimises double-counting injury events by omitting records which have a mode of admission of 'transfer from another acute hospital'. Records with mode of admission of 'transfer from another acute hospital', are, however, retained when estimating total bed-days attributable to community injury.

Accordingly, it is estimated that 356,260 community injury events (cases) resulted in inpatient hospital care in the 2004–05 period (Table 2.1).

**Table 2.1: Key indicators for hospitalised community injury: males, females and persons, Australia 2004–05**

Key indicators	Males	Females	Persons
Total number of hospital separations due to injury and poisoning	264,139	199,410	463,554 <sup>(a)</sup>
Community injury hospital separations (S00–T75 or T79)	223,634	160,463	384,102 <sup>(a)</sup>
Community injury separations as proportion of all injury separations	84.7%	80.5%	82.9%
Estimated number of community injury cases <sup>(b)</sup>	207,624	148,631	356,260 <sup>(a)</sup>
Cases per 100,000 population	2,065.9	1,462.9	1,762.8
Cases per 100,000 population—age-standardised <sup>(c)</sup>	2,091.5	1,369.9	1,747.4
Total patient-days due to community injury <sup>(d), (e), (f)</sup>	690,814	734,668	1,425,498
Mean patient-days per case	3.3	4.9	4.0

(a) Includes 5 separations for which sex was not reported.

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

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

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

(e) Includes 16 days of patient care for which sex was not reported.

(f) Excludes 1 separation with length of stay 4,229 days.

## 2.1 Community injury cases

ICD-10-AM inclusion criteria:

- Principal diagnosis [S00–T75](#) or [T79](#), and
- Mode of admission other than ‘transfer from another acute hospital’.

As described above, an estimated 356,260 injury cases most likely occurring in the community resulted in hospitalisation in 2004–05. The age-standardised rate of these serious injury events was 1,747.4 per 100,000 population.

### Age and sex

The age and sex profile of hospitalised community injury in 2004–05 was very similar to that presented for earlier years (Helps et al. 2002; Berry & Harrison 2006a; Berry & Harrison 2007a). Males accounted for a higher proportion of injury cases (58.3%,  $n = 207,624$ ) than females ( $n = 148,631$ ) and the age-standardised rate of community injury cases for males (2,091.5 per 100,000 population) was also higher than that for females (1,369.9 per 100,000, a M:F rate ratio of 1.5 to 1).

Male age-specific rates increased in the teens, were highest in the early 20s, then declined until 70 years of age (Figure 2.1). Age-specific rates for females followed a similar pattern, but rate increases in the teens and early 20s were lower than those observed for males. In every age-group until the age of 65 years, the rates for females were lower than those for males. From the age of 75 years, however, the age-specific rates of community injury for females were substantially higher than those for males in every age-group. The age-standardised rate of hospitalised injury cases for persons aged 75 years and older overall was 4,797.5 per 100,000 population.

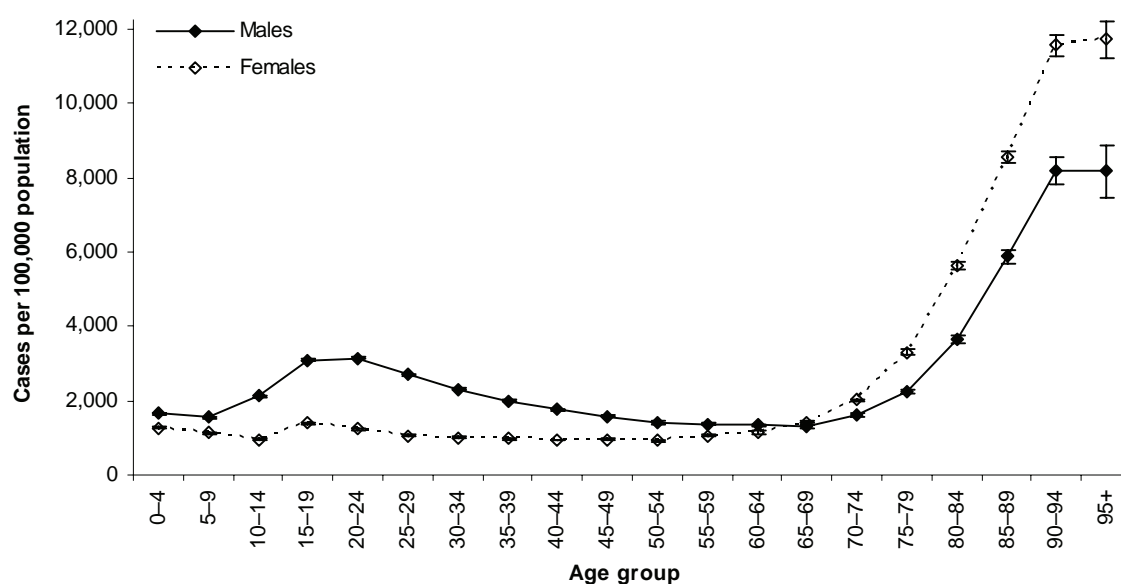


Figure 2.1: Age-specific rates ( $\pm$  95% CI) of community injury cases: males and females, Australia 2004–05

## External cause

The most common type of external cause attributed to hospitalised community injury cases in 2004–05 described unintentional falls (35.6% of injury cases,  $n = 126,805$ ). Unlike most other types of community injury, injuries due to falls were more common for females than for males (Table 2.2). Unintentional falls were the most frequent external cause type for both younger (0–14 years) and older (> 44 years) Australians (Table 2.3). Transportation was the second most common *specific* external cause type for hospitalised community injury for both males and females. Transportation was the leading cause of injury for persons aged 15–44 years. Overall, unintentional injuries accounted for 85.9% of all community injury cases in 2004–05.

Approximately one in eight community injury cases were due to intentional injuries in 2004–05 (13.6%,  $n = 48,305$ ). As in previous years, males were more frequently hospitalised due to assault (7.3% of cases involving males,  $n = 15,152$ ) while females were more frequently hospitalised for self-inflicted injuries (10.0% of cases involving females,  $n = 14,866$ ). Hospitalised intentional injury cases were most common for Australians aged 25–44 years.

Less than one per cent of community injury cases hospitalised in 2004–05 were not assigned external cause codes fitting into the ten defined external cause categories (0.6%,  $n = 2,045$ ). Some of these cases did not have an external cause coded or had a first-listed external cause code outside of the appropriate V01–Y89 range (19.5%,  $n = 399$ ). Most, however, had a first external cause describing complications of surgical and medical care (80.5%,  $n = 1,646$ ). The very small number of cases in this group supports our understanding that hospitalised injuries assigned a principal diagnosis in the range S00–T75 or T79 most likely occur in a community setting.

**Table 2.2: Major external cause groups for community injury cases: males, females and persons, Australia 2004–05**

External cause	Males	Females	Persons *
<b>Unintentional injuries</b>			
Transportation	34,738 (16.7%)	16,269 (10.9%)	51,009 (14.3%)
Drowning	290 (0.1%)	166 (0.1%)	456 (0.1%)
Poisoning, pharmaceuticals	3,087 (1.5%)	3,722 (2.5%)	6,809 (1.9%)
Poisoning, other substances	1,380 (0.7%)	939 (0.6%)	2,319 (0.7%)
Falls	56,830 (27.4%)	69,973 (47.1%)	126,805 (35.6%)
Fires, burns & scalds	3,472 (1.7%)	1,930 (1.3%)	5,402 (1.5%)
Other unintentional injuries	80,618 (38.8%)	32,491 (21.9%)	113,110 (31.7%)
<i>Total unintentional injuries</i>	<i>180,415 (86.9%)</i>	<i>125,490 (84.4%)</i>	<i>305,910 (85.9%)</i>
<b>Intentional injuries</b>			
Intentional, self-inflicted (self-harm)	9,017 (4.3%)	14,866 (10.0%)	23,883 (6.7%)
Intentional, inflicted by another (assault)	15,152 (7.3%)	5,266 (3.5%)	20,418 (5.7%)
Undetermined intent	1,832 (0.9%)	2,172 (1.5%)	4,004 (1.1%)
<i>Total intentional injuries</i>	<i>26,001 (12.5%)</i>	<i>22,304 (15.0%)</i>	<i>48,305 (13.6%)</i>
Other or missing	1,208 (0.6%)	837 (0.6%)	2,045 (0.6%)
<b>Total community injury cases</b>	<b>207,624</b>	<b>148,631</b>	<b>356,260</b>

\* Persons includes 5 cases for which sex was not reported.



**Table 2.3: Major external cause groups for community injury cases by age, Australia 2004–05**

External cause	0–4	5–14	15–24	25–44	45–64	65+	All ages *
<b>Unintentional injuries</b>							
Transportation	966	7,580	13,428	16,114	8,373	4,547	51,009
Drowning	212	60	59	53	46	26	456
Poisoning, pharmaceuticals	1,481	267	1,179	1,964	1,025	892	6,809
Poisoning, other substances	421	112	429	713	404	240	2,319
Falls	7,110	16,764	8,053	13,365	18,837	62,676	126,805
Fires, burns & scalds	1,384	692	797	1,311	726	492	5,402
Other unintentional injuries	6,602	12,554	23,684	36,290	22,205	11,775	113,110
<b>Intentional injuries</b>							
Intentional, self inflicted	9	643	6,948	10,808	4,600	875	23,883
Intentional, inflicted by another	252	449	6,680	10,148	2,541	348	20,418
Undetermined intent	68	134	1,163	1,770	657	212	4,004
Other or missing	40	64	149	377	623	792	2,045
<b>Total community injury cases</b>	<b>18,545</b>	<b>39,319</b>	<b>62,569</b>	<b>92,913</b>	<b>60,037</b>	<b>82,875</b>	<b>356,260</b>

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

\* All ages includes 2 cases for which age was not reported.

## Place and activity

The most common specified place of occurrence for community injury cases was the home, with more than a quarter of all hospitalised cases occurring here (26.4%, see Table 2.4). The home was a more common place of occurrence for cases involving females (36.2%,  $n = 53,871$ ) than for males (19.4%,  $n = 40,260$ ).

Consistent with a high number of transportation-related injuries, 10.4% of community injury cases occurred on public streets and highways ( $n = 37,033$ ). Injuries reported to occur in streets and highways, as well as sports and athletics areas, trade and construction areas and farms, accounted for higher proportions of cases involving males than for cases involving females.

While only 0.1% of community injury cases lacked a place of occurrence code, an unfortunately large proportion of community injuries (39.9%,  $n = 142,203$ ) had an 'unspecified' place of occurrence recorded. Injuries occurring in an unspecified place accounted for a higher proportion of cases involving males (44.3%,  $n = 91,926$ ) than cases involving females (33.8%,  $n = 50,276$ ).

While one in ten community injury cases occurred whilst the person was engaged in sporting activities (10.5%,  $n = 37,253$ ), the most frequent types of activity reported for community injury cases were 'other' and 'unspecified' activities (Table 2.5). Males were more commonly injured while playing sport (14.0% of cases involving males,  $n = 28,977$ ) than females (5.6%,  $n = 8,275$ ).

Another ten per cent of community injury cases occurred while the person was engaged in work of some kind (either for income or not; 9.8% of cases,  $n = 34,944$ ). Males were more commonly injured while working for income than females (9.4% vs. 2.0% respectively) while similar proportions of males and females were injured while engaged in 'other types of work' (3.5% vs. 3.4% respectively).



**Table 2.4: Place of occurrence for community injury cases: males, females and persons, Australia 2004–05**

Place of occurrence	Males	Females	Persons *
Home	40,260 (19.4%)	53,871 (36.2%)	94,133 (26.4%)
Residential institution	4,404 (2.1%)	11,623 (7.8%)	16,027 (4.5%)
School	4,309 (2.1%)	2,424 (1.6%)	6,733 (1.9%)
Health Service area	1,910 (0.9%)	2,424 (1.6%)	4,334 (1.2%)
Other specified institution & public administrative area	497 (0.2%)	601 (0.4%)	1,098 (0.3%)
Sports & athletics area	15,655 (7.5%)	3,867 (2.6%)	19,522 (5.5%)
Street & highway	23,025 (11.1%)	14,006 (9.4%)	37,033 (10.4%)
Trade & service area	6,957 (3.4%)	3,964 (2.7%)	10,921 (3.1%)
Industrial & construction area	5,764 (2.8%)	374 (0.3%)	6,138 (1.7%)
Farm	2,774 (1.3%)	699 (0.5%)	3,473 (1.0%)
Other specified place of occurrence	9,919 (4.8%)	4,353 (2.9%)	14,272 (4.0%)
Unspecified place of occurrence	91,926 (44.3%)	50,276 (33.8%)	142,203 (39.9%)
Place not reported/not applicable	224 (0.1%)	149 (0.1%)	373 (0.1%)
<b>Total</b>	<b>207,624</b>	<b>148,631</b>	<b>356,260</b>

\* Persons includes 5 cases for which sex was not reported.

**Table 2.5: Activity at time of occurrence for community injury cases: males, females and persons, Australia 2004–05**

Activity	Males	Females	Persons
While engaged in sports	28,977 (14.0%)	8,275 (5.6%)	37,253 (10.5%)
While engaged in leisure	4,174 (2.0%)	2,355 (1.6%)	6,529 (1.8%)
While working for income	19,553 (9.4%)	2,959 (2.0%)	22,512 (6.3%)
While engaged in other types of work	7,317 (3.5%)	5,115 (3.4%)	12,432 (3.5%)
While resting, sleeping, eating, etc.	6,965 (3.4%)	10,737 (7.2%)	17,702 (5.0%)
Other specified activity	37,362 (18.0%)	34,126 (23.0%)	71,488 (20.1%)
Unspecified activity	101,946 (49.1%)	84,130 (56.6%)	186,080 (52.2%)
Activity not reported/not applicable	1,330 (0.6%)	934 (0.6%)	2,264 (0.6%)
<b>Total</b>	<b>207,624</b>	<b>148,631</b>	<b>356,260</b>

\* Persons includes 5 cases for which sex was not reported.

## Principal diagnosis

The most common type of injury resulting in hospitalisation due to a community injury was a head injury (18.2% of cases,  $n = 64,963$ . See Table 2.6). Head injuries were the most common principal diagnosis for both males (20.7% of cases involving males) and females (14.8%). Head injuries were common for people of all ages (Table 2.7), and were the most frequent type of principal diagnosis for young Australians aged 0–4 years and 15–24 years.

The second most common type of principal diagnosis for males described injuries to the wrist and hand (17.6%,  $n = 36,485$ ) while the second most common type of principal diagnosis for females was an injury to the hip and thigh (12.7%,  $n = 18,855$ ). This difference was due to the particularly high rate of injury for older females and the frequency of unintentional falls at this age; injuries to the hip and thigh being the most common type of principal diagnosis for Australians aged 65 years and older (Table 2.7).

That the third most common type of principal diagnosis for females was poisoning by drugs, medicaments and biological substances (12.3%,  $n = 18,312$ ) similarly reflects the preponderance of females involved in injuries attributed to intentional self-harm. The third most common type of principal diagnosis for males was an injury of the knee or lower leg (12.0%,  $n = 24,972$ ).

**Table 2.6: Principal diagnosis groups for community injury cases: males, females and persons, Australia 2004–05**

Principal diagnosis	Males	Females	Persons *
Injuries to the head	42,957 (20.7%)	22,006 (14.8%)	64,963 (18.2%)
Injuries to the neck	4,258 (2.1%)	3,164 (2.1%)	7,422 (2.1%)
Injuries to the thorax	8,349 (4.0%)	5,731 (3.9%)	14,082 (4.0%)
Injuries to the abdomen, lower back, lumbar spine & pelvis	10,113 (4.9%)	10,220 (6.9%)	20,333 (5.7%)
Injuries to the shoulder & upper arm	13,014 (6.3%)	9,944 (6.7%)	22,958 (6.4%)
Injuries to the elbow & forearm	21,660 (10.4%)	18,036 (12.1%)	39,697 (11.1%)
Injuries to the wrist & hand	36,485 (17.6%)	10,766 (7.2%)	47,252 (13.3%)
Injuries to the hip & thigh	10,900 (5.2%)	18,855 (12.7%)	29,756 (8.4%)
Injuries to the knee & lower leg	24,972 (12.0%)	16,688 (11.2%)	41,660 (11.7%)
Injuries to the ankle & foot	7,701 (3.7%)	4,692 (3.2%)	12,393 (3.5%)
Injuries involving multiple body regions	216 (0.1%)	162 (0.1%)	378 (0.1%)
Injuries to unspecified parts of trunk, limb or body region	1,250 (0.6%)	1,001 (0.7%)	2,251 (0.6%)
Effects of foreign body entering through natural orifice	4,014 (1.9%)	2,682 (1.8%)	6,696 (1.9%)
Burns	4,272 (2.1%)	2,156 (1.5%)	6,428 (1.8%)
Frostbite	25 (0.0%)	11 (0.0%)	36 (0.0%)
Poisoning by drugs, medicaments & biological substances	10,762 (5.2%)	18,312 (12.3%)	29,074 (8.2%)
Toxic effects of non-medical substances	4,017 (1.9%)	2,736 (1.8%)	6,753 (1.9%)
Other & unspecified effects of external causes	1,894 (0.9%)	1,120 (0.8%)	3,014 (0.8%)
Certain early complications of trauma	765 (0.4%)	349 (0.2%)	1,114 (0.3%)
<b>Total</b>	<b>207,624</b>	<b>148,631</b>	<b>356,260</b>

\* Persons includes 5 cases for which sex was not reported.

**Table 2.7: Principal diagnosis groups for community injury cases by age, Australia 2004–05**

Principal diagnosis	0–4	5–14	15–24	25–44	45–64	65+	All ages <sup>†</sup>
Injuries to the head	6,687	7,437	14,314	16,490	8,041	11,993	64,963
Injuries to the neck	89	586	1,734	2,531	1,336	1,146	7,422
Injuries to the thorax	55	294	1,569	3,274	3,311	5,579	14,082
Injuries to the abdomen, lower back, lumbar spine & pelvis	281	1,349	2,772	4,565	3,122	8,244	20,333
Injuries to the shoulder & upper arm	1,072	2,946	3,058	4,666	4,115	7,101	22,958
Injuries to the elbow & forearm	1,685	12,896	5,004	6,660	6,031	7,421	39,697
Injuries to the wrist & hand	1,678	4,046	11,962	17,289	9,053	3,224	47,252
Injuries to the hip & thigh	484	964	1,129	1,832	2,802	22,545	29,756
Injuries to the knee & lower leg	502	3,520	7,496	12,760	9,095	8,287	41,660
Injuries to the ankle & foot	545	1,681	2,315	3,833	2,505	1,514	12,393
Injuries involving multiple body regions	9	24	*	132	*	92	378
Injuries to unspecified parts of trunk, limb or body region	75	179	359	586	429	623	2,251
Effects of foreign body entering through natural orifice	1,411	942	449	1,202	1,442	1,250	6,696
Burns	1,482	790	994	1,682	967	513	6,428
Frostbite	0	0	*	34	*	0	36
Poisoning by drugs, medicaments & biological substances	1,523	833	7,480	11,831	5,427	1,979	29,074
Toxic effects of non-medical substances	570	611	1,200	2,262	1,480	630	6,753
Other & unspecified effects of external causes	376	167	464	950	606	451	3,014
Certain early complications of trauma	21	54	195	334	227	283	1,114
<b>Total</b>	<b>18,545</b>	<b>39,319</b>	<b>62,569</b>	<b>92,913</b>	<b>60,037</b>	<b>82,875</b>	<b>356,260</b>

Note: Shading denotes highest category for each age group.

\* Small cell counts have been suppressed.

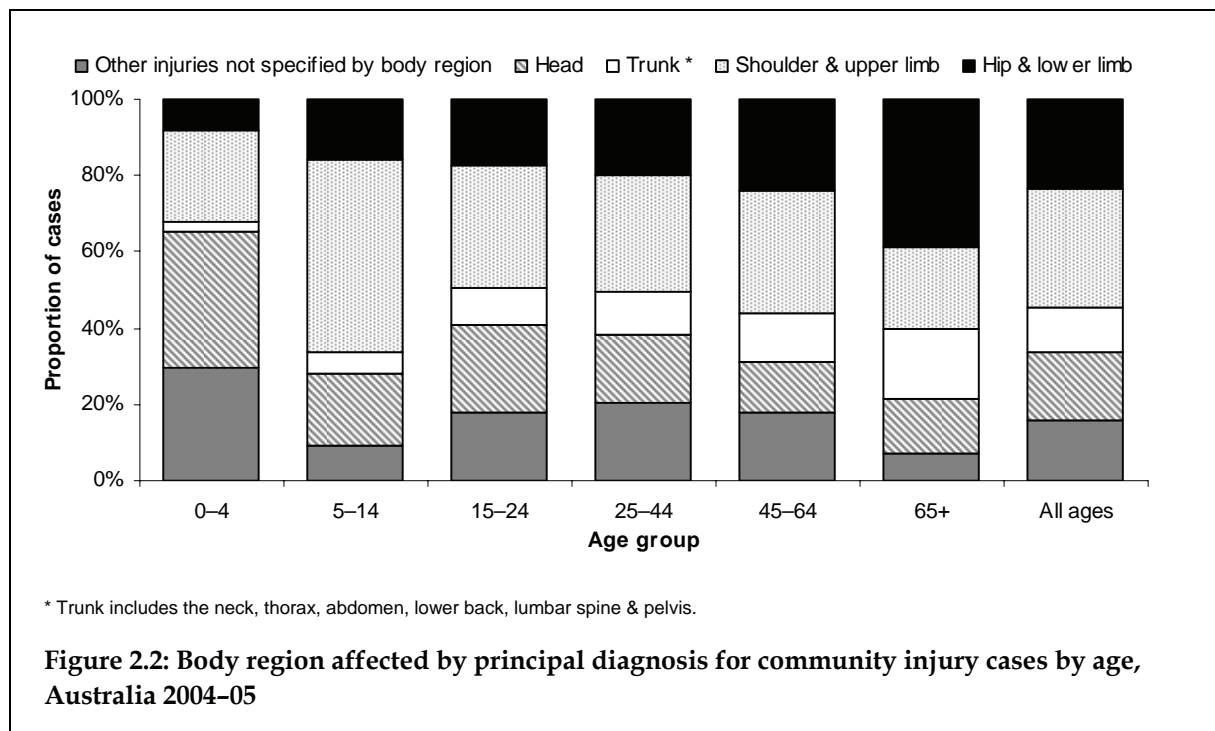
† All ages includes 2 cases for which age was not reported.

## Body region

As in previous reports (Helps et al. 2002; Berry & Harrison 2006a; Berry & Harrison 2007a), the region of the body injured is classified here according to the principal diagnosis for the record. If a person is admitted due to multiple injuries, the most serious injury is normally coded as principal diagnosis and others as additional diagnoses. Our classification of 'other injuries not specified by body part' therefore generally refers to systemic injuries such as drowning and submersion or poisoning rather than injuries to multiple parts of the body.

The shoulder and upper limb region was the most commonly injured body region for community injury cases requiring hospitalisation in 2004–05. This body region was injured in a higher proportion of cases involving males (34.3%,  $n = 71,159$ ) than for cases involving females (26.1%,  $n = 38,746$ ). Injuries to the hip and lower limb region were also common, and this was the most frequently injured body region for females (27.1% vs. 21.0% for males). As described above, head injuries were more common for males than for females.

As can be seen in Figure 2.2, the proportion of community injury cases involving injuries to the hip and thigh and trunk region increased with age. Head injuries accounted for a large proportion of injuries in children aged 0–4 years compared to other age groups and injuries to the shoulder and upper arm were common in children 5–14 years.



## High threat to life

Hospitalised injuries with an International Classification of Diseases-based injury severity score (ICISS) of less than 0.941 are considered to represent a high threat to life (Stephenson et al. 2003; Stephenson et al. 2004, also section 9.5).

In 2004–05, one in six community injury cases (16.4%,  $n = 58,550$ ) were classed as high threat to life cases (Table 2.8). Similar number of high threat to life cases involved males ( $n = 29,970$ ) and females ( $n = 28,577$ ). As more males than females were hospitalised due to community injury overall, high threat to life cases represented a smaller proportion of all cases involving males (14.4%) than for females (19.2%).

Falls and transportation-related injuries were the most common causes of high threat to life cases for both males and females, and accounted for more than three-quarters of high threat to life community injuries for persons overall (78.0%,  $n = 45,642$ ). About a quarter of all falls and transportation-related community injury cases were considered to represent a high threat to life (Table 2.8). Nearly all cases of drowning and submersion were considered of high threat (90.8%, 414) while less than two per cent of cases of poisoning by pharmaceuticals were judged as being a high threat to life (1.9%). Interestingly, while more females are admitted to hospital due to self-inflicted injuries than males (14,866 vs. 9,017, respectively), more self-harm cases involving males were classed as being of high threat to life; 7.1% of self-harm cases for males were a high threat to life, compared to only 2.5% of female cases.

High threat to life transportation injuries were more common than high threat to life fall-related injuries for children aged 5–14, but otherwise the age-related patterns of high threat to life cases was similar to that observed for all community injury (Table 2.3 previously).

**Table 2.8: Major external cause groups for high threat to life <sup>(a)</sup> community injury cases: males, females and persons, Australia 2004–05**

External cause	Males		Females		Persons <sup>(b)</sup>	
	Count	Per cent of type	Count	Per cent of type	Count	Per cent of type
<b>Unintentional injuries</b>						
Transportation	9,512	27.4	4,052	24.9	13,566	26.6
Drowning	259	89.3	155	93.4	414	90.8
Poisoning, pharmaceuticals	67	2.2	59	1.6	126	1.9
Poisoning, other substances	105	7.6	44	4.7	149	6.4
Falls	11,588	20.4	20,487	29.3	32,076	25.3
Fires, burns & scalds	979	28.2	468	24.2	1,447	26.8
Other unintentional injuries	3,205	4.0	1,858	5.7	5,063	4.5
<i>Total unintentional injuries</i>	<i>25,715</i>	<i>14.3</i>	<i>27,123</i>	<i>21.6</i>	<i>52,841</i>	<i>17.3</i>
<b>Intentional injuries</b>						
Intentional, self inflicted	639	7.1	376	2.5	1,015	4.2
Intentional, inflicted by another	3,362	22.2	884	16.8	4,246	20.8
Undetermined intent	108	5.9	72	3.3	180	4.5
<i>Total intentional injuries</i>	<i>4,109</i>	<i>15.8</i>	<i>1,332</i>	<i>6.0</i>	<i>5,441</i>	<i>11.3</i>
Other and/or missing	146	12.1	122	14.6	268	13.1
<b>Total community injury cases</b>	<b>29,970</b>	<b>14.4</b>	<b>28,577</b>	<b>19.2</b>	<b>58,550</b>	<b>16.4</b>

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

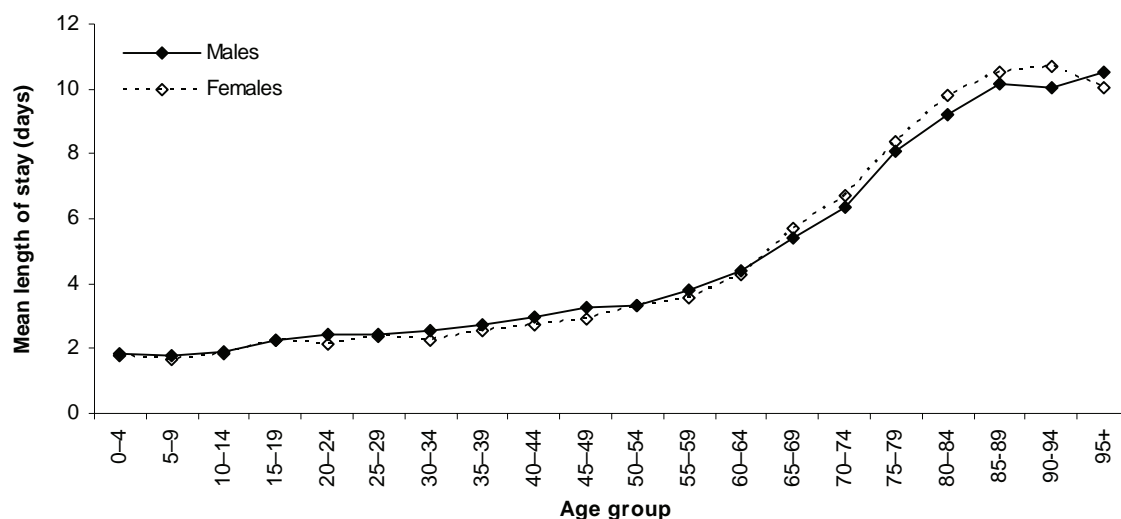
(b) Persons includes 3 cases for which sex was not reported.

## Length of stay

'Patient-days' are the number of full or partial days a patient received care during their hospital admission. Unlike the previous sections, which discuss the estimated number of cases of hospitalised injury in 2004–05, analysis of patient-days includes the inward transfer separations omitted from the case analyses (as these transfers also contribute to the total *burden* of hospital care due to community injury). Accordingly, mean lengths of stay per injury case have been calculated in this report by dividing the total number of patient-days attributed to community injury separations in 2004–05 by the estimated number of cases.

The total number of patient-days attributed to hospitalised community injury in 2004–05 was 1,425,498\*. Episodes of care for community injuries in 2004–05 were frequently short; a third of records directly related to community injury separated from hospital on the same day as admitted (34.2%,  $n = 131,233$ ) and nearly two-thirds of separations, including the same-day separations, had a length of stay of only one day (62.5%,  $n = 239,941$ ). Only five per cent of episodes of care due to community injury required a hospital stay of more than a fortnight (5.3%,  $n = 20,237$ ).

While a larger proportion of the estimated number of community injury cases involved males (58.3%), males accounted for only 48.5% of patient-days due to community injury ( $n = 690,814$ ). Most likely due to the high rate of injury cases for older females, 51.5% of patient-days in 2004–05 ( $n = 734,668$ ) involved females. Accordingly, the mean length of stay per case was shorter for males (3.3 days) than for females (4.9 days). The mean length of stay per case for persons overall was 4.0 days. Mean lengths of stay per case were similar for males and females in each age group, and mean lengths of stay increased markedly with age for both males and females (Figure 2.3).

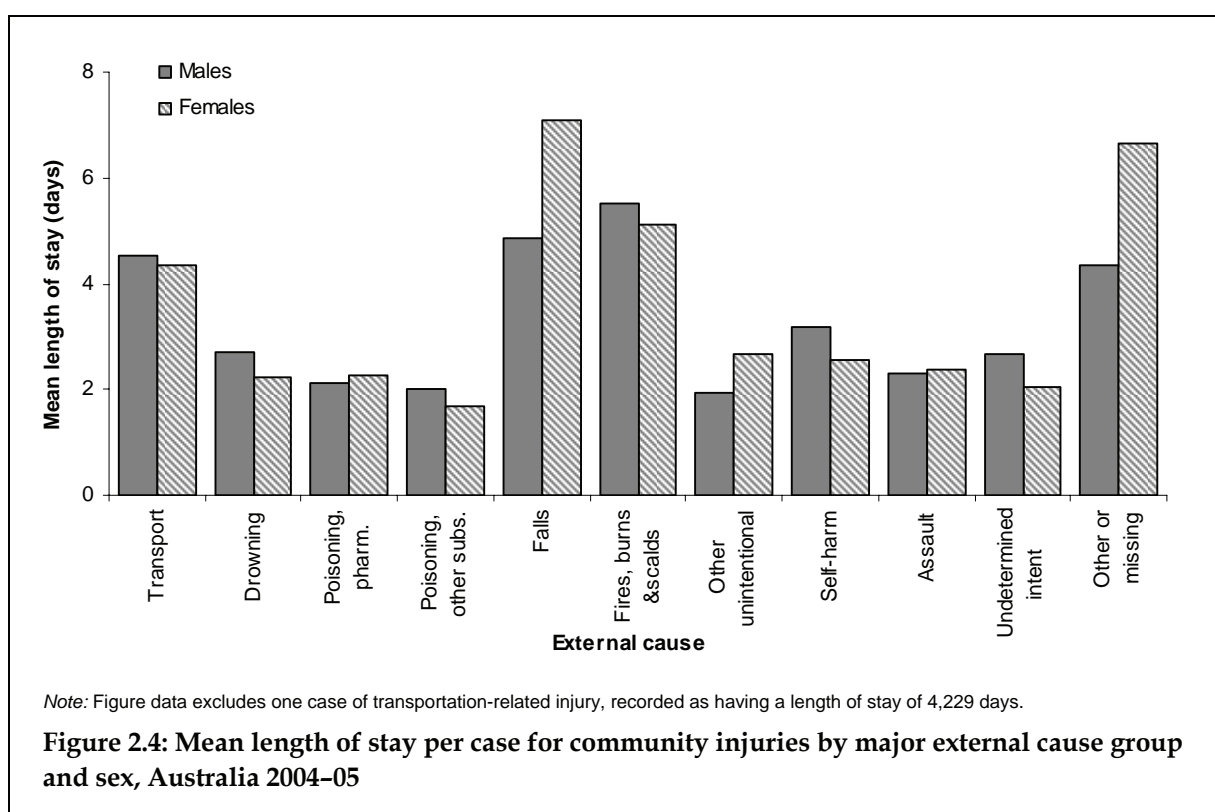


Note: Figure data excludes one case recorded as having a length of stay of 4,229 days.

**Figure 2.3: Mean length of stay per case for community injuries: males and females by age, Australia 2004–05**

\* One separation had a length of stay of 4,229 days recorded (over 11 years) and was omitted from this analysis.

Figure 2.4 describes the mean length of stay per community injury case for males and females according to external cause. Injuries due to falls had the longest mean length of stay per case for both females (7.1 days) and persons overall (6.1 days). Injuries due to fire, burns and scalds had the longest mean length of stay per case for males however (5.5 days, compared to 4.9 days per falls case for males). Injuries due to fire, burns and scalds had the second-longest mean length of stay per case for persons overall (5.4 days). Injuries described here as 'other or missing external causes' (chiefly complications of surgical and medical care) had the third-longest mean length of stay per case (person: 5.3 days) and the mean length of stay for females with these injuries was substantially longer than that for males. Transportation injuries had the fourth-longest mean length of stay per case (4.5 days) and this was similar for both males and females. Length of stay can be considered a rough measure of injury severity and these findings correlate with our analysis of high threat to life community injury cases in the previous section.



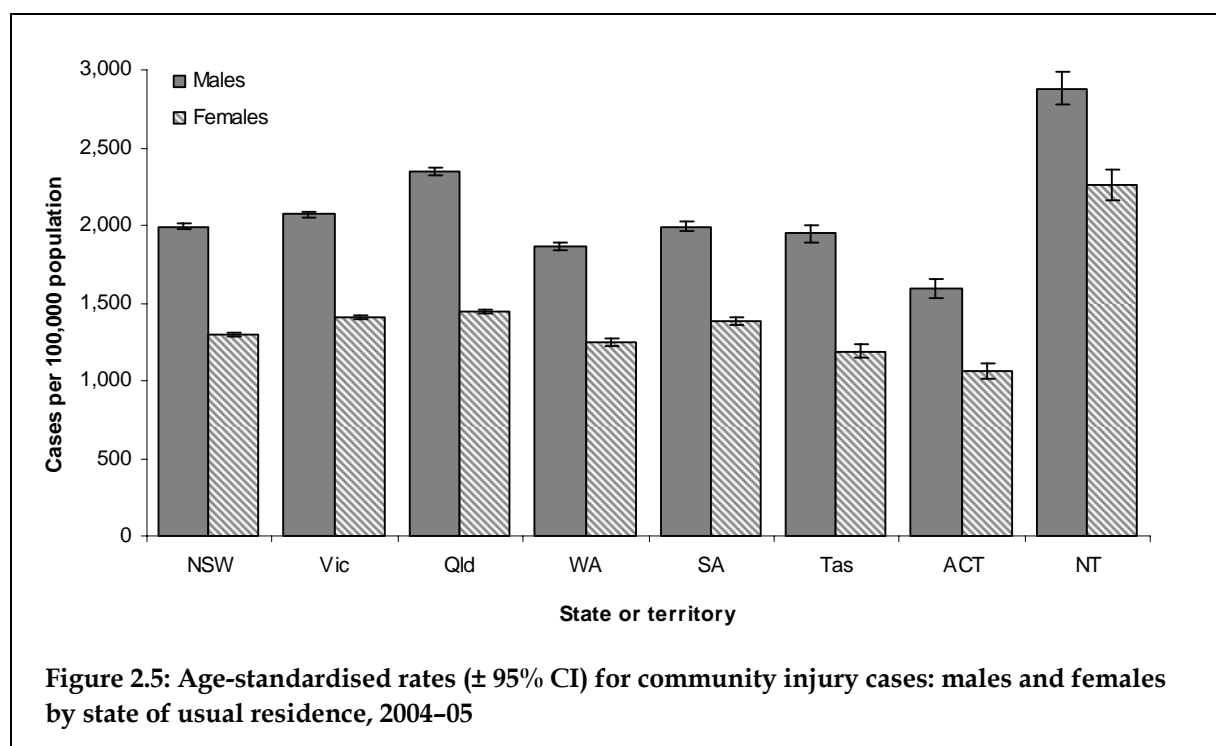


## State of usual residence

Rates of hospitalised community injury cases in 2004–05 were analysed according to the state of usual residence of the patient. This does not necessarily reflect the state in which the injury event or hospitalisation occurred; the person may have been injured (and hospitalised) outside of their state of usual residence (e.g. while on holiday) or the person may have been injured in their home state but hospitalised in a different jurisdiction according to the level of care required or the availability of hospital services. Nonetheless, given the availability of population data at state-level, this method is considered to be the best measure of the distribution of serious injury cases across the nation.

Similar to previous reports (Berry & Harrison 2006a; Berry & Harrison 2007a), residents of the Northern Territory had the highest rate of hospitalised community injury cases in 2004–05 (2,596.6 per 100,000 population), and both male and female rates were significantly higher than those for the other states and territories (Figure 2.5). Rates of hospitalised injury cases for residents of Queensland were also significantly higher than other states and territories (other than the Northern Territory); 1,908.4 per 100,000 population. Again, this significant difference was observed for both males and females resident in Queensland. The lowest rate of hospitalised injury cases in 2004–05 was observed for both males and females resident in the Australian Capital Territory (persons: 1,339.2 per 100,000 population).

Less than 0.2% of community injury cases in 2004–05 ( $n = 693$ ) involved Australians resident in the Cocos and Keeling Islands, Christmas Island and Jervis Bay. Rates were not calculated for these populations. In addition, 2,790 records for community injury cases in 2004–05 did not provide a state of usual residence (0.8% of all cases). It is thought that a large proportion of these cases involved international visitors.



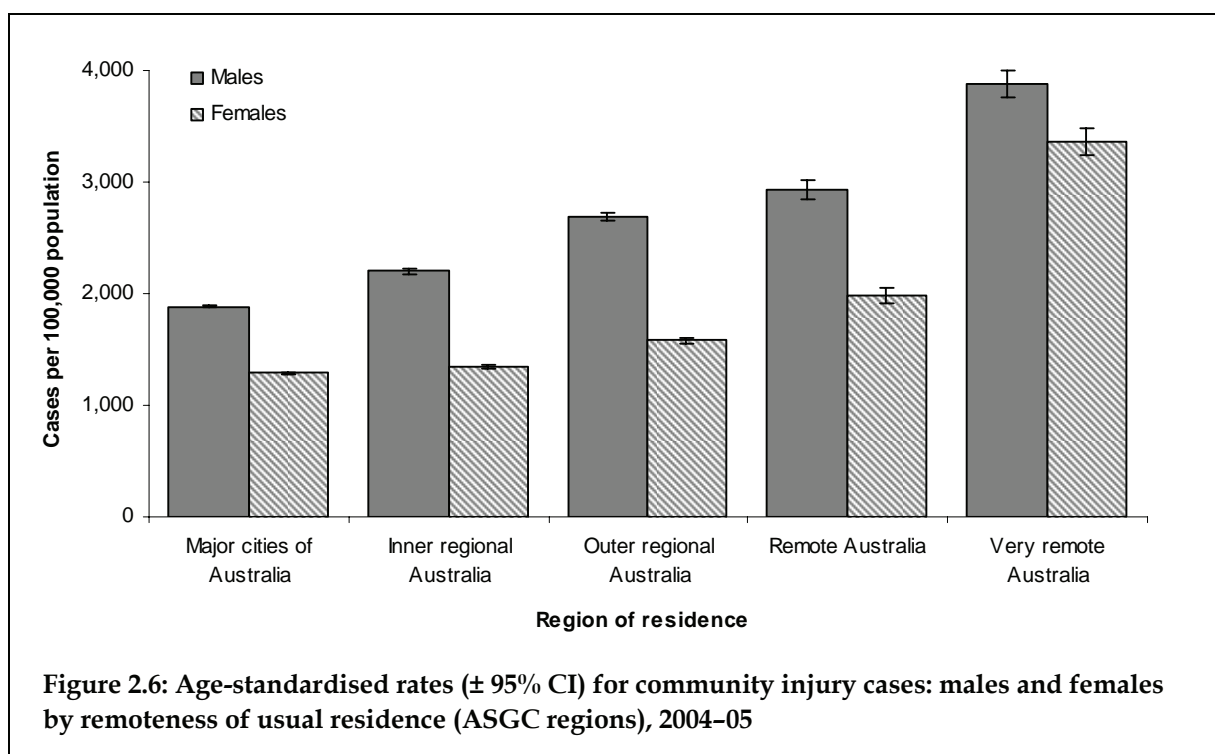


## Remoteness of usual residence

Rates of hospitalised community injury cases were also analysed according to the remoteness classification of the person's usual residence. The Remoteness Structure of the Australian Standard Geographical Classification (ASGC) categorises census collection districts which share common characteristics into broad geographical regions called Remoteness Areas (RAs). The AGSC Remoteness Structure is more fully described in the Data Issues section. As for state of usual residence, the RA of usual residence differs from the RA of hospitalisation for some cases, and will not always be the same as the RA in which the injury was sustained.

The age-standardised rate of hospitalised community injury cases in 2004–05 increased monotonically with increasing remoteness of the person's place of usual residence; the lowest rate was observed for residents of Australia's major cities (1,600.5 per 100,000 population) and the highest rate was observed for residents of Australia's very remote regions (3,644.2 per 100,000). This pattern was also seen for both males and females separately (Figure 2.6). This is similar to patterns observed for rates of hospitalisation and rates of deaths due to injury in previous years (Berry & Harrison 2006a; see also AIHW 2007; Henley et al. 2007). Figure 2.6 suggests that rates for males show a more linear increase with increasing remoteness of usual residence, while rates of community injury cases for females show a more marked increase for residents of very remote areas compared to the other regions of the country.

The high rate of injury morbidity for residents of the more remote areas of Australia may be partly attributable to higher injury risk among Aboriginal and Torres Strait Islander Australians, who comprise a relatively large proportion of the remote area populations (Helps & Harrison 2006). The high rate of hospitalised injury for residents of the Northern Territory, described in the previous section, is most likely related to remoteness factors; the majority of the Territory being classed as Remote or Very remote (ABS 2004; AIHW 2004).



## 3 Unintentional injury

Most community injury cases separating from hospital in 2004–05 were due to unintentional external causes (85.9%,  $n = 305,910$ ). The age-standardised rate of unintentional injury cases was 1,496.6 per 100,000 population. A higher proportion of unintentional injury cases involved males (59.0%,  $n = 180,415$ ) and males had a higher rate of hospitalised unintentional injuries (1,820.8 per 100,000) than females (1,138.6 per 100,000, giving a M:F rate ratio of 1.6 to 1).

### 3.1 Transportation injury cases

ICD-10-AM inclusion criteria:

- Principal diagnosis [S00–T75](#) or [T79](#), and
- First external cause [V01–V99](#), and
- Mode of admission other than ‘transfer from another acute hospital’.

**Table 3.1: Key indicators for hospitalised unintentional transport injury: males, females and persons, Australia 2004–05**

Key indicators	Males	Females	Persons <sup>(a)</sup>
Total number of hospital separations due to transport injury	38,341	17,713	56,056
Transport separations as proportion of all community injury separations	17.1%	11.0%	14.6%
Estimated number of transport injury cases <sup>(b)</sup>	34,738	16,269	51,009
Cases per 100,000 population	345.6	160.1	252.4
Cases per 100,000 population—age-standardised <sup>(c)</sup>	345.2	160.4	253.4
Total patient-days due to transport injury <sup>(d), (e), (f)</sup>	157,395	70,837	228,234
Mean patient-days per case	4.5	4.4	4.5

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

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

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

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

(e) Includes 2 days of patient care for which sex was not reported.

(f) Excludes 1 separation with length of stay 4,229 days.

This chapter defines *unintentional* transportation injuries as community injuries (principal diagnosis S00–T75 or T79) that have a first external cause in the range V01–V99 (and a mode of admission other than transfer from another acute hospital to avoid double-counting of cases). Such cases include those due to land transport (e.g. accidents involving pedestrians, cyclists, cars, trucks, trains etc.  $n = 49,638$ ), water transport (e.g. boats, water-skis, surf-boards etc.  $n = 747$ ) and air transport (e.g. helicopters, planes, gliders, hot air balloons,  $n = 131$ ).

This chapter excludes transport-related injury cases that were not considered to be unintentional, including: intentional self-harm by jumping or lying before a moving object ( $n = 60$ ), intentional self-harm by crashing of motor vehicle ( $n = 54$ ), assault by pushing or placing victim before a moving object and assault by crashing of motor vehicle ( $n = 35$ ),

and falling, lying or running before or into a moving object, undetermined intent and crashing of motor vehicle, undetermined intent ( $n = 5$ ). Sequelae of transport accidents ( $n = 74$ ) are not included here because the focus of this chapter is injury incident in 2004–05.

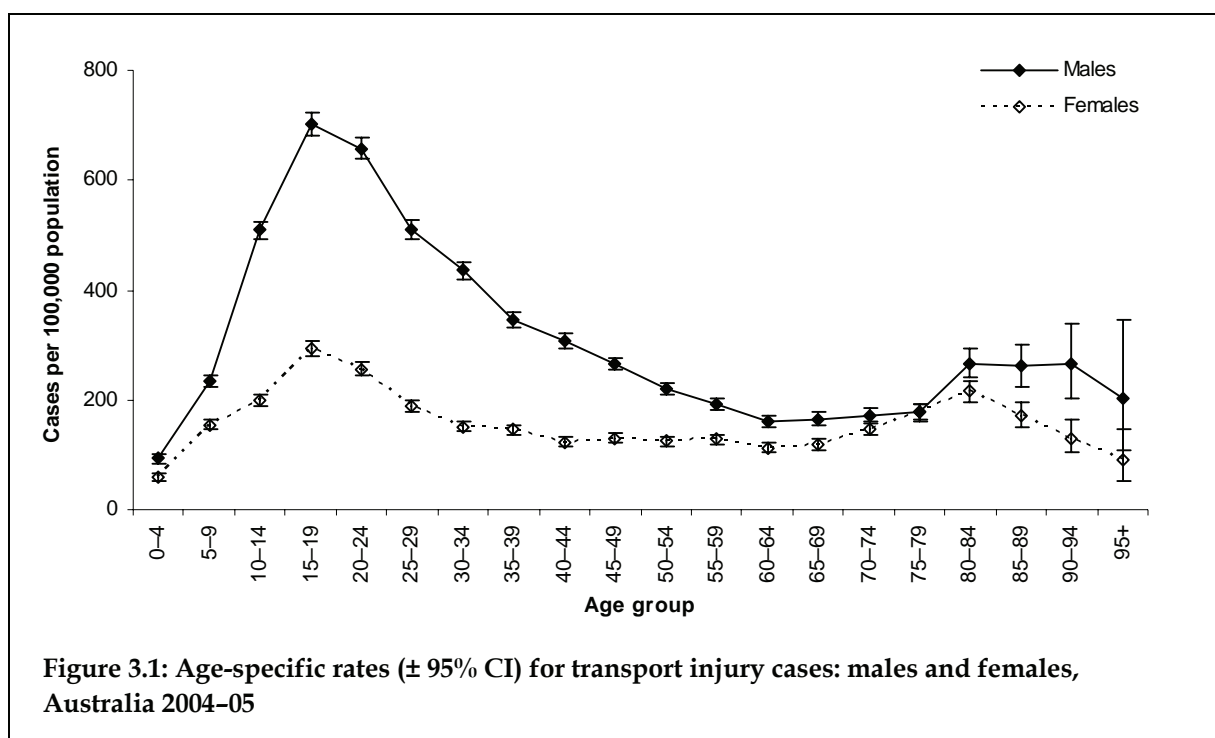
Using the definition above, then, an estimated 51,009 hospitalised injury cases were due to transportation-related external causes in 2004–05 (Table 3.1). The age-standardised rate of hospitalised transport injuries was 253.4 per 100,000 population.

## Transport—age and sex

As for all unintentional injuries, the majority of hospitalised transport injury cases involved males (68.1%,  $n = 34,738$ ). Accordingly, the age-standardised rate of transport injuries was also higher for males (345.2 per 100,000) than for females (160.4 per 100,000), a M:F rate ratio of 2.2.

Age-specific rates of hospitalised transport injury were higher for males than for females at every age other than for the 75–79 years group, where the rates were equal (Figure 3.1). As seen in previous years (Berry & Harrison 2006a; Berry & Harrison 2007a; see also Harrison & Berry 2007), even males 0–4 years of age had a higher rate of hospitalisation due to transport injuries than females. The overall pattern of rates of hospitalised transport injuries by age was analogous for both males and females, however, with the highest age-specific rate observed for the 15–19 years age group. For males aged 15–19 years the age-specific rate of hospitalised transport injuries was 702.4 cases per 100,000 population while for females of this age the rate was 292.8 per 100,000. A second, smaller peak in rates of transport injuries were observed for both males and females in the 80–84 years age group.

More than half of all unintentional transport injury cases in 2004–05 involved people aged between 10–34 years (54.1%,  $n = 27,614$ ).



## Transport—external cause

For all persons admitted to hospital due to transport-related injury cases, 'car occupant injured in a transport accident' (V40–V49) was the most common type of external cause reported (35.9%,  $n = 18,331$ ). The pattern of transport-related external causes was quite different for males and females however (Table 3.2). Injured car occupants accounted for over half of the cases involving females (52.8%) but accounted for less than three in ten transport-related cases for males (28.0%). Conversely, 'motorcycle rider injured in transport accidents' (V20–V29) was the most common type of transport external cause for males (31.1% of cases) while this was only the fifth most common cause of transport injuries for females (6.1%). Similarly, a much higher proportion of cases involving males were due to being a pedal cyclist involved in a transport accidents (20.0% of cases) than for females (10.3%).

On the other hand, a higher proportion of transport injuries involving females were attributed to being an 'animal-rider or occupant of animal-drawn vehicle injured in transport accident' (V80, 13.0%) than for males (3.4%). It is assumed that for most, if not all, of these cases, horses were the animal in question.

Table 3.3 reports the mode of transport of the person injured in a hospitalised transport injury case in 2004–05. Unsurprisingly, car occupants were the people most commonly injured in transport accidents in all age groups but the very youngest. Children aged 0–14 were most commonly injured in transport accidents when riding a pedal cycle ( $n = 3,816$ ), accounting for slightly less than half (44.7%) of transport injuries at this age. Pedestrians accounted for one in five transport cases for people aged 65 years and older ( $n = 819$ , 18.0%), whereas pedestrians accounted for less than one in ten cases (5.5–8.1%) for younger adults. Similarly, nearly a quarter of children aged 0–4 years (23.2%) hospitalised for injuries sustained in transport accidents in 2004–05 were pedestrians.

**Table 3.2: Mode of transport of injured person for unintentional transport injury cases: males, females and persons, Australia 2004–05**

Mode of transport	Males	Females	Persons
Pedestrian	2,341 (6.7%)	1,618 (9.9%)	3,959 (7.8%)
Pedal cycle	6,950 (20.0%)	1,669 (10.3%)	8,619 (16.9%)
Motorcycle	10,818 (31.1%)	1,000 (6.1%)	11,818 (23.2%)
Three-wheeled motor vehicle	41 (0.1%)	26 (0.2%)	67 (0.1%)
Car	9,741 (28.0%)	8,588 (52.8%)	18,331 (35.9%)
Pick-up truck or van	426 (1.2%)	118 (0.7%)	544 (1.1%)
Heavy transport vehicle	721 (2.1%)	53 (0.3%)	774 (1.5%)
Bus	147 (0.4%)	291 (1.8%)	438 (0.9%)
Animal or animal-driven vehicle	1,170 (3.4%)	2,113 (13.0%)	3,283 (6.4%)
Other land transport	1,313 (3.8%)	492 (3.0%)	1,805 (3.5%)
<i>Total land transport</i>	<i>33,668 (96.9%)</i>	<i>15,968 (98.1%)</i>	<i>49,638 (97.3%)</i>
Water transport	593 (1.7%)	154 (0.9%)	747 (1.5%)
Air & space transport	121 (0.3%)	10 (0.1%)	131 (0.3%)
Other & unspecified transport	356 (1.0%)	137 (0.8%)	493 (1.0%)
<b>Total</b>	<b>34,738</b>	<b>16,269</b>	<b>51,009</b>

\* Persons includes 2 cases for which sex was not reported.

**Table 3.3: Mode of transport of injured person for unintentional transport injury cases by age, Australia 2004–05**

Mode of transport	0–4	5–14	15–24	25–44	45–64	65+	All ages <sup>†</sup>
Pedestrian	224	507	742	989	678	819	3,959
Pedal cycle	298	3,518	1,630	1,801	1,066	306	8,619
Motorcycle	41	1,543	3,754	4,899	1,402	179	11,818
Three-wheeled motor vehicle	*	*	13	8	7	35	67
Car	263	722	5,691	5,761	3,445	2,448	18,331
Pick-up truck or van	13	37	139	179	136	40	544
Heavy transport vehicle	*	16	60	359	285	*	774
Bus	9	20	37	52	87	233	438
Animal or animal-driven vehicle	37	815	743	1,057	558	73	3,283
Other land transport	30	211	368	527	410	259	1,805
Water transport	13	49	133	305	195	52	747
Air & space transport	0	*	10	74	43	*	131
Other & unspecified transport	36	138	108	103	61	47	493
<b>Total</b>	<b>966</b>	<b>7,580</b>	<b>13,428</b>	<b>16,114</b>	<b>8,373</b>	<b>4,547</b>	<b>51,009</b>

Note: Shading denotes highest category for each age group.

\* Small cell counts have been suppressed.

† All ages includes 1 case for which age was not reported.

## Transport—place and activity

Not surprisingly, more than half of all hospitalised unintentional transport injury cases were reported to have taken place on public streets and highways (57.8%,  $n = 29,476$ ). Nearly all of these places were public roadways (54.0% of all cases, see Table 3.4). Most likely due to the higher proportion of females injured in car accidents, a greater proportion of females were injured on roadways (61.8% vs. 50.4% cases for males).

Unlike many other types of community injury, very few transport cases occurred in and around the home; 0.8% of cases occurred in the driveway of homes and 2.1% occurred in 'other and unspecified' places in the home. A similar proportion of cases (2.8%,  $n = 1,414$ ) were reported to have occurred on farms and 2.6% of transport cases occurred on racetracks and racecourses ( $n = 1,344$ ). A quarter of all unintentional transport injury cases had an unspecified place of occurrence (25.4%,  $n = 12,958$ ).

More than half of all hospitalised transport injury cases had an unspecified activity recorded (54.9%,  $n = 27,989$ ) and similar proportions of cases for both males and females had an unspecified activity code reported (Table 3.5). One in five transport cases reported an 'other specified activity' code (22.9%,  $n = 11,703$ ), but no further detail is available for cases in this category.

The most frequent specified activity category for transport injury cases was 'while engaged in sport' (15.1% of cases,  $n = 7,709$ ). Wheeled motor sports (e.g. motocross, rallying and riding All Terrain Vehicles) accounted for 5.2% of all transport injuries and wheeled non-motor sports (e.g. cycling and skate-boarding) accounted for another 5.6% of cases. Far greater proportions of cases involving males were ascribed these activity codes than cases involving females. Conversely, a greater proportion of cases involving females were attributed to equestrian sporting activities (6.5% vs. 1.4% of male cases).

**Table 3.4: Place of occurrence for unintentional transport injury cases: males, females and persons, Australia 2004–05**

Place of occurrence	Males	Females	Persons *
Driveway to home	234 (0.7%)	188 (1.2%)	422 (0.8%)
Other & unspecified place in home	736 (2.1%)	326 (2.0%)	1,062 (2.1%)
Residential institution	26 (0.1%)	20 (0.1%)	46 (0.1%)
School	45 (0.1%)	19 (0.1%)	64 (0.1%)
Health Service area	* (0.0%)	* (0.0%)	19 (0.0%)
Other specified institution & public administrative area	* (0.0%)	* (0.0%)	15 (0.0%)
Sporting grounds (outdoor)	174 (0.5%)	40 (0.2%)	214 (0.4%)
Racetrack & racecourse	1,209 (3.5%)	135 (0.8%)	1,344 (2.6%)
Equestrian facility	18 (0.1%)	88 (0.5%)	106 (0.2%)
Skating rink	100 (0.3%)	10 (0.1%)	110 (0.2%)
Other & unspecified sports & athletic areas	161 (0.5%)	23 (0.1%)	184 (0.4%)
<i>Total sports &amp; athletic areas</i>	<i>1,662 (4.8%)</i>	<i>296 (1.8%)</i>	<i>1,958 (3.8%)</i>
Roadway	17,513 (50.4%)	10,050 (61.8%)	27,565 (54.0%)
Footpath (sidewalk)	338 (1.0%)	230 (1.4%)	568 (1.1%)
Cycleway	116 (0.3%)	39 (0.2%)	155 (0.3%)
Other specified public highway, street or road	355 (1.0%)	153 (0.9%)	508 (1.0%)
Unspecified public highway, street or road	456 (1.3%)	224 (1.4%)	680 (1.3%)
<i>Total street &amp; highway</i>	<i>18,778 (54.1%)</i>	<i>10,696 (65.7%)</i>	<i>29,476 (57.8%)</i>
Trade & service area	170 (0.5%)	94 (0.6%)	264 (0.5%)
Industrial & construction area	187 (0.5%)	8 (0.0%)	195 (0.4%)
Farm	1,071 (3.1%)	343 (2.1%)	1,414 (2.8%)
Area of still water	19 (0.1%)	5 (0.0%)	24 (0.0%)
Stream of water	82 (0.2%)	20 (0.1%)	102 (0.2%)
Large area of water	290 (0.8%)	89 (0.5%)	379 (0.7%)
Beach	201 (0.6%)	47 (0.3%)	248 (0.5%)
Forest	250 (0.7%)	24 (0.1%)	274 (0.5%)
Desert & other specified countryside	382 (1.1%)	81 (0.5%)	463 (0.9%)
Parking lot	77 (0.2%)	78 (0.5%)	155 (0.3%)
Other specified place of occurrence	1,125 (3.2%)	315 (1.9%)	1,440 (2.8%)
Unspecified place of occurrence	9,355 (26.9%)	3,603 (22.1%)	12,958 (25.4%)
Place not reported/not applicable	24 (0.1%)	7 (0.0%)	31 (0.1%)
<b>Total</b>	<b>34,738</b>	<b>16,269</b>	<b>51,009</b>

\* Persons includes 2 cases for which sex was not reported.

\* Small cell counts have been suppressed.



**Table 3.5: Reported activity for unintentional transport injury cases: males, females and persons, Australia 2004–05**

Activity	Males	Females	Persons *
Boating sports	98 (0.3%)	37 (0.2%)	135 (0.3%)
Individual water sports	179 (0.5%)	22 (0.1%)	201 (0.4%)
Equestrian activities	482 (1.4%)	1,050 (6.5%)	1,532 (3.0%)
Wheeled motor sports	2,486 (7.2%)	160 (1.0%)	2,646 (5.2%)
Wheeled non-motored sports	2,310 (6.6%)	532 (3.3%)	2,842 (5.6%)
Aero sports	58 (0.2%)	5 (0.0%)	63 (0.1%)
Other & unspecified sports	221 (0.6%)	69 (0.4%)	290 (0.6%)
<i>Total sports</i>	<i>5,834 (16.8%)</i>	<i>1,875 (11.5%)</i>	<i>7,709 (15.1%)</i>
While engaged in leisure	663 (1.9%)	249 (1.5%)	912 (1.8%)
While working for income	1,884 (5.4%)	292 (1.8%)	2,176 (4.3%)
While engaged in other types of work	183 (0.5%)	59 (0.4%)	242 (0.5%)
While resting, sleeping, eating, etc.	133 (0.4%)	70 (0.4%)	203 (0.4%)
Other specified activity	7,645 (22.0%)	4,058 (24.9%)	11,703 (22.9%)
Unspecified activity	18,343 (52.8%)	9,644 (59.3%)	27,989 (54.9%)
Activity not reported/not applicable	53 (0.2%)	22 (0.1%)	75 (0.1%)
<b>Total</b>	<b>34,738</b>	<b>16,269</b>	<b>51,009</b>

\* Persons includes 2 cases for which sex was not reported.

## Transport—principal diagnosis

The proportions of principal diagnoses assigned to transport injury cases in 2004–05 were generally similar for both males and females and for most age groups; head injuries were the most common principal diagnoses for males and females (accounting for nearly a quarter of cases overall, see Table 3.6) and for most age groups (Table 3.7). For the 5–14 years age group an injury to the elbow and forearm was the most common type of principal diagnosis (although head injuries were only slightly fewer in number for people of this age). For people aged 65 years and older, a much larger number of transport injury cases were assigned a principal diagnosis of injuries to the thorax ( $n = 1,106$ ) than were given a diagnosis of head injuries ( $n = 743$ ).

Of note, higher proportions of transport cases involving females were coded with principal diagnoses indicating injuries to the neck (11.5%) than for males (5.6%), while higher proportions of cases involving males were coded with principal diagnoses indicating injuries to the knee and lower leg (15.2%) than for females (10.4%). This was due to the differences in the type of vehicles involved in male and female cases; neck injuries were a frequent result of transport accidents involving cars and animals (more common in females) while knee and lower leg injuries were a frequent result of motorcycle accidents (more common males).

Nearly half of all principal diagnoses assigned to transport injury cases described a fracture (47.0%,  $n = 23,964$ ). Fractures were more frequent for cases involving males (49.6% of cases) than for females (41.4%) and were the most common type of injury sustained in a transport accident in every age group. Open wounds were also common for transport injuries, accounting for one in ten hospitalised cases of this type (10.7%,  $n = 5462$ ).

**Table 3.6: Principal diagnosis groups for transport injury cases: males, females and persons, Australia 2004–05**

Principal diagnosis	Males	Females	Persons <sup>†</sup>
Injuries to the head	8,015 (23.1%)	3,702 (22.8%)	11,717 (23.0%)
Injuries to the neck	1,935 (5.6%)	1,869 (11.5%)	3,804 (7.5%)
Injuries to the thorax	3,188 (9.2%)	2,000 (12.3%)	5,190 (10.2%)
Injuries to the abdomen, lower back, lumbar spine & pelvis	3,074 (8.8%)	1,946 (12.0%)	5,020 (9.8%)
Injuries to the shoulder & upper arm	3,404 (9.8%)	1,256 (7.7%)	4,660 (9.1%)
Injuries to the elbow & forearm	4,293 (12.4%)	1,816 (11.2%)	6,109 (12.0%)
Injuries to the wrist & hand	2,031 (5.8%)	551 (3.4%)	2,582 (5.1%)
Injuries to the hip & thigh	1,701 (4.9%)	701 (4.3%)	2,402 (4.7%)
Injuries to the knee & lower leg	5,284 (15.2%)	1,700 (10.4%)	6,984 (13.7%)
Injuries to the ankle & foot	1,188 (3.4%)	442 (2.7%)	1,630 (3.2%)
Injuries involving multiple body regions	84 (0.2%)	46 (0.3%)	130 (0.3%)
Injuries to unspecified parts of trunk, limb or body region	268 (0.8%)	165 (1.0%)	433 (0.8%)
Burns	142 (0.4%)	40 (0.2%)	182 (0.4%)
Other principal diagnoses	131 (0.4%)	35 (0.2%)	166 (0.3%)
<b>Total <sup>†</sup></b>	<b>34,738</b>	<b>16,269</b>	<b>51,009</b>

<sup>†</sup> Totals include 2 cases for which sex was not reported and 4 cases from categories too small to publish.

**Table 3.7: Principal diagnosis groups for transport injury cases by age, Australia 2004–05**

Principal diagnosis	0–4	5–14	15–24	25–44	45–64	65+	All ages <sup>†</sup>
Injuries to the head	490	2,010	3,702	3,290	1,481	743	11,717
Injuries to the neck	18	176	1,030	1,485	770	325	3,804
Injuries to the thorax	19	135	885	1,588	1,457	1,106	5,190
Injuries to the abdomen, lower back, lumbar spine & pelvis	64	610	1,385	1,604	888	469	5,020
Injuries to the shoulder & upper arm	80	627	1,106	1,715	819	313	4,660
Injuries to the elbow & forearm	87	2,113	1,336	1,564	711	298	6,109
Injuries to the wrist & hand	23	295	802	962	402	98	2,582
Injuries to the hip & thigh	49	361	583	628	353	428	2,402
Injuries to the knee & lower leg	67	938	1,824	2,419	1,129	607	6,984
Injuries to the ankle & foot	36	207	520	576	211	80	1,630
Injuries involving multiple body regions	*	*	38	54	17	10	130
Injuries to unspecified parts of trunk, limb or body region	8	44	128	123	81	49	433
Burns	18	43	46	50	22	*	182
Certain early complications of trauma	*	12	37	44	26	15	137
Other principal diagnoses	0	*	6	12	6	*	29
<b>Total <sup>†</sup></b>	<b>966</b>	<b>7,580</b>	<b>13,428</b>	<b>16,114</b>	<b>8,373</b>	<b>4,547</b>	<b>51,009</b>

Note: Shading denotes highest category for each age group.

\* Small cell counts have been suppressed.

<sup>†</sup> Totals include 1 case for which age was not reported and 4 cases from categories too small to publish.

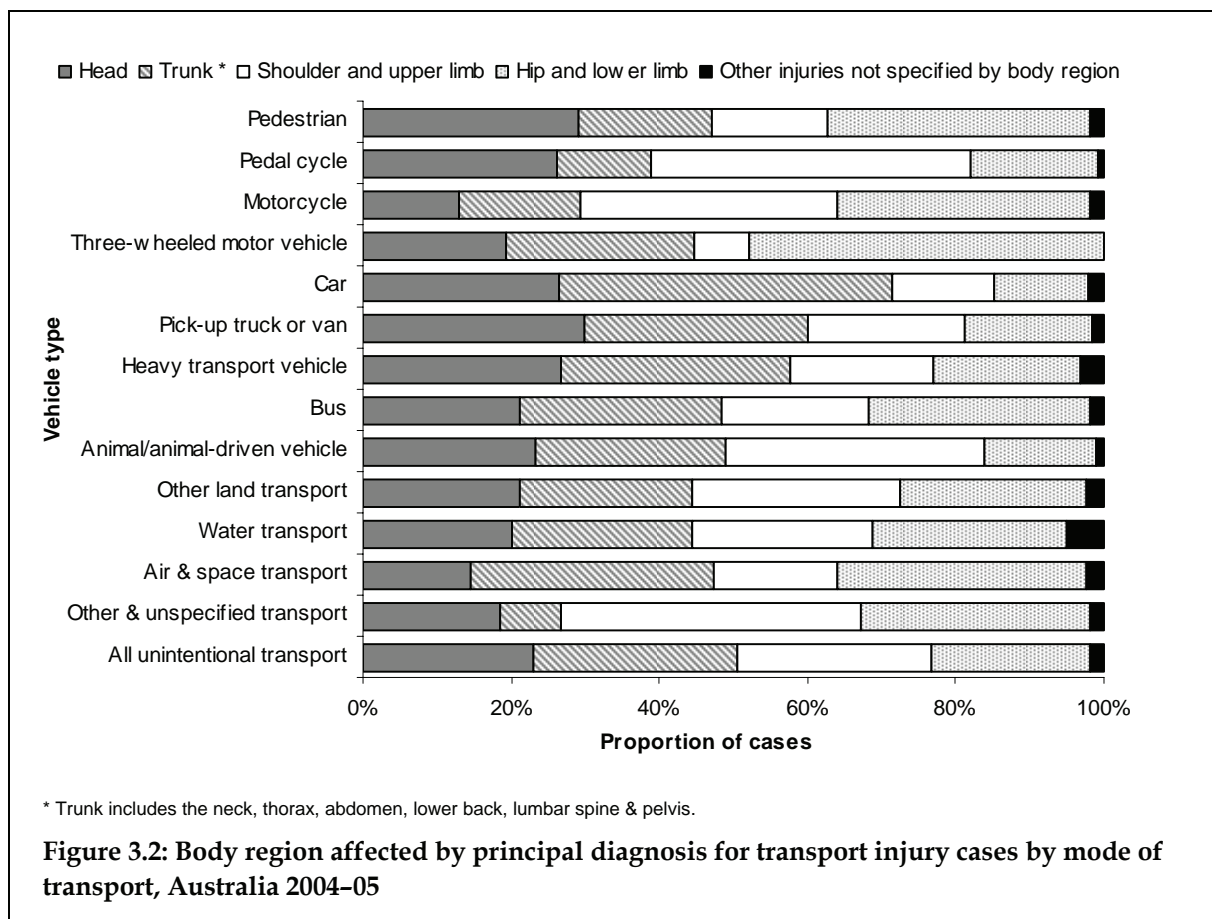


## Transport—body region

Analyses of transport injury diagnoses by body region injured presents a somewhat different picture to that described above due to the aggregation of many groups of principal diagnoses into five classes (see Figure 3.2). Injuries to the trunk region and shoulder and upper limb region accounted for higher proportions of transport cases (27.5% and 26.2%, respectively) than head injuries (23.0%), the most frequent principal diagnosis described in the previous section.

Larger proportion of cases involving females (35.7%) were injuries to the trunk than for males (23.6%), while males sustained a higher proportion of injuries to the shoulder and upper limb (28.0%) regions than females (22.3%). Higher frequencies of shoulder and upper limb injuries in males relates to both the much higher rates of transport injury for males aged 5–14 years, when injuries to the elbow and forearm are most common, and the frequency of shoulder and upper limb injuries as the result of motorcycle accidents (Figure 3.2).

While case numbers are small overall, Figure 3.2 indicates that about half (47.8%,  $n = 32$ ) of injuries for occupants of three-wheeled motor vehicles were injuries to the hip and lower limbs, injuries common for older people (see Table 2.7). People aged 65 years and older accounted for 52.2% of transport injuries for occupants of three-wheeled motor vehicles and as such, these cases may relate to accidents involving motor-scooters (or 'gophers'). These vehicles are more correctly coded as 'pedestrian conveyances' in the fourth edition of the ICD-10-AM (NCCH 2004), and as such are indistinguishable from prams, roller-skates and skateboards, but will be more readily recognisable in future editions of the ICD-10-AM.



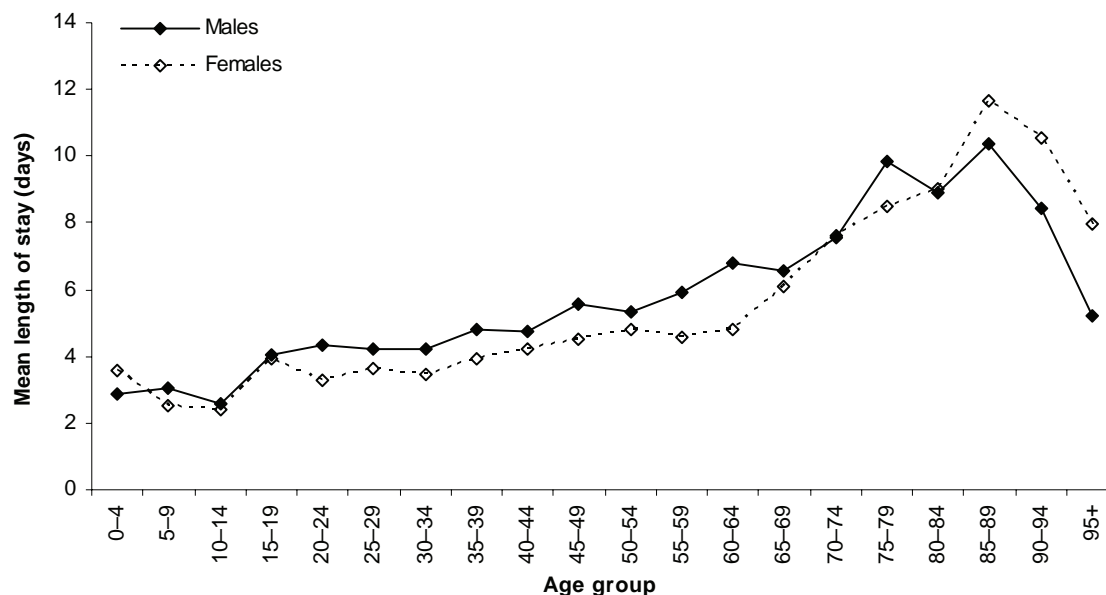
## Transport—length of stay

Unlike the discussion of hospitalised injury *cases* due to unintentional transport accident external causes, the analysis of patient-days here includes inward transfer separations as these transfers contribute to the total burden of hospital care due to transport injury.

The total number of patient-days attributed to hospitalised transport injuries in 2004–05 was 228,234\*, 16.0% of all community injury patient-days. Three in ten separations attributed to transport injury were discharged from hospital on the same day as admitted (30.6%,  $n = 17,149$ ) and nearly six in ten transport separations, including the same-day cases, had a length of stay of only one day (58.2%,  $n = 32,640$ ).

The mean length of stay for transport injury cases was a little longer than for community injuries overall; 4.5 days. The mean length of stay per transport injury case for males (4.5 days) was only slightly longer than that for females (4.4 days). Mean lengths of stay increased with age until the age of 89 years (Figure 3.3).

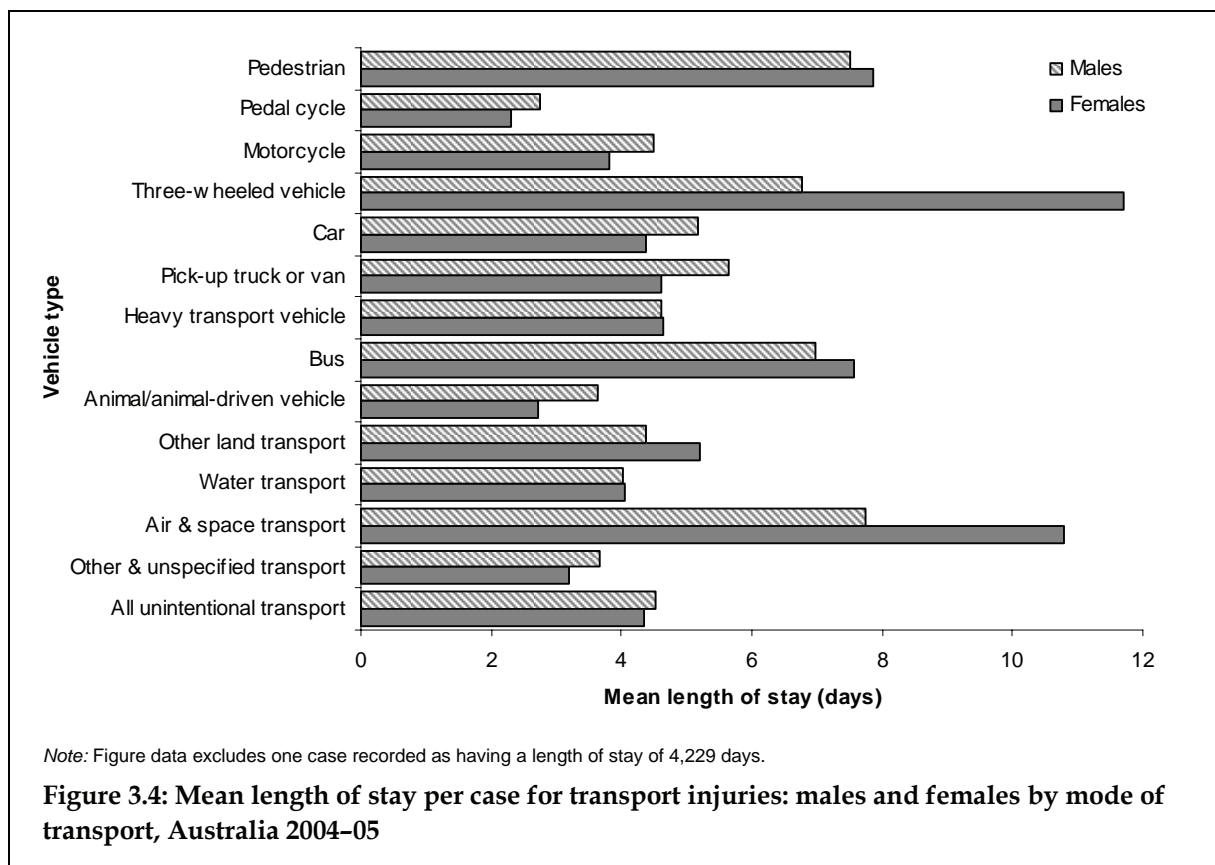
As discussed above, many occupants of three-wheeled motor vehicles were older people and, accordingly, it is not surprising to observe that this mode of transport had the longest mean length of stay per case, 8.7 days. Cases involving pedestrians, occupants of buses, and 'air and space' transport (chiefly hang-gliders, gliders and parachutists) also had quite long lengths of stay per case for both males and females (see Figure 3.4). The shortest lengths of stay were observed for pedal cyclists and people injured in animal-related transport accidents, types of cases that were particularly common for younger people.



Note: Figure data excludes one case recorded as having a length of stay of 4,229 days.

**Figure 3.3: Mean length of stay per case for transport injuries: males and females by age, Australia 2004–05**

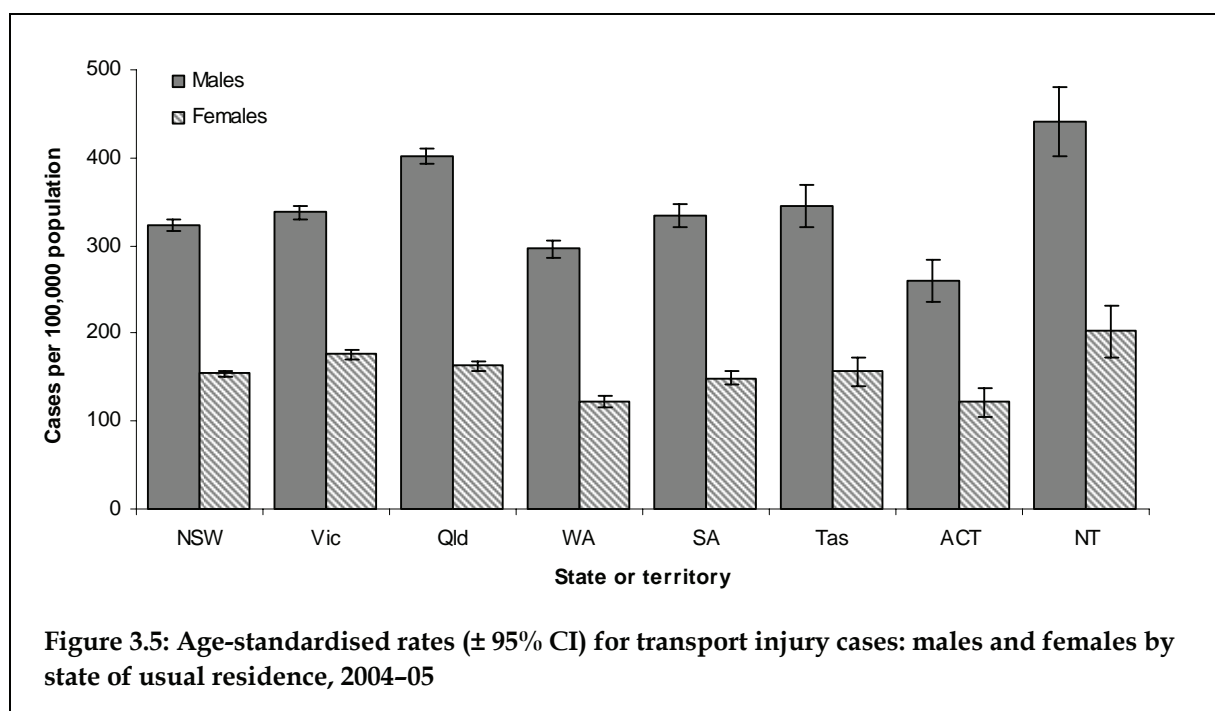
\* One separation was considered to be an outlier, having a recorded length of stay of 4,229 days (over 11 years), and omitted from this analysis.



## Transport—state of usual residence

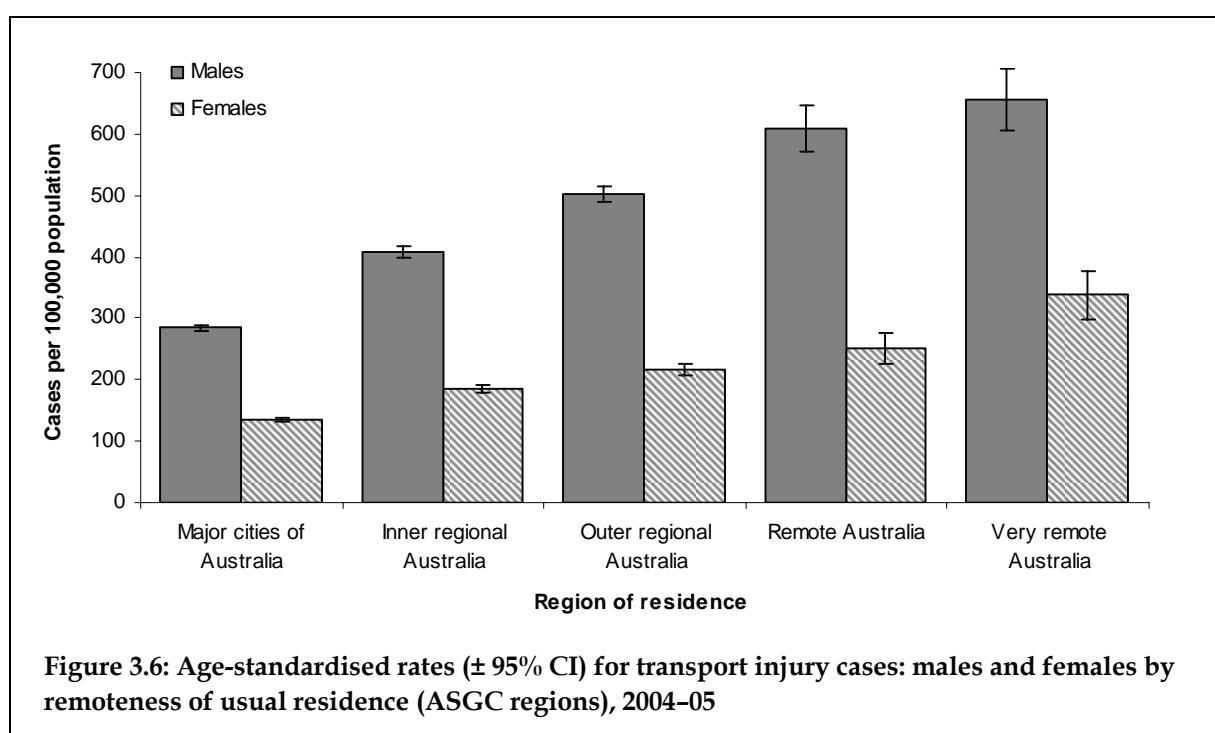
Similar to the analysis of all community injury cases, residents of the Northern Territory had the highest rate of hospitalised transport injury cases in 2004-05 (327.8 per 100,000 population) and rates of transport injury involving residents of Queensland were the second highest observed; 283.2 per 100,000. Both of these rates were significantly higher than that observed for the nation as a whole. The lowest rate of hospitalised injury cases in 2004-05 was observed for residents of the Australian Capital Territory (191.4 per 100,000 population) but this rate was not considered to be significantly lower than that for residents of Western Australia (209.9 per 100,000).

While the rates of cases involving females were lower than those for males, the patterns of rates of transport injury cases by state of usual residence were similar for both males and females (Figure 3.5). The only exception was that instead of females resident in Queensland having the second highest rates observed, as for all persons and cases involving males, the rate of transport injury cases involving females resident in Victoria was slightly higher than that calculated for Queenslanders.



## Transport—remoteness of usual residence

As for community injury cases overall, rates of hospitalised transport injury cases for both males and females increased with the increasing remoteness of the person's usual residence (Figure 3.6). In addition to the factors that may influence increased rates of hospitalised injury generally for people in the more remote areas of Australia, the isolation of these regions may contribute directly to high rates of transport-related injuries through increased exposure; the requirement to drive longer distances as part of daily life in remote areas, the greater likelihood that travel will be at high speed and/or on unsurfaced roads etc.



## Land transport

ICD-10-AM inclusion criteria:

- Principal diagnosis [S00–T75](#) or [T79](#), and
- First external cause [V01–V89](#), and
- Mode of admission other than ‘transfer from another acute hospital’.

This section concentrates on the community injury cases hospitalised in 2004–05 that were attributed to land transport accidents (97.3% of all unintentional transport injury cases,  $n = 49,638$ ). Most land transport injury cases in 2004–05 involved car occupants (36.9%,  $n = 18,331$ ) and motorcyclists (23.8%,  $n = 11,818$ , see also Table 3.2).

More males than females were hospitalised for injuries sustained in land transport accidents (33,668 cases vs. 15,968 cases respectively, Table 3.2). Accordingly, males had a higher age-standardised rate of land transport injuries; 334.5 cases per 100,000 population vs. 157.4 per 100,000 for females (a M:F rate ratio of 2.1 to 1). As land transport injuries accounted for nearly all of the transport cases in 2004–05, the age distribution of rates of land transport cases is very similar to that in Figure 3.1.

### Land transport—traffic and non-traffic accidents

Land transport injury cases can be divided into two main groups; traffic accidents and non-traffic accidents. Traffic accidents are defined as any vehicle accidents occurring on public roadways while non-traffic accidents are any vehicle accidents that occur entirely in places other than roadways. Of all hospitalised cases attributed to land transport accidents, 60.7% were classed as traffic accidents ( $n = 30,138$ , see Table 3.8).

For traffic accident cases, the most frequent modes of transport used by the injured person were cars (53.2%,  $n = 16,042$ ) and motorcycles (19.6%,  $n = 5,896$ ). As noted for all transport injury cases, a higher proportion of traffic accident cases involving females involved cars (73.3%) than for males (42.7%). Similarly, a higher proportion of traffic accident cases involving males involved motorcycles (27.2%) than for females (5.0%). A pedal cycle as the mode of transport in a land transport traffic accident was also proportionately more common for cases involving males (16.6%, compared to 7.4% for females).

For non-traffic accident land transport cases, the most frequent modes of transport used by the injured person were motorcycles (39.3%,  $n = 5,447$ ) and pedal cycles (30.7%,  $n = 4,260$ ). This pattern was similar for cases involving males, with 44.7% of non-traffic cases attributed to motorcycles and 30.5% of cases attributed to pedal cycles. For females, however, this order was reversed; more non-traffic cases were attributed to pedal cycles (31.7%) than motorcycles (16.3%). For females, cars were again a more common mode of transport (28.7% of female cases,  $n = 764$ ) for non-traffic accidents than motorcycles ( $n = 433$ ).

Of land transport accidents where the traffic type was unspecified, the majority (58.3%;  $n = 3,283$ ) involved an animal rider or occupant of an animal-drawn vehicle. Unlike most other classes of land transport accidents, far more animal rider or occupant of an animal-drawn vehicle cases involved females ( $n = 2,113$  vs.  $n = 1,170$  for males).

**Table 3.8: Mode of transport of injured person by traffic type for land transport injury cases: males, females and persons, Australia 2004–05**

Mode of transport	Non-traffic accident	Traffic accident	Unspecified	Total land transport
<b>Males</b>				
Pedestrian	518	1,563	260	2,341
Pedal cycle	3,416	3,288	246	6,950
Motorcycle	5,014	5,377	427	10,818
Three-wheeled motor vehicle	29	*	*	*
Car	1,064	8,463	214	9,741
Pick-up truck or van	121	276	29	426
Heavy transport vehicle	236	408	77	721
Bus	27	71	49	147
Animal or animal-driven vehicle	0	0	1,170	1,170
Other land transport	781	343	189	1,313
<b>Total</b>	<b>11,206</b>	<b>19,797</b>	<b>2,665</b>	<b>33,668</b>
<b>Females</b>				
Pedestrian	320	1,111	187	1,618
Pedal cycle	844	763	62	1,669
Motorcycle	433	519	48	1,000
Three-wheeled motor vehicle	15	*	*	*
Car	764	7,577	247	8,588
Pick-up truck or van	29	71	18	118
Heavy transport vehicle	16	27	10	53
Bus	63	107	121	291
Animal or animal-driven vehicle	0	0	2,113	2,113
Other land transport	175	155	162	492
<b>Total</b>	<b>2,659</b>	<b>10,339</b>	<b>2,970</b>	<b>15,968</b>
<b>Persons <sup>†</sup></b>				
Pedestrian	838	2,674	447	3,959
Pedal cycle	4,260	4,051	308	8,619
Motorcycle	5,447	5,896	475	11,818
Three-wheeled motor vehicle	44	17	6	67
Car	1,828	16,042	461	18,331
Pick-up truck or van	150	347	47	544
Heavy transport vehicle	252	435	87	774
Bus	90	178	170	438
Animal or animal-driven vehicle	0	0	3,283	3,283
Other land transport	956	498	351	1,805
<b>Total</b>	<b>13,865</b>	<b>30,138</b>	<b>5,635</b>	<b>49,638</b>

Note: Shading denotes highest case count for each traffic type and gender.

\* Small cell counts have been suppressed.

† Persons includes 2 cases for which sex was not reported.

## Land transport—counterpart

The section above described land transport injury cases in terms of the mode of transport of the injured person. Another view of land transport cases describes what other vehicles or objects were involved in the collision—termed the ‘counterpart’.

Classification of a transport accident’s counterpart here follows that of Berry and Harrison (2007a). That is, the counterparts ‘car, pick-up truck or van’ and ‘heavy transport vehicle or bus’ could not be separated for cases where the mode of transport was an animal or animal-driven vehicle and so are presented here in the ‘car, pick-up truck or van’ category. The possibility of misinterpretation of these cases (e.g. as collisions with cars rather than buses) should be minimal given that less than five cases overall were animal or animal-driven vehicle accidents colliding with cars, pick-up trucks, vans, heavy transport vehicles or buses (Table 3.9). In addition, cases coded as ‘other land transport’ cases (V81–V89) could not be coded to counterpart categories comparable to those of the other modes of transport (see NCCH 2004). Accordingly, these cases ( $n = 1,805$ ) have been omitted from Table 3.9.

For most types of land transport injury cases in 2004–05, the most common counterpart coded was ‘non-collision transport accident’ (36.3% of cases overall). As outlined in (Berry & Harrison 2007a; see also Berry & Harrison 2007b), the frequency of ‘non-collision’ counterparts suggests that this code may be being used as a dump code, clouding our understanding of these cases.

**Table 3.9: Counterpart by the mode of transport of injured person for land transport injury cases, Australia 2004–05**

Counterpart	Mode of transport									Total <sup>(b)</sup>
	Pedestrian	Pedal cycle	Motorcycle	Three-wheeled motor vehicle	Car	Pick-up truck or van	Heavy transport vehicle	Bus	Animal or animal-driven vehicle <sup>(c)</sup>	
Pedestrian or animal	0	48	195	0	90	6	*	*	14	356
Pedal cycle	112	190	13	0	9	0	0	*	*	325
Two- or three-wheeled motor vehicle	90	17	351	*	32	*	0	0	*	494
Car, pick-up truck or van <sup>(a)</sup>	2,943	1,065	1,574	*	7,738	96	43	59	*	13,523
Heavy transport vehicle or bus	147	46	73	0	558	24	66	15	NA	929
Railway train or railway vehicle	34	*	9	0	24	*	*	0	0	75
Other non-motor vehicle	52	*	12	0	23	0	0	*	8	101
Fixed or stationary object	0	433	1,261	8	4,466	85	68	15	29	6,365
Non-collision transport accident	0	4,359	5,593	39	3,856	246	452	244	2,593	17,382
Other & unspecified transport accidents	581	2,451	2,737	16	1,535	82	142	104	635	8,283
<b>Total <sup>(b)</sup></b>	<b>3,959</b>	<b>8,619</b>	<b>11,818</b>	<b>67</b>	<b>18,331</b>	<b>544</b>	<b>774</b>	<b>438</b>	<b>3,283</b>	<b>47,833</b>

(a) Where vehicle type is animal or animal-driven vehicle, counterparts ‘car, pick-up truck or van’ and ‘heavy transport vehicle or bus’ are combined.

(b) Totals exclude 1,805 land transport injury cases (‘other land transport’) for which counterpart was not comparable to those listed for other vehicle types.

Note: Shading denotes most numerous counterparts for each vehicle type.

\* Small cell counts have been suppressed.



**Table 3.10: Road user type by mode of transport of injured person; traffic, non-traffic and unspecified land transport injury cases, Australia 2004–05**

Mode of transport	Road user type						Total <sup>†</sup>
	Pedestrian	Driver	Passenger	Person boarding or alighting	Person on outside of vehicle	Other & unspecified	
Traffic accident							
Pedestrian	2,674	0	0	0	0	0	2,674
Pedal cycle	0	2,049	19	0	0	1,983	4,051
Motorcycle	0	3,821	214	0	0	1,861	5,896
Car	0	9,909	4,928	0	54	1,151	16,042
Pick-up truck or van	0	190	93	0	26	38	347
Heavy transport vehicle	0	319	63	0	*	45	435
Bus	0	19	128	0	*	29	178
Animal or animal-driven vehicle	0	0	0	0	0	0	0
Other land transport	0	81	25	0	11	381	498
Total traffic accident <sup>†</sup>	2,674	16,397	5,471	0	101	5,495	30,138
Non-traffic accident							
Pedestrian	838	0	0	0	0	0	838
Pedal cycle	0	3,072	76	0	0	1,112	4,260
Motorcycle	0	4,404	131	0	0	912	5,447
Car	0	1,034	537	0	101	156	1,828
Pick-up truck or van	0	36	32	0	50	32	150
Heavy transport vehicle	0	87	19	0	77	69	252
Bus	0	*	54	0	*	29	90
Animal or animal-driven vehicle	0	0	0	0	0	0	0
Other land transport	0	535	60	0	130	231	956
Total non-traffic accident <sup>†</sup>	838	9,207	909	0	362	2,549	13,865
Unspecified whether traffic or non-traffic accident							
Pedestrian	447	0	0	0	0	0	447
Pedal cycle	0	0	0	13	0	295	308
Motorcycle	0	0	0	28	0	447	475
Car	0	0	0	263	0	198	461
Pick-up truck or van	0	0	0	21	0	26	47
Heavy transport vehicle	0	0	0	43	0	44	87
Bus	0	0	0	124	0	46	170
Animal or animal-driven vehicle	0	0	0	0	0	3,283	3,283
Other land transport	0	0	113	122	23	93	351
Total unspecified <sup>†</sup>	447	0	113	618	23	4,434	5,635
Total land transport <sup>†</sup>	3,959	25,604	6,493	618	486	12,478	49,638

Note: Shading denotes most frequent road user type for each traffic category.

\* Small cell counts have been suppressed.

† Totals include cases coded to mode of transport 'three-wheeled motor vehicle'; *n* = 17 (traffic), *n* = 44 (non-traffic), and *n* = 6 (unspecified).



Table 3.10 describes the type of road user injured in land transport injury cases according to the traffic type classification of the accident. As in previous years, vehicle drivers were the most commonly-injured road user type for both traffic and non-traffic cases, as well as all land transport injury cases overall. For traffic accidents, car drivers were the most commonly injured road users while for non-traffic accidents motorcycle 'drivers' were the most frequently injured road users. This result should not be surprisingly given that a driver is almost always in a car when an accident occurs. The lower frequency of passengers injured should not be interpreted as meaning passengers are at a lower risk of injury, but rather indicates that the presence of a passenger in a car is variable.

More than half (58.3%,  $n = 3,283$ ) of the land transport cases where the traffic type of the crash was unspecified involved animal riders or occupants of animal-driven vehicles.

### **Land transport—age distribution by road user type**

Of all road user types, car drivers had the highest age-standardised rate of land transport traffic accident cases; 48.8 hospitalised cases per 100,000 population. Peaks in age-specific rates of traffic accidents involving car drivers occurred for two age groups; car drivers aged 20–24 years (115.8 per 100,000) and 80–84 years (65.2 per 100,000, see Figure 3.7). As discussed above, the presence of a passenger in a car is variable and, accordingly, rates for car passengers injured in traffic accidents were lower than those for car drivers overall (age-standardised rate: 24.4 per 100,000) and for all age groups. The highest age-specific rate of car passenger traffic cases was observed for the 15–19 years age group (75.5 per 100,000 population), an age when car driver injuries were also relatively high. As with car driver injury cases, a second peak in rates of car passenger injury cases was noted for those aged 80–84 years (34.2 per 100,000).

The age-standardised rate of motorcycle rider traffic injury cases (29.4 per 100,000) was comparable to that for car passengers. The age-specific distribution of motorcycle rider injury cases was somewhat different however; rates were highest at a slightly older age (20–24, as for car drivers) and rates fell steadily from this point. While rates of pedal cyclists injured in traffic accidents followed a similar trajectory, the highest rates (66.6 per 100,000) occurred at an early age; 10–14 years.

Pedestrians injured in land transport traffic cases had the lowest age-standardised rate of all the road user groups described here (13.2 per 100,000) and presented a very different age pattern; rates were quite uniform until the age of 74 years and the highest rate of pedestrian traffic accident cases was observed for the 80–84 years age group. At these older ages, the rates of pedestrian traffic accident cases were equivalent to those for car drivers.

Non-traffic land transport injuries presented a quite different age-distribution to that of traffic injury cases; rates for car drivers, car passengers and pedestrians were all quite low and rates were highest for pedal cyclists and motorcycle riders (see Figure 3.8, to same scale as Figure 3.7). As for traffic accidents, rates of pedal cyclists injured in non-traffic accidents were highest for the 10–14 years age group and declined thereafter. For motorcycle riders, high rates of injury in non-traffic accidents were noted at a slightly younger age (15–19 years) than for traffic accidents.

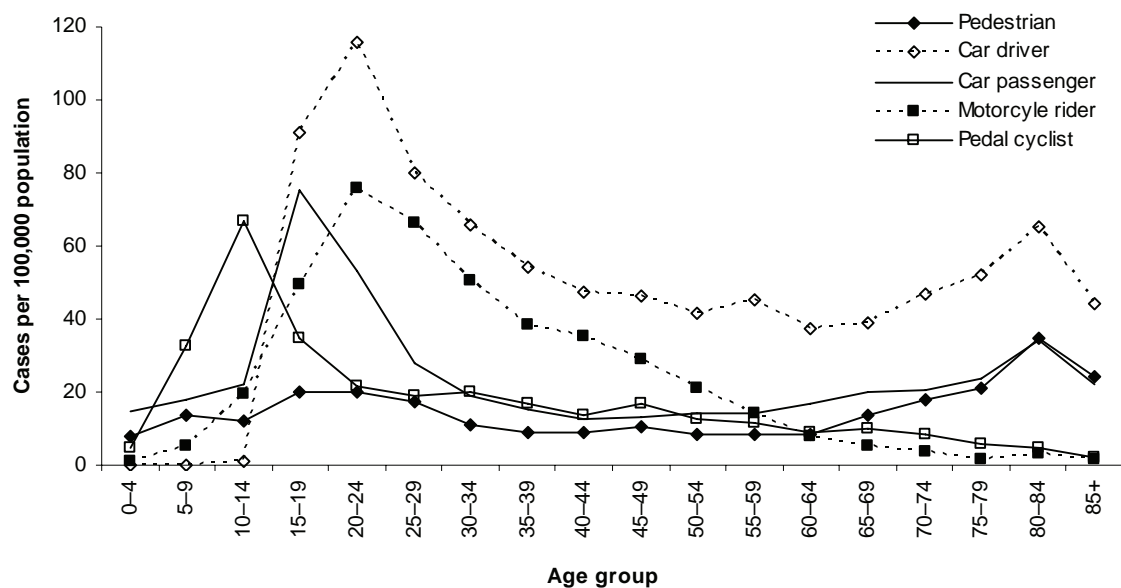


Figure 3.7: Land transport traffic injury cases: age-specific rates for selected road user types, Australia 2004-05

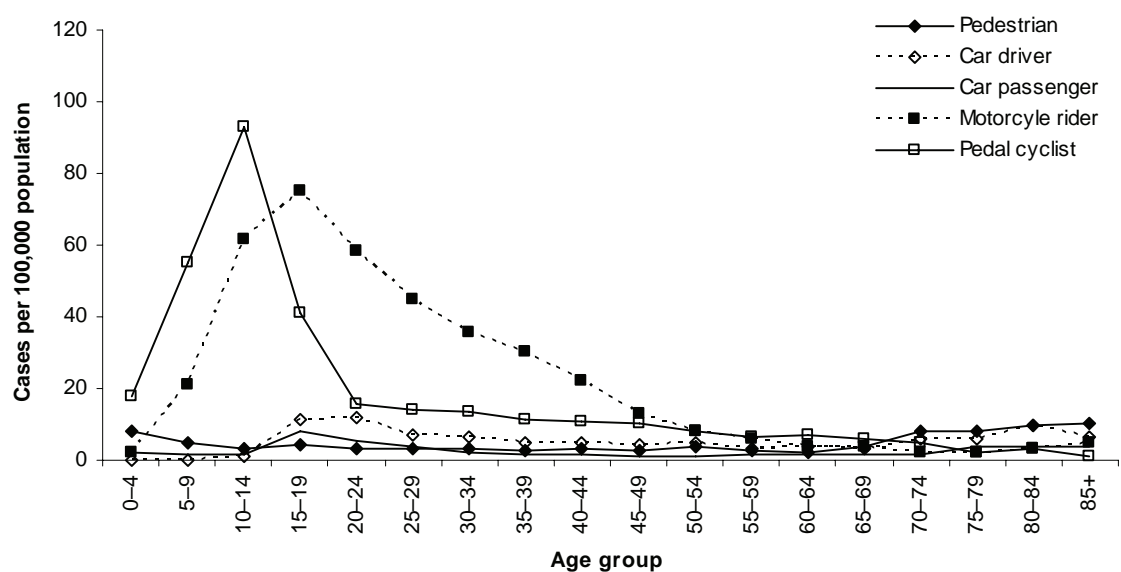


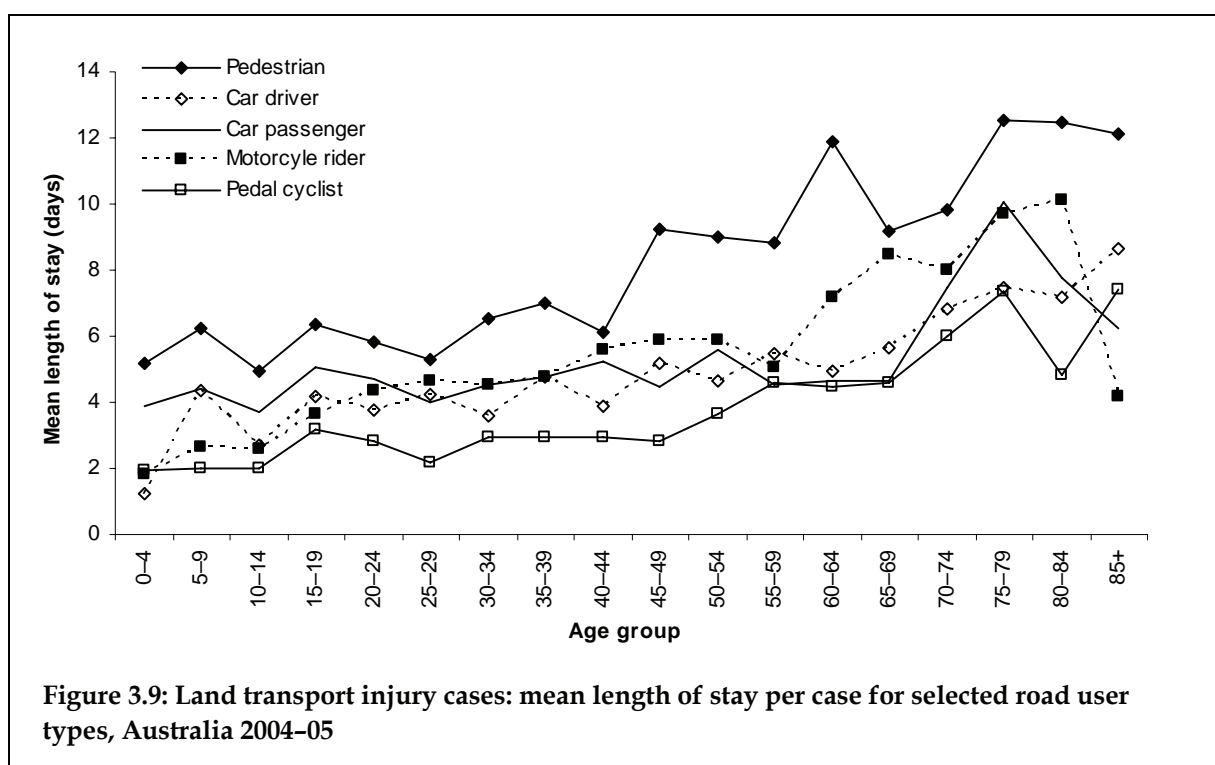
Figure 3.8: Land transport non-traffic injury cases: age-specific rates for selected road user types, Australia 2004-05

## Land transport—length of stay by road user type

Unlike the discussion of hospitalised injury *cases* due to land transport accidents above, the analysis of patient-days here includes inward transfer separations as these transfers also contribute to the total burden of hospital care due to land transport injury. The total number of patient-days attributed to land transport injuries in 2004–05 was 222,443\*, 97.5% of all transport injury patient-days.

Figure 3.9 presents age-specific mean lengths of stay for selected road user types (for all types of traffic accidents). For all of the road user types presented here, mean lengths of stay per land transport case increased with age. For all age groups, pedestrians had the longest mean lengths of stay compared to other road users. This is likely related to the lack of protection for pedestrians when impacted by (generally) mechanical counterparts.

For unknown reasons, the mean lengths of stay per case in 2004–05 are about a day longer for all age groups and all road user types than those calculated for 2003–04 (Berry & Harrison 2007a).



\* Again, the one separation that had a recorded length of stay of 4,229 days (over 11 years) was omitted from this analysis.

## 3.2 Drowning and submersion injury cases

ICD-10-AM inclusion criteria:

- Principal diagnosis [S00–T75](#) or [T79](#), and
- First external cause [W65–W74](#), and
- Mode of admission other than ‘transfer from another acute hospital’.

**Table 3.11: Key indicators for hospitalised drowning and submersion injury: males, females and persons, Australia 2004–05**

Key indicators	Males	Females	Persons
Total number of hospital separations due to drowning & submersion injury	316	174	490
Drowning & submersion separations as proportion of all community injury separations	0.1%	0.1%	0.1%
Estimated number of drowning & submersion injury cases <sup>(a)</sup>	290	166	456
Cases per 100,000 population	2.9	1.6	2.3
Cases per 100,000 population—age-standardised <sup>(b)</sup>	2.9	1.7	2.3
Total patient-days due to drowning & submersion injury <sup>(c)</sup>	782	371	1,153
Mean patient-days per case	2.7	2.2	2.5

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

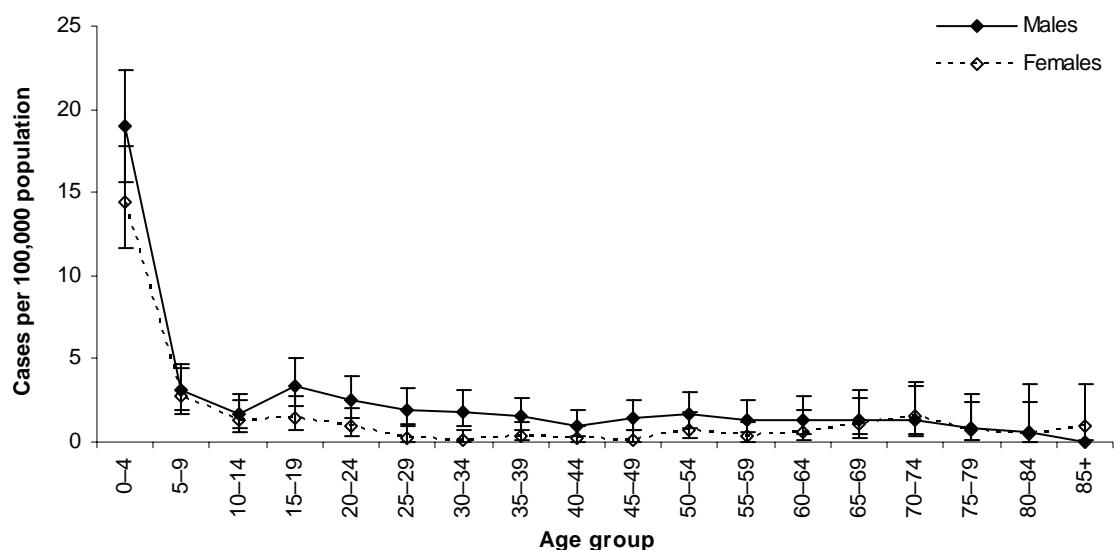
(b) Standardised to the Australian estimated resident population 30th June 2001.

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

An estimated 456 hospitalised injury cases were due to *unintentional* drowning and submersion in 2004–05 (Table 3.11). Intentional/undetermined intent drowning and submersion injuries (i.e. cases coded to principal diagnoses X71, X92 or Y21) are included in later sections. The age-standardised rate of accidental drowning and submersion cases was 2.3 per 100,000 population.

### Drowning and submersion—age and sex

More than half of all hospitalised drowning and submersion injury cases involved children under 10 years of age (55.0%,  $n = 251$ ) and 63.6% involved males ( $n = 290$ ). Age-specific rates of accidental drowning and submersion for both males and females were highest for those aged 0–4 years, and rates were at a much lower and relatively constant level at older ages (Figure 3.10). Rates for males were generally higher than those for females for all age groups, but the width of the confidence intervals suggest that these differences were non-significant for all age groups other than the 30–34 years group (males: 1.9 per 100,000, CI+ 3.1, CI- 1.0; females: 0.1 per 100,000, CI+ 0.7, CI- 0.0). The overall (age-standardised) rate of accidental drowning and submersion cases involving males was 2.9 per 100,000 population while for females this rate was 1.7 per 100,000 (M:F ratio 1.7:1).



**Figure 3.10: Age-specific rates ( $\pm$  95% CI) for accidental drowning and submersion injury cases: males and females, Australia 2004–05**

## Drowning and submersion—external cause

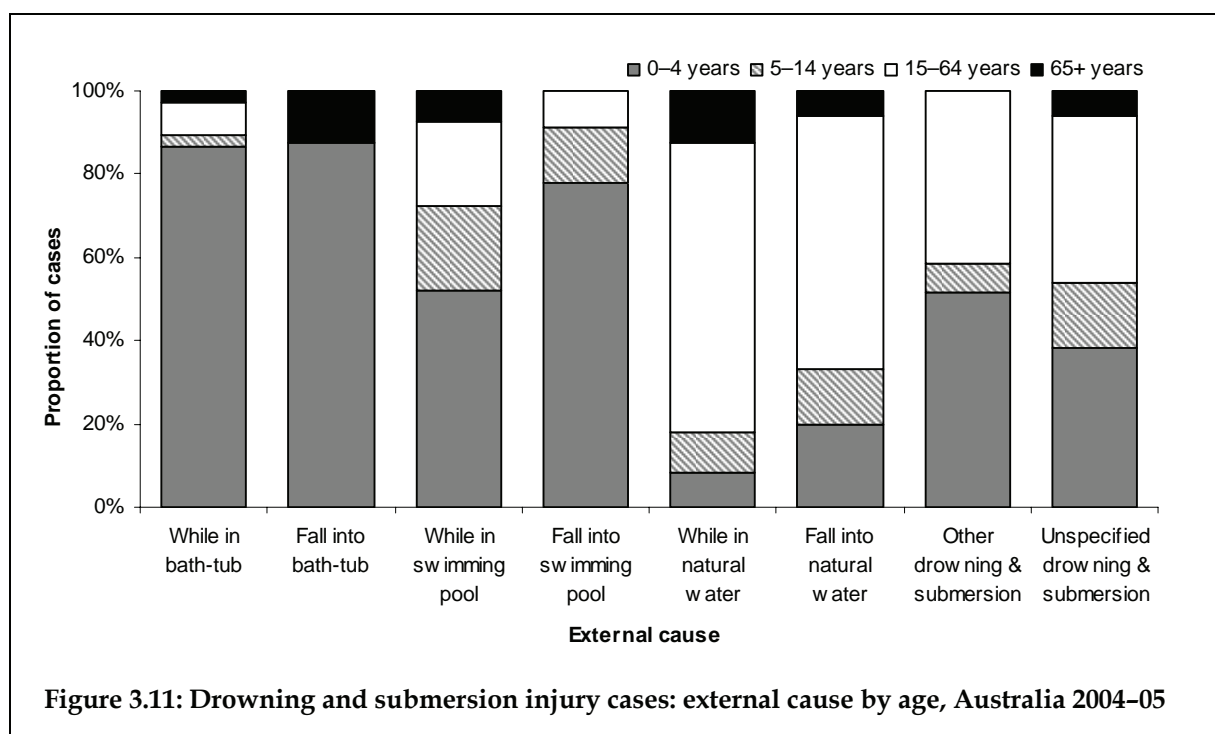
Many accidental drowning and submersion cases involved swimming pools; drowning and submersion while *in* a swimming pool accounted for 21.5% of cases and drowning and submersion due to *falling into* a swimming pool accounted for 17.8% (Table 3.12). A higher proportion of cases involving females were associated with swimming pools (45.8%) than for males (35.5%) while a higher proportion of cases involving males were associated with natural water (35.9% of cases for males vs. 20.5% of cases for females).

As can be seen in Figure 3.11, the age patterns for different drowning and submersion external causes were quite distinct, when considered for relatively broad groups. The majority of cases attributed to bathtubs and swimming pools involved children aged 0–4 years while a relatively small proportion of other types of drowning and submersion cases involved such young children.

**Table 3.12: First external cause for drowning injury cases: males, females and persons, Australia 2004–05**

External cause	Males	Females	Persons
Drowning & submersion while in bath-tub (W65)	18 (6.2%)	19 (11.4%)	37 (8.1%)
Drowning & submersion following fall into bathtub (W66)	* (1.4%)	* (2.4%)	8 (1.8%)
Drowning & submersion while in swimming-pool (W67)	53 (18.3%)	45 (27.1%)	98 (21.5%)
Drowning & submersion following fall into swimming-pool (W68)	50 (17.2%)	31 (18.7%)	81 (17.8%)
Drowning & submersion while in natural water (W69)	54 (18.6%)	18 (10.8%)	72 (15.8%)
Drowning & submersion following fall into natural water (W70)	50 (17.2%)	16 (9.6%)	66 (14.5%)
Other specified drowning & submersion (W73)	* (5.9%)	* (7.2%)	29 (6.4%)
Unspecified drowning & submersion (W74)	44 (15.2%)	21 (12.7%)	65 (14.3%)
<b>Total</b>	<b>290</b>	<b>166</b>	<b>456</b>

\* Small case counts have been suppressed.



## Drowning and submersion—place and activity

A third of all hospitalised drowning and submersion cases occurred in the home (35.3%,  $n = 161$ ). Not surprisingly, other common places of occurrence for accidental drowning and submersion cases were areas defined by the presence of natural water; together, areas of still water, streams of water, large areas of water and beaches accounted for 42.3% of cases ( $n = 193$ ).

Accidental drowning and submersion cases rarely occurred in swimming centres, with only 6.4% of cases ( $n = 29$ ) having swimming centres as the designated place of occurrence. More than half of the accidental drowning cases attributed to swimming pools (external causes W67 and W68) occurred in the home (54.2%,  $n = 97$ ).

As young children were more commonly involved in drowning and submersion events involving bathtubs and swimming pools, it was not surprising to find that most drowning cases reported to have occurred in the home involved children aged 0–4 years (85.7%,  $n = 139$ ). Conversely, only 16.1% cases ( $n = 31$ ) occurring in areas of still water, streams of water, large areas of water and beaches involved children aged less than five years old.

Compared to other classes of external cause, relatively few hospitalised drowning and submersion cases had an unspecified place of occurrence (5.9%,  $n = 27$ ).

The most frequent specified activity engaged in for hospitalised drowning and submersion cases was swimming (19.7%,  $n = 90$ ). Other water-related sporting activities were also relatively common, although more so for males than for females. For example, 7.9% of male cases were reported to have occurred while surfing or boogie boarding compared to only 1.8% of female cases.

As for place of occurrence, age was strongly associated with activity at the time of the drowning and submersion incident; nine in ten of the cases coded with ‘while resting, sleeping, eating or engaging in other vital activities’ involved children aged 0–4 years (86.1%,  $n = 31$ ).

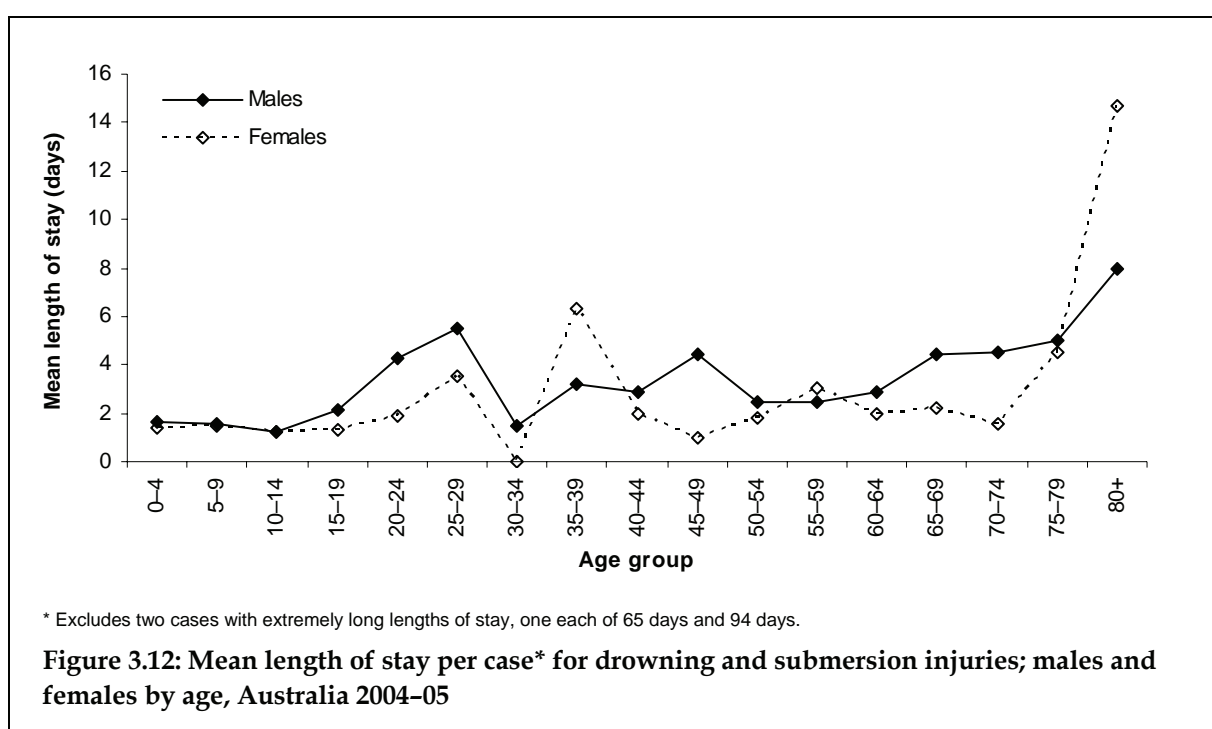
## Drowning and submersion—principal diagnosis

Most hospitalised drowning and submersion cases in 2004–05 were assigned a principal diagnosis of T75.1, drowning and nonfatal submersion (83.8%,  $n = 382$ ). Many of the remaining accidental drowning and submersion cases (14.7%,  $n = 67$ ) were assigned a principal diagnosis that described physical trauma, commonly injuries to the head and neck (7.7% of all accidental drowning cases,  $n = 35$ ). Diagnosis patterns were similar for males and females but there was a difference in the type of principal diagnosis assigned to accidental drowning and submersion cases according to age; only 0.5% of cases involving very young children 0–4 years were assigned a principal diagnosis describing physical trauma compared to 27.0% of cases involving people aged 5 years and older.

## Drowning and submersion—length of stay

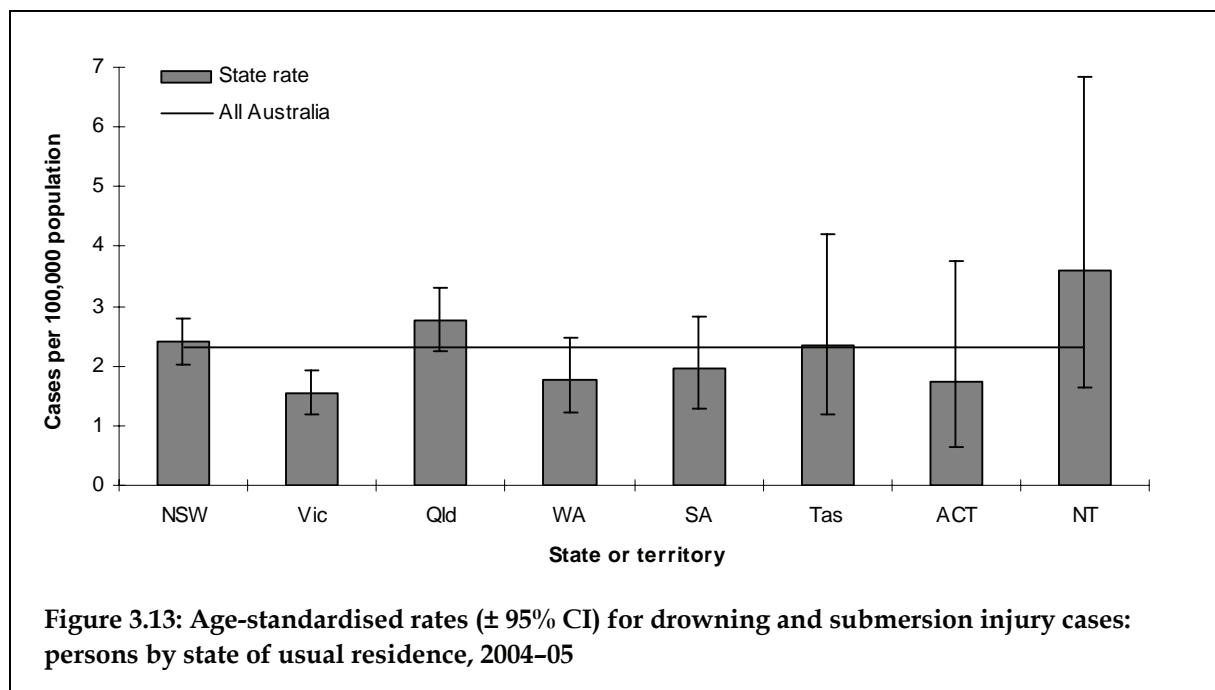
The total number of patient-days attributed to hospitalised drowning and submersion injuries in 2004–05 was 1,153. Including same-day stays, three-quarters of all drowning and submersion separations had a length of stay of only one day (75.3%,  $n = 369$ ). This is a higher proportion of cases having a length of stay of only one day than observed for many other types of community injury cases. Accordingly, the mean length of stay for all hospitalised drowning and submersion cases was quite short compared to other types of injuries; 2.5 days. The mean length of stay per case for drowning and submersion injuries for males was 2.7 days and 2.2 days for females.

The mean length of stay due to drowning and submersion showed no strong trend with age (Figure 3.12). The observed fluctuations for both sexes reflect the small number of drowning cases involving people over the age of four years. Two accidental drowning cases with extremely long lengths of stay have been omitted from the means presented in Figure 3.12 as they obscure the overall pattern of relatively low mean lengths of stay for accidental drowning cases for all but the very old.



## Drowning and submersion—state of usual residence

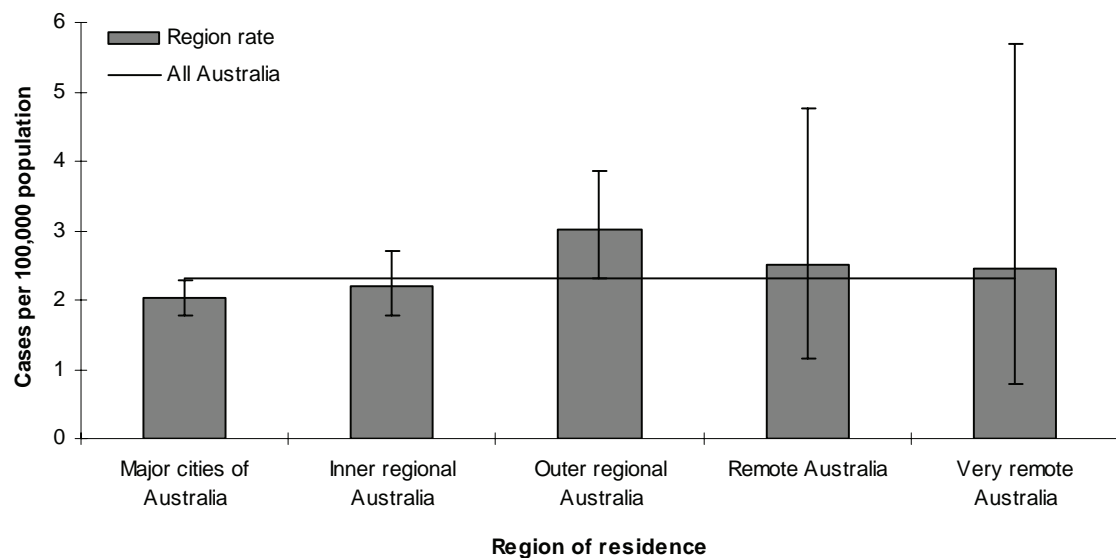
Age-standardised rates of hospitalised drowning and submersion cases by state of usual residence suggest that there is little significant difference between the jurisdictions (Figure 3.13). While the highest rate was observed for residents of the Northern Territory (3.6 per 100,000 population), the 95% confidence intervals for this rate overlapped with those for all other states. The lowest rate of hospitalised drowning and submersion cases was observed for residents of Victoria (1.5 per 100,000). This was significantly lower than the national age-standardised rate, but was not significantly different to other jurisdictions.



## Drowning and submersion—remoteness of usual residence

The rate of drowning and submersion cases according to the remoteness of the person's place of usual residence was somewhat different to that for all community injury cases (Figure 3.14). While rates of cases involving resident's of Australia's major cities were the lowest observed (2.0 per 100,000 population), this was not significantly different to rates for residents of inner regional Australia. The rate of drowning and submersion cases was highest for residents of outer regional areas (3.0 per 100,000). Rates for residents of Remote and Very remote Australia were not significantly different to those for other regions of the country.





**Figure 3.14: Age-standardised rates ( $\pm$  95% CI) for drowning and submersion injury cases: persons by remoteness of usual residence (ASGC regions), 2004-05**

### 3.3 Poisoning (pharmaceuticals) injury cases

ICD-10-AM inclusion criteria:

- Principal diagnosis [S00–T75](#) or [T79](#), and
- First external cause [X40–X44](#), and
- Mode of admission other than ‘transfer from another acute hospital’.

**Table 3.13: Key indicators for hospitalised unintentional poisoning by pharmaceuticals injury: males, females and persons, Australia 2004–05**

Key indicators	Males	Females	Persons
Total number of hospital separations due to poisoning (pharmaceuticals) injury	3,228	3,847	7,075
Poisoning (pharmaceuticals) separations as proportion of all community injury separations	1.4%	2.4%	1.8%
Estimated number of poisoning (pharmaceuticals) injury cases <sup>(a)</sup>	3,087	3,722	6,809
Cases per 100,000 population	30.7	36.6	33.7
Cases per 100,000 population—age-standardised <sup>(b)</sup>	31.2	36.7	34.0
Total patient-days due to poisoning (pharmaceuticals) injury <sup>(c)</sup>	6,564	8,468	15,032
Mean patient-days per case	2.1	2.3	2.2

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

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

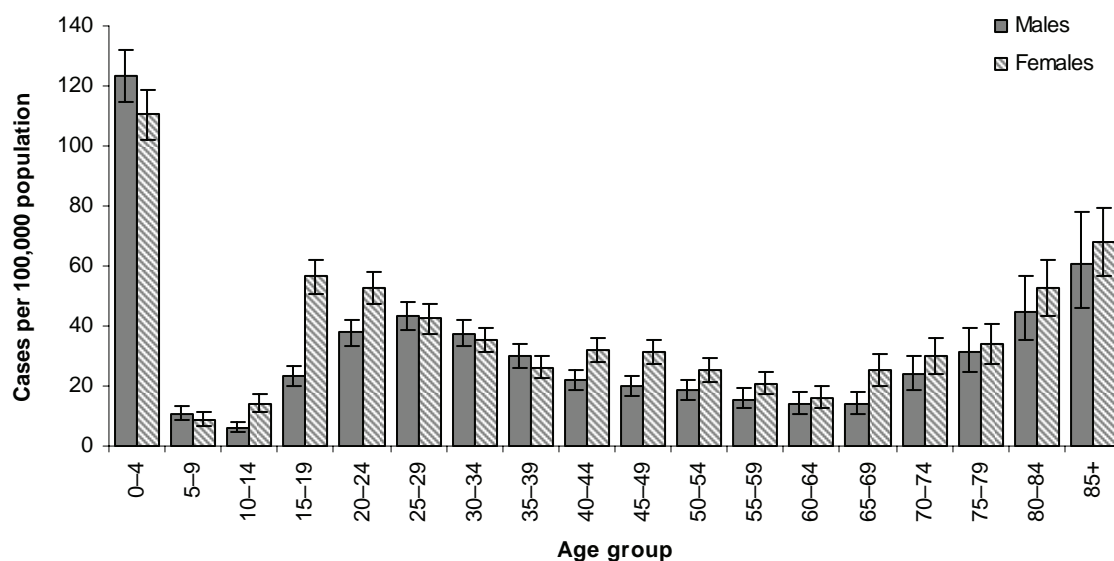
(c) Includes records with a mode of admission of ‘transfer from another acute hospital’ as contributing to hospital burden due to injury.

An estimated 6,809 hospitalised injury cases were due to *unintentional* poisoning by pharmaceutical substances in 2004–05 (Table 3.13). Intentional/undetermined intent poisonings involving pharmaceuticals (i.e. cases coded to principal diagnoses X60–X64, X85 or Y10–Y14) are discussed in later sections. It is important to note that such cases are more numerous than accidental pharmaceutical poisonings; intentional self-poisoning cases, for example, were 2.7 times more common than accidental poisoning cases in 2004–05 ( $n = 18,568$ ).

Accidental poisoning cases requiring hospitalisation in 2004–05 occurred at an age-standardised rate of 34.0 per 100,000 population.

#### Poisoning (pharmaceuticals)—age and sex

Only 45.3% of hospitalised accidental pharmaceutical poisoning cases involved males in 2004–05 ( $n = 3,087$ ). Accordingly, and unlike many types of community injuries, females had a higher age-standardised rate of unintentional pharmaceutical poisonings (36.7 per 100,000 population) than males (31.2 per 100,000). The pattern of cases by age was quite similar for both males and females however (Figure 3.15). Rates were highest for children aged 0–4 years and lowest for children 5–14 years. Age-specific rates of accidental pharmaceutical poisonings were significantly higher for females than for males between the ages of 15–24 years and 40–49 years. Of note, the male to female rate-ratio of hospitalised pharmaceutical poisonings for people aged 15–19 was 0.4:1.



**Figure 3.15: Age-specific rates ( $\pm$  95% CI) for unintentional poisoning by pharmaceuticals injury cases: males and females, Australia 2004–05**

## Poisoning (pharmaceuticals)—external cause

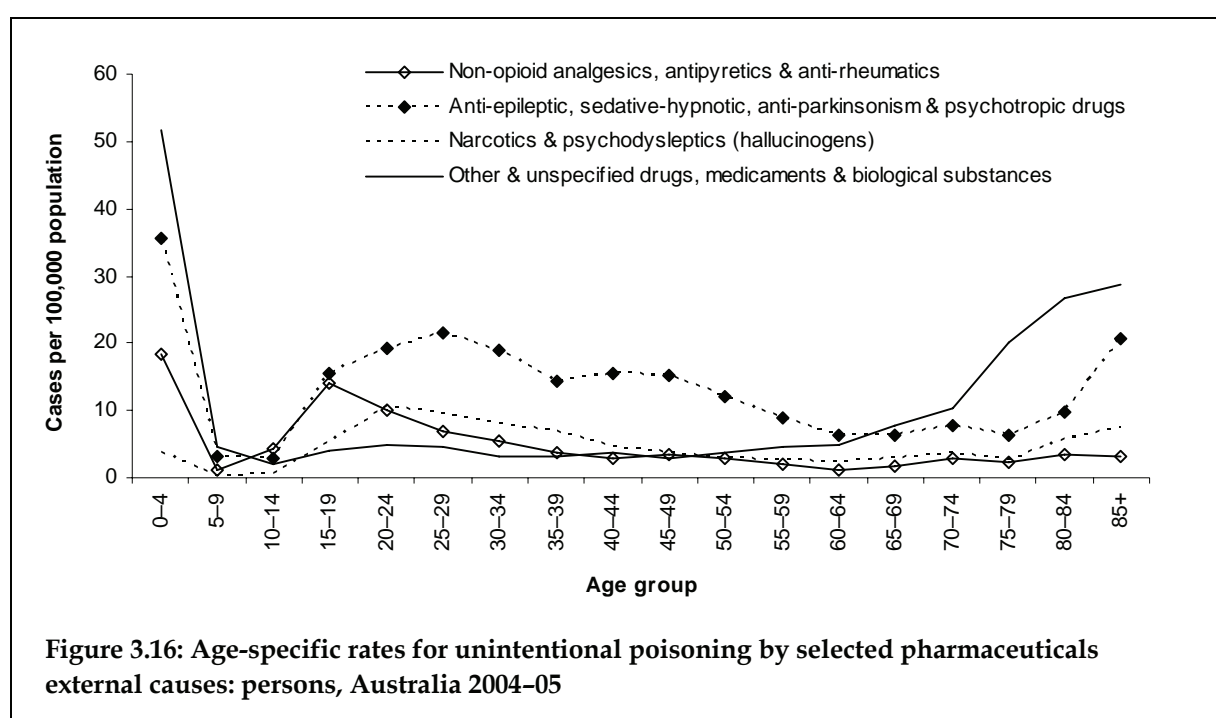
The most common external cause code assigned to unintentional poisoning by pharmaceuticals cases in 2004–05 was X41, accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, anti-parkinsonism and psychotropic drugs (41.5%,  $n = 2,826$ ). These types of pharmaceuticals were the most frequent cause of hospitalised poisoning cases for both males and females (Table 3.14). The second most common *specific* cause of accidental pharmaceutical poisoning cases in 2004–05 was X40, accidental poisoning by and exposure to non-opioid analgesics, antipyretics and anti-rheumatics (16.2%,  $n = 1,106$ ). These drugs were also the second most common cause of cases involving females (18.8% of cases,  $n = 699$ ), but only the third most frequent cause of hospitalised pharmaceutical poisoning cases for males (13.2%,  $n = 407$ ). For males, the second most common cause of hospitalised pharmaceutical poisonings was X42, accidental poisoning by and exposure to narcotics and psychodysleptics (17.3% of cases,  $n = 534$ ).

Cases attributed to accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances (X44) accounted for a quarter of all hospitalised pharmaceutical poisonings.

As well as the overall rate of poisonings, age was also associated with the type of pharmaceutical attributed to the case. Rates of poisoning by antiepileptic, sedative-hypnotic, anti-parkinsonism and psychotropic drugs (X41) were highest for people aged 10–64 years (Figure 3.16). For both children aged 0–9 years and adults 65 years and older, rates of poisoning by other and unspecified drugs, medicaments and biological substances (X44) were highest.

**Table 3.14: First external cause for unintentional poisoning by pharmaceuticals injury cases: males, females and persons, Australia 2004–05**

External cause	Males	Females	Persons
Non-opioid analgesics, antipyretics & anti-rheumatics (X40)	407 (13.2%)	699 (18.8%)	1,106 (16.2%)
Antiepileptic, sedative-hypnotic, anti-parkinsonism & psychotropic drugs, not elsewhere classified (X41)	1,226 (39.7%)	1,600 (43.0%)	2,826 (41.5%)
Narcotics & psychodysleptics (hallucinogens), not elsewhere classified (X42)	534 (17.3%)	421 (11.3%)	955 (14.0%)
Other drugs acting on the autonomic nervous system (X43)	102 (3.3%)	123 (3.3%)	225 (3.3%)
Other & unspecified drugs, medicaments & biological substances (X44)	818 (26.5%)	879 (23.6%)	1,697 (24.9%)
<b>Total</b>	<b>3,087</b>	<b>3,722</b>	<b>6,809</b>



## Poisoning (pharmaceuticals)—place and activity

More than half of all unintentional poisoning by pharmaceuticals cases were reported to have taken place in the home (58.1%,  $n = 3,956$ ). This was true for both males and females (Table 3.15) and was the most common place of occurrence for all age groups (data not presented). A further five per cent of cases reportedly occurred in a health service area ( $n = 338$ ). Cases occurring in health service areas were more common for Australians aged 65 years and older, accounting for 13.6% ( $n = 121$ ) of accidental pharmaceutical poisonings involving people of this age (versus 1–8% for other age groups).

Place of occurrence was unspecified for three in ten unintentional poisoning by pharmaceuticals cases (29.5%,  $n = 2,011$ ). Similarly, activity at time of occurrence was unspecified for half of all accidental pharmaceutical poisonings (51.7%, Table 3.16).

**Table 3.15: Place of occurrence for unintentional poisoning by pharmaceuticals injury cases: males, females and persons, Australia 2004–05**

Place of occurrence	Males	Females	Persons
Home	1,738 (56.3%)	2,218 (59.6%)	3,956 (58.1%)
Residential institution	49 (1.6%)	98 (2.6%)	147 (2.2%)
School	6 (0.2%)	20 (0.5%)	26 (0.4%)
Health service area	141 (4.6%)	197 (5.3%)	338 (5.0%)
Other specified institution and public administrative area	6 (0.2%)	11 (0.3%)	17 (0.2%)
Sports and athletics area	* (0.1%)	* (0.0%)	* (0.0%)
Street and highway	17 (0.6%)	11 (0.3%)	28 (0.4%)
Shop and store	5 (0.2%)	14 (0.4%)	19 (0.3%)
Cafe, hotel and restaurant	60 (1.9%)	60 (1.6%)	120 (1.8%)
Other & unspecified trade and service area	16 (0.5%)	17 (0.5%)	33 (0.5%)
Industrial and construction area	* (0.1%)	* (0.1%)	9 (0.1%)
Farm	* (0.1%)	* (0.0%)	* (0.0%)
Other specified place of occurrence	49 (1.6%)	38 (1.0%)	87 (1.3%)
Unspecified place of occurrence	984 (31.9%)	1,027 (27.6%)	2,011 (29.5%)
Place not reported/not applicable	7 (0.2%)	5 (0.1%)	12 (0.2%)
<b>Total</b>	<b>3,087</b>	<b>3,722</b>	<b>6,809</b>

\* Small case counts have been suppressed.

**Table 3.16: Activity at time of occurrence for unintentional poisoning by pharmaceuticals injury cases: males, females and persons, Australia 2004–05**

Activity	Males	Females	Persons
While engaged in sports	* (0.1%)	* (0.1%)	6 (0.1%)
While engaged in leisure	29 (0.9%)	29 (0.8%)	58 (0.9%)
While working for income	8 (0.3%)	19 (0.5%)	27 (0.4%)
While engaged in other types of work	* (0.1%)	* (0.2%)	10 (0.1%)
While resting, sleeping, eating, etc.	78 (2.5%)	104 (2.8%)	182 (2.7%)
Other specified activity	1,311 (42.5%)	1,653 (44.4%)	2,964 (43.5%)
Unspecified activity	1,633 (52.9%)	1,887 (50.7%)	3,520 (51.7%)
Activity not reported/not applicable	20 (0.6%)	22 (0.6%)	42 (0.6%)
<b>Total</b>	<b>3,087</b>	<b>3,722</b>	<b>6,809</b>

\* Small case counts have been suppressed.

## Poisoning (pharmaceuticals)—principal diagnosis

In 99.5% ( $n = 6,773$ ) of accidental pharmaceutical poisoning cases, the principal diagnosis assigned to the case described 'poisoning by drugs, medicaments and biological substances'. Nearly a quarter of these cases (23.6%,  $n = 1,598$ ) were assigned a principal diagnosis of T42, poisoning by antiepileptic, sedative-hypnotic and anti-parkinsonism drugs. Other common principal diagnoses for hospitalised pharmaceutical poisonings were T43, psychotropic drugs (18.1%,  $n = 1,226$ ) and T39, poisoning by non-opioid analgesics, antipyretics and anti-rheumatics (16.5%,  $n = 1,115$ ). The proportions of principal diagnoses assigned to cases involving males and females were quite similar (Table 3.17).

Poisoning by antiepileptic, sedative-hypnotic and anti-parkinsonism drugs (T42) was the most common principal diagnosis assigned to accidental pharmaceutical poisoning cases for most age groups (Table 3.18). For children aged 5–14 years and young adults 15–24 years, poisoning by non-opioid analgesics, antipyretics & anti-rheumatics (T39) was the most common principal diagnosis assigned to unintentional cases, however.

Not surprisingly, the nature of the injury as described by the principal diagnosis for hospitalised pharmaceutical poisoning cases was overwhelmingly 'poisoning/toxic effect' (99.7%,  $n = 6,788$ ). Similarly, 99.8% of cases ( $n = 6,793$ ) were classed as being 'other injuries not specified by body region'.

**Table 3.17: Principal diagnosis for unintentional pharmaceutical poisoning cases where diagnosis group was 'poisoning by drugs, medicaments and biological substances': males, females and persons, Australia 2004–05**

Principal diagnosis	Males	Females	Persons
Systemic antibiotics (T36)	15 (0.5%)	22 (0.6%)	37 (0.5%)
Other systemic anti-infectives & antiparasitics (T37)	11 (0.4%)	13 (0.4%)	24 (0.4%)
Hormones & their synthetic substitutes & antagonists, not elsewhere classified (T38)	81 (2.6%)	88 (2.4%)	169 (2.5%)
Non-opioid analgesics, antipyretics & anti-rheumatics (T39)	413 (13.5%)	702 (19.0%)	1,115 (16.5%)
Narcotics & psychodysleptics [hallucinogens] (T40)	517 (16.8%)	417 (11.3%)	934 (13.8%)
Anaesthetics & therapeutic gases (T41)	30 (1.0%)	24 (0.6%)	54 (0.8%)
Antiepileptic, sedative-hypnotic & anti-parkinsonism drugs (T42)	681 (22.2%)	917 (24.8%)	1,598 (23.6%)
Psychotropic drugs, nec (T43)	552 (18.0%)	674 (18.2%)	1,226 (18.1%)
Drugs primarily affecting the autonomic nervous system (T44)	108 (3.5%)	124 (3.3%)	232 (3.4%)
Primarily systemic & haematological agents, nec (T45)	172 (5.6%)	150 (4.1%)	322 (4.8%)
Agents primarily affecting the cardiovascular system (T46)	196 (6.4%)	222 (6.0%)	418 (6.2%)
Agents primarily affecting the gastrointestinal system (T47)	21 (0.7%)	46 (1.2%)	67 (1.0%)
Agents primarily acting on smooth & skeletal muscles & the respiratory system (T48)	42 (1.4%)	53 (1.4%)	95 (1.4%)
Topical agents primarily affecting skin & mucous membrane & by ophthalmological, otorhinolaryngological & dental drugs (T49)	100 (3.3%)	97 (2.6%)	197 (2.9%)
Diuretics & other & unspecified drugs, medicaments & biological substances (T50)	131 (4.3%)	154 (4.2%)	285 (4.2%)
<b>Total</b>	<b>3,070</b>	<b>3,703</b>	<b>6,773</b>

**Table 3.18: Principal diagnosis for accidental pharmaceutical poisoning cases where diagnosis group was 'poisoning by drugs, medicaments and biological substances' by age, Australia 2004–05**

Principal diagnosis	0–4	5–14	15–24	25–44	45–64	65+	All ages <sup>†</sup>
Systemic antibiotics (T36)	*	*	5	12	9	5	37
Other systemic anti-infectives & antiparasitics (T37)	6	0	*	6	*	6	24
Hormones & their synthetic substitutes & antagonists, nec (T38)	62	9	9	25	27	37	169
Non-opioid analgesics, antipyretics & anti-rheumatics (T39)	234	74	338	280	128	61	1,115
Narcotics & psychodysleptics [hallucinogens] (T40)	47	10	218	404	147	108	934
Anaesthetics & therapeutic gases (T41)	*	0	28	18	*	*	54
Antiepileptic, sedative-hypnotic & anti-parkinsonism drugs (T42)	257	39	189	568	381	164	1,598
Psychotropic drugs, nec (T43)	191	45	295	467	167	60	1,226
Drugs primarily affecting the autonomic nervous system (T44)	101	9	11	25	16	70	232
Primarily systemic & haematological agents, nec (T45)	132	6	17	19	40	108	322
Agents primarily affecting the cardiovascular system (T46)	154	42	7	25	43	147	418
Agents primarily affecting the gastrointestinal system (T47)	30	*	*	5	6	18	67
Agents primarily acting on smooth & skeletal muscles & the respiratory system (T48)	62	7	*	7	7	*	95
Topical agents primarily affecting skin & mucous membrane etc. (T49)	121	10	13	16	17	20	197
Diuretics & other & unspecified drugs, medicaments & biological substances (T50)	69	9	31	73	30	73	285
<b>Total</b>	<b>1,475</b>	<b>265</b>	<b>1,172</b>	<b>1,950</b>	<b>1,023</b>	<b>887</b>	<b>6,773</b>

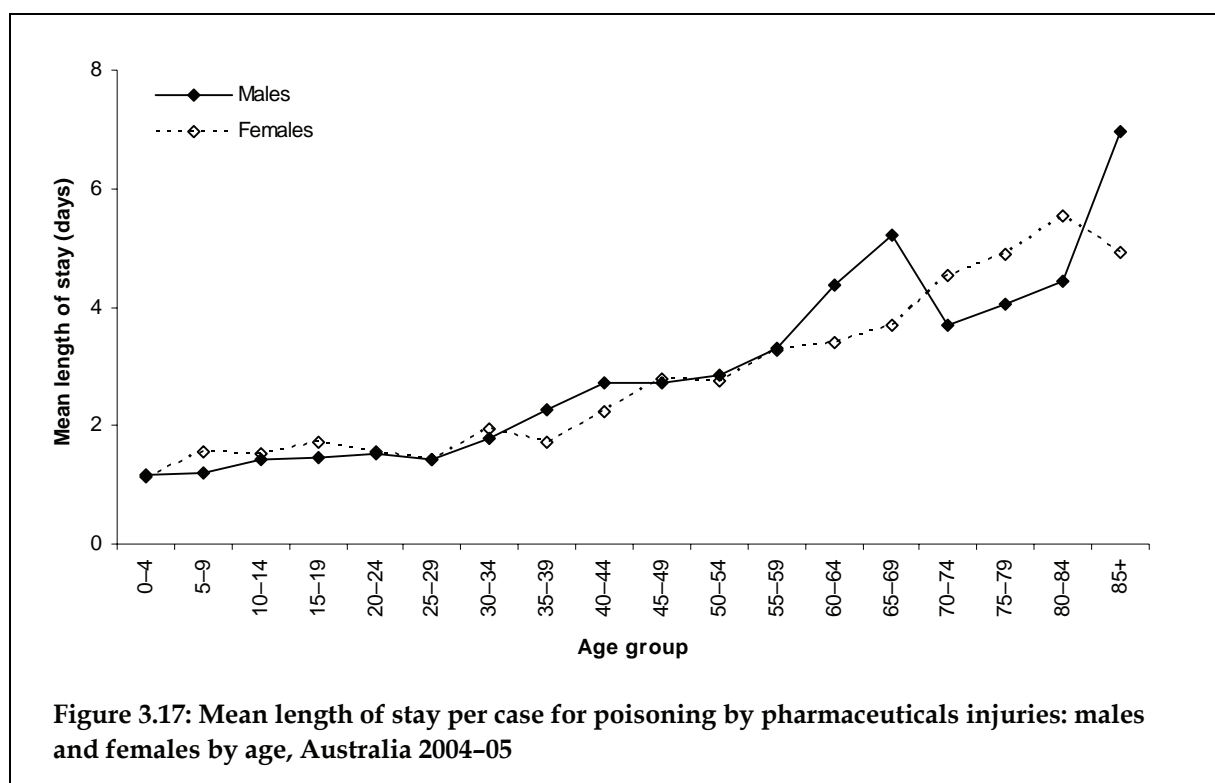
\* Small cell counts have been suppressed.

† All ages includes 1 case for which age was not reported.

## Poisoning (pharmaceuticals)—length of stay

The total number of patient-days attributed to hospitalised cases of unintentional poisoning by pharmaceuticals in 2004–05 was 15,032, 1.1% of all patient-days due to community injuries in this year. Including same-day separations, 77.0% of all hospitalised pharmaceutical poisoning separations had a hospital stay of only one day ( $n = 5,451$ ). The longest lengths of stay observed for unintentional pharmaceutical poisonings were in excess of 100 days ( $n = 2$ ). Accordingly, the mean length of stay for hospitalised cases of accidental pharmaceutical poisoning was longer than actually observed for most cases; 2.2 days. The mean length of stay for cases involving males (2.1 days) was very similar to that for females (2.3 days).

As can be seen in Figure 3.17, the mean lengths of stay per pharmaceutical poisoning case increased almost linearly with age for both males and females. The large fluctuations for means for people aged 60 years and older are provoked by the small numbers of cases determining these means. Nevertheless, the mean lengths of stay per case for older people hospitalised due to pharmaceutical poisoning are substantially longer than those for younger people, which may be related to the increased frequency of poisonings occurring in health service areas for cases involving older people.

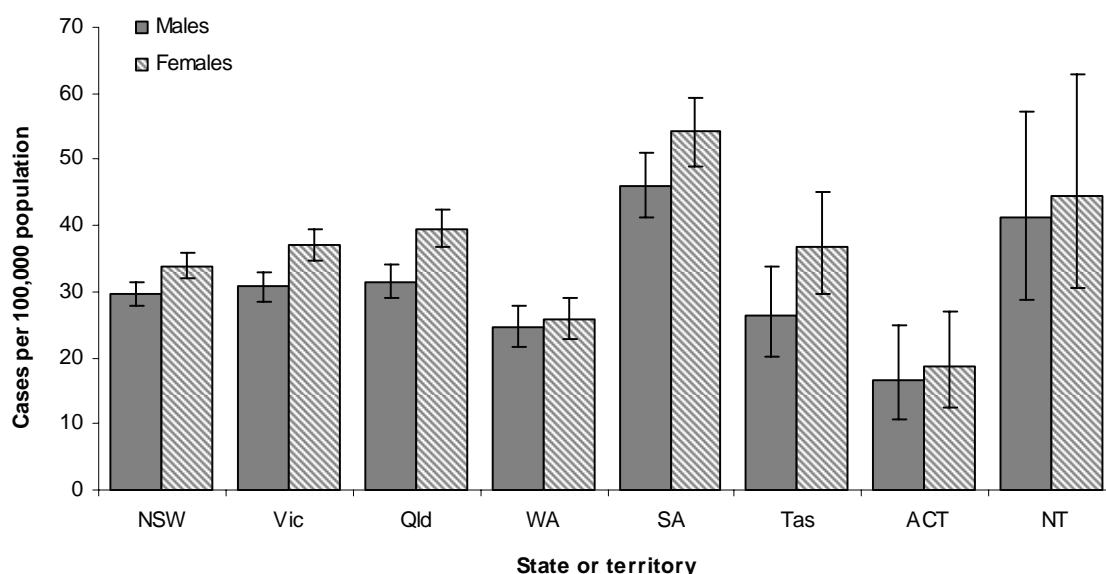


## Poisoning (pharmaceuticals)—state of usual residence

Age-standardised rates of hospitalised cases of unintentional poisoning by pharmaceuticals varied widely according to the person's place of usual residence. The highest rate was observed for persons resident in South Australia; 50.2 per 100,000 population. This rate was significantly higher than those of all other states and territories other than the Northern Territory. The lowest rate of hospitalised cases of accidental poisoning by pharmaceuticals was observed for persons resident in the Australian Capital Territory; 17.3 per 100,000 population. This rate was considered to be significantly lower than those of all other states and territories.

Male and female rates of unintentional poisoning by pharmaceuticals cases show similar patterns according to state of usual residence (Figure 3.18). Interestingly, rates for males and females resident in Western Australia and the ACT are more similar to each other than for males and females resident in the other states of Australia.

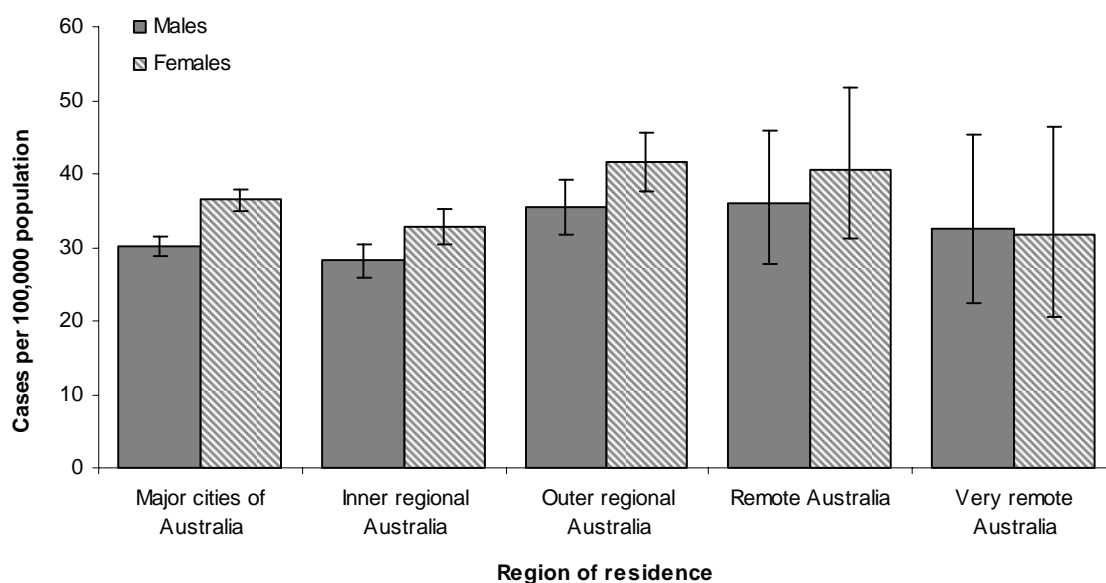




**Figure 3.18: Age-standardised rates ( $\pm$  95% CI) for unintentional poisoning by pharmaceuticals injury cases: males and females by state of usual residence, 2004–05**

### Poisoning (pharmaceuticals)—remoteness of usual residence

The rate of hospitalised cases of unintentional poisoning by pharmaceuticals according to the remoteness of the person's place of usual residence was somewhat different to that for most community injury cases. While rates rose with remoteness for community injury overall (Figure 2.6), there was no strong trend associated with remoteness for hospitalisations due to unintentional poisoning by pharmaceuticals (Figure 3.19).



**Figure 3.19: Age-standardised rates ( $\pm$  95% CI) for unintentional poisoning by pharmaceuticals injury cases: males and females by remoteness of usual residence (ASGC regions), 2004–05**

## 3.4 Poisoning (other substances) injury cases

ICD-10-AM inclusion criteria:

- Principal diagnosis [S00–T75](#) or [T79](#), and
- First external cause [X45–X49](#), and
- Mode of admission other than ‘transfer from another acute hospital’.

**Table 3.19: Key indicators for hospitalised unintentional poisoning by other substances injury: males, females and persons, Australia 2004–05**

Key indicators	Males	Females	Persons
Total number of hospital separations due to poisoning (other substances) injury	1,458	982	2,440
Poisoning (other substances) separations as proportion of all community injury separations	0.7%	0.6%	0.6%
Estimated number of poisoning (other substances) injury cases <sup>(a)</sup>	1,380	939	2,319
Cases per 100,000 population	13.7	9.2	11.5
Cases per 100,000 population—age-standardised <sup>(b)</sup>	13.8	9.3	11.6
Total patient-days due to poisoning (other substances) injury <sup>(c)</sup>	2,786	1,566	4,352
Mean patient-days per case	2.0	1.7	1.9

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

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

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

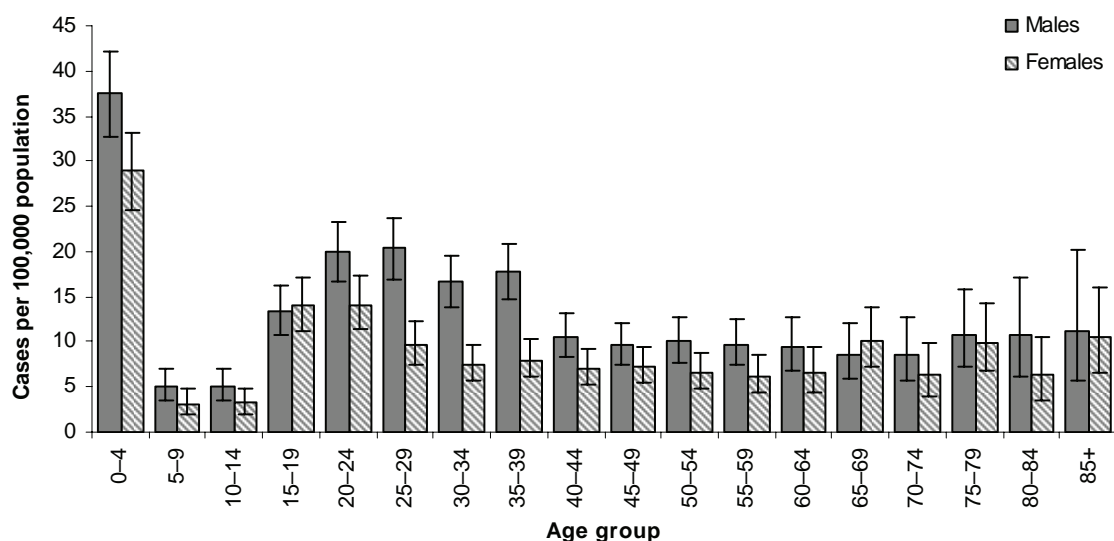
An estimated 2,319 hospitalised injury cases were due to *unintentional* poisoning by non-pharmaceutical substances in 2004–05 (Table 3.19). The age-standardised rate of these hospitalised poisonings due to substances other than pharmaceuticals was 11.6 per 100,000 population.

Intentional/undetermined intent poisonings involving non-pharmaceutical substances (i.e. cases coded to principal diagnoses X65–X69, X86–X90 or Y15–Y19) are discussed in later sections.

### Poisoning (other substances)—age and sex

Unlike accidental poisonings due to pharmaceuticals (and like most other types of community injuries), males accounted for a higher proportion of unintentional poisoning by non-pharmaceutical substances cases (59.5%,  $n = 1,380$ ) than females. Accordingly, males had a higher age-standardised rate of accidental poisoning by other substances cases (13.8 per 100,000 population) than females (9.3 per 100,000).

Like pharmaceutical poisonings, however, rates of unintentional poisonings by other substances were highest for children 0–4 years and relatively low for all other ages (Figure 3.20). Male and female rates were quite similar for most age groups, but were significantly different for those aged 25–39 years. Here, the rates for males were 2.0–2.2 times higher than those for females of the same age. Unlike poisonings by pharmaceuticals, rates of hospitalised poisonings by other substances did not increase for older Australians.



**Figure 3.20: Age-specific rates ( $\pm$  95% CI) for unintentional poisoning by other substances injury cases: males and females, Australia 2004–05**

## Poisoning (other substances)—external cause

The most common first external cause assigned to cases of unintentional poisoning by substances other than pharmaceuticals was X49, accidental poisoning by and exposure to other and unspecified chemicals and noxious substances (Table 3.20). X49 includes poisonings by such substance as corrosive aromatics, acids and caustic alkalis, glues and adhesives, paints and dyes, and poisonous foodstuffs or plants (NCCH 2004). Accidental poisoning by other and unspecified chemicals and noxious substances was the most common cause of poisoning by substances other than pharmaceuticals for every age group. The age-standardised rate of poisoning by other and unspecified chemicals and noxious substances for all ages was 7.4 cases per 100,000 population.

Accidental poisoning due to alcohol (X45) was the second most common cause of hospitalised cases in 2004–05, accounting for 11.5% of the total ( $n = 266$ ). A higher proportion of cases involving females (14.9%,  $n = 140$ ) were attributed to alcohol poisoning than for males (9.1%,  $n = 126$ ). Rates of accidental alcohol poisoning were highest for those aged 15–19; 5.2 cases per 100,000 population.

**Table 3.20: First external cause for unintentional poisoning by other substances injury cases: males, females and persons, Australia 2004–05**

External cause	Males	Females	Persons
Accidental poisoning by & exposure to alcohol (X45)	126 (9.1%)	140 (14.9%)	266 (11.5%)
Accidental poisoning by & exposure to organic solvents & halogenated hydrocarbons & their vapours (X46)	134 (9.7%)	52 (5.5%)	186 (8.0%)
Accidental poisoning by & exposure to other gases & vapours (X47)	158 (11.4%)	67 (7.1%)	225 (9.7%)
Accidental poisoning by & exposure to pesticides (X48)	107 (7.8%)	57 (6.1%)	164 (7.1%)
Accidental poisoning by & exposure to other & unspecified chemicals & noxious substances (X49)	855 (62.0%)	623 (66.3%)	1,478 (63.7%)
<b>Total</b>	<b>1,380</b>	<b>939</b>	<b>2,319</b>

## Poisoning (other substances)—place and activity

Unlike unintentional pharmaceutical poisonings, only a third of accidental poisoning by other substances cases were reported as having occurred in the home (35.0%,  $n = 811$  Table 3.21). However, a higher proportion of poisoning by other substances was assigned an unspecified place of occurrence (42.3% of cases, compared to 29.5% of poisonings by pharmaceuticals). Patterns of place of occurrence for poisoning by other substances cases were relatively similar for males and females, other than a slightly higher proportion of cases involving females occurring in the home than for males (39.9% vs. 31.6%) and a much higher proportion of cases involving males occurring in industrial and construction areas than for females (9.8% vs. 0.7%).

**Table 3.21: Place of occurrence for poisoning by other substances injury cases: males, females and persons, Australia 2004–05**

Place of occurrence	Males	Females	Persons
Home	436 (31.6%)	375 (39.9%)	811 (35.0%)
Residential institution	8 (0.6%)	17 (1.8%)	25 (1.1%)
School	12 (0.9%)	6 (0.6%)	18 (0.8%)
Health service area	14 (1.0%)	9 (1.0%)	23 (1.0%)
Other specified institution & public administrative area	* (0.2%)	* (0.4%)	* (0.3%)
Sports & athletics area	* (0.4%)	* (0.4%)	9 (0.4%)
Street & highway	* (0.6%)	* (0.4%)	12 (0.5%)
Shop & store	13 (0.9%)	11 (1.2%)	24 (1.0%)
Cafe, hotel & restaurant	64 (4.6%)	69 (7.3%)	133 (5.7%)
Other & unspecified trade & service area	15 (1.1%)	8 (0.9%)	23 (1.0%)
Industrial & construction area	135 (9.8%)	7 (0.7%)	142 (6.1%)
Farm	* (2.0%)	* (0.2%)	29 (1.3%)
Other specified place of occurrence	56 (4.1%)	23 (2.4%)	79 (3.4%)
Unspecified place of occurrence	583 (42.2%)	398 (42.4%)	981 (42.3%)
Place not reported/not applicable	* (0.1%)	* (0.2%)	* (0.1%)
<b>Total</b>	<b>1,380</b>	<b>939</b>	<b>2,319</b>

\* Small case counts have been suppressed.

The reported activity at the time of the unintentional poisoning by substances other than pharmaceutical incident indicates that males were more likely to be poisoned while working for income (20.3% of cases involving males) than females (5.1%, Table 3.22). No one particular industry stood out amongst these working for income cases, with 46.6% described as 'other' and 'unspecified' work for income.

Conversely, a higher proportion of poisoning by other substances cases involving females occurred while 'resting, sleeping, eating or engaging in other vital activities' (30.4%,  $n = 285$ ) than cases involving males (16.6%,  $n = 229$ ). This is consistent with a higher proportion of females being poisoned in the home.

**Table 3.22: Activity at time of occurrence for unintentional poisoning by other substances injury cases: males, females and persons, Australia 2004–05**

Activity	Males	Females	Persons
While engaged in sports	* (0.7%)	* (0.2%)	11 (0.5%)
While engaged in leisure	16 (1.2%)	18 (1.9%)	34 (1.5%)
While working for income	280 (20.3%)	48 (5.1%)	328 (14.1%)
While engaged in other types of work	92 (6.7%)	39 (4.2%)	131 (5.6%)
While resting, sleeping, eating, etc.	229 (16.6%)	285 (30.4%)	514 (22.2%)
Other specified activity	243 (17.6%)	193 (20.6%)	436 (18.8%)
Unspecified activity	505 (36.6%)	348 (37.1%)	853 (36.8%)
Activity not reported/not applicable	* (0.4%)	* (0.6%)	12 (0.5%)
<b>Total</b>	<b>1,380</b>	<b>939</b>	<b>2,319</b>

\* Small case counts have been suppressed.

## Poisoning (other substances)—principal diagnosis

The principal diagnoses assigned to unintentional poisoning by other substances cases were a little more varied than those of cases of accidental pharmaceutical poisonings. Eight in ten cases of poisoning by substances other than pharmaceuticals were given a principal diagnosis describing 'toxic effects of non-medical substances'. Most frequently, these were codes describing toxic effects of noxious substances eaten as food, other than seafood (T62: 27.0%,  $n = 627$ ) and the toxic effects of alcohol (T51: 10.5%,  $n = 244$ ). Both of these diagnoses, and toxic effects diagnoses more generally, were proportionately more common for females than males (Table 3.23).

A further 15.0% of unintentional poisoning by non-pharmaceutical substances cases received principal diagnoses describing burns ( $n = 348$ ). Of these, burns to the eye and adnexa were most common (T26: 5.0%,  $n = 116$ ) and this and all other types of burns were more proportionately more common for males than for females.

Similar to accidental pharmaceutical poisoning cases, hospitalised cases of accidental poisoning by other substances were strongly associated with young age (see Figure 3.20, previously). The biggest difference observed was for cases attributed to T52, toxic effects of organic solvents: 24.9% of cases involving very young children recorded this principal diagnosis compared to only 3.7% of cases for older children and adults.

Conversely, a higher proportion of cases involving people aged five years and older were assigned a principal diagnosis describing burns (16.0%, compared to 10.5% of children 0–4 years). Burns to the eye and adnexa (T26) showed the largest age-related differential, with 1.9% of cases involving very young children attributed this principal diagnosis compared to 5.7% of cases involving older children and adults.

As for unintentional pharmaceutical poisonings, the principal diagnoses of most cases of accidental poisoning by other substances indicated injuries not specified by body region (97.5%,  $n = 2,262$ ) and the nature of the injury was classed as poisoning/toxic effect (81.5%,  $n = 1,889$ ).

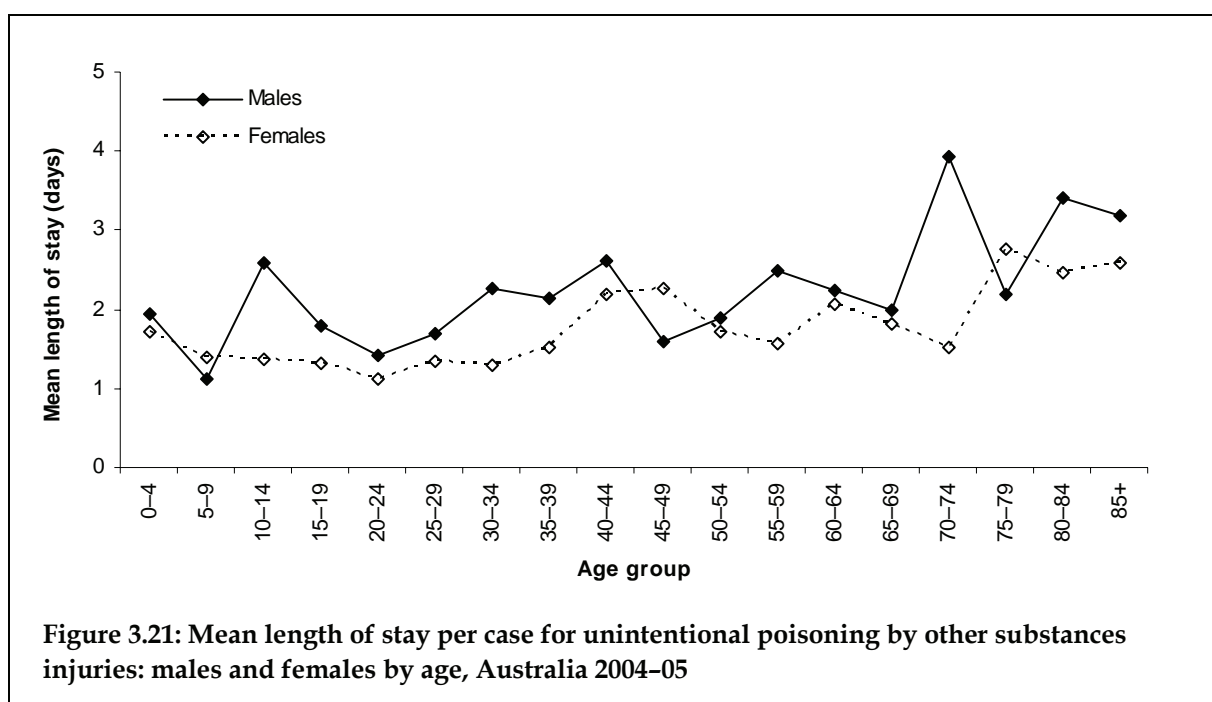
**Table 3.23: Principal diagnosis for unintentional poisoning by other substances injury cases: males, females and persons, Australia 2004–05**

Principal diagnosis	Males	Females	Persons
Injuries to the head & upper body	40 (2.9%)	14 (1.5%)	54 (2.3%)
Injuries to the hip & lower body	* (0.1%)	* (0.1%)	* (0.1%)
Effects of foreign body entering through natural orifice	14 (1.0%)	7 (0.7%)	21 (0.9%)
<i>Burns</i>	<i>267 (19.3%)</i>	<i>81 (8.6%)</i>	<i>348 (15.0%)</i>
Burn of head & neck (T20)	25 (1.8%)	11 (1.2%)	36 (1.6%)
Burn of trunk (T21)	* (1.5%)	* (0.2%)	23 (1.0%)
Burn of shoulder & upper limb, except wrist & hand (T22)	17 (1.2%)	6 (0.6%)	23 (1.0%)
Burn of wrist & hand (T23)	36 (2.6%)	8 (0.9%)	44 (1.9%)
Burn of hip & lower limb, except ankle & foot (T24)	* (2.4%)	* (0.4%)	37 (1.6%)
Burn of ankle & foot (T25)	28 (2.0%)	6 (0.6%)	34 (1.5%)
Burn of eye & adnexa (T26)	84 (6.1%)	32 (3.4%)	116 (5.0%)
Burn of respiratory tract (T27)	* (0.3%)	0 (0.0%)	* (0.2%)
Burn of other internal organs (T28)	16 (1.2%)	12 (1.3%)	28 (1.2%)
Burns of multiple body regions (T29)	* (0.2%)	0 (0.0%)	* (0.1%)
Poisoning by drugs, medicaments & biological substances	11 (0.8%)	17 (1.8%)	28 (1.2%)
<i>Toxic effects of non-medical substances</i>	<i>1,043 (75.6%)</i>	<i>818 (87.1%)</i>	<i>1,861 (80.3%)</i>
Toxic effect of alcohol (T51)	117 (8.5%)	127 (13.5%)	244 (10.5%)
Toxic effect of organic solvents (T52)	115 (8.3%)	61 (6.5%)	176 (7.6%)
Toxic effect of halogen derivatives of aliphatic & aromatic hydrocarbons (T53)	35 (2.5%)	11 (1.2%)	46 (2.0%)
Toxic effect of corrosive substances (T54)	76 (5.5%)	49 (5.2%)	125 (5.4%)
Toxic effect of soaps & detergents (T55)	20 (1.4%)	12 (1.3%)	32 (1.4%)
Toxic effect of metals (T56)	31 (2.2%)	16 (1.7%)	47 (2.0%)
Toxic effect of other inorganic substances (T57)	0 (0.0%)	* (0.4%)	* (0.2%)
Toxic effect of carbon monoxide (T58)	45 (3.3%)	20 (2.1%)	65 (2.8%)
Toxic effect of other gases, fumes & vapours (T59)	110 (8.0%)	49 (5.2%)	159 (6.9%)
Toxic effect of pesticides (T60)	91 (6.6%)	48 (5.1%)	139 (6.0%)
Toxic effect of noxious substances eaten as seafood (T61)	39 (2.8%)	41 (4.4%)	80 (3.4%)
Toxic effect of other noxious substances eaten as food (T62)	294 (21.3%)	333 (35.5%)	627 (27.0%)
Toxic effect of aflatoxin & other mycotoxin food contaminants (T64)	0 (0.0%)	* (0.1%)	* (0.0%)
Toxic effect of other & unspecified substances (T65)	70 (5.1%)	46 (4.9%)	116 (5.0%)
Other & unspecified effects of external causes	* (0.1%)	* (0.0%)	* (0.1%)
Certain early complications of trauma	* (0.1%)	* (0.1%)	* (0.1%)
<b>Total</b>	<b>1,380</b>	<b>939</b>	<b>2,319</b>

\* Small case counts have been suppressed.

## Poisoning (other substances)—length of stay

The total number of patient-days attributed to hospitalised cases of accidental poisoning by substances other than pharmaceuticals in 2004–05 was 4,352. Nearly half of all poisoning by other substances separations were discharged from hospital on the same day as admitted; 46.9%,  $n = 1,145$ . Including these separations, 82.9% of unintentional poisonings by other substances had a length of stay of only one day ( $n = 2,023$ ). Accordingly, and similar to accidental pharmaceutical poisonings, the mean length of stay for all poisoning by other substances cases was quite short; 1.9 days. Females had a slightly shorter mean length of stay (1.7 days) than males (2.0 days). Mean lengths of stay per case increased slightly with age (Figure 3.21). The fluctuations apparent in Figure 3.21 are largely due to the relatively small number of cases underlying the means.

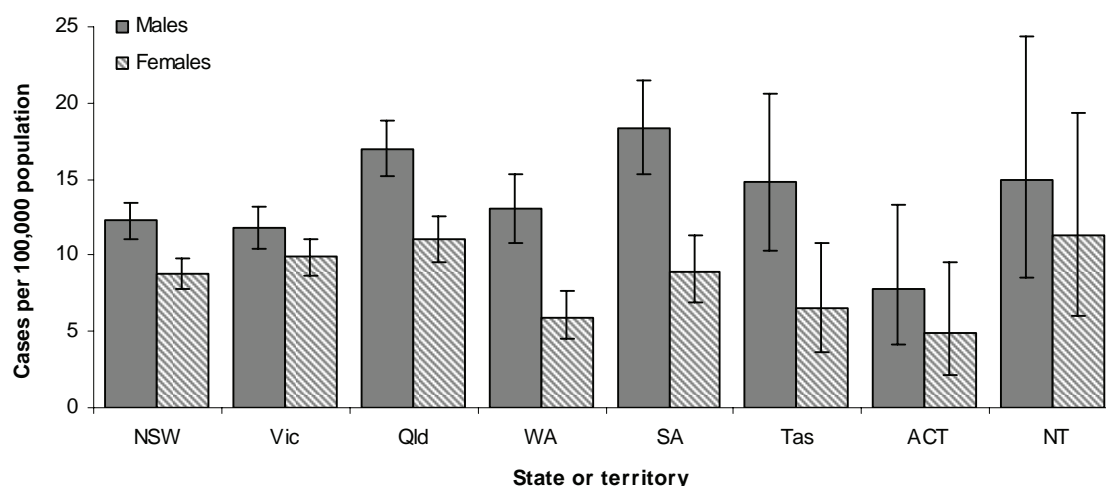


## Poisoning (other substances)—state of usual residence

The pattern of rates of accidental poisoning by substances other than pharmaceuticals by state of usual residence was slightly different to that for pharmaceutical poisoning cases. While the age-standardised rate for residents of South Australia was quite high for poisonings by other substances, the highest rate was observed for residents of Queensland (14.0 per 100,000). Similar to unintentional pharmaceutical poisonings however, the lowest rate of hospitalised poisoning by other substances cases was observed for residents of the Australian Capital Territory (6.3 per 100,000), and rates for cases involving residents of Western Australia were quite low also (9.6 per 100,000).

This pattern held for age-standardised rates hospitalised poisoning by substances other than pharmaceuticals for both males and females, except that males resident in South Australia had a slightly higher rate than males resident in Queensland (Figure 3.22).



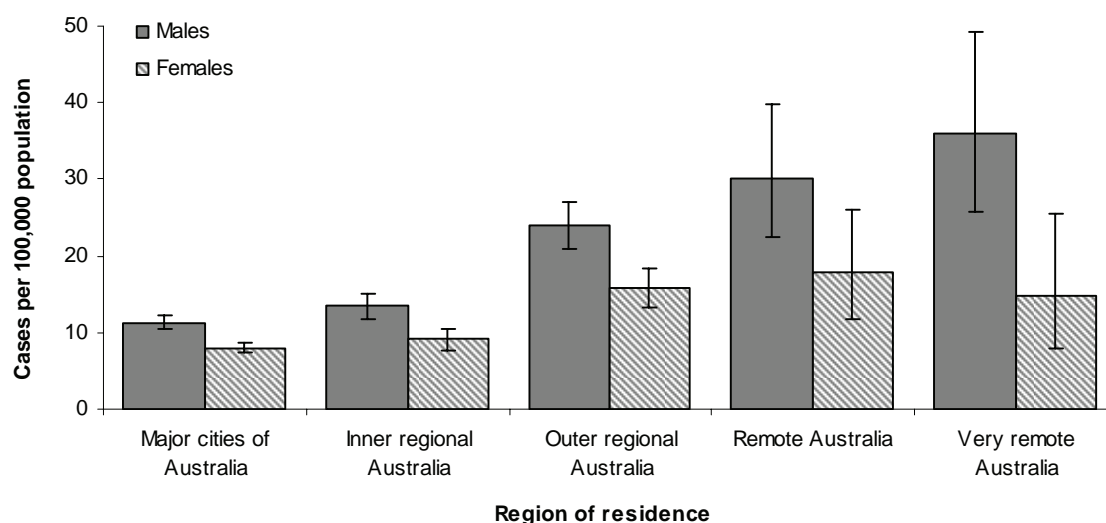


**Figure 3.22: Age-standardised rates ( $\pm$  95% CI) for unintentional poisoning by other substances injury cases: males and females by state of usual residence, 2004-05**

### Poisoning (other substances)—remoteness of usual residence

The rate of unintentional poisoning by other substances cases according to the remoteness of the person's usual residence shows a pattern similar to that observed for all community injury; the lowest age-standardised rate was observed for residents of Australia's Major cities (9.6 per 100,000 population) and the highest rate was observed for residents of Very remote Australia (26.1 per 100,000). This was unlike accidental pharmaceutical poisonings, where no significant pattern was observed.

Figure 3.23 demonstrates that it is largely the rate of cases involving males which is driving this pattern; rates for females were marginally lower in Very remote areas than in Remote Australia. For both males and females, however, the width of the 95% confidence intervals for Outer regional, Remote and Very remote areas suggest that these rates are not significantly different from each other.



**Figure 3.23: Age-standardised rates ( $\pm$  95% CI) for poisoning by other substances injury cases: males and females by remoteness of usual residence (ASGC regions), 2004-05**



## 3.5 Fall injury cases

ICD-10-AM inclusion criteria:

- Principal diagnosis [S00–T75](#) or [T79](#), and
- First external cause [W00–W19](#), and
- Mode of admission other than ‘transfer from another acute hospital’.

**Table 3.24: Key indicators for hospitalised falls injury: males, females and persons, Australia 2004–05**

Key indicators	Males	Females	Persons <sup>(a)</sup>
Total number of hospital separations due to falls injury	62,022	77,088	139,112
Falls separations as proportion of all community injury separations	27.7%	48.0%	36.2%
Estimated number of falls injury cases <sup>(b)</sup>	56,830	69,973	126,805
Cases per 100,000 population	565.5	688.7	627.4
Cases per 100,000 population—age-standardised <sup>(c)</sup>	592.1	595.2	607.0
Total patient-days due to falls injury <sup>(d), (e)</sup>	275,642	496,354	772,004
Mean patient-days per case	4.9	7.1	6.1

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

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

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

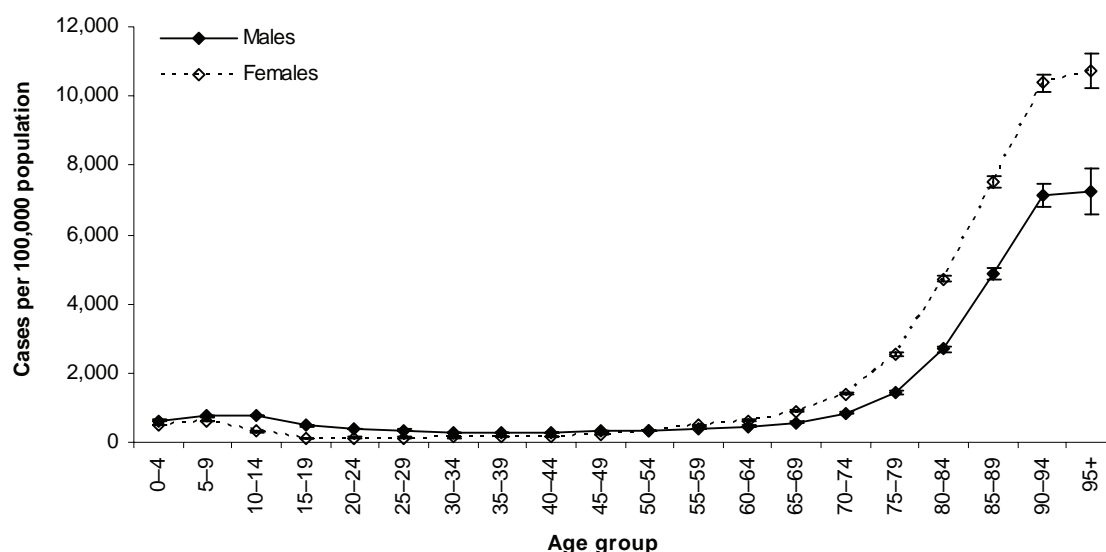
(d) Includes records with a mode of admission of 'transfer from another acute hospital' as contributing to hospital burden due to injury.

(e) Includes 8 days of patient care for which sex was not reported.

An estimated 126,805 hospitalised injury cases were due to unintentional falls in 2004–05 (Table 3.24). The age-standardised rate of hospitalised injurious fall cases was 607.0 per 100,000 population.

### Falls—age and sex

Males comprised less than half of all unintentional fall injury cases (44.8%,  $n = 56,830$ ) but age-standardised rates of cases were very similar for both males and females; 592.1 per 100,000 population for males compared to 595.2 per 100,000 for females. With reference to both the National Injury Prevention and Safety Promotion Plan: 2004–2014 and the National Falls Prevention for Older People Plan: 2004 Onwards (NPHP 2004; NPHP 2005), the age-standardised rate of unintentional falls cases for Australians aged 65 years and older was 2,295.9 per 100,000 population. While rates of hospitalised falls injury for both males and females were observed to increase substantially from the age of 75 years, rates for older females were considerably higher than those for older males (Figure 3.24). More detailed information regarding fall-related hospital separations specifically involving older Australians can also be found in the recent NISU report by Bradley and Harrison (2007).



**Figure 3.24: Age-specific rates ( $\pm$  95% CI) for fall injury cases: males and females, Australia 2004-05**

## Falls—external cause

The leading cause of hospitalised accidental fall cases for both males and females was W01, falls due to slipping, tripping and stumbling (Table 3.25). Falls attributed to tripping were most common (15.0% of all fall cases,  $n = 18,970$ ), while slipping and stumbling accounted for 8.7% and 2.9% of cases, respectively. A higher proportion of cases involving females were attributed to slipping, tripping and stumbling (32.5%,  $n = 22,774$ ) than for males (19.2%, 10,931).

The most frequent type of hospitalised fall for younger people 0-14 years in 2004-05 was a fall involving playground equipment (Table 3.26). For teenagers and young adults aged 15-24 years, falls due to collision with, or pushing by, another person (W03) were the most common cause of hospitalised fall injuries. Many of these likely occurred while playing sport (discussed further below, see also Flood & Harrison 2006). Males had a higher rate of hospitalised falls at these ages (Figure 3.24).

For adults aged 25 years and older, when rates for females approach, and then at ages older than 50 years, exceed those for males, falls due to slipping, tripping and stumbling were the most common cause of hospitalisation in each age group. The ratio of cases attributed to slips to cases attributed to trips decreased with age for adults aged 25 and older. That is, while more slips than trips were observed for adults 25-44 years, more trips were the recorded cause of hospitalised falls for people aged 45 years and older.

The frequency of hospitalised fall cases attributed to beds, chairs and other furniture (W06-W08) by age had distinctly bimodal distributions, with high numbers of cases observed for children aged 0-4 years and adults aged 65 years and older. As has been recently discussed (Bradley 2007; Bradley & Harrison 2007), cases of ladder-related falls increase with age and were particularly common for people aged 45 years and older.

**Table 3.25: First external cause for fall injury cases: males, females and persons, Australia 2004–05**

External cause	Males	Females	Persons *
Fall on same level involving ice & snow (W00)	30 (0.1%)	28 (0.0%)	58 (0.0%)
Fall on same level from slipping (W01.0)	3,665 (6.4%)	7,410 (10.6%)	11,075 (8.7%)
Fall on same level from tripping (W01.1)	5,849 (10.3%)	13,121 (18.8%)	18,970 (15.0%)
Fall on same level from stumbling (W01.2)	1,417 (2.5%)	2,243 (3.2%)	3,661 (2.9%)
<i>All slips, trips &amp; stumbles (W01)</i>	<i>10,931 (19.2%)</i>	<i>22,774 (32.5%)</i>	<i>33,706 (26.6%)</i>
Fall involving roller-skates (W02.0)	196 (0.3%)	172 (0.2%)	368 (0.3%)
Fall involving skateboard (W02.1)	1,692 (3.0%)	277 (0.4%)	1,969 (1.6%)
Fall involving water-ski (W02.2)	85 (0.1%)	35 (0.1%)	120 (0.1%)
Fall involving snow ski (W02.3)	177 (0.3%)	146 (0.2%)	323 (0.3%)
Fall involving snow board (W02.4)	162 (0.3%)	34 (0.0%)	196 (0.2%)
Fall involving ice-skates (W02.5)	44 (0.1%)	68 (0.1%)	112 (0.1%)
<i>All falls involving ice-skates etc (W02)</i>	<i>2,356 (4.1%)</i>	<i>732 (1.0%)</i>	<i>3,088 (2.4%)</i>
Other fall on same level due to collision with, or pushing by, another person (W03)	3,579 (6.3%)	679 (1.0%)	4,258 (3.4%)
Fall while being carried or supported by other persons (W04)	220 (0.4%)	233 (0.3%)	453 (0.4%)
Fall involving wheelchair (W05)	293 (0.5%)	326 (0.5%)	619 (0.5%)
Fall involving bed (W06)	1,531 (2.7%)	2,665 (3.8%)	4,196 (3.3%)
Fall involving chair (W07)	1,508 (2.7%)	2,227 (3.2%)	3,735 (2.9%)
Fall involving other furniture (W08)	447 (0.8%)	460 (0.7%)	907 (0.7%)
Fall involving tree house (W09.0)	42 (0.1%)	33 (0.0%)	75 (0.1%)
Fall involving flying fox (W09.1)	189 (0.3%)	170 (0.2%)	359 (0.3%)
Fall involving playground climbing apparatus (W09.2)	893 (1.6%)	973 (1.4%)	1,866 (1.5%)
Fall involving slide (W09.3)	350 (0.6%)	197 (0.3%)	547 (0.4%)
Fall involving swing (W09.4)	335 (0.6%)	246 (0.4%)	581 (0.5%)
Fall involving seesaw (W09.5)	30 (0.1%)	25 (0.0%)	55 (0.0%)
Fall involving trampoline (W09.6)	797 (1.4%)	641 (0.9%)	1,439 (1.1%)
Fall involving other specified playground equipment (W09.8)	178 (0.3%)	131 (0.2%)	309 (0.2%)
Fall involving unspecified playground equipment (W09.9)	275 (0.5%)	150 (0.2%)	425 (0.3%)
<i>All falls involving playground equipment (W09)</i>	<i>3,089 (5.4%)</i>	<i>2,566 (3.7%)</i>	<i>5,656 (4.5%)</i>
Fall on & from stairs & steps (W10)	3,283 (5.8%)	5,089 (7.3%)	8,372 (6.6%)
Fall on & from ladder (W11)	3,187 (5.6%)	659 (0.9%)	3,846 (3.0%)
Fall on & from scaffolding (W12)	292 (0.5%)	8 (0.0%)	300 (0.2%)
Fall from, out of or through building or structure (W13)	2,880 (5.1%)	681 (1.0%)	3,561 (2.8%)
Fall from tree (W14)	903 (1.6%)	288 (0.4%)	1,191 (0.9%)
Fall from cliff (W15)	227 (0.4%)	98 (0.1%)	325 (0.3%)
Diving or jumping into water causing injury other than drowning or submersion (W16)	357 (0.6%)	95 (0.1%)	452 (0.4%)
Other fall from one level to another (W17)	3,388 (6.0%)	1,835 (2.6%)	5,223 (4.1%)
Other fall on same level (W18)	8,167 (14.4%)	11,654 (16.7%)	19,821 (15.6%)
Unspecified fall (W19)	10,162 (17.9%)	16,876 (24.1%)	27,038 (21.3%)
<b>Total</b>	<b>56,830</b>	<b>69,973</b>	<b>126,805</b>

\* Persons includes 2 cases for which sex was not reported.

**Table 3.26: First external cause for fall injury cases by age, Australia 2004–05**

External cause	0–4	5–14	15–24	25–44	45–64	65+	All ages
Fall on same level involving ice & snow (W00)	*	*	*	18	27	7	58
Fall on same level from slipping (W01.0)	263	558	456	1,264	2,510	6,024	11,075
Fall on same level from tripping (W01.1)	393	1,240	456	1,155	2,832	12,894	18,970
Fall on same level from stumbling (W01.2)	60	212	154	260	437	2,538	3,661
<i>All slips, trips &amp; stumbles (W01)</i>	<i>716</i>	<i>2,010</i>	<i>1,066</i>	<i>2,679</i>	<i>5,779</i>	<i>21,456</i>	<i>33,706</i>
Fall involving roller-skates (W02.0)	*	258	54	37	17	*	368
Fall involving skateboard (W02.1)	48	1,192	502	184	26	17	1,969
Fall involving water-ski (W02.2)	*	9	33	59	17	*	120
Fall involving snow ski (W02.3)	0	23	71	130	87	12	323
Fall involving snow board (W02.4)	0	14	93	84	5	0	196
Fall involving ice-skates (W02.5)	*	46	25	24	16	*	112
<i>All falls involving ice-skates etc (W02)</i>	<i>49</i>	<i>1,542</i>	<i>778</i>	<i>518</i>	<i>168</i>	<i>33</i>	<i>3,088</i>
Other fall on same level due to collision with, or pushing by, another person (W03)	79	1,383	1,531	881	161	223	4,258
Fall while being carried by other persons (W04)	315	76	31	19	7	5	453
Fall involving wheelchair (W05)	*	*	16	69	120	402	619
Fall involving bed (W06)	628	379	58	79	224	2,828	4,196
Fall involving chair (W07)	725	354	61	239	526	1,830	3,735
Fall involving other furniture (W08)	441	125	21	57	82	181	907
Fall involving tree house (W09.0)	36	38	*	*	0	0	75
Fall involving flying fox (W09.1)	27	306	8	10	*	*	359
Fall involving playground climbing apparatus (W09.2)	174	1,685	*	*	0	*	1,866
Fall involving slide (W09.3)	205	317	9	7	*	*	547
Fall involving swing (W09.4)	138	406	26	11	0	0	581
Fall involving seesaw (W09.5)	15	40	0	0	0	0	55
Fall involving trampoline (W09.6)	342	1,019	49	25	*	*	1,439
Fall involving other specified playground equipment (W09.8)	95	196	7	8	*	*	309
Fall involving unspecified playground equipment (W09.9)	130	291	*	*	*	0	425
<i>All falls involving playground equipment (W09)</i>	<i>1,162</i>	<i>4,298</i>	<i>102</i>	<i>66</i>	<i>19</i>	<i>9</i>	<i>5,656</i>
Fall on & from stairs & steps (W10)	421	334	453	1,435	2,029	3,700	8,372
Fall on & from ladder (W11)	23	50	131	815	1,691	1,136	3,846
Fall on & from scaffolding (W12)	*	*	34	102	138	22	300
Fall from, out of or through building or structure (W13)	302	610	634	995	717	303	3,561
Fall from tree (W14)	61	782	90	96	98	64	1,191
Fall from cliff (W15)	5	24	69	97	84	46	325
Diving or jumping into water causing injury other than drowning or submersion (W16)	6	77	171	145	42	11	452
Other fall from one level to another (W17)	741	980	531	1,053	1,060	858	5,223
Other fall on same level (W18)	644	2,062	1,173	1,806	2,260	11,876	19,821
Unspecified fall (W19)	787	1,665	1,099	2,196	3,605	17,686	27,038
<b>Total</b>	<b>7,110</b>	<b>16,764</b>	<b>8,053</b>	<b>13,365</b>	<b>18,837</b>	<b>62,676</b>	<b>126,805</b>

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

\* Small case counts have been suppressed.

## Falls—place and activity

The home was the most commonly specified place of occurrence for hospitalised fall injuries for all age groups other than young people aged 5–24 years (Table 3.27). More than a third of all unintentional fall cases were reported to have occurred in the home or the driveway to the home (combined, 37.4%, Table 3.28). A higher proportion of cases for females occurred in the home itself (42.4%), than for cases involving males (29.8%). This is most likely due to the high rate of falls for older females. Similarly, a higher proportion of cases involving females occurred in aged care facilities (14.9%) than cases for males (5.7%). In all, 10.7% of all hospitalised injuries resulting from an unintentional fall in 2004–05 occurred in aged care facilities ( $n = 13,624$ ).

On the other hand, higher proportions of hospitalised fall cases involving males were reported to have occurred in sports and athletics areas (total sports; 9.0%,  $n = 5,105$ ) than cases involving females (2.2%,  $n = 1,531$ ) and sports facilities were the most common specified place of occurrence for hospitalised fall injuries for people aged 15–24 years in 2004–05. Higher proportions of hospitalised falls involving males were also reported to have occurred in industrial and construction areas (total industrial and construction; 1.5%,  $n = 870$ ) than cases involving females (0.1%,  $n = 91$ ). Very small proportions of cases for each age group were reported to have occurred in industrial and construction areas, with the largest number of cases occurring for the 25–44 years group. These cases represented 2.9% of the total number of hospitalised falls for people of this age.

Three in ten hospitalised fall cases in 2004–05 were ascribed an ‘unspecified’ place of occurrence code (29.0%,  $n = 36,836$ ). Ten per cent more cases involving males were given an unspecified code than for cases involving females (34.6% vs. 24.6%, respectively). A particularly high proportion of hospitalised falls were coded with an unspecified place of occurrence for the 25–44 years age group, for which 43.0% ( $n = 5,741$ ) were unspecified. The lowest proportion of hospitalised falls coded with an unspecified place of occurrence was observed for people aged 65 years and older (17.3%).

**Table 3.27: Place of occurrence for fall injury cases by age, Australia 2004–05**

Place of occurrence	0–4	5–14	15–24	25–44	45–64	65+	All ages
Home	3,370	2,690	861	3,081	6,861	30,530	47,393
Residential institution	9	16	42	112	369	13,628	14,176
School, other institution & public administration area	415	3,711	336	204	384	1,574	6,624
Sports & athletics area	82	2,086	2,114	1,572	494	288	6,636
Street & highway	38	170	284	515	1,002	2,694	4,703
Trade & service area	228	135	349	726	975	1,980	4,393
Industrial & construction area	7	7	133	386	383	45	961
Farm	10	17	29	76	126	108	366
Other specified place of occurrence	279	874	615	950	982	991	4,691
Unspecified place of occurrence/ Place not reported/not applicable	2,672	7,058	3,290	5,743	7,261	10,838	36,862
<b>Total</b>	<b>7,110</b>	<b>16,764</b>	<b>8,053</b>	<b>13,365</b>	<b>18,837</b>	<b>62,676</b>	<b>126,805</b>

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

**Table 3.28: Place of occurrence for fall injury cases: males, females and persons, Australia 2004–05**

Place of occurrence	Males	Females	Persons *
Driveway to home	287 (0.5%)	466 (0.7%)	753 (0.6%)
Other & unspecified place in home	16,957 (29.8%)	29,680 (42.4%)	46,639 (36.8%)
Aged care facilities	3,233 (5.7%)	10,391 (14.9%)	13,624 (10.7%)
Other & unspecified residential institution	257 (0.5%)	295 (0.4%)	552 (0.4%)
School	2,760 (4.9%)	1,696 (2.4%)	4,456 (3.5%)
Health service area	497 (0.9%)	962 (1.4%)	1,459 (1.2%)
Other specified institution & public administrative area	248 (0.4%)	461 (0.7%)	709 (0.6%)
Sporting grounds (outdoor)	3,729 (6.6%)	632 (0.9%)	4,361 (3.4%)
Sporting hall (indoor)	301 (0.5%)	281 (0.4%)	582 (0.5%)
Swimming centre	63 (0.1%)	46 (0.1%)	109 (0.1%)
Racetrack & racecourse	38 (0.1%)	26 (0.0%)	64 (0.1%)
Skating rink	267 (0.5%)	117 (0.2%)	384 (0.3%)
Skiing	311 (0.5%)	182 (0.3%)	493 (0.4%)
Other specified sports & athletic areas	185 (0.3%)	134 (0.2%)	319 (0.3%)
Sports & athletic areas, unspecified	211 (0.4%)	113 (0.2%)	324 (0.3%)
Roadway	668 (1.2%)	649 (0.9%)	1,317 (1.0%)
Sidewalk	1,240 (2.2%)	1,894 (2.7%)	3,134 (2.5%)
Other & unspecified public highway, street or road	118 (0.2%)	134 (0.2%)	252 (0.2%)
Shop & store	565 (1.0%)	1,312 (1.9%)	1,877 (1.5%)
Commercial garage	53 (0.1%)	30 (0.0%)	83 (0.1%)
Office building	31 (0.1%)	37 (0.1%)	68 (0.1%)
Cafe, hotel & restaurant	960 (1.7%)	715 (1.0%)	1,675 (1.3%)
Other & unspecified trade & service area	355 (0.6%)	335 (0.5%)	690 (0.5%)
Construction area	430 (0.8%)	28 (0.0%)	458 (0.4%)
Factory & plant	195 (0.3%)	35 (0.1%)	230 (0.2%)
Mine & quarry	47 (0.1%)	5 (0.0%)	52 (0.0%)
Oil & gas extraction	6 (0.0%)	0 (0.0%)	6 (0.0%)
Other & unspecified industrial & construction area	192 (0.3%)	23 (0.0%)	215 (0.2%)
Farm	275 (0.5%)	91 (0.1%)	366 (0.3%)
Area of still water	67 (0.1%)	44 (0.1%)	111 (0.1%)
Stream of water	145 (0.3%)	69 (0.1%)	214 (0.2%)
Large area of water	200 (0.4%)	62 (0.1%)	262 (0.2%)
Beach	326 (0.6%)	196 (0.3%)	522 (0.4%)
Forest	67 (0.1%)	81 (0.1%)	148 (0.1%)
Other specified countryside	223 (0.4%)	160 (0.2%)	383 (0.3%)
Car park (parking lot)	101 (0.2%)	175 (0.3%)	276 (0.2%)
Other specified place of occurrence	1,562 (2.7%)	1,213 (1.7%)	2,775 (2.2%)
Unspecified place of occurrence	19,644 (34.6%)	17,192 (24.6%)	36,836 (29.0%)
Place not reported/not applicable	16 (0.0%)	11 (0.0%)	27 (0.0%)
<b>Total</b>	<b>56,830</b>	<b>69,973</b>	<b>126,805</b>

\* Persons includes 2 cases for which sex was not reported.



**Table 3.29: Activity at time of occurrence for fall injury cases: males, females and persons, Australia 2004–05**

Activity		Males	Females	Persons *
<b>While engaged in sports</b>	Team ball sports	5,111 (9.0%)	771 (1.1%)	5,882 (4.6%)
	Team bat or stick sports	261 (0.5%)	71 (0.1%)	332 (0.3%)
	Boating sports	17 (0.0%)	14 (0.0%)	31 (0.0%)
	Individual water sports	439 (0.8%)	138 (0.2%)	577 (0.5%)
	Ice & snow sports	471 (0.8%)	295 (0.4%)	766 (0.6%)
	Individual athletic activities	174 (0.3%)	238 (0.3%)	412 (0.3%)
	Acrobatic sports	88 (0.2%)	147 (0.2%)	236 (0.2%)
	Aesthetic activities	42 (0.1%)	191 (0.3%)	233 (0.2%)
	Racquet sports	134 (0.2%)	163 (0.2%)	297 (0.2%)
	Target & precision sports	100 (0.2%)	97 (0.1%)	197 (0.2%)
	Combative sports	60 (0.1%)	20 (0.0%)	80 (0.1%)
	Equestrian activities	11 (0.0%)	16 (0.0%)	27 (0.0%)
	Adventure sports	63 (0.1%)	40 (0.1%)	103 (0.1%)
	Wheeled non-motored sports	1,463 (2.6%)	370 (0.5%)	1,833 (1.4%)
	Aero sports	30 (0.1%)	7 (0.0%)	37 (0.0%)
	Other school recreation activity	337 (0.6%)	274 (0.4%)	611 (0.5%)
	Other specified sport & exercise activity	269 (0.5%)	192 (0.3%)	461 (0.4%)
	Unspecified sport & exercise activity	127 (0.2%)	87 (0.1%)	214 (0.2%)
	<i>Total sports</i>	<i>9,197 (16.2%)</i>	<i>3,131 (4.5%)</i>	<i>12,329 (9.7%)</i>
<b>While engaged in leisure</b>		1,774 (3.1%)	1,444 (2.1%)	3,218 (2.5%)
<b>While working for income</b>		2,855 (5.0%)	853 (1.2%)	3,708 (2.9%)
<b>While engaged in other types of work</b>		2,382 (4.2%)	3,028 (4.3%)	5,410 (4.3%)
<b>While resting, sleeping, eating, etc.</b>		3,526 (6.2%)	7,729 (11.0%)	11,255 (8.9%)
<b>Other specified activity</b>		9,116 (16.0%)	11,364 (16.2%)	20,480 (16.2%)
<b>Unspecified activity</b>		27,928 (49.1%)	42,377 (60.6%)	70,306 (55.4%)
<b>Activity not reported/not applicable</b>		52 (0.1%)	47 (0.1%)	99 (0.1%)
<b>Total</b>		<b>56,830</b>	<b>69,973</b>	<b>126,805</b>

\* Persons includes 2 cases for which sex was not reported.

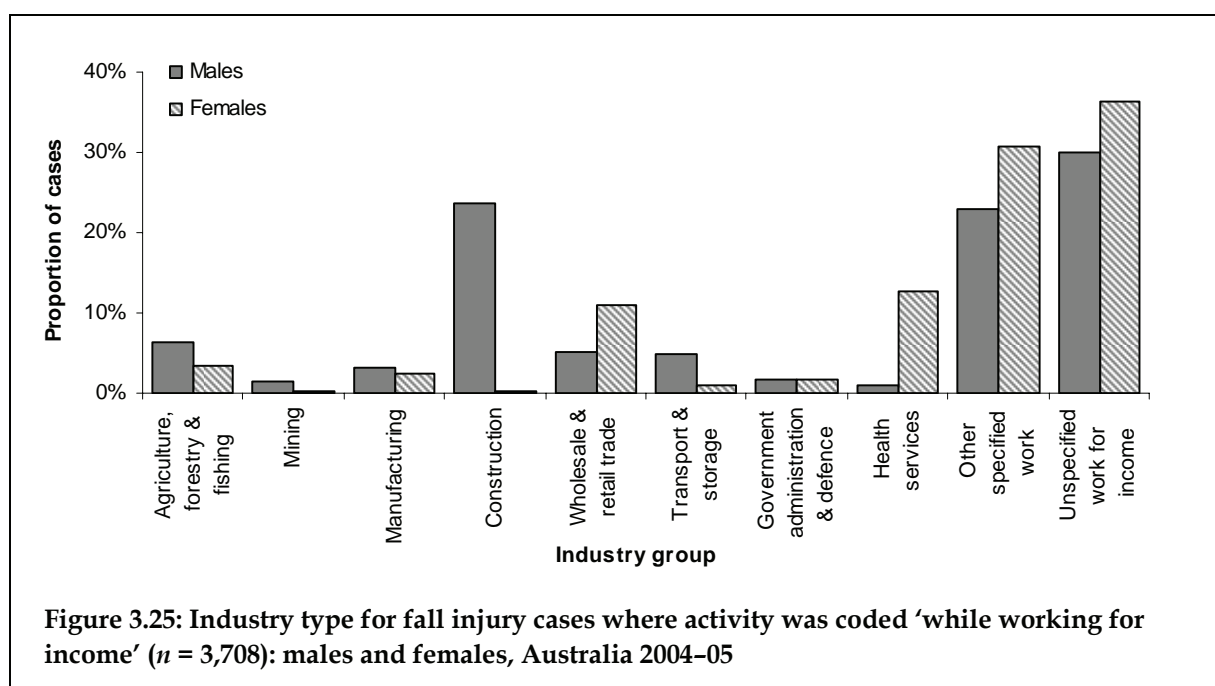
More than half of all hospitalised fall injury cases in 2004–05 had ‘unspecified’ reported as the activity at the time of the injury incident (55.4%,  $n = 70,306$ ). A higher proportion of cases for females had an unspecified activity code (60.6%) than for males (49.1%, see Table 3.29). Cases coded to ‘other specified activity’ accounted for a further 16.2% unintentional falls, with similar proportions of cases assigned this code for both males and females.

The most common specific activity engaged in at the time of a fall injury requiring hospitalisation was sport; one in ten cases were described as having occurred while engaged in sporting activities (9.7%). Three times the number of fall cases attributed to sport involved males than involved females (9,197 vs. 3,131, respectively), representing four times the proportion of cases (16.2% vs. 4.5%). The most frequent sports resulting in a hospitalised fall injury for males were team ball sports (9.0% of all male cases,  $n = 5,111$ ) and wheeled non-motored sports (e.g. cycling, skateboarding; 2.6%,  $n = 1,463$ ). Team ball

sports were also the most common sporting activities resulting in a hospitalised fall injury for females (1.1% of all female cases,  $n = 771$ ).

The second most common specific activity engaged in at the time of a fall injury requiring hospitalisation was 'while resting, sleeping, eating or engaging in other vital activities', accounting for 8.9% of falls cases in 2004–05. A higher proportion of cases involving females were assigned this activity code (11.0%,  $n = 7,729$ ) than cases involving males (6.2%,  $n = 3,526$ ), consistent with the high rate of falls for older females and falls occurring in the home.

Less than three per cent of hospitalised fall cases occurred while working for income (2.9%,  $n = 3,708$ ) and falls while working for income were more frequent for males than for females. For males, a quarter of falls while working for income (23.7%,  $n = 678$ ) occurred while working in the construction industry, consistent with the place of occurrence data discussed above. For females, one in eight hospitalised falls while working for income (12.7%,  $n = 108$ ) occurred while working in the health service industries. However, 'other specified work for income' and 'unspecified work for income' codes accounted for more than half of all cases of hospitalised falls while working for income for both males and females.





## Falls—principal diagnosis

Hospitalised cases of unintentional falls injury in 2004–05 most commonly resulted in injuries to the elbow and forearm (19.4%,  $n = 24,537$ ) and injuries to the head (19.1%,  $n = 24,179$ ). Injuries of these types represented a higher proportion of cases involving males than for cases involving females (Table 3.30). Injuries to the hip and thigh were the third most common principal diagnosis for falls cases (18.2%,  $n = 23,022$ ), and a higher proportion of cases involving females (22.9%) had these injuries than cases involving males (12.3%). This disparity is due to the differences in rates of falls by age and sex, with injuries to the hip and thigh being the leading type of injury for people aged 65 years and older, and females outnumber males in this age group (Table 3.31).

While injuries to the elbow and forearm were the most common hospitalised fall injury for persons overall, such injuries were the leading cause of injury for only the 5–14 years age group (Table 3.31). Children younger than this were predominately hospitalised due to head injuries, as were teenagers and young adults 15–24 years. Adults aged 25–64 years had injuries to the knee and lower leg most frequently reported as the principal diagnosis. As described above, injuries to the hip and thigh were the leading type of injury for people aged 65 years and older, accounting for a third (32.2%) of all hospitalised injury cases due to a fall for people of this age and 87.6% of *all* cases (at any age) with a principal diagnosis of this type.

**Table 3.30: Principal diagnosis groups for fall injury cases: males, females and persons, Australia 2004–05**

Principal diagnosis	Males	Females	Persons <sup>†</sup>
Injuries to the head	12,916 (22.7%)	11,263 (16.1%)	24,179 (19.1%)
Injuries to the neck	1,062 (1.9%)	760 (1.1%)	1,822 (1.4%)
Injuries to the thorax	3,192 (5.6%)	2,770 (4.0%)	5,962 (4.7%)
Injuries to the abdomen, lower back, lumbar spine & pelvis	3,664 (6.4%)	6,280 (9.0%)	9,944 (7.8%)
Injuries to the shoulder & upper arm	5,392 (9.5%)	7,255 (10.4%)	12,647 (10.0%)
Injuries to the elbow & forearm	11,577 (20.4%)	12,959 (18.5%)	24,537 (19.4%)
Injuries to the wrist & hand	2,687 (4.7%)	1,555 (2.2%)	4,242 (3.3%)
Injuries to the hip & thigh	7,002 (12.3%)	16,019 (22.9%)	23,022 (18.2%)
Injuries to the knee & lower leg	7,230 (12.7%)	9,189 (13.1%)	16,419 (12.9%)
Injuries to the ankle & foot	1,589 (2.8%)	1,363 (1.9%)	2,952 (2.3%)
Injuries involving multiple body regions	45 (0.1%)	47 (0.1%)	92 (0.1%)
Injuries to unspecified parts of trunk, limb or body region	313 (0.6%)	372 (0.5%)	685 (0.5%)
Effects of foreign body entering through natural orifice	6 (0.0%)	0 (0.0%)	6 (0.0%)
Burns	* (0.0%)	* (0.0%)	14 (0.0%)
Poisoning & toxic effects	* (0.0%)	* (0.0%)	6 (0.0%)
Other & unspecified effects of external causes	8 (0.0%)	22 (0.0%)	30 (0.0%)
Certain early complications of trauma	135 (0.2%)	111 (0.2%)	246 (0.2%)
<b>Total</b>	<b>56,830</b>	<b>69,973</b>	<b>126,805</b>

\* Small case counts have been suppressed.

† Persons includes 2 cases for which sex was not reported.

**Table 3.31: Principal diagnosis groups for fall injury cases by age, Australia 2004–05**

Principal diagnosis	0–4	5–14	15–24	25–44	45–64	65+	All ages
Injuries to the head	4,097	2,421	1,726	2,582	3,143	10,210	24,179
Injuries to the neck	46	224	287	337	270	658	1,822
Injuries to the thorax	12	76	206	585	1,176	3,907	5,962
Injuries to the abdomen, lower back, lumbar spine & pelvis	90	383	431	958	1,181	6,901	9,944
Injuries to the shoulder & upper arm	856	1,984	726	1,055	1,902	6,124	12,647
Injuries to the elbow & forearm	1,373	9,247	1,631	2,226	3,727	6,333	24,537
Injuries to the wrist & hand	72	568	799	1,020	661	1,122	4,242
Injuries to the hip & thigh	279	325	166	406	1,687	20,159	23,022
Injuries to the knee & lower leg	237	1,318	1,641	3,244	4,189	5,790	16,419
Injuries to the ankle & foot	23	167	390	829	755	788	2,952
Injuries involving multiple body regions	*	5	*	9	9	68	92
Injuries to unspecified parts of trunk, limb or body region	22	33	29	77	91	433	685
Effects of foreign body entering through natural orifice	*	*	*	*	*	*	6
Burns	*	*	*	5	*	5	14
Poisoning & toxic effects	*	*	*	*	*	*	6
Other & unspecified effects of external causes	*	*	*	*	*	23	30
Certain early complications of trauma	*	*	16	27	38	152	246
<b>Total</b>	<b>7,110</b>	<b>16,764</b>	<b>8,053</b>	<b>13,365</b>	<b>18,837</b>	<b>62,676</b>	<b>126,805</b>

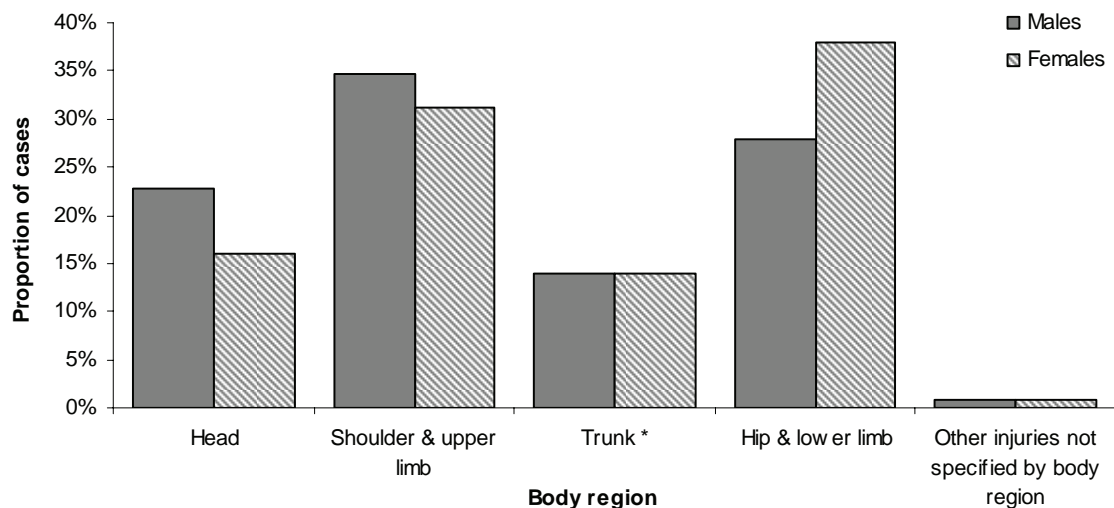
Note: Shading denotes highest category for each age group.

\* Small cell counts have been suppressed.

Injuries due to unintentional falls were most frequently fractures in nature, accounting for six in ten hospitalised cases (62.7%,  $n = 79,481$ ). Fracture principal diagnoses were the most common type of injury for both males and females and fractures were common for all age groups, accounting for 41–76% of cases according to age. While still the most common result of a serious fall, the lowest proportion of fractures as principal diagnosis was observed for children 0–4 years of age. At this age, open wounds accounted for a higher proportion of cases (24.0%). This compares to 7–10% for older children and adults. Open wounds were the second most common nature of injury described by the principal diagnoses of hospitalised fall cases in 2004–05.

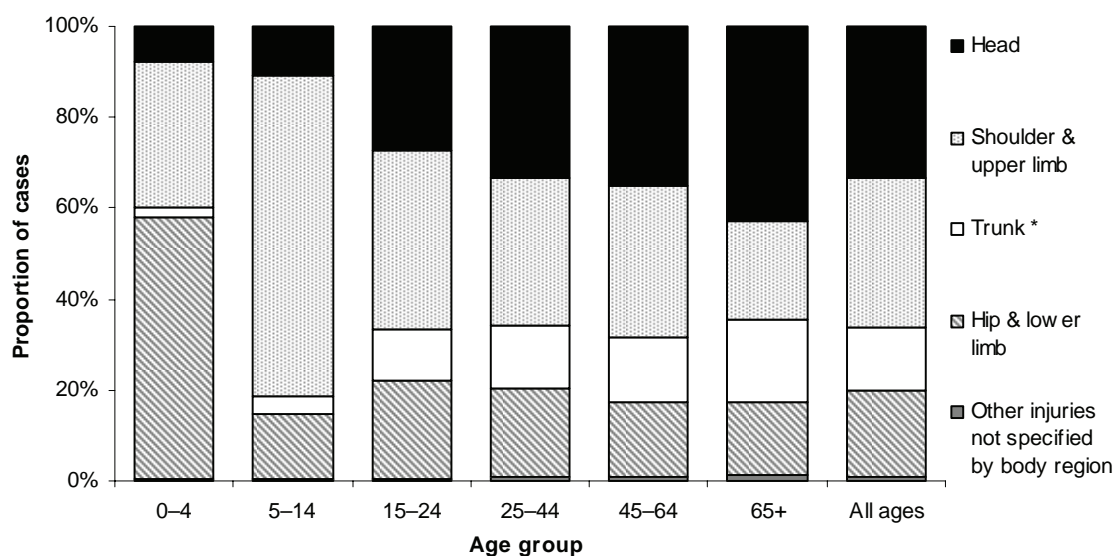
### Falls—body region

The body region injured according to the principal diagnosis of hospitalised fall injury cases in 2004–05 was most frequently the hip and lower limb region (33.4% of cases), although injuries to the shoulder and upper limb region were almost as common (32.7%). Reflecting differences in rates of unintentional falls by age and sex, a higher proportion of cases involving females were injuries to the hip and lower limb region, injuries typical for older ages, than for males (Figure 3.26). Similarly, a higher proportion of cases involving males were injuries to the shoulder and upper limb region, injuries typical for younger ages, than for females (see also Figure 3.27). Injuries to the head were most common for the 0–4 years age group than for other ages and account for a higher proportion of cases involving males. Injuries to the trunk region, as common in females as in males, increased in frequency with age.



\* Trunk includes the neck, thorax, abdomen, lower back, lumbar spine & pelvis.

**Figure 3.26: Body region affected by principal diagnosis for fall injury cases: males and females, Australia 2004–05**



\* Trunk includes the neck, thorax, abdomen, lower back, lumbar spine & pelvis.

**Figure 3.27: Body region affected by principal diagnosis for fall injury cases by age: persons, Australia 2004–05**

## Falls—length of stay

Falls accounted for a third (34.6%) of all community injury cases in 2004–05 but more than half of all patient-days in this period (54.2%,  $n = 772,004$ ). A lower proportion of fall injury separations were discharged on the same day as admitted (24.9%,  $n = 34,590$ ) than was observed for all other types of community injuries. Including these same-day separations, half (48.8%,  $n = 67,939$ ) of all falls separations had a length of stay of one day (again, a lower proportion than observed for all other types of community injury). These results are largely due to the high rate of falls for older Australians, for whom the injuries resulting from falls are frequently severe (e.g. hip fracture) and serious co-morbidities are common.

The mean length of stay per case for fall injuries in 2004–05 was 6.1 days. This is likely to be an underestimate of the actual amount of time many people spend in hospital due to falls as this value, while incorporating the patient-days from both case and transfer separations, does not include hospital care coded to principal diagnoses describing rehabilitation procedures and other follow-up care (diagnoses which appear to be particularly common for older people following a fall, Bradley & Harrison 2007).

As can be seen in Figure 3.28, mean lengths of stay per case for hospitalised falls increased markedly with age. While the mean length of stay per case for males was slightly longer than that for females in most age-groups, the mean length of stay per case for males overall (4.9 days) was much shorter than that for females (7.1 days). This is related to the higher proportion of females involved in injurious falls at older ages.

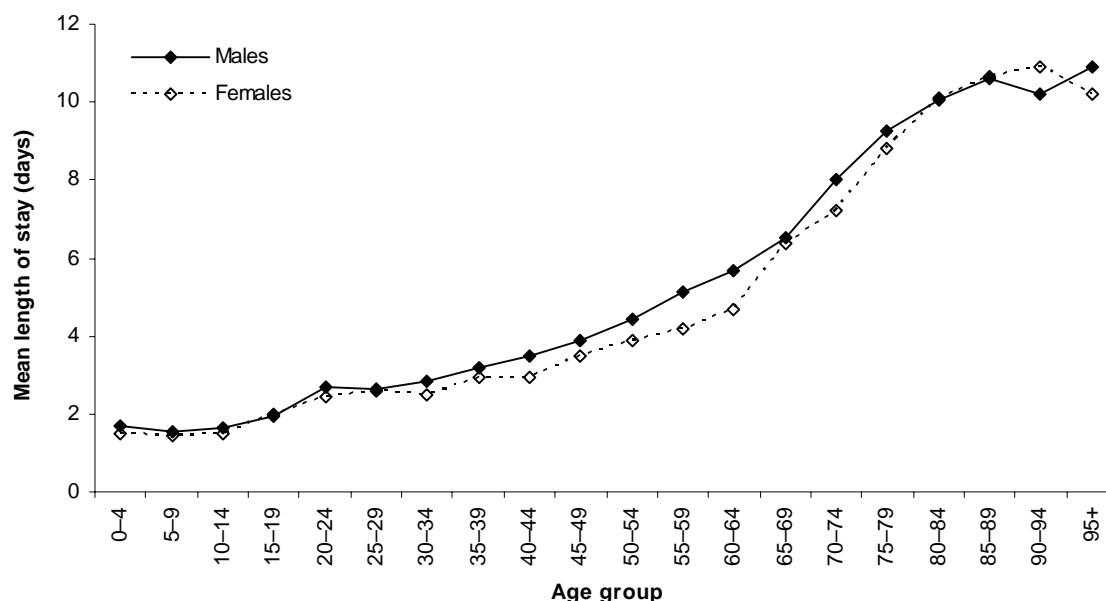
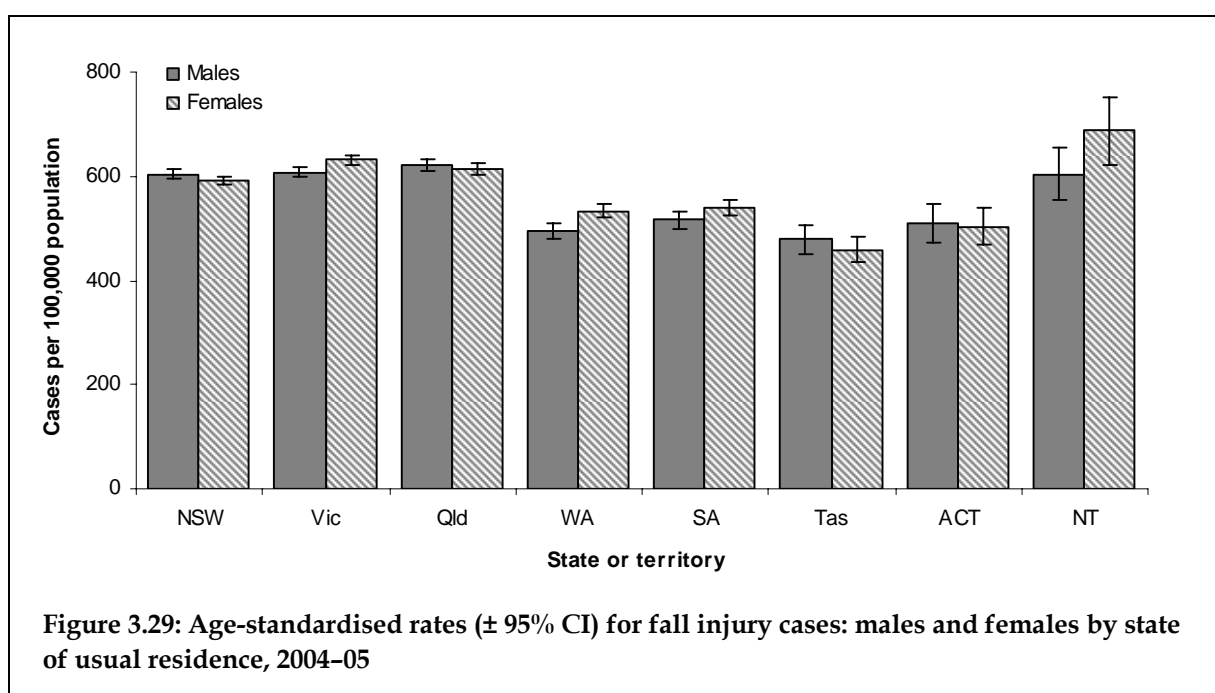


Figure 3.28: Mean length of stay per case for fall-related injuries: males and females by age, Australia 2004–05

## Falls—state of usual residence

The rate of hospitalised fall injury cases did not vary as markedly by the person's state of usual residence as did rates of many other types of community injuries. Residents of the Northern Territory had the highest rate observed (655.8 per 100,000 population), but this was only slightly, and insignificantly, higher than rates of hospitalised fall injuries for residents of New South Wales, Victoria and Queensland. The lowest rate of hospitalised fall injury cases was observed for residents of Tasmania (480.2 per 100,000 population). Rates for males and females showed a similar pattern (Figure 3.29), but the rate of hospitalised falls for males resident in Queensland was marginally higher than that of males resident in the Northern Territory. Age-standardised rates of hospitalised falls for females were significantly higher than those of males in Victoria and Western Australia. In all other jurisdictions, male and female rates were statistically similar.



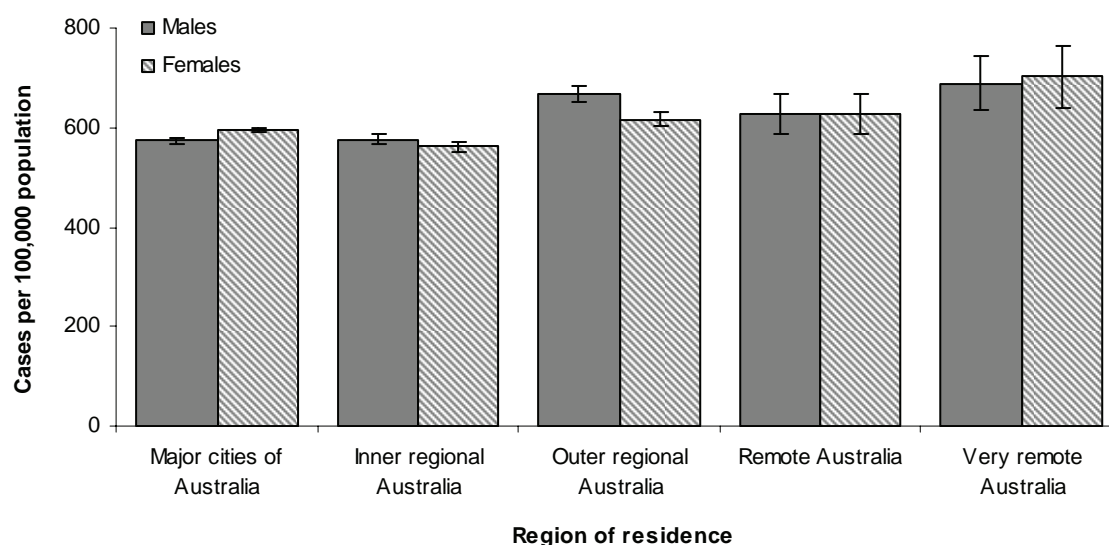
## Falls—remoteness of usual residence

The age-standardised rates of hospitalised fall injury cases for males and females according to the remoteness of the persons' place of usual residence present slightly different distributions (Figure 3.30); rates were relatively low for males resident in Australia's Major cities and Inner regional areas but highest for residents of Outer regional areas, while for females, rates were lowest in Inner regional areas and highest in Very remote Australia. Similarly, for persons overall, residents of Australia's Inner regional areas had the lowest rate of hospitalised falls (580.5 per 100,000, population) while residents of Very remote regions had the highest rate of falls cases (698.6 per 100,000 population).

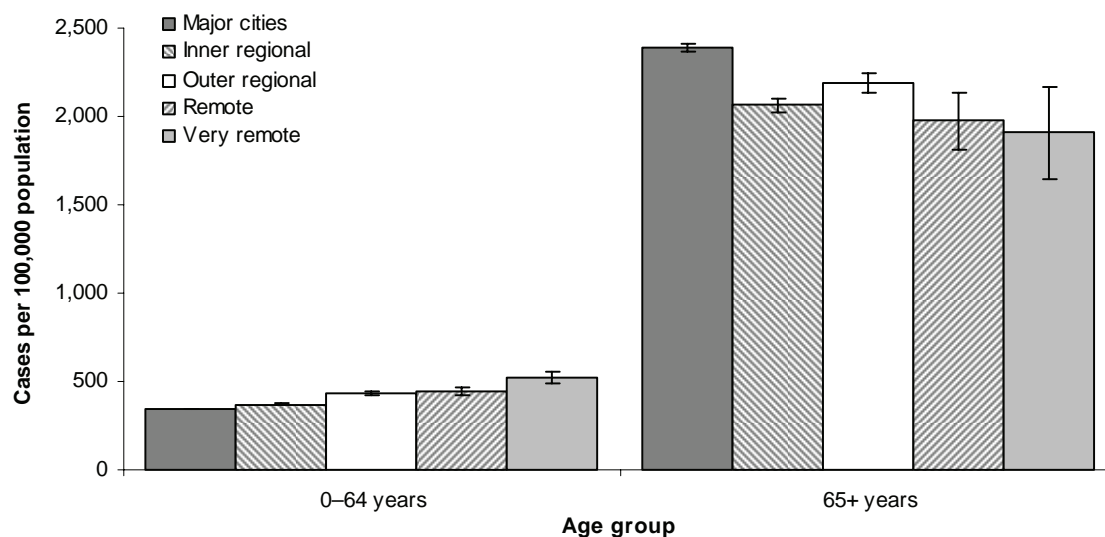
Figure 3.31 presents age-standardised rates of hospitalised falls by remoteness of usual residence for two age classes; all people under the age of 65 years and people 65 years and older. It can be seen that there is a substantial difference in the pattern of hospitalised falls cases for the two age groups. Age-standardised rates for younger patients demonstrate the familiar increase with each increase in remoteness that is typical for most types of

injury hospitalisations. Rates for older Australians, however, show an overall decrease in rates of hospitalisation with increasing remoteness.

As these are age-standardised rates, this pattern is not simply explained by a larger population of older people congregated near the healthcare facilities and services of urban areas. As suggested in Bradley and Harrison (2007) a number of factors could be influencing the rate of falls hospitalisations for older Australians according to remoteness, including; a 'survivor effect' whereby older Australians living in more remote areas may be comparatively more healthy than more urban residents, or a 'non-survivor effect' whereby older Australians in remote areas might be less likely to survive a serious fall long enough to be hospitalised.



**Figure 3.30: Age-standardised rates ( $\pm$  95% CI) for fall injury cases: males and females by remoteness of usual residence (ASGC regions), 2004-05**



**Figure 3.31: Age-standardised rates ( $\pm$  95% CI) for fall injury cases: remoteness of usual residence (ASGC regions) by age group, 2004-05**

## 3.6 Fires, burns and scalds injury cases

ICD-10-AM inclusion criteria:

- Principal diagnosis [S00–T75](#) or [T79](#), and
- First external cause [X00–X19](#), and
- Mode of admission other than ‘transfer from another acute hospital’.

**Table 3.32: Key indicators for hospitalised fire, burns and scalds injury: males, females and persons, Australia 2004–05**

Key indicators	Males	Females	Persons
Total number of hospital separations due to fire, burns & scalds injury	4,002	2,160	6,162
Fire, burns & scalds separations as proportion of all community injury separations	1.8%	1.3%	1.6%
Estimated number of fire, burns & scalds injury cases <sup>(a)</sup>	3,472	1,930	5,402
Cases per 100,000 population	34.5	19.0	26.7
Cases per 100,000 population—age-standardised <sup>(b)</sup>	34.8	19.4	27.2
Total patient-days due to fire, burns & scalds injury <sup>(c)</sup>	19,179	9,902	29,081
Mean patient-days per case	5.5	5.1	5.4

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

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

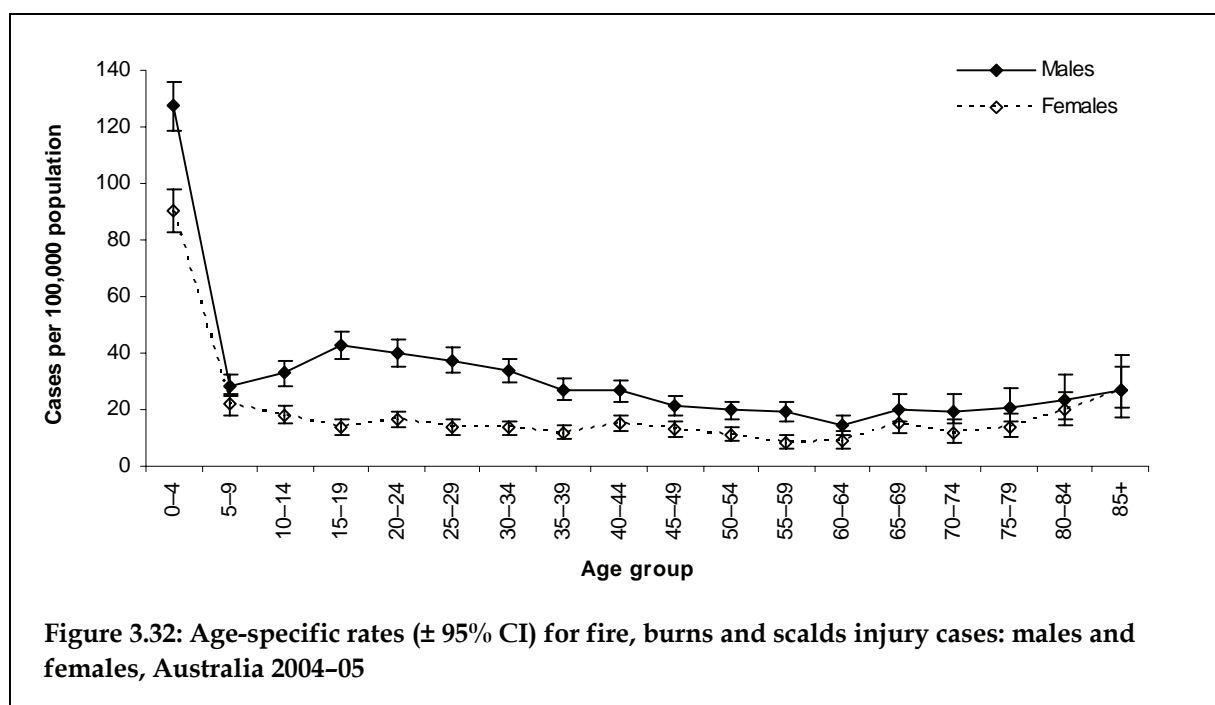
(c) Includes records with a mode of admission of 'transfer from another acute hospital' as contributing to hospital burden due to injury.

An estimated 5,402 hospitalised cases in 2004–05 were due to injuries resulting from exposure to smoke, fire and flames or contact with heat and hot substances (Table 3.32). The age-standardised rate of hospitalised burns and scalds cases was 27.2 per 100,000 population.

### Fires, burns and scalds—age and sex

Nearly two-thirds of burns and scalds cases in 2004–05 involved males (64.3%,  $n = 3,742$ ). Males had an age-standardised rate of hospitalised burns and scalds of 34.8 per 100,000 population, compared to 19.4 per 100,000 for females. The highest age-specific rates of burns and scalds cases for both males and females were observed for the 0–4 years age group (Figure 3.32). Rates for females then decreased for the 5–9 years age group and remained relatively low until very old age, when slight increases were noted. Rates for males, on the other hand, decreased for those aged 5–9 years but then rose again to remain substantially higher than those for females from late childhood to middle adulthood. From the age of 60 years, the differences in rates between males and females were not significant.





## Fires, burns and scalds—external cause

Contact with hot drinks, food, fats and cooking oils was the leading cause of hospitalised burns and scalds in 2004-05, accounting for nearly a quarter of cases (22.9%,  $n = 1,236$ ). This predominance was observed for both males and females, but a higher proportion of cases for females (30.5%,  $n = 589$ ) were due to contact with hot drinks, food, fats and cooking oils than for males (18.6%,  $n = 647$ ). The next most frequent cause of burns and scalds cases was 'contact with other hot fluids' (i.e. not hot drinks or hot tap-water). Again, a higher proportion of cases involving females were assigned this first external cause code (18.7%,  $n = 361$ ) than cases involving males (11.7%,  $n = 406$ ).

The third most common cause of hospitalised burns and scalds was exposure to ignition of highly flammable material, accounting for 12.9% of cases overall ( $n = 695$ ). A higher proportion of cases involving males (17.5%) were coded to this category than cases involving females (4.6%). About a third of these injuries were work-related (working for income and other types of work,  $n = 166$ ), and 64.7% of all cases coded as exposure to ignition of highly flammable material involved people aged 15-44 years ( $n = 450$ , Table 3.33). Higher proportions of males cases were coded to external causes describing contact with hot heating appliances, radiators and pipes and contact with hot engines, machinery and tools, but these injuries were more common for younger people, aged less than 14 years, so are not likely to be work-related (see also below).

The most common external cause for burns and scalds injuries, contact with hot drinks, food, fats and cooking oils, was the leading cause of hospitalisation for children 0-14 years and older adults aged 65 and older (Table 3.33).

Only ten cases were coded as injuries due to the ignition or melting of nightwear in 2004-05 and half of these cases ( $n = 5$ ) involved adults aged 65 years and older. Only one case with this cause involved a child aged less than five years.



**Table 3.33: First external cause for fire, burns and scalds injury cases by age, Australia 2004–05**

External cause	0–4	5–14	15–24	25–44	45–64	65+	All ages
Exposure to uncontrolled fire in building or structure (X00)	10	26	28	61	38	31	194
Exposure to uncontrolled fire, not in building or structure (X01)	*	8	6	21	17	*	61
Exposure to controlled fire in building or structure (X02)	11	6	28	46	25	24	140
Exposure to controlled fire, not in building or structure (X03)	59	20	51	71	29	8	238
Exposure to ignition of highly flammable material (X04)	6	115	205	245	88	36	695
Exposure to ignition or melting of nightwear (X05)	*	*	*	*	*	5	10
Exposure to ignition or melting of other clothing & apparel (X06)	6	12	11	26	20	15	90
Exposure to other specified smoke, fire & flames (X08)	22	13	33	51	25	18	162
Exposure to unspecified smoke, fire & flames (X09)	38	39	71	139	73	65	425
Contact with hot drinks, food, fats & cooking oils (X10)	517	192	122	201	120	84	1,236
Contact with hot tap-water (X11)	147	36	19	40	32	46	320
Contact with other hot fluids (X12)	246	95	69	168	123	66	767
Contact with steam & hot vapours (X13)	7	9	51	45	21	9	142
Contact with hot air & gases (X14)	*	*	*	*	*	*	17
Contact with hot household appliances (X15)	143	18	14	28	10	6	219
Contact with hot heating appliances, radiators & pipes (X16)	72	19	17	44	43	40	235
Contact with hot engines, machinery & tools (X17)	18	37	27	25	11	8	126
Contact with other hot metals (X18)	15	*	7	24	13	*	62
Contact with other & unspecified heat & hot substances (X19)	63	42	33	66	34	25	263
<b>Total</b>	<b>1,384</b>	<b>692</b>	<b>797</b>	<b>1,311</b>	<b>726</b>	<b>492</b>	<b>5,402</b>

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

\* Small case counts have been suppressed.

## Fires, burns and scalds—place and activity

More than half of all hospitalised burns and scalds cases in 2004–05 were reported to have occurred in the home (53.4%,  $n = 2,885$ ). A higher proportion of cases involving females (64.8%) were reported to have occurred in the home than for cases involving males (47.1%, Table 3.34). These observations are consistent with the high number of cases due to contact with hot drinks, food, fats and cooking oils. The second most frequent place of occurrence code assigned to hospitalised burns and scalds was ‘unspecified place of occurrence’ (32.0%,  $n = 1,728$ ) and a higher proportion of cases involving males were assigned this code than for cases involving females. Together, the home and ‘unspecified place of occurrence’ account for more than four in five hospitalised burns and scalds cases (85.4%). Relatively few burns and scalds cases were reported to have occurred in trade and service areas (3.1% in total), industrial and construction areas (2.8%), farms (0.9%) or residential institutions (0.9%).

**Table 3.34: Place of occurrence for fire, burns and scalds injury cases: males, females and persons, Australia 2004–05**

Place of occurrence	Males	Females	Persons
Home	1,635 (47.1%)	1,250 (64.8%)	2,885 (53.4%)
Residential institution	24 (0.7%)	27 (1.4%)	51 (0.9%)
School	5 (0.1%)	7 (0.4%)	12 (0.2%)
Health service area	* (0.1%)	* (0.5%)	12 (0.2%)
Other specified institution & public administrative area	5 (0.1%)	* (0.1%)	* (0.1%)
Sports & athletics area	* (0.2%)	* (0.1%)	10 (0.2%)
Street & highway	49 (1.4%)	17 (0.9%)	66 (1.2%)
Shop & store	10 (0.3%)	12 (0.6%)	22 (0.4%)
Commercial garage	13 (0.4%)	0 (0.0%)	13 (0.2%)
Cafe, hotel & restaurant	66 (1.9%)	39 (2.0%)	105 (1.9%)
Other & unspecified trade & service area	19 (0.5%)	8 (0.4%)	27 (0.5%)
Industrial & construction area	146 (4.2%)	5 (0.3%)	151 (2.8%)
Farm	* (1.4%)	* (0.2%)	51 (0.9%)
Areas of still water, streams & large areas of water	* (0.5%)	* (0.2%)	23 (0.4%)
Beach	18 (0.5%)	5 (0.3%)	23 (0.4%)
Forest	* (0.3%)	* (0.1%)	14 (0.3%)
Other specified countryside	30 (0.9%)	6 (0.3%)	36 (0.7%)
Other specified place of occurrence	118 (3.4%)	45 (2.3%)	163 (3.0%)
Unspecified place of occurrence	1,245 (35.9%)	483 (25.0%)	1,728 (32.0%)
Place not reported/not applicable	* (0.0%)	* (0.1%)	* (0.1%)
<b>Total</b>	<b>3,472</b>	<b>1,930</b>	<b>5,402</b>

\* Small case counts have been suppressed.

Consistent with the high proportion of hospitalised burns and scalds assigned an unspecified place of occurrence code, nearly half of all cases were assigned an unspecified activity code (47.8%,  $n = 2,580$ ). Together, burns and scalds injuries coded to 'other specified' and 'unspecified' activity codes accounted for 69.8% of cases ( $n = 3,770$ , Table 3.35).

One in five cases were reported to have occurred while the person was resting, eating, sleeping or engaging in other vital activities (11.3%) or while engaged in non-income producing work (9.3%). Contact with hot drinks, food, fats and cooking oils was the most common cause of burns and scalds injuries sustained during these activities and were strongly associated with the home as the place of occurrence.

Less than ten per cent of cases (7.8%,  $n = 423$ ) were reported to have occurred while working for income. For these cases, injuries due to exposure to ignition of highly flammable material and contact with other hot fluids were relatively common. The specific industry type most frequently assigned to burns and scalds occurring while working for income was the wholesale and retail trade industry (15.4%,  $n = 65$ ), although half (49.9%) of working for income cases were coded to 'other' and 'unspecified' work for income codes.

**Table 3.35: Activity at time of occurrence by external cause of fire, burns and scalds injury cases, Australia 2004–05**

External cause	Sport & leisure activities	Working for income	Other types of work	Resting, sleeping, eating, etc.	Other & unspecified activities	Activity not reported/not applicable
Exposure to uncontrolled fire	*	21	16	62	155	*
Exposure to controlled fire	25	16	43	40	254	0
Exposure to ignition of highly flammable material	*	66	100	14	496	*
Exposure to ignition or melting of nightwear	0	0	0	*	6	*
Exposure to ignition or melting of other clothing & apparel	*	12	10	5	57	*
Exposure to other specified smoke, fire & flames	*	16	7	16	118	*
Exposure to unspecified smoke, fire & flames	*	26	18	30	346	*
Contact with hot drinks, food, fats & cooking oils	*	55	186	197	794	*
Contact with hot tap-water	0	12	8	107	193	0
Contact with other hot fluids	*	67	55	90	548	*
Contact with steam & hot vapours	0	25	15	*	99	*
Contact with hot air & gases	*	5	*	*	8	0
Contact with hot household appliances	*	6	16	6	189	*
Contact with hot heating appliances, radiators & pipes	*	12	9	26	187	*
Contact with hot engines, machinery & tools	12	17	7	0	90	0
Contact with other hot metals	0	28	6	*	27	*
Contact with other & unspecified heat & hot substances	8	39	*	9	203	*
<b>Total</b>	<b>87</b>	<b>423</b>	<b>502</b>	<b>611</b>	<b>3,770</b>	<b>9</b>

Note: Shading denotes most numerous category for each activity group.

\* Small case counts have been suppressed.

## Fires, burns and scalds—principal diagnosis

Not surprisingly, the principal diagnosis for most hospitalised burns and scalds cases described burns (92.4%,  $n = 4,992$ ). Burns to the wrist and hands, head and neck, trunk, and hip and lower limbs were all common (16.0–18.3% of cases, see Table 3.36). Overall, very similar proportions of cases for both males and females were assigned burns principal diagnoses, but proportionately more males sustained burns to the head and neck (19.4% vs. 13.8% for females) and proportionately more females sustained burns to the trunk (21.0% vs. 13.5% for males).

Six per cent of hospitalised burns and scalds had a principal diagnosis describing toxic effects of substances chiefly non-medicinal as to source ( $n = 317$ ). Most of these cases were coded to T59.8, toxic effect of other specified gases, fumes and vapours (85.8% of toxic effect cases,  $n = 272$ ).

The principal diagnoses assigned to burns and scalds cases did not differ much by age and tabulated data is not provided here. Nonetheless, it is interesting to note that the age-group with the highest proportion of burns diagnoses (98.0%) was the 0–4 years group and this age-group had the lowest proportion of cases assigned a toxic effects of

non-medicinal substances diagnosis (1.6%). Conversely, the lowest proportion of burns diagnoses (83.7%) was observed for the 65 years and older group and people of this age had the highest proportion of cases assigned a toxic effects of non-medicinal substances diagnosis (13.0%).

**Table 3.36: Principal diagnosis for fire, burns and scalds injury cases: males, females and persons, Australia 2004–05**

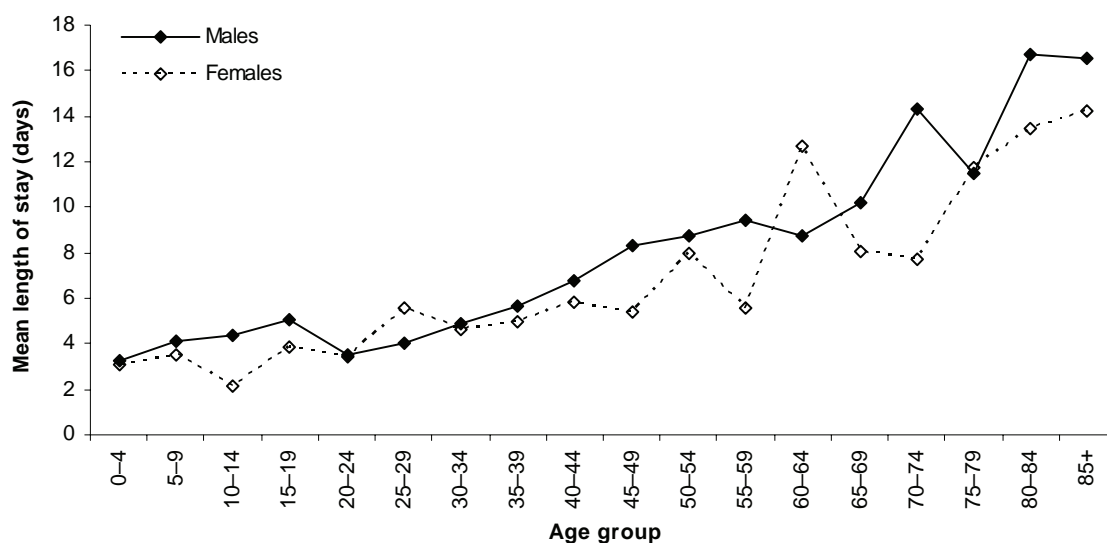
Principal diagnosis	Males	Females	Persons
Injuries S00–T19	38 (1.1%)	14 (0.7%)	52 (1.0%)
Burn of head & neck (T20)	675 (19.4%)	267 (13.8%)	942 (17.4%)
Burn of trunk (T21)	470 (13.5%)	406 (21.0%)	876 (16.2%)
Burn of shoulder & upper limb, except wrist & hand (T22)	430 (12.4%)	223 (11.6%)	653 (12.1%)
Burn of wrist & hand (T23)	651 (18.8%)	339 (17.6%)	990 (18.3%)
Burn of hip & lower limb, except ankle & foot (T24)	535 (15.4%)	329 (17.0%)	864 (16.0%)
Burn of ankle & foot (T25)	385 (11.1%)	190 (9.8%)	575 (10.6%)
Burn of eye & adnexa (T26)	31 (0.9%)	7 (0.4%)	38 (0.7%)
Burn of respiratory tract (T27)	* (0.2%)	* (0.2%)	11 (0.2%)
Burn of other internal organs (T28)	* (0.3%)	* (0.1%)	13 (0.2%)
Burns of multiple body regions (T29)	15 (0.4%)	9 (0.5%)	24 (0.4%)
Burn, body region unspecified (T30)	* (0.0%)	* (0.1%)	* (0.0%)
Burns classified according to extent of body surface involved (T31)	* (0.0%)	* (0.2%)	* (0.1%)
<i>Total burns</i>	<i>3,213 (92.5%)</i>	<i>1,779 (92.2%)</i>	<i>4,992 (92.4%)</i>
Toxic effects of non-medical substances	194 (5.6%)	123 (6.4%)	317 (5.9%)
Other injury diagnoses (T36–T50, T66–T75, T79)	27 (0.8%)	14 (0.7%)	41 (0.8%)
<b>Total</b>	<b>3,472</b>	<b>1,930</b>	<b>5,402</b>

\* Small case counts have been suppressed.

## Fires, burns and scalds—length of stay

The total number of patient-days attributed to hospitalised cases of burns and scalds injuries in 2004–05 was 29,081 (2.0% of all patient-days due to community injuries). Including same-day separations, more than half of all burns and scalds separations reported a length of stay of one day (58.8%,  $n = 3,626$ ). Conversely, a small proportion of burns and scalds cases had long lengths of stay, in excess of 100 days (0.2%,  $n = 10$ ). The mean length of stay per case for hospitalised burns and scalds was 5.4 days and this was similar for both male cases (5.5 days) and female cases (5.1 days).

As can be seen in Figure 3.33, mean lengths of stay per case for hospitalised burns and scalds increased markedly with age and mean lengths of stay for males were frequently longer than those for females. Mean length of stay for cases involving children 0–4 years, the age group most commonly admitted to hospital due to burns and scalds, was 3.2 days while the mean length of stay for people 85 years of age and older was 15.0 days.

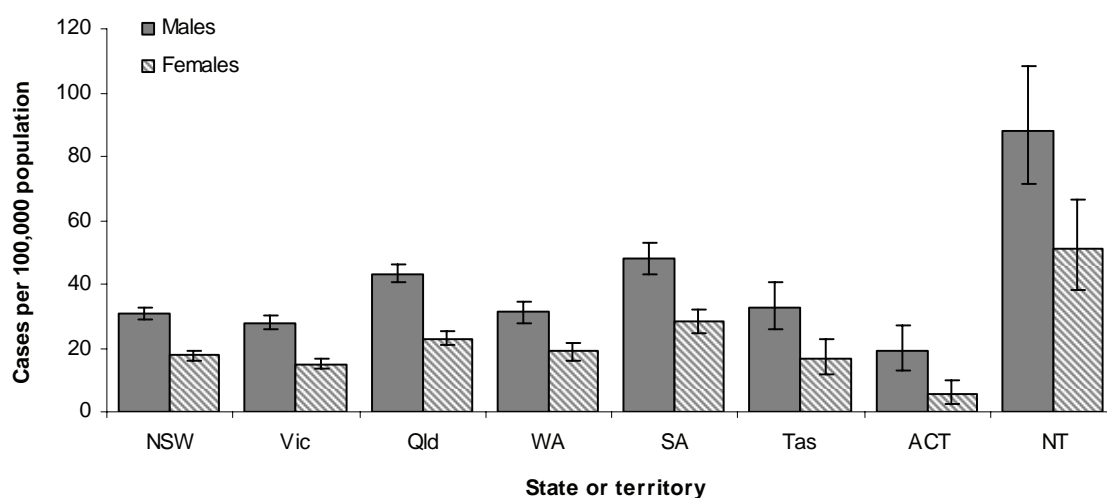


**Figure 3.33: Mean length of stay per case for fire, burns and scalds injuries; males and females by age, Australia 2004-05**

## Fires, burns and scalds—state of usual residence

Age-standardised rates of hospitalised burns and scalds cases were much higher for residents of the Northern Territory, 69.4 per 100,000 population, than for residents of all other jurisdictions of Australia. This was true for both male and female rates and these demonstrated the same pattern of differences between the states (Figure 3.34). Despite the wide confidence intervals provoked by relatively small numbers of cases ( $n > 100$ ), the rate of burns and scalds for both males and females resident in the Northern Territory were significantly higher than those for all other jurisdictions.

In each jurisdiction, including the Northern Territory, the age-standardised rate of burns and scalds cases for males was significantly higher than that for females.



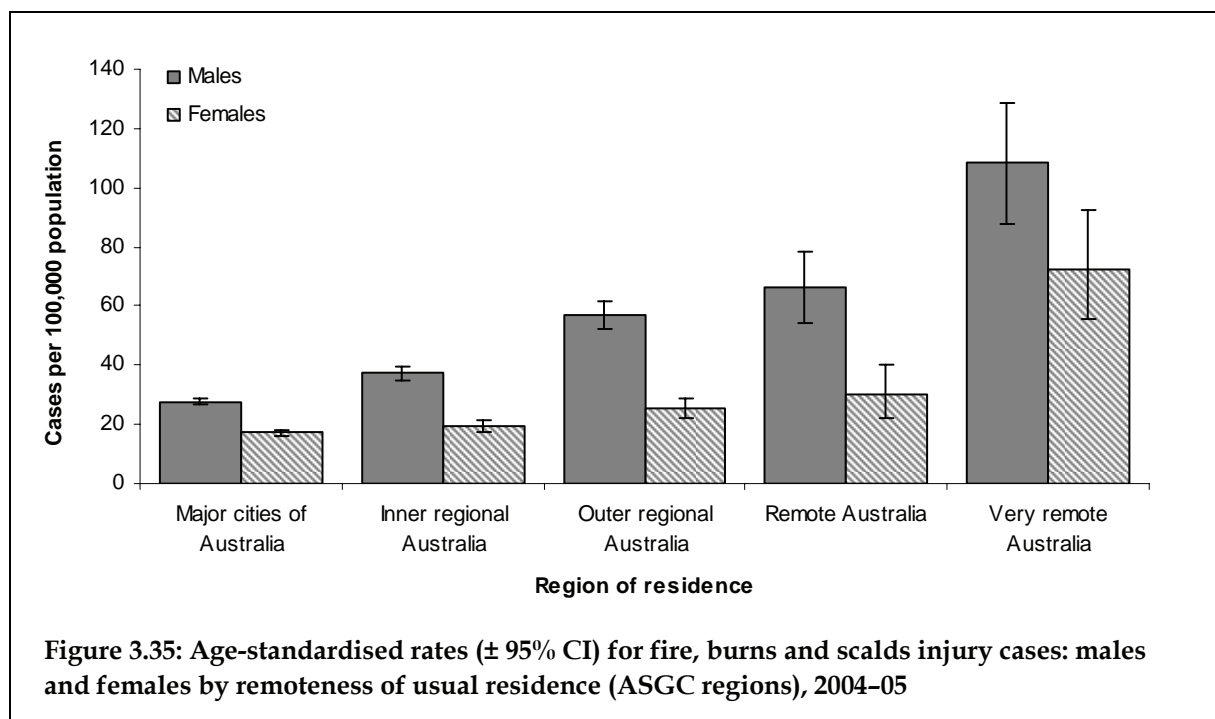
**Figure 3.34: Age-standardised rates ( $\pm$  95% CI) for fire, burns and scalds injury cases: males and females by state of usual residence, 2004-05**

## Fires, burns and scalds—remoteness of usual residence

The rate of hospitalised burns and scalds injury cases increased markedly with increases in the remoteness of the person's place of usual residence. People resident in Australia's Major cities had the lowest rate of hospitalised burns and scalds in 2004–05 (22.5 per 100,000 population) while residents of Australia's Very remote regions had the highest age-standardised rate of burns and scalds cases (91.0 per 100,000). This rate was significantly higher than that for all other regions and the nation as a whole.

Similar increases in rates of burn and scald cases were observed for both males and females (Figure 3.35). The higher rate of burns and scalds for residents of Very remote regions was particularly distinct for cases involving females, for whom rates jumped from 30.2 cases per 100,000 for residents of Remote areas to 72.5 per 100,000 for residents of Very remote areas.

The high rate of burns and scalds injuries noted previously for residents of the Northern Territory are most likely related to these findings, similarly high rates of burns and scalds have been previously noted for Indigenous Australians (see also Helps & Harrison 2004; Helps & Harrison 2006).



## 3.7 Other unintentional injury cases

ICD-10-AM inclusion criteria:

- Principal diagnosis [S00–T75](#) or [T79](#), and
- First external cause [W20–W64](#), [W75–W99](#), [X20–X39](#), [X50–X59](#), [Y85](#), [Y86](#) or [Y89.9](#), and
- Mode of admission other than ‘transfer from another acute hospital’.

**Table 3.37: Key indicators for hospitalised other unintentional injury: males, females and persons, Australia 2004–05**

Key indicators	Males	Females	Persons <sup>(a)</sup>
Total number of hospital separations due to other unintentional injury	85,396	34,271	119,668
Other unintentional separations as proportion of all community injury separations	38.2%	21.4%	31.2%
Estimated number of other unintentional injury cases <sup>(b)</sup>	80,618	32,491	113,110
Cases per 100,000 population	802.2	319.8	559.7
Cases per 100,000 population—age-standardised <sup>(c)</sup>	800.9	315.9	561.1
Total patient-days due to other unintentional injury <sup>(d), (e)</sup>	154,698	86,862	241,566
Mean patient-days per case	1.9	2.7	2.1

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

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

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

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

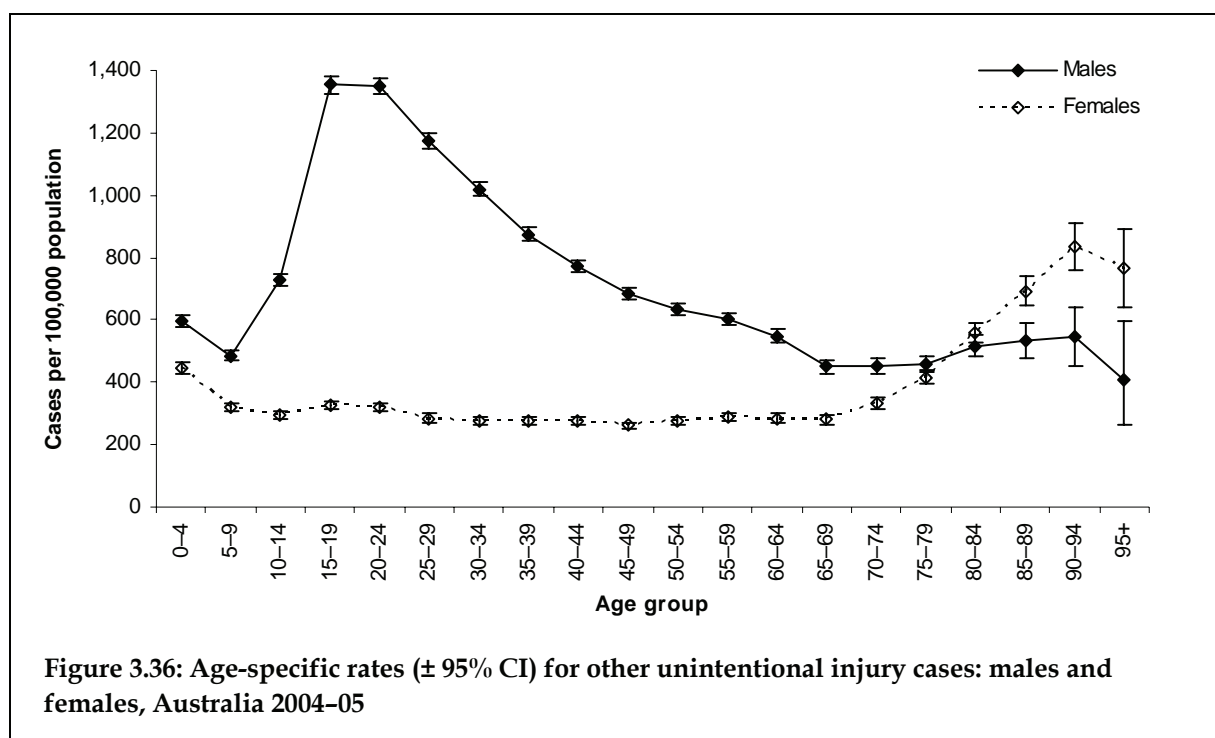
(e) Includes 6 days of patient care for which sex was not reported.

The remaining 113,110 hospitalised community injury cases in 2004–05 were the result of a variety of causes, including; exposure to mechanical forces (e.g. struck by object or unintentional contact with another person), accidental threats to breathing other than drowning and submersion, and contact with venomous animals and plants. The age-standardised rate of these other unintentional hospitalised injury was 561.1 per 100,000 population in this year (Table 3.37).

### Other unintentional—age and sex

Males accounted for nearly three-quarters of all other unintentional hospitalised injury cases in 2004–05 (71.3%,  $n = 80,618$ ). Accordingly, the age-standardised rate of these types of injuries was considerably higher for males (800.9 per 100,000 population) than for females (315.9 per 100,000). Age-specific rates of other unintentional injury cases were also quite different for males and females (Figure 3.36). Rates were highest for males aged 15–24 years and, from this peak, declined relatively steadily with increasing age. Conversely, rates for females were quite low for all age groups until the age of 75 years. Rates then increased with age, and were significantly higher than those of males for females aged 85 years and older.





## Other unintentional—external cause

Nearly half of all other unintentional hospitalised injury cases (46.4%,  $n = 52,532$ ) were due to exposure to inanimate mechanical forces (e.g. being stuck by objects, injured in explosions or contact with tools and machines). A larger proportion of cases involving males were assigned first external causes of this type (49.3%) than cases involving females (39.4%, Table 3.38). This was also the most common external cause category for all age groups other than the very old, for whom injuries due to exposure to other and unspecified factors became more frequent (Figure 3.37). Age-specific rates of injuries due to exposure to inanimate mechanical forces were highest for young adults 15–29 years.

Of this large group of hospitalised injuries, the *specific* external cause most frequently assigned to cases due to exposure to inanimate mechanical forces was W22, striking against or struck by other objects (13.1%,  $n = 6,862$ ). The next most common external causes for cases classed as exposure to inanimate mechanical forces were W44, foreign body entering into or through eye or natural orifice (11.6%,  $n = 6,102$ ) and W25, contact with sharp glass (10.3%,  $n = 5,433$ ). Contact with other and unspecified machinery (W31) was also a particularly frequent first external cause for cases involving males (10.7% of male cases due to exposure to inanimate mechanical forces,  $n = 4,269$ ).

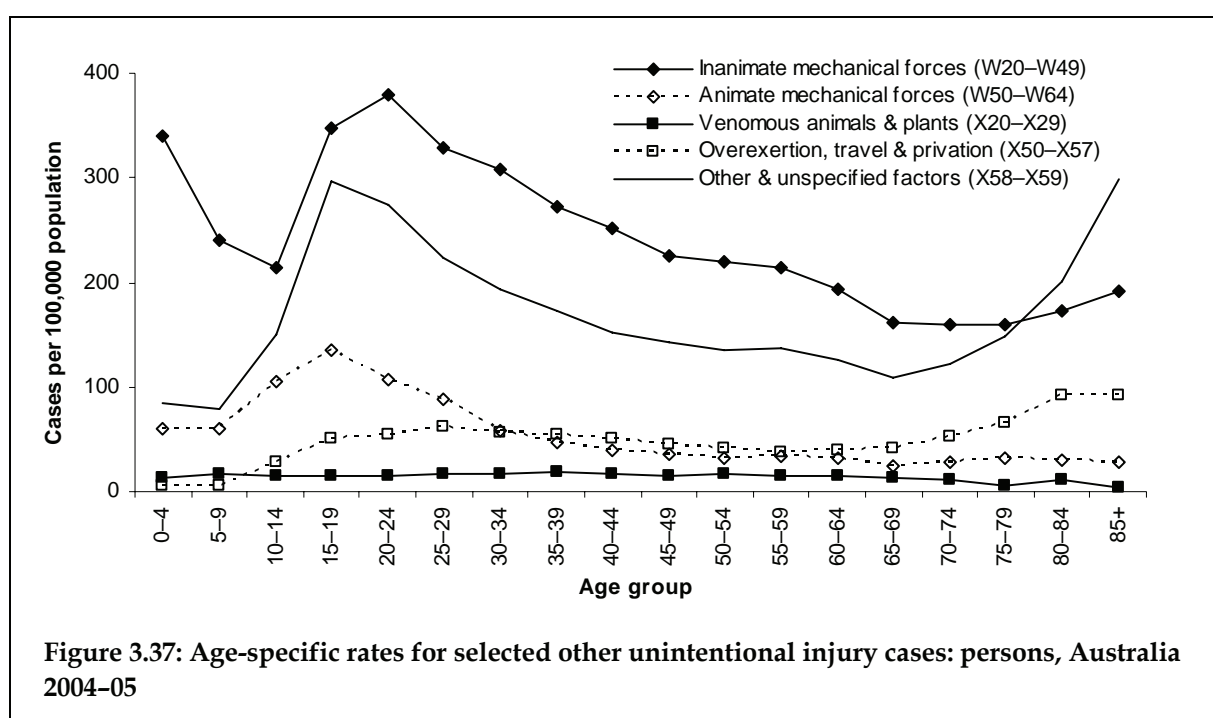
The second most common group of external causes for cases coded as other unintentional hospitalised injuries was accidental exposure to other and unspecified factors (29.9%,  $n = 33,766$ ). A slightly higher proportion of cases involving females were described as accidental exposure to other and unspecified factors (33.1%) than cases involving males (28.5%), likely related to the increase in rates of injuries of this type with age. The other and unspecified factors group contains only two codes, X58 (other) and X59 (unspecified), and the majority of cases for both males and females had X59 as the first external cause (persons: 94.7%,  $n = 31,991$ ). Rates of injuries resulting from accidental exposure to other and unspecified factors were highest for people aged 15–24 years, with a second peak noted for people aged 85 years and older (Figure 3.37).

The third most common type of external cause for cases coded as other unintentional hospitalised injuries were those describing exposure to animate mechanical forces (W50–W64). One in ten other unintentional injury cases in 2004–05 were assigned such external cause codes (10.7%,  $n = 12,145$ ). Most frequently, such cases were specifically attributed to being hit, struck, kicked, twisted, bitten or scratched by another person (W50; 28.7%,  $n = 3,480$ ). A further 23.9% of cases had a first external cause of W51, striking against or bumped into by another person. Both of these external cause codes were more frequent for cases involving males than for cases involving females. Rates of hospitalised injuries due to exposure to animate mechanical forces were highest for young people 15–19 years (Figure 3.37), and is likely to be related to rates of sporting injuries at this age (discussed further below).

**Table 3.38: External cause groups for other unintentional injury cases: males, females and persons, Australia 2004–05**

External cause	Males	Females	Persons *
Exposure to inanimate mechanical forces (W20–W49)	39,730 (49.3%)	12,802 (39.4%)	52,532 (46.4%)
Exposure to animate mechanical forces (W50–W64)	8,744 (10.8%)	3,400 (10.5%)	12,145 (10.7%)
Other accidental threats to breathing (W75–W84)	426 (0.5%)	339 (1.0%)	765 (0.7%)
Exposure to electric current, radiation & extreme ambient air temperature & pressure (W85–W99)	752 (0.9%)	247 (0.8%)	999 (0.9%)
Contact with venomous animals & plants (X20–X29)	1,928 (2.4%)	1,150 (3.5%)	3,078 (2.7%)
Exposure to forces of nature (X30–X39)	407 (0.5%)	264 (0.8%)	671 (0.6%)
Overexertion, travel & privation (X50–X57)	5,469 (6.8%)	3,432 (10.6%)	8,901 (7.9%)
Accidental exposure to other & unspecified factors (X58–X59)	23,001 (28.5%)	10,765 (33.1%)	33,766 (29.9%)
Sequelae of external causes (Y85, Y86, Y89.9)	161 (0.2%)	92 (0.3%)	253 (0.2%)
<b>Total</b>	<b>80,618</b>	<b>32,491</b>	<b>113,110</b>

\* Persons includes 1 case for which sex was not reported.



## Other unintentional—place and activity

More than half of all hospitalised cases in the other unintentional injury group had an unspecified place of occurrence recorded (58.9%,  $n = 66,644$ ). Nevertheless, and as for many other types of hospitalised community injury, the home was the most frequent *specified* place of occurrence; 15.9% ( $n = 17,947$ ) of other unintentional injury cases were reported to have occurred in the home. The home was the most frequently specified place of occurrence for many types of other unintentional injury cases, including exposure to inanimate mechanical forces, accidental threats to breathing and contact with venomous plants and animals (Table 3.39). A much higher proportion of female other unintentional injury cases occurred in the home (and driveway; 22.1%) than for male cases (13.4%, see Table 3.40).

Sports grounds and facilities were also a relatively common place of occurrence, accounting for 9.4% ( $n = 10,677$ ) of other unintentional injury cases in 2004–05. Sports facilities were the most common place of occurrence for injuries attributed to exposure to animate mechanical forces, over-exertion, travel and privation and exposure to other and unspecified factors. Sports facilities were a proportionately more common place of occurrence for males (10.8% of male cases) than for females (6.1%).

**Table 3.39: Place of occurrence for other unintentional injury cases by external cause groups, Australia 2004–05**

Place of occurrence	Inanimate mechanical forces (W20–W49)	Animate mechanical forces (W50–W64)	Accidental threats to breathing (W75–W84)	Electric current, radiation etc. (W85–W99)	Venomous animals & plants (X20–X29)	Forces of nature (X30–X39)	Over-exertion, travel & privation (X50–X57)	Other & unspecified factors (X58–X59)	Sequelae (Y85, Y86, Y89.9)	Total
Home	11,645	1,562	345	181	775	176	1,843	1,386	34	17,947
Residential institution	333	53	65	7	6	20	126	346	*	959
School	943	466	9	7	34	*	162	227	0	1,852
Health service area	204	*	32	11	5	*	101	137	5	515
Other specified institution & public administrative area	83	19	*	*	8	*	31	23	0	170
Sports & athletics area	1,641	3,390	*	*	12	34	2,113	3,475	5	10,677
Street & highway	374	117	8	10	33	55	118	120	32	867
Trade & service area	1,920	150	21	42	23	15	254	204	5	2,634
Industrial & construction area	3,978	26	*	98	25	30	218	243	*	4,624
Farm	880	477	*	10	76	19	57	56	*	1,578
Other specified place of occurrence	2,141	501	13	458	425	126	395	519	10	4,588
Unspecified place of occurrence	28,368	5,363	264	170	1,651	185	3,477	27,013	153	66,644
Place not reported/not applicable	22	*	0	0	5	*	6	17	0	55
<b>Total</b>	<b>52,532</b>	<b>12,145</b>	<b>765</b>	<b>999</b>	<b>3,078</b>	<b>671</b>	<b>8,901</b>	<b>33,766</b>	<b>253</b>	<b>113,110</b>

Note: Shading denotes most common specific category for each external cause group.

\* Small case counts have been suppressed.

**Table 3.40: Place of occurrence for other unintentional injury cases: males, females and persons, Australia 2004–05**

Place of occurrence	Males	Females	Persons
Home	10,767 (13.4%)	7,178 (22.1%)	17,945 (15.9%)
Prison	125 (0.2%)	9 (0.0%)	134 (0.1%)
Aged care facilities	179 (0.2%)	523 (1.6%)	702 (0.6%)
Other & unspecified residential institution	84 (0.1%)	39 (0.1%)	123 (0.1%)
School	1,306 (1.6%)	546 (1.7%)	1,852 (1.6%)
Health Service area	221 (0.3%)	294 (0.9%)	515 (0.5%)
Other specified institution & public administrative area	102 (0.1%)	68 (0.2%)	170 (0.2%)
Sporting grounds (outdoor)	6,592 (8.2%)	985 (3.0%)	7,577 (6.7%)
Sporting hall (indoor)	834 (1.0%)	352 (1.1%)	1,186 (1.0%)
Swimming centre	43 (0.1%)	36 (0.1%)	79 (0.1%)
Racetrack & racecourse	71 (0.1%)	21 (0.1%)	92 (0.1%)
Skating rink	39 (0.0%)	12 (0.0%)	51 (0.0%)
Skiing	166 (0.2%)	132 (0.4%)	298 (0.3%)
Other & unspecified sports & athletic areas	938 (1.2%)	456 (1.4%)	1,394 (1.2%)
Roadway	335 (0.4%)	132 (0.4%)	467 (0.4%)
Sidewalk	215 (0.3%)	126 (0.4%)	341 (0.3%)
Other & unspecified public highway, street or road	36 (0.0%)	23 (0.1%)	59 (0.1%)
Shop & store	534 (0.7%)	280 (0.9%)	814 (0.7%)
Commercial garage	155 (0.2%)	6 (0.0%)	161 (0.1%)
Office building	33 (0.0%)	10 (0.0%)	43 (0.0%)
Cafe, hotel & restaurant	648 (0.8%)	301 (0.9%)	949 (0.8%)
Other & unspecified trade & service area	558 (0.7%)	108 (0.3%)	666 (0.6%)
Construction area	673 (0.8%)	21 (0.1%)	694 (0.6%)
Factory & plant	1,920 (2.4%)	141 (0.4%)	2,061 (1.8%)
Mine & quarry	401 (0.5%)	10 (0.0%)	411 (0.4%)
Other & unspecified industrial & construction area	1,386 (1.7%)	71 (0.2%)	1,457 (1.3%)
Farm	1,326 (1.6%)	252 (0.8%)	1,578 (1.4%)
Area of still water	78 (0.1%)	29 (0.1%)	107 (0.1%)
Stream of water	185 (0.2%)	47 (0.1%)	232 (0.2%)
Large area of water	905 (1.1%)	201 (0.6%)	1,106 (1.0%)
Beach	488 (0.6%)	173 (0.5%)	661 (0.6%)
Forest	97 (0.1%)	30 (0.1%)	127 (0.1%)
Other specified countryside	174 (0.2%)	85 (0.3%)	259 (0.2%)
Other specified place of occurrence	1,573 (2.0%)	521 (1.6%)	2,094 (1.9%)
Unspecified place of occurrence	47,386 (58.8%)	19,257 (59.3%)	66,644 (58.9%)
Place not reported/not applicable	45 (0.1%)	16 (0.0%)	61 (0.1%)
<b>Total</b>	<b>80,618</b>	<b>32,491</b>	<b>113,110</b>

\* Persons includes 1 case for which sex was not reported.

Half of all hospitalised other unintentional injury cases had ‘unspecified activity’ recorded as the activity being undertaken at the time of the injury (50.0%,  $n = 56,547$ ), which is not surprising given the large number of such cases with an unspecified place of occurrence.

The most common *specified* activity reported for other unintentional injury cases was ‘while engaged in sporting activities’ (14.9%,  $n = 16,681$ ), which again is not surprising given the proportion of cases reported to have occurred in sports and athletics areas. Sports activities were the most commonly specified activity at the time of injury for most of the different types of other unintentional injuries (Table 3.41).

The number of cases for which sports were the specified activity was larger than the number of cases reported to have taken place in sporting venues, which is most likely due to some sporting activities, such as cycling, rock-climbing and swimming, being undertaken in places such as roads, countryside and beaches. As for place of occurrence, a higher proportion of cases involving males were attributed to sporting activities (16.9%) than for cases involving females (9.9%).

The second most common specified activity reported for other unintentional injuries was while working for income (13.6%,  $n = 15,353$ ). Working for income was the most frequent activity engaged in when injuries attributed to exposure to inanimate mechanical forces were sustained (Table 3.41). Again, a much higher proportion of cases involving males were injured while working for income (17.1%) than cases involving females (4.9%).

**Table 3.41: Activity at time of occurrence for other unintentional injury cases by external cause groups, Australia 2004–05**

Activity	Inanimate mechanical forces (W20–W49)	Animate mechanical forces (W50–W64)	Accidental threats to breathing (W75–W84)	Electric current, radiation etc. (W85–W99)	Venomous animals & plants (X20–X29)	Forces of nature (X30–X39)	Overexertion, travel & privation (X50–X57)	Other & unspecified factors (X58–X59)	Sequelae (Y85, Y86, Y89.9)	Total
While engaged in sports	3,201	4,572	5	360	142	103	3,032	5,446	0	16,861
While engaged in leisure	663	278	*	5	70	*	170	113	*	1,323
While working for income	10,695	571	8	309	196	72	1,038	2,459	5	15,353
While engaged in other types of work	4,762	275	*	62	216	36	558	138	*	6,051
While resting, sleeping, eating, etc.	3,020	104	438	16	107	32	539	276	0	4,532
Other specified activity	7,646	1,501	82	91	371	97	1,485	830	7	12,110
Unspecified activity	22,507	4,833	225	156	1,967	309	2,067	24,455	28	56,547
Activity not reported/not applicable	38	11	*	0	9	*	12	49	212	333
<b>Total</b>	<b>52,532</b>	<b>12,145</b>	<b>765</b>	<b>999</b>	<b>3,078</b>	<b>671</b>	<b>8,901</b>	<b>33,766</b>	<b>253</b>	<b>113,110</b>

Note: Shading denotes most common specific category for each external cause group.

\* Small case counts have been suppressed.

## Other unintentional—principal diagnosis

The most common principal diagnoses for other unintentional hospitalised injury cases described injuries to the wrist and hand (32.9%,  $n = 37,182$ ). These were the most common types of injuries for both males and females, but a higher proportion of cases involving males were assigned principal diagnosis of injuries to the wrist and hand (36.8%) than cases involving females (23.1%, Table 3.42). Injuries to the wrist and hand were also the most frequent type of principal diagnosis for all age groups other than very young children.

Injuries to the knee and lower leg were the second most common injury to result from a case attributed to other unintentional external causes (15.4%,  $n = 17,400$ ) and such injuries were proportionately more common for females (16.9%) than for males (14.8%). Injuries to the head accounted for 13.4% of cases attributed to other unintentional external causes and head injuries were the most common result for cases involving young children aged 0–4 years.

While injuries to the hip and thigh represented a relatively small proportion of all other unintentional hospitalised injury cases (3.4%,  $n = 3,845$ ), such injuries accounted for a substantial proportion of cases involving people aged 65 years and older (15.6% of cases 65+ years, compared to 1–3% of cases for younger ages).

**Table 3.42: Principal diagnosis groups for other unintentional injury cases: males, females and persons, Australia 2004–05**

Principal diagnosis	Males	Females	Persons *
Injuries to the head	11,153 (13.8%)	4,008 (12.3%)	15,161 (13.4%)
Injuries to the neck	709 (0.9%)	291 (0.9%)	1,000 (0.9%)
Injuries to the thorax	1,073 (1.3%)	567 (1.7%)	1,640 (1.4%)
Injuries to the abdomen, lower back, lumbar spine & pelvis	2,439 (3.0%)	1,441 (4.4%)	3,880 (3.4%)
Injuries to the shoulder & upper arm	3,726 (4.6%)	1,178 (3.6%)	4,904 (4.3%)
Injuries to the elbow & forearm	4,850 (6.0%)	2,391 (7.4%)	7,241 (6.4%)
Injuries to the wrist & hand	29,660 (36.8%)	7,521 (23.1%)	37,182 (32.9%)
Injuries to the hip & thigh	1,958 (2.4%)	1,887 (5.8%)	3,845 (3.4%)
Injuries to the knee & lower leg	11,894 (14.8%)	5,506 (16.9%)	17,400 (15.4%)
Injuries to the ankle & foot	4,804 (6.0%)	2,789 (8.6%)	7,593 (6.7%)
Injuries involving multiple body regions	47 (0.1%)	19 (0.1%)	66 (0.1%)
Injuries to unspecified parts of trunk, limb or body region	557 (0.7%)	308 (0.9%)	865 (0.8%)
Effects of foreign body entering through natural orifice	3,947 (4.9%)	2,650 (8.2%)	6,597 (5.8%)
Burns	431 (0.5%)	109 (0.3%)	540 (0.5%)
Frostbite	24 (0.0%)	11 (0.0%)	35 (0.0%)
Poisoning by drugs, medicaments & biological substances	11 (0.0%)	5 (0.0%)	16 (0.0%)
Toxic effects of non-medical substances	1,888 (2.3%)	1,132 (3.5%)	3,020 (2.7%)
Other & unspecified effects of external causes	1,035 (1.3%)	522 (1.6%)	1,557 (1.4%)
Certain early complications of trauma	412 (0.5%)	156 (0.5%)	568 (0.5%)
<b>Total</b>	<b>80,618</b>	<b>32,491</b>	<b>113,110</b>

\* Persons includes 1 case for which sex was not reported.



The nature of the injury described by the principal diagnosis of other unintentional injury cases in 2004–05 was highly variable (Table 3.43). Most commonly, other unintentional injury principal diagnoses described a fracture (28.2%,  $n = 31,935$ ). Injuries due to accidental exposure to other and unspecified external causes or exposure to animate mechanical forces were commonly fractures, accounting for 45.1% and 37.0% of cases in these groups, respectively.

The most common group of other unintentional injury cases, exposure to inanimate mechanical forces, most frequently resulted in open wounds. Injuries that were open wounds in nature accounted for 30.1% of all cases due to exposure to inanimate mechanical forces ( $n = 15,825$ ). Overall, open wounds were the second most common type of other unintentional injury case for both males and females.

**Table 3.43: Nature of injury diagnosis for other unintentional injury cases: males, females and persons, Australia 2004–05**

Nature of injury	Males	Females	Persons *
Superficial (excluding eye)	3,067 (3.8%)	1,904 (5.9%)	4,971 (4.4%)
Open wound (excluding eye)	16,306 (20.2%)	6,410 (19.7%)	22,716 (20.1%)
Fracture (excluding tooth)	23,302 (28.9%)	8,633 (26.6%)	31,935 (28.2%)
Dislocation	4,371 (5.4%)	1,992 (6.1%)	6,363 (5.6%)
Sprain/strain	3,868 (4.8%)	1,949 (6.0%)	5,817 (5.1%)
Nerve (including spinal cord; excluding brain)	2,350 (2.9%)	891 (2.7%)	3,241 (2.9%)
Blood vessel	879 (1.1%)	267 (0.8%)	1,146 (1.0%)
Muscle/tendon	8,906 (11.1%)	2,526 (7.8%)	11,433 (10.1%)
Crush injury	741 (0.9%)	160 (0.5%)	901 (0.8%)
Amputation (including partial)	2,887 (3.6%)	581 (1.8%)	3,468 (3.1%)
Internal organ	573 (0.7%)	165 (0.5%)	738 (0.7%)
Burn/corrosion (excluding eye)	416 (0.5%)	106 (0.3%)	522 (0.5%)
Eye injury (excluding foreign body in external eye)	989 (1.2%)	236 (0.7%)	1,225 (1.1%)
Foreign body: external eye	638 (0.8%)	146 (0.4%)	784 (0.7%)
Foreign body: ear canal	506 (0.6%)	424 (1.3%)	930 (0.8%)
Foreign body: nose	239 (0.3%)	222 (0.7%)	461 (0.4%)
Foreign body: respiratory tract	570 (0.7%)	530 (1.6%)	1,100 (1.0%)
Foreign body: aliment tract	1,928 (2.4%)	1,256 (3.9%)	3,184 (2.8%)
Foreign body: genito-urinary tract	66 (0.1%)	72 (0.2%)	138 (0.1%)
Intracranial (including concussion)	1,430 (1.8%)	409 (1.3%)	1,839 (1.6%)
Dental (including fractured tooth)	302 (0.4%)	259 (0.8%)	561 (0.5%)
Electrical injury	280 (0.3%)	95 (0.3%)	375 (0.3%)
Bite (including envenomation)	1,862 (2.3%)	1,108 (3.4%)	2,970 (2.6%)
Other specified nature of injury	1,822 (2.3%)	917 (2.8%)	2,739 (2.4%)
Unspecified nature of injury	2,296 (2.8%)	1,219 (3.8%)	3,515 (3.1%)
<b>Total</b>	<b>80,594</b>	<b>32,477</b>	<b>113,072</b>

\* Persons includes 1 case for which sex was not reported.



## Other unintentional—body region

The shoulder and upper limbs was the most commonly injured region for other unintentional injuries in 2004–05, accounting for two in five hospitalised cases (43.6%,  $n = 49,327$ ). A higher proportion of cases involving males sustained injuries to the shoulder and upper limbs (47.4%, compared to 34.1% for cases involving females).

Nevertheless, shoulder and upper limb injuries were the leading result of other unintentional injuries for both males and females. Similarly, the shoulder and upper limb region was the most commonly injured body region for cases due to exposure to inanimate mechanical forces, animate mechanical forces and other and unspecified factors, the three most common other unintentional injury groups (Table 3.44).

The hip and lower limb region was the second most commonly injured body region for a quarter of other unintentional injury cases overall (25.5%,  $n = 28,838$ ). Injuries to the hip and lower limb region were proportionately more common for cases involving females (31.3% of cases vs. 23.1% for males), most likely related to the marked increase in rates of other unintentional injury for older females. Similarly, injuries to the hip and lower limb region were the most frequent type for injury for cases of overexertion, travel and privation injuries, relatively high rates of which were observed for people aged 70 years and older (see previously, Figure 3.37).

The principal diagnosis for about one in ten other unintentional injury cases reported other injuries not specified by body region (11.7%,  $n = 13,264$ ). As expected, this was the most commonly injured ‘region’ for cases of accidental threats to breathing (other than drowning), exposure to electric current, radiation and the like, contact with venomous animals and plants, exposure to forces of nature, and sequelae (Table 3.44).

**Table 3.44: Body region affected by principal diagnosis for other unintentional injury cases by external cause group: persons, Australia 2004–05**

Body region	Inanimate mechanical forces (W20–W49)	Animate mechanical forces (W50–W64)	Accidental threats to breathing (W75–W84)	Electric current, radiation etc. (W85–W99)	Venomous animals & plants (X20–X29)	Exposure to forces of nature (X30–X39)	Overexertion, travel & privation (X50–X57)	Other & unspecified factors (X58–X59)	Sequelae (Y85, Y86, Y89.9)	Total
Head	6,058	3,654	8	10	16	7	63	5,312	33	15,161
Trunk <sup>†</sup>	1,939	1,297	6	8	17	11	1,631	1,580	31	6,520
Shoulder & upper limb	29,075	3,780	*	*	112	15	1,404	14,863	66	49,327
Hip & lower limb	8,789	2,856	*	*	157	19	5,590	11,375	45	28,838
Other injuries not specified by body region	6,671	558	747	966	2,776	619	213	636	78	13,264
<b>Total</b>	<b>52,532</b>	<b>12,145</b>	<b>765</b>	<b>999</b>	<b>3,078</b>	<b>671</b>	<b>8,901</b>	<b>33,766</b>	<b>253</b>	<b>113,110</b>

Note: Shading denotes most common body region category for each external cause group.

\* Small case counts have been suppressed.

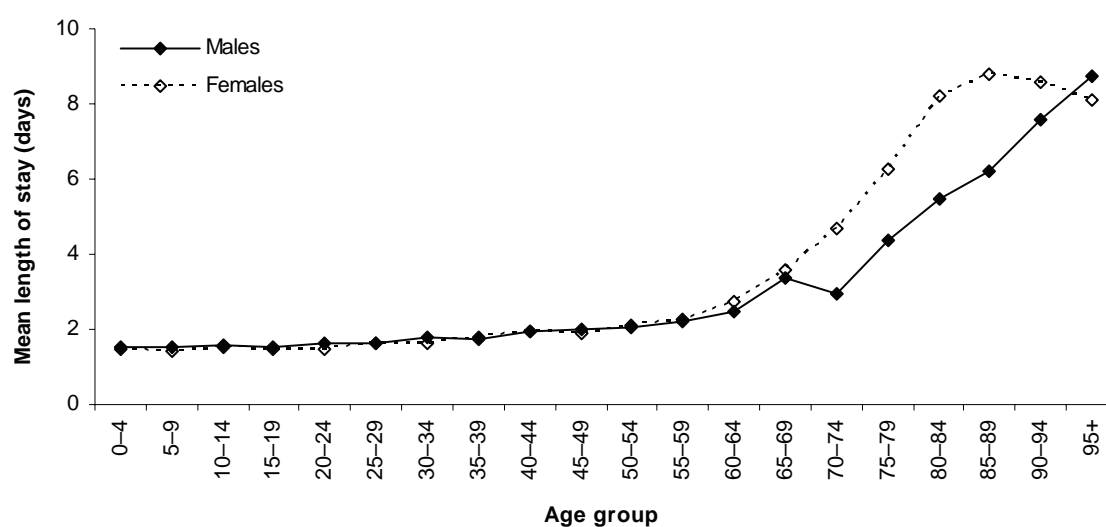
† Trunk includes the neck, thorax, abdomen, lower back, lumbar spine & pelvis.

## Other unintentional—length of stay

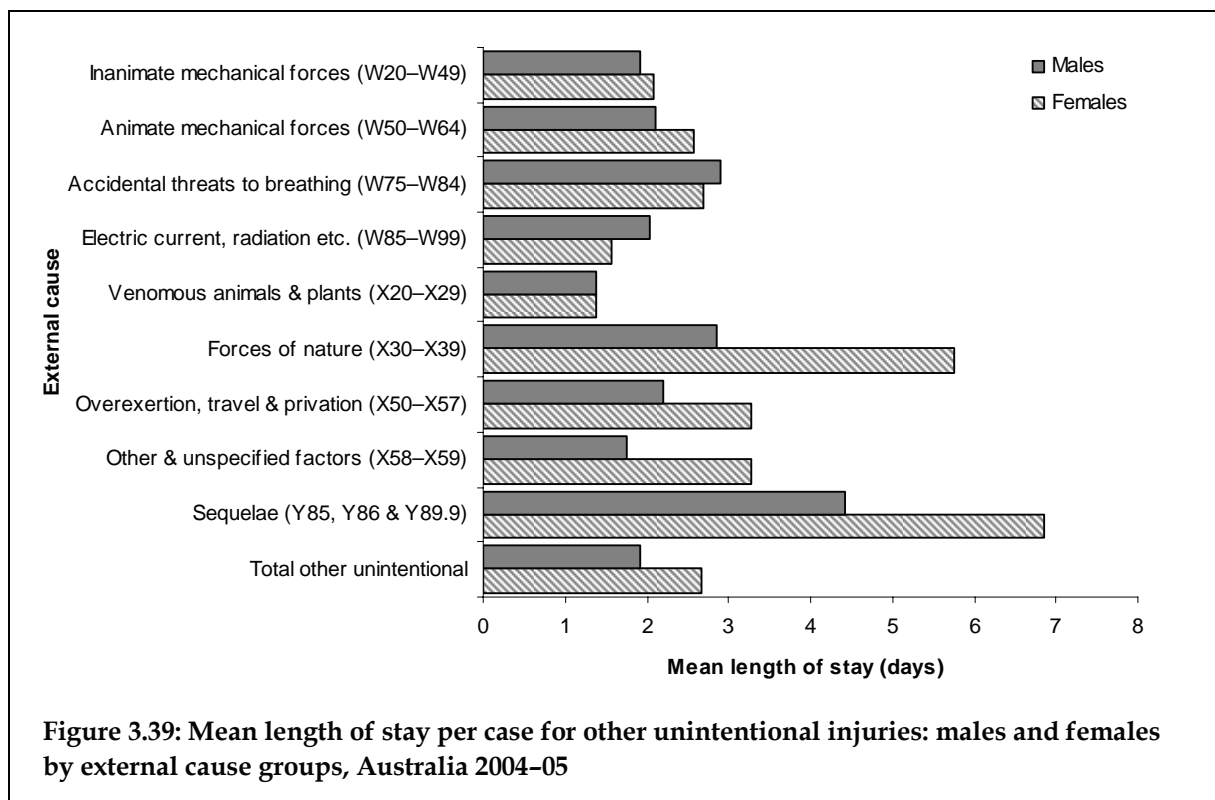
The injuries grouped as 'other unintentional' accounted for a third (31.7%) of all community injury cases in 2004–05 but accounted for a substantially smaller proportion of all patient-days attributed to community injury in this period (16.9%,  $n = 241,566$ ). Unlike most other types of community injury cases, nearly half of case separations for other unintentional injuries reported that the person was discharged from hospital on the same day as admitted (45.1%,  $n = 53,944$ ). Including these same-day separations, more than three-quarters other unintentional injury case separations reported a length of stay of one day (77.1%,  $n = 87,182$ ). Nevertheless, a small proportion of unintentional injury cases reported quite long lengths of stay, in excess of 100 days ( $n = 8$ ).

Not surprisingly, the mean length of stay per case for other unintentional injuries was short; 2.1 days. The mean length of stay for case separations for males was substantially shorter (1.9 days) than that of females (2.7 days). This is more likely due to differences in the ages of males and females hospitalised because of other unintentional injuries rather than the types of unintentional injuries sustained. As can be seen in Figure 3.38, mean lengths of stay were similar for males and females at younger ages, when the rates of such injuries involving males were up to four times higher than that for females. At older ages, however, when rates of other unintentional injuries for females matched or surpassed those for males, the mean length of stay for females was much longer than that for males for all but those aged 95 years and older.

Mean lengths of stay per case for most types of other unintentional injuries had quite short mean lengths of stay (Figure 3.39). Only injuries attributed to forces of nature (X30–X39) and sequelae of trauma (Y85, Y86 or Y89.9) having means substantially higher than most other types. For most types of other unintentional injuries, the mean length of stay per case for females was longer than that for males, substantially so for injuries attributed to forces of nature, overexertion, travel and privation, accidental exposure to other and unspecified factors and sequelae of trauma, all injuries that were more common in older people than for younger Australians.



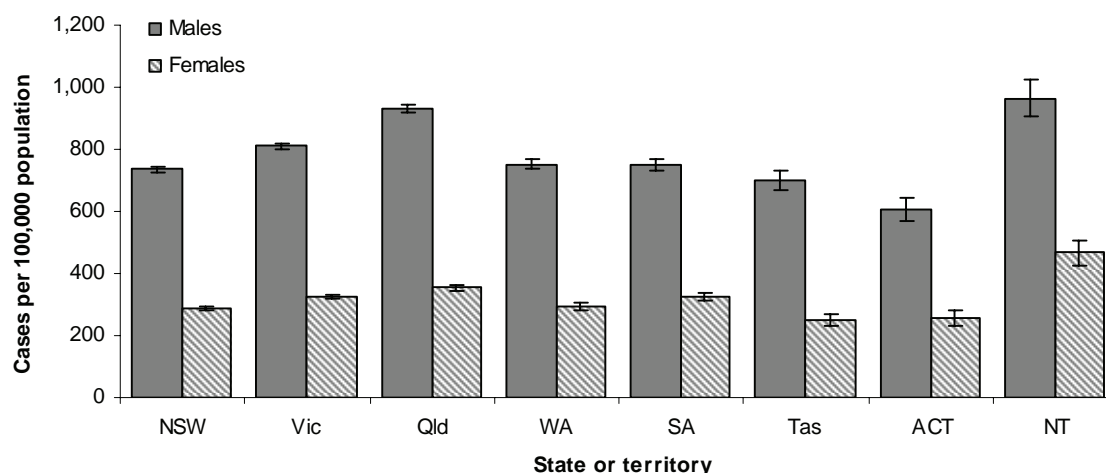
**Figure 3.38: Mean length of stay per case for other unintentional injuries: males and females by age, Australia 2004–05**



## Other unintentional—state of usual residence

The age-standardised rates of hospitalised other unintentional injury cases by state of usual residence showed a similar distribution for both males and females (Figure 3.40). Rates for both males and females were highest for residents of the Northern Territory (males: 963.9 per 100,000 population; females: 465.8 per 100,000). For males, the rate of other unintentional injury cases for residents of the Northern Territory was not significantly higher than that for male residents of Queensland (924.9 per 100,000). For females, however, the rate of other unintentional injury cases for residents of the Northern Territory was significantly higher than for females in all other jurisdictions.

The lowest age-standardised rate of hospitalised other unintentional injury cases for males was observed for residents of the Australian Capital Territory (607.3 per 100,000 population). This was significantly lower than that observed for males resident in Tasmania (699.7 per 100,000). Conversely, the lowest age-standardised rate of hospitalised other unintentional injury cases for females was observed for residents of Tasmania (251.7 per 100,000), and this was not significantly different to that for females resident in the Australian Capital Territory (254.9 per 100,000).

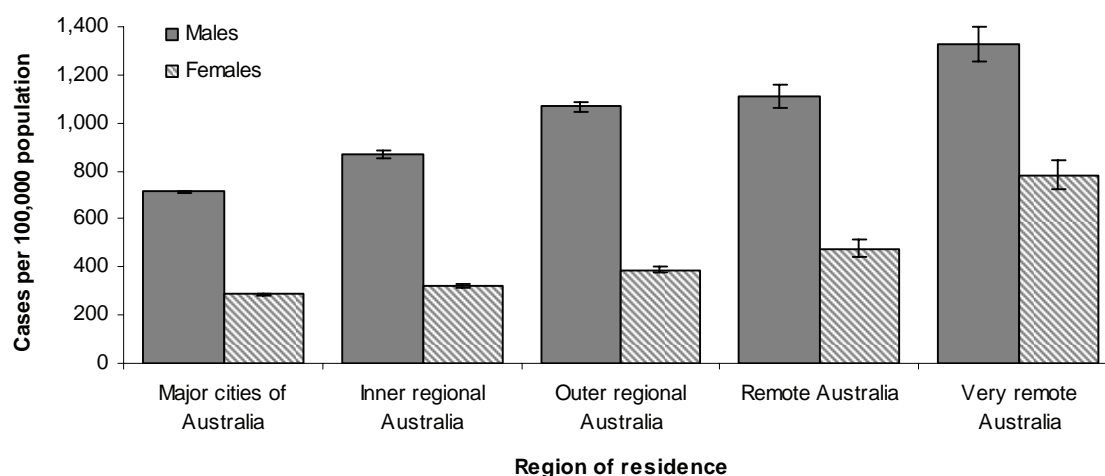


**Figure 3.40: Age-standardised rates ( $\pm$  95% CI) for other unintentional injury cases: males and females by state of usual residence, 2004–05**

### Other unintentional—remoteness of usual residence

As for rates by state of usual residence, age-standardised rates of hospitalised other unintentional injury cases by remoteness of usual residence showed a similar distribution for both males and females (Figure 3.41). Rates for males increased consistently with increases in the remoteness classification of the place of usual residence. The widths of the confidence intervals suggest that the observed differences between the three most remote regions are not significant however. Conversely, for females, each increase in rate with increasing remoteness was significant.

The age-standardised rates of hospitalised other unintentional injury cases for males were significantly higher than those for females in all remoteness regions. In all regions other than Very remote Australia, male rates were at least 2.3 times higher than those for females. In Very remote Australia, however, the rate of other unintentional injury cases for males was 'only' 1.7 times higher than that for females.



**Figure 3.41: Age-standardised rates ( $\pm$  95% CI) for other unintentional injury cases: males and females by remoteness of usual residence (ASGC regions), 2004–05**

## 4 Intentional injury

Intentional injuries include those that are classed as self-inflicted (self-harm) and those that are caused, on purpose, by another person (assault). This report also groups injuries of undetermined intent as 'intentional' injuries. Fewer than one in seven community injury cases separating from hospital in 2004–05 were due to intentional external causes (13.6%,  $n = 48,305$ ). The age-standardised rate of intentional injury cases was 241.0 per 100,000 population. A slightly higher proportion of intentional injury cases involved males (53.8%,  $n = 26,001$ ) and, accordingly, males had a higher rate of hospitalised intentional injuries (258.6 per 100,000) than females (223.6 per 100,000, a M:F rate ratio of 1.2 to 1).

### 4.1 Intentional self-harm cases

ICD-10-AM inclusion criteria:

- Principal diagnosis [S00–T75](#) or [T79](#), and
- First external cause [X60–X84](#) or [Y87.0](#), and
- Mode of admission other than 'transfer from another acute hospital'.

**Table 4.1: Key indicators for hospitalised intentional self-harm injury: males, females and persons, Australia 2004–05**

Key indicators	Males	Females	Persons
Total number of hospital separations due to intentional self-harm injury	9,548	15,535	25,083
Intentional self-harm separations as proportion of all community injury separations	4.3%	9.7%	6.5%
Estimated number of intentional self-harm injury cases <sup>(a)</sup>	9,017	14,866	23,883
Cases per 100,000 population	89.7	146.3	118.2
Cases per 100,000 population—age-standardised <sup>(b)</sup>	89.9	148.9	118.9
Total patient-days due to intentional self-harm injury <sup>(c)</sup>	28,748	37,848	66,596
Mean patient-days per case	3.2	2.5	2.8

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

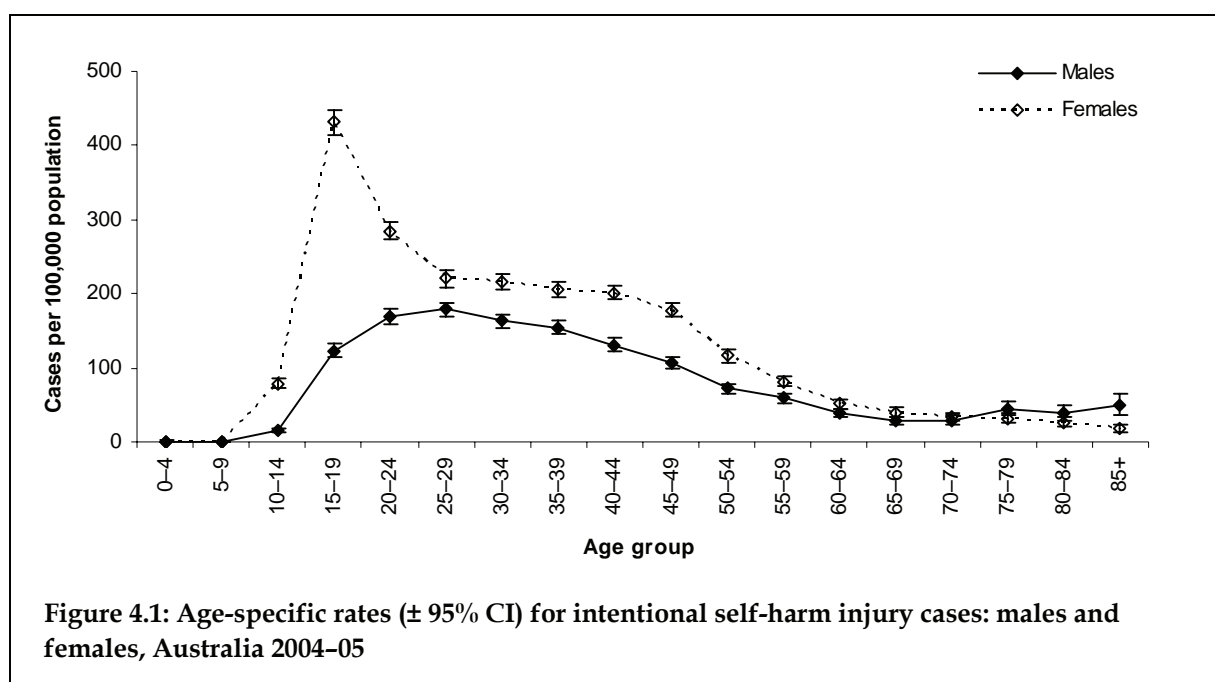
(b) Standardised to the Australian estimated resident population 30th June 2001.

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

An estimated 23,883 hospitalised injury cases were due to intentional self-harm in 2004–05 (Table 4.1). The age-standardised rate of hospitalised self-harm cases was 118.9 per 100,000 population.

## Self-harm—age and sex

Unlike most other types of hospitalised community injury, a higher proportion of intentional self-harm cases involved females (62.2%,  $n = 14,866$ ). Accordingly, females had a higher age-standardised rate of self-harm injuries (148.9 per 100,000 population) than males (89.9 per 100,000). The highest age-specific rate for cases of hospitalised self-harm was 431.1 per 100,000 population for females aged 15–19 years and this was a much higher rate than observed for either females 10–14 years or 20–24 years (Figure 4.1). On the other hand, rates of hospitalised self-harm were highest for males aged 25–29 years (178.7 per 100,000), but this rate was not that much higher than observed for males a little younger or a little older. Rates of hospitalised self-harm for females were significantly higher than those for males between the ages of 10–59 years.



## Self-harm—external cause

Three specific external cause codes, X60, X61 and X78, accounted for three-quarters of all hospitalised self-harm cases in 2004–05 (77.9%,  $n = 18,613$ ). Nearly half of all hospitalised self-harm cases (45.8%,  $n = 10,931$ ) were due to self-poisoning by antiepileptic, sedative-hypnotic, anti-parkinsonism or psychotropic drugs (X61, e.g. antidepressants, barbiturates and tranquilisers). The group of drugs (external cause X41) was also the leading cause of cases of hospitalised accidental poisoning by pharmaceuticals (see previous section). A slightly higher proportion of female self-harm cases involved antiepileptic, sedative-hypnotic, anti-parkinsonism or psychotropic drugs (47.6%) than male cases (42.7%, Table 4.2). X61 was the most frequent external cause code assigned to self-harm cases for all age groups other than for children aged 0–14 years.

Self-poisoning by non-opioid analgesics, antipyretics and anti-rheumatics (X60, 19.2%) was the second most common cause attributed to hospitalised self-harm cases. Self-harm due to these drugs was far more common for females than for males (23.5% of cases vs. 12.3%, respectively) and this was the leading cause of cases involving children aged 0–14 years.

The third most common first external cause for self-harm cases was self-harm by sharp object (X78), accounting for 12.9% of all self-harm cases requiring hospitalisation. For cases of this type, however, cases involving males were proportionately more common than cases involving females (16.4% of male self-harm cases vs. 10.8% for females). Markedly higher proportions of self-harm cases for males were also attributed to self-poisoning by other gases and vapours (e.g. vehicle exhaust) and hanging than for cases involving females.

**Table 4.2: First external cause for intentional self-harm cases: males, females and persons, Australia 2004–05**

External cause	Males	Females	Persons
Self-poisoning: non-opioid analgesics, antipyretics & anti-rheumatics (X60)	1,105 (12.3%)	3,490 (23.5%)	4,595 (19.2%)
Self-poisoning: antiepileptic, sedative-hypnotic, anti-parkinsonism & psychotropic drugs, not elsewhere classified (X61)	3,854 (42.7%)	7,077 (47.6%)	10,931 (45.8%)
Self-poisoning: narcotics & psychodysleptics [hallucinogens], not elsewhere classified (X62)	534 (5.9%)	641 (4.3%)	1,175 (4.9%)
Self-poisoning: other drugs acting on the autonomic nervous system (X63)	105 (1.2%)	133 (0.9%)	238 (1.0%)
Self-poisoning: other & unspecified drugs, medicaments & biological substances (X64)	596 (6.6%)	1,033 (6.9%)	1,629 (6.8%)
Self-poisoning: alcohol (X65)	130 (1.4%)	182 (1.2%)	312 (1.3%)
Self-poisoning: organic solvents & halogenated hydrocarbons & their vapours (X66)	30 (0.3%)	27 (0.2%)	57 (0.2%)
Self-poisoning: other gases & vapours (X67)	287 (3.2%)	106 (0.7%)	393 (1.6%)
Self-poisoning: pesticides (X68)	81 (0.9%)	43 (0.3%)	124 (0.5%)
Self-poisoning: other & unspecified chemicals & noxious substances (X69)	120 (1.3%)	161 (1.1%)	281 (1.2%)
Self-harm by hanging, strangulation & suffocation (X70)	306 (3.4%)	128 (0.9%)	434 (1.8%)
Self-harm by drowning & submersion (X71)	9 (0.1%)	13 (0.1%)	22 (0.1%)
Self-harm by smoke, fire & flames (X76)	35 (0.4%)	25 (0.2%)	60 (0.3%)
Self-harm by sharp object (X78)	1,480 (16.4%)	1,607 (10.8%)	3,087 (12.9%)
Self-harm by blunt object (X79)	32 (0.4%)	7 (0.0%)	39 (0.2%)
Self-harm by jumping from a high place (X80)	56 (0.6%)	41 (0.3%)	97 (0.4%)
Self-harm by jumping or lying before moving object (X81)	37 (0.4%)	23 (0.2%)	60 (0.3%)
Self-harm by crashing of motor vehicle (X82)	32 (0.4%)	22 (0.1%)	54 (0.2%)
Self-harm by other specified means (X83)	107 (1.2%)	57 (0.4%)	164 (0.7%)
Self-harm by unspecified mean (X84)	27 (0.3%)	37 (0.2%)	64 (0.3%)
Other self-harm (X72–X75, X77 & Y87)	54 (0.6%)	13 (0.1%)	67 (0.3%)
<b>Total</b>	<b>9,017</b>	<b>14,866</b>	<b>23,883</b>

## Self-harm—place and activity

Sixty per cent of all hospitalised intentional self-harm cases in 2004–05 occurred in the home (59.5%,  $n = 14,214$ ). A further 31.4% of cases had ‘unspecified’ recorded as the place of occurrence. Together, these place categories accounted for more than nine in ten hospitalised cases.

A slightly higher proportion of intentional self-harm cases involving females (62.3%) were reported to have occurred in the home than for cases involving males (55.0%, Table 4.3).



Conversely, a higher proportion of cases involving males had an unspecified place of occurrence reported (34.1%) than for cases involving females (29.8%). Only small proportions of cases for both males and females were reported to have occurred in other specified places.

Similarly, nearly three-quarters of hospitalised intentional self-harm cases in 2004–05 were reported to have occurred while engaged in ‘other specified activities’, for which no further detail is available (72.6%, Table 4.4). A further 26.7% of cases ( $n = 6,385$ ) had ‘unspecified activity’ recorded for the incident or did not have any activity code recorded. This pattern of activity coding was similar for both males and females and was not entirely surprising given the type of injury.

**Table 4.3: Place of occurrence for intentional self-harm cases: males, females and persons, Australia 2004–05**

Place of occurrence	Males	Females	Persons
Home	4,955 (55.0%)	9,259 (62.3%)	14,214 (59.5%)
Residential institution	155 (1.7%)	138 (0.9%)	293 (1.2%)
School	20 (0.2%)	90 (0.6%)	110 (0.5%)
Health service area	181 (2.0%)	375 (2.5%)	556 (2.3%)
Other specified institution & public administrative area	24 (0.3%)	36 (0.2%)	60 (0.3%)
Sports & athletics area	8 (0.1%)	7 (0.0%)	15 (0.1%)
Street & highway	191 (2.1%)	105 (0.7%)	296 (1.2%)
Trade & service area	154 (1.7%)	158 (1.1%)	312 (1.3%)
Industrial & construction area	7 (0.1%)	8 (0.1%)	15 (0.1%)
Other specified place of occurrence	225 (2.5%)	238 (1.6%)	463 (1.9%)
Unspecified place of occurrence	3,079 (34.1%)	4,423 (29.8%)	7,502 (31.4%)
Place not reported/not applicable	18 (0.2%)	29 (0.2%)	47 (0.2%)
<b>Total</b>	<b>9,017</b>	<b>14,866</b>	<b>23,883</b>

**Table 4.4: Activity at time of occurrence for intentional self-harm cases: males, females and persons, Australia 2004–05**

Activity	Males	Females	Persons
While engaged in sport	* (0.1%)	* (0.0%)	9 (0.0%)
While engaged in leisure	24 (0.3%)	20 (0.1%)	44 (0.2%)
While working for income	17 (0.2%)	14 (0.1%)	31 (0.1%)
While engaged in other types of work	* (0.0%)	* (0.1%)	15 (0.1%)
While resting, sleeping, eating, etc.	17 (0.2%)	39 (0.3%)	56 (0.2%)
Other specified activity	6,578 (73.0%)	10,765 (72.4%)	17,343 (72.6%)
Unspecified activity	2,342 (26.0%)	3,940 (26.5%)	6,282 (26.3%)
Activity not reported/not applicable	30 (0.3%)	73 (0.5%)	103 (0.4%)
<b>Total</b>	<b>9,017</b>	<b>14,866</b>	<b>23,883</b>

\* Small cell counts have been suppressed.

## Self-harm—principal diagnosis

Nearly eight in ten hospitalised self-harm cases in 2004–05 were assigned principal diagnosis codes for poisoning by drugs, medicaments and biological substances (78.0%,  $n = 18,636$ ). This is congruent with the previous analysis of external cause for self-harm cases, which found that 82.6% of cases were due to some form of self-poisoning. A substantially higher proportion of cases involving females had principal diagnoses of this type (83.6%) than cases involving males (68.9%, Table 4.5). Poisoning by drugs, medicaments and biological substances was also the most common principal diagnosis for self-harm cases for every age group.

Similarly, the majority of injuries resulting from intentional self-harm cases were described as being poisoning/toxic effects in nature (82.5%, Table 4.6). One in ten hospitalised intentional self-harm cases were open wounds (10.2%) and unlike most other types of community injuries, fractures accounted for less than one per cent of self-harm cases (0.9%). Injuries of a specific physical nature (e.g. open wounds, fractures, muscle or tendon damage) were proportionately more common for males.

Given the predominance of poisoning as the first external cause and/or principal diagnosis for hospitalised intentional self harm, it is not surprising that the majority of cases were described as being 'other injuries not specified by body region' (84.9%,  $n = 20,281$ ). A further ten per cent of cases were described as injuries to the shoulder and upper limb (10.0%,  $n = 2,400$ ).

**Table 4.5: Principal diagnosis for intentional self-harm cases: males, females and persons, Australia 2004–05**

Principal diagnosis	Males	Females	Persons
Injuries to the head	171 (1.9%)	71 (0.5%)	242 (1.0%)
Injuries to the neck	179 (2.0%)	90 (0.6%)	269 (1.1%)
Injuries to the thorax	91 (1.0%)	41 (0.3%)	132 (0.6%)
Injuries to the abdomen, lower back, lumbar spine & pelvis	186 (2.1%)	127 (0.9%)	313 (1.3%)
Injuries to the shoulder & upper arm	44 (0.5%)	29 (0.2%)	73 (0.3%)
Injuries to the elbow & forearm	399 (4.4%)	512 (3.4%)	911 (3.8%)
Injuries to the wrist & hand	669 (7.4%)	747 (5.0%)	1,416 (5.9%)
Injuries to the hip & thigh	36 (0.4%)	66 (0.4%)	102 (0.4%)
Injuries to the knee & lower leg	58 (0.6%)	51 (0.3%)	109 (0.5%)
Injuries to the ankle & foot	25 (0.3%)	10 (0.1%)	35 (0.1%)
Injuries involving multiple body regions	13 (0.1%)	21 (0.1%)	34 (0.1%)
Injuries to unspecified parts of trunk, limb or body region	38 (0.4%)	49 (0.3%)	87 (0.4%)
Burns	56 (0.6%)	50 (0.3%)	106 (0.4%)
Poisoning by drugs, medicaments & biological substances	6,210 (68.9%)	12,426 (83.6%)	18,636 (78.0%)
Toxic effects of non-medical substances	622 (6.9%)	456 (3.1%)	1,078 (4.5%)
Other & unspecified effects of ext causes	201 (2.2%)	109 (0.7%)	310 (1.3%)
Certain early complications of trauma	10 (0.1%)	8 (0.1%)	18 (0.1%)
<b>Total *</b>	<b>9,017</b>	<b>14,866</b>	<b>23,883</b>

\* Totals include 12 cases from categories too small to publish.

**Table 4.6: Nature of injury diagnosis for intentional self-harm cases: males, females and persons, Australia 2004–05**

Nature of injury	Males	Females	Persons
Superficial (excluding eye)	135 (1.5%)	131 (0.9%)	266 (1.1%)
Open wound (excluding eye)	1,108 (12.3%)	1,340 (9.0%)	2,448 (10.2%)
Fracture (excluding tooth)	145 (1.6%)	61 (0.4%)	206 (0.9%)
Dislocation	* (0.0%)	* (0.0%)	7 (0.0%)
Nerve (including spinal cord; excluding brain)	52 (0.6%)	33 (0.2%)	85 (0.4%)
Blood vessel	89 (1.0%)	26 (0.2%)	115 (0.5%)
Muscle/tendon	147 (1.6%)	99 (0.7%)	246 (1.0%)
Amputation (including partial)	* (0.1%)	* (0.0%)	15 (0.1%)
Internal organ	89 (1.0%)	31 (0.2%)	120 (0.5%)
Burn/corrosion (excluding eye)	56 (0.6%)	50 (0.3%)	106 (0.4%)
Eye injury (excluding foreign body in external eye)	* (0.0%)	* (0.0%)	5 (0.0%)
Foreign body: aliment tract	* (0.1%)	* (0.0%)	12 (0.1%)
Intracranial (including concussion)	50 (0.6%)	23 (0.2%)	73 (0.3%)
Drowning, immersion	5 (0.1%)	14 (0.1%)	19 (0.1%)
Asphyxia/threat to breathing	181 (2.0%)	89 (0.6%)	270 (1.1%)
Poison/toxic effect (excluding bite)	6,832 (75.8%)	12,882 (86.7%)	19,714 (82.5%)
Other specified nature of injury	35 (0.4%)	21 (0.1%)	56 (0.2%)
Unspecified nature of injury	60 (0.7%)	47 (0.3%)	107 (0.4%)
Injuries of more than one nature	* (0.0%)	* (0.0%)	5 (0.0%)
<b>Total <sup>†</sup></b>	<b>9,017</b>	<b>14,866</b>	<b>23,883</b>

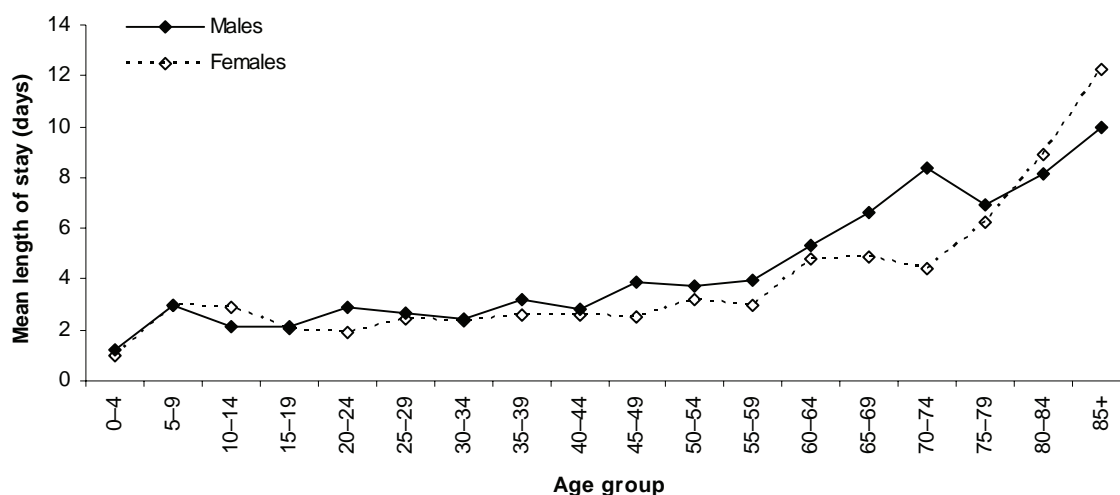
\* Small cell counts have been suppressed.

† Totals include 8 cases from categories too small to publish.

## Self-harm—length of stay

The total number of patient-days attributed to hospitalised cases of intentional self-harm in 2004–05 was 66,596 (4.7% of all patient-days due to community injuries in this year). Three in ten intentional self-harm hospital separations in 2004–05 were discharged on the same day as admitted (30.3%,  $n = 7,611$ ) and, including these same-day separations, most separations for self-harm injuries (69.2%,  $n = 17,363$ ) had a length of stay of only one day. The longest lengths of stay for intentional self-harm separations were in excess of 100 days ( $n = 22$ , 0.1%).

The mean length of stay per self-harm case was 2.8 days. Cases involving males had a slightly longer mean length of stay (3.2 days) than cases involving females (2.5 days). This is most likely related to the higher proportions of non-poisoning cases for males; the mean length of stay for all self-poisoning cases was 2.5 days while the mean length of stay for other forms of self-harm was 4.0 days. As for most other types of injuries, mean lengths of stay for intentional self-harm cases increased with age (Figure 4.2).

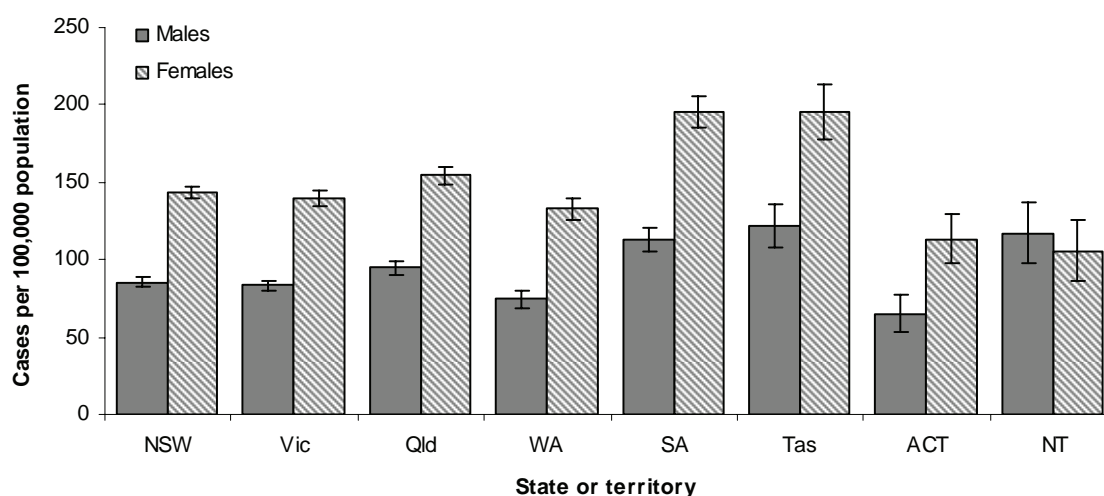


**Figure 4.2: Mean length of stay per case for intentional self-harm injuries; males and females by age, Australia 2004-05**

## Self-harm—state of usual residence

Age-standardised rates of hospitalised intentional self-harm in 2004-05 varied considerably according to the person's state of usual residence. The highest rates of self-harm were observed for residents of Tasmania (158.6 per 100,000 persons) and South Australia (153.3 per 100,000). The rates were statistically similar to each other, but significantly higher than those for other jurisdictions. Unlike many other types of hospitalised community injury cases, age-standardised rates of intentional self-harm involving residents of the Northern Territory were not significantly higher than either those of other jurisdictions or the overall national rate.

Rates of self harm for males and females showed a similar distribution (Figure 4.3) and for all but residents of the Northern Territory, rates for females were significantly higher than those for males.

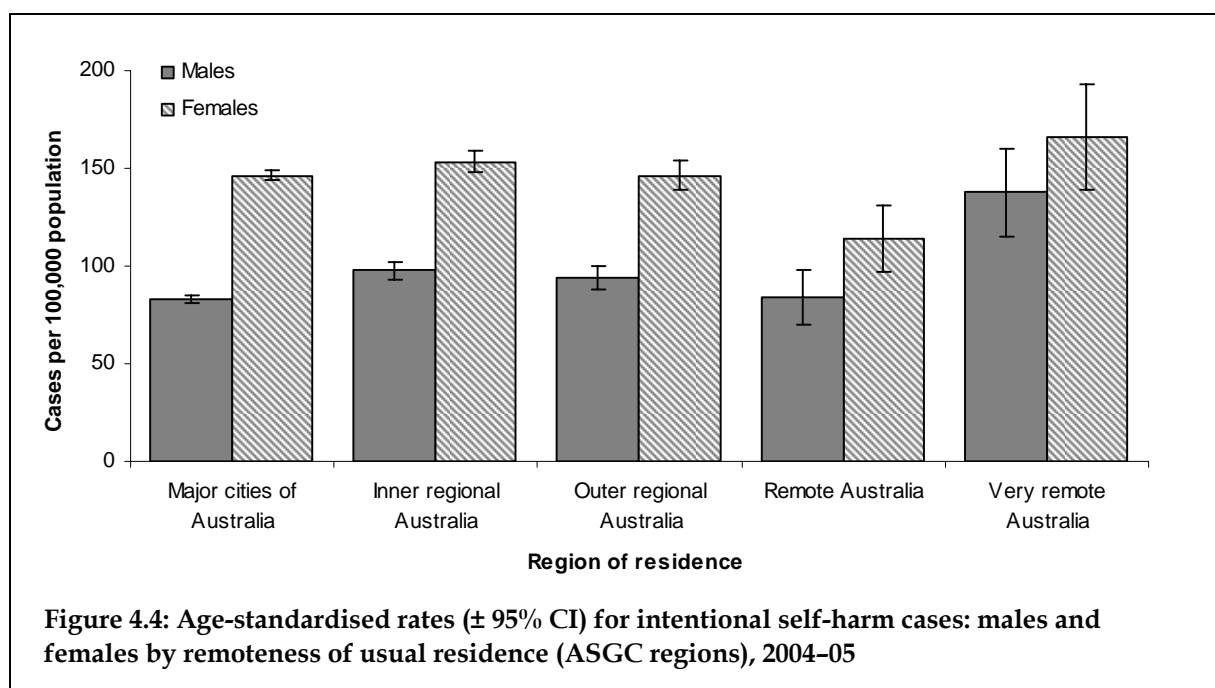


**Figure 4.3: Age-standardised rates (± 95% CI) for intentional self-harm cases: males and females by state of usual residence, 2004-05**

## Self-harm—remoteness of usual residence

Age-standardised rates of intentional self-harm according to the remoteness of the person's place of usual residence did not present the pattern common to many other types of community injury cases (i.e. lowest for residents of Australia's Major cities and highest for residents of Australia's most remote areas). Instead, the lowest rates of hospitalised self-harm cases in 2004–05 were observed for Remote Australia (98.2 per 100,000 population) and this was so for both males and females resident in this region (Figure 4.4). The highest rate of self-harm cases was reported for residents of Australia's Very remote areas, however (150.8 per 100,000). The difference in rates between Remote and Very remote Australia was significant for both males and females, despite the wide confidence intervals provoked by relatively small case numbers.

Rates of cases involving females were substantially higher than those for males in Major cities and both Inner and Outer regional Australia. Rates of hospitalised self-harm did not significantly differ between males and females for residents of Remote and Very remote Australia, however.



## 4.2 Assault injury cases

ICD-10-AM inclusion criteria:

- Principal diagnosis [S00–T75](#) or [T79](#), and
- First external cause [X85–Y09](#), [Y35–Y36](#), [Y87.1](#), [Y89.0](#) or [Y89.1](#), and
- Mode of admission other than ‘transfer from another acute hospital’.

**Table 4.7: Key indicators for hospitalised assault injury: males, females and persons, Australia 2004–05**

Key indicators	Males	Females	Persons
Total number of hospital separations due to assault injury	16,163	5,531	21,694
Assault separations as proportion of all community injury separations	7.2%	3.4%	5.6%
Estimated number of assault injury cases <sup>(a)</sup>	15,152	5,266	20,418
Cases per 100,000 population	150.8	51.8	101.0
Cases per 100,000 population—age-standardised <sup>(b)</sup>	150.4	53.0	102.2
Total patient-days due to assault injury <sup>(c)</sup>	34,906	12,467	47,373
Mean patient-days per case	2.3	2.4	2.3

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

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

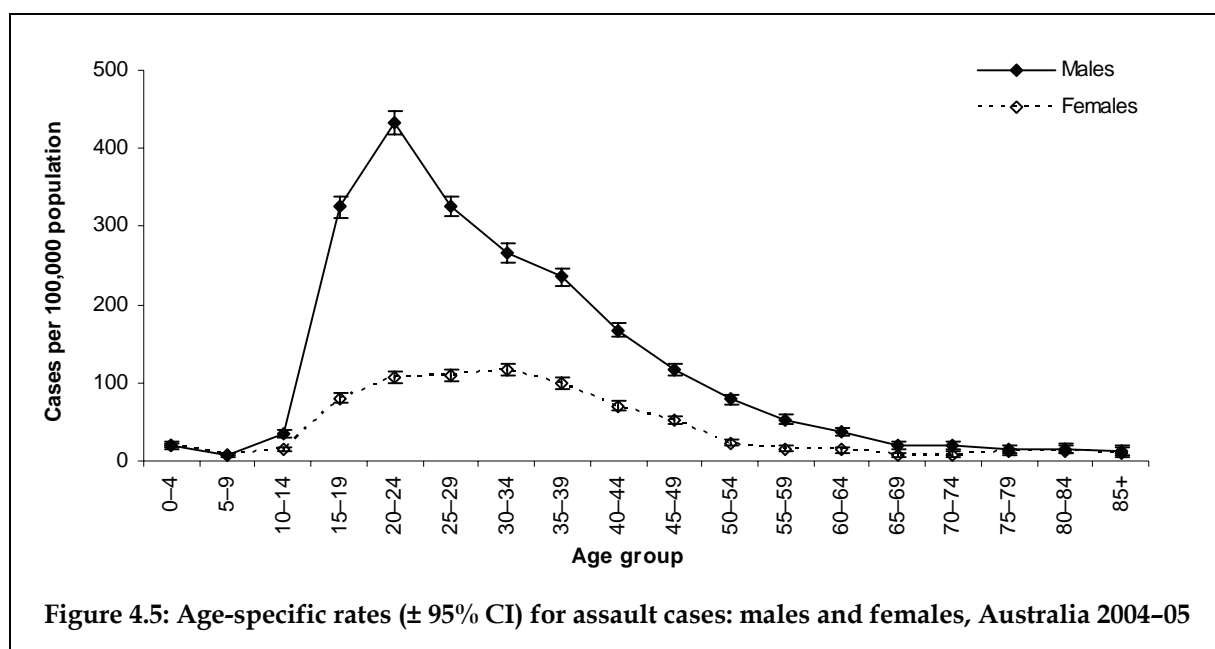
(c) Includes records with a mode of admission of ‘transfer from another acute hospital’ as contributing to hospital burden due to injury.

An estimated 20,418 hospitalised injury cases were due to assault in 2004–05 (Table 4.7) and these occurred at an age-standardised rate of 102.2 cases per 100,000 population.

### Assault—age and sex

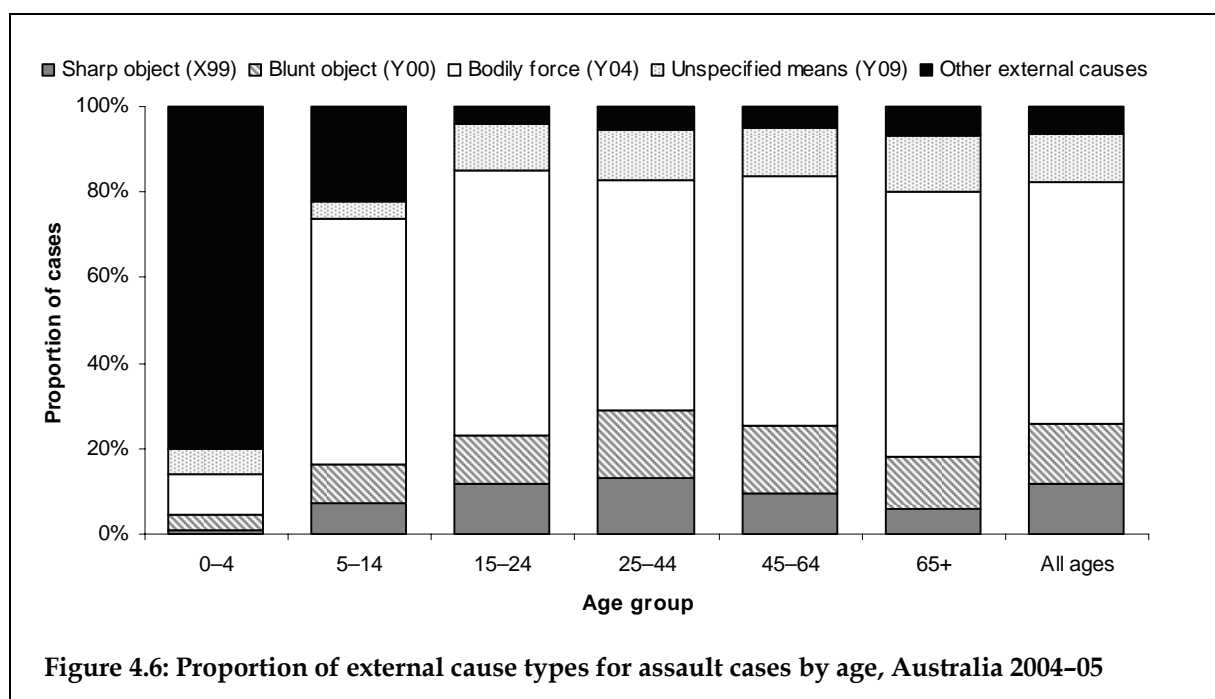
Three-quarters of all hospitalised cases of assault involved males (74.2%,  $n = 15,152$ ), giving a much higher age-standardised rate for males (150.4 per 100,000 population) than for females (53.0 per 100,000).

It is not surprising, then, that age-specific rates for males were significantly higher than those for females for most age groups (Figure 4.5). The lowest age-specific rate of hospitalised assault cases for males was observed for the 5–9 years age group while the highest rate was observed for the 20–24 years age group. At this age, the rate of cases involving males was 4.1 times that for females. The lowest rate of hospitalised assault cases for females was also observed for the 5–9 years age group. While rates of hospitalised assault for females were highest for young adults, unlike cases involving males, there was no distinct peak for those in their early 20s. The highest rate of hospitalised assault for females was 116.8 per 100,000 for those aged 30–34 years, but this was not significantly different to the rate for females aged 20–29 years.



## Assault—external cause

The most common external cause assigned to hospitalised assault injury cases in 2004–05 was Y04, assault by bodily force (56.7%,  $n = 11,572$ ). The types of external causes attributed to hospitalised assault cases in 2004–05 did not differ greatly according to the person's age (Figure 4.6). Only for very young children 0–4 years of age did the pattern differ markedly, with a much larger proportion of cases attributed to external causes other than the four (Y04, Y00, X99 and Y09) most commonly associated with adult cases. For children aged 0–4 years, nearly half (48.4%,  $n = 122$ ) of all hospitalised assault cases were attributed to Y07, other maltreatment syndromes, with a further 22.2% ( $n = 56$ ) attributed to Y06, neglect and abandonment.





Some differences in the external causes for assault cases were noted for males and females (Table 4.8). A higher proportion of cases involving males were attributed to assault by bodily force (58.2%) than for cases involving females (52.3%) while higher proportion of cases involving females were attributed to assault by blunt object (15.8%) than for cases involving males (13.4%). X99, assault by sharp object, and Y09, assault by unspecified means, both accounted for approximately 11% of hospitalised assault injury cases. Higher proportions of male assault cases were attributed to these external causes than observed for female cases.

**Table 4.8: First external cause for assault cases: males, females and persons, Australia 2004–05**

External cause	Males	Females	Persons
Assault by drugs, medicaments & biological substances (X85)	24 (0.2%)	40 (0.8%)	64 (0.3%)
Assault by other specified chemicals & noxious substances (X89)	* (0.0%)	* (0.1%)	9 (0.0%)
Assault by unspecified chemical or noxious substance (X90)	* (0.0%)	* (0.2%)	10 (0.0%)
Assault by hanging, strangulation & suffocation (X91)	8 (0.1%)	15 (0.3%)	23 (0.1%)
Assault by handgun discharge (X93)	* (0.2%)	* (0.0%)	25 (0.1%)
Assault by other & unspecified firearm discharge (X95)	65 (0.4%)	6 (0.1%)	71 (0.3%)
Assault by smoke, fire & flames (X97)	19 (0.1%)	12 (0.2%)	31 (0.2%)
Assault by steam, hot vapours & hot objects (X98)	15 (0.1%)	10 (0.2%)	25 (0.1%)
Assault by sharp object (X99)	1,864 (12.3%)	546 (10.4%)	2,410 (11.8%)
Assault by blunt object (Y00)	2,035 (13.4%)	830 (15.8%)	2,865 (14.0%)
Assault by pushing from high place (Y01)	8 (0.1%)	9 (0.2%)	17 (0.1%)
Assault by pushing or placing victim before moving object (Y02)	* (0.0%)	* (0.1%)	10 (0.0%)
Assault by crashing of motor vehicle (Y03)	20 (0.1%)	5 (0.1%)	25 (0.1%)
Assault by bodily force (Y04)	8,817 (58.2%)	2,755 (52.3%)	11,572 (56.7%)
Sexual assault by bodily force (Y05)	20 (0.1%)	134 (2.5%)	154 (0.8%)
Neglect & abandonment (Y06)	37 (0.2%)	35 (0.7%)	72 (0.4%)
Other maltreatment syndromes (Y07)	95 (0.6%)	209 (4.0%)	304 (1.5%)
Assault by other specified means (Y08)	251 (1.7%)	123 (2.3%)	374 (1.8%)
Assault by unspecified means (Y09)	1,783 (11.8%)	510 (9.7%)	2,293 (11.2%)
Legal intervention (Y35)	* (0.2%)	* (0.1%)	38 (0.2%)
Sequelae of assault (Y87)	15 (0.1%)	5 (0.1%)	20 (0.1%)
Other assault external causes (X88, X92, X96, Y36)	* (0.0%)	* (0.1%)	6 (0.0%)
<b>Total</b>	<b>15,152</b>	<b>5,266</b>	<b>20,418</b>

\* Small cell counts have been suppressed.

## Assault—place and activity

Compared to most other types of hospitalised community injury cases, a relatively small proportion of assault injuries were reported to have occurred in the home (17.0%,  $n = 3,475$ ). Regrettably, ‘unspecified place of occurrence’ was reported for more than half of all hospitalised assault cases in 2004–05 (55.4%,  $n = 11,316$ ).

A markedly higher proportion of cases involving females were reported to have taken place in the home (33.3%) than cases involving males (11.4%, Table 4.9). Conversely, the proportion of male cases reported to have occurred in sports and athletics areas was 4.5 times that for cases involving females (0.9% vs. 0.2%, respectively). Similarly, the proportion of cases involving males reported to have occurred in cafes, restaurants or hotels was 4.0 times that for cases involving females (12.8% vs. 3.2%, respectively) and a much higher proportion of cases involving males were also reported to have occurred in trade and services areas overall.

The place of occurrence for hospitalised assault cases also differed by age as well as gender. The home was the specified place of occurrence for higher proportions of cases involving both children 0–14 years and adults 65 years and older and lower proportions of cases involving these age groups had an unspecified place of occurrence than people aged 15–64 years.

**Table 4.9: Place of occurrence for assault cases: males, females and persons, Australia 2004–05**

Place of occurrence	Males	Females	Persons
Home	1,724 (11.4%)	1,751 (33.3%)	3,475 (17.0%)
Residential institution	230 (1.5%)	41 (0.8%)	271 (1.3%)
School	140 (0.9%)	24 (0.5%)	164 (0.8%)
Health service area	31 (0.2%)	23 (0.4%)	54 (0.3%)
Other specified institution & public administrative area	88 (0.6%)	12 (0.2%)	100 (0.5%)
Sports & athletics area	142 (0.9%)	11 (0.2%)	153 (0.7%)
Roadway	502 (3.3%)	80 (1.5%)	582 (2.9%)
Sidewalk	710 (4.7%)	92 (1.7%)	802 (3.9%)
Other & unspecified public highway, street or road	74 (0.5%)	9 (0.2%)	83 (0.4%)
<i>Total street &amp; highway</i>	<i>1,286 (8.5%)</i>	<i>181 (3.4%)</i>	<i>1,467 (7.2%)</i>
Shop & store	169 (1.1%)	33 (0.6%)	202 (1.0%)
Commercial garage	42 (0.3%)	7 (0.1%)	49 (0.2%)
Cafe, hotel & restaurant	1,946 (12.8%)	171 (3.2%)	2,117 (10.4%)
Other & unspecified trade & service areas	210 (1.4%)	30 (0.6%)	240 (1.2%)
<i>Total trade &amp; service area</i>	<i>2,367 (15.6%)</i>	<i>241 (4.6%)</i>	<i>2,608 (12.8%)</i>
Industrial & construction area	23 (0.2%)	5 (0.1%)	28 (0.1%)
Other specified place of occurrence	587 (3.9%)	165 (3.1%)	752 (3.7%)
Unspecified place of occurrence	8,514 (56.2%)	2,802 (53.2%)	11,316 (55.4%)
Place not reported/not applicable	20 (0.1%)	10 (0.2%)	30 (0.1%)
<b>Total</b>	<b>15,152</b>	<b>5,266</b>	<b>20,418</b>

Little can be understood of the activities people were engaged in when seriously assaulted; three-quarters of assault cases had an unspecified activity code recorded (75.1%,  $n = 15,324$ ) and a further 16.8% of cases had 'other specified activity' recorded ( $n = 3,424$ , Table 4.10). Slightly higher proportions of cases involving males were reported to have occurred while engaged in sports or leisure activities than for cases involving females, but with such high proportions of cases with an unspecified activity code, such small differences are not compelling.

**Table 4.10: Activity at time of occurrence for assault cases: males, females and persons, Australia 2004–05**

Activity	Males	Females	Persons
While engaged in sports	97 (0.6%)	7 (0.1%)	104 (0.5%)
While engaged in leisure	701 (4.6%)	77 (1.5%)	778 (3.8%)
While working for income	370 (2.4%)	52 (1.0%)	422 (2.1%)
While engaged in other types of work	29 (0.2%)	15 (0.3%)	44 (0.2%)
While resting, sleeping, eating, etc.	157 (1.0%)	76 (1.4%)	233 (1.1%)
Other specified activity	2,612 (17.2%)	812 (15.4%)	3,424 (16.8%)
Unspecified activity	11,127 (73.4%)	4,197 (79.7%)	15,324 (75.1%)
Activity not reported/not applicable	59 (0.4%)	30 (0.6%)	89 (0.4%)
<b>Total</b>	<b>15,152</b>	<b>5,266</b>	<b>20,418</b>

## Assault—principal diagnosis

Nearly two-thirds of all assault injury cases in 2004–05 were assigned a principal diagnosis indicating head injuries (65.2%,  $n = 13,319$ ). A substantially higher proportion of cases involving males were attributed to head injuries (69.1%) than for females (54.1%, Table 4.11). Head injuries were also the most common principal diagnosis assigned to assault cases for all age groups other than very young children 0–4 years of age. The second most common type of principal diagnosis assigned to hospitalised assault cases in 2004–05 were injuries to the wrist and hand (7.9%,  $n = 1,613$ ).

**Table 4.11: Principal diagnosis for assault cases: males, females and persons, Australia 2004–05**

Principal diagnosis	Males	Females	Persons
Injuries to the head	10,470 (69.1%)	2,849 (54.1%)	13,319 (65.2%)
Injuries to the neck	270 (1.8%)	143 (2.7%)	413 (2.0%)
Injuries to the thorax	753 (5.0%)	317 (6.0%)	1,070 (5.2%)
Injuries to the abdomen, lower back, lumbar spine & pelvis	613 (4.0%)	337 (6.4%)	950 (4.7%)
Injuries to the shoulder & upper arm	400 (2.6%)	197 (3.7%)	597 (2.9%)
Injuries to the elbow & forearm	483 (3.2%)	307 (5.8%)	790 (3.9%)
Injuries to the wrist & hand	1,273 (8.4%)	340 (6.5%)	1,613 (7.9%)
Injuries to the hip & thigh	151 (1.0%)	97 (1.8%)	248 (1.2%)
Injuries to the knee & lower leg	429 (2.8%)	199 (3.8%)	628 (3.1%)
Injuries to the ankle & foot	49 (0.3%)	65 (1.2%)	114 (0.6%)
Injuries involving multiple body regions	21 (0.1%)	29 (0.6%)	50 (0.2%)
Injuries to unspecified parts of trunk, limb or body region	54 (0.4%)	90 (1.7%)	144 (0.7%)
Burns	39 (0.3%)	21 (0.4%)	60 (0.3%)
Poisoning by drugs, medicaments & biological substances	20 (0.1%)	35 (0.7%)	55 (0.3%)
Toxic effects of non-medical substances	7 (0.0%)	13 (0.2%)	20 (0.1%)
Other & unspecified effects of external causes	77 (0.5%)	212 (4.0%)	289 (1.4%)
Certain early complications of trauma	40 (0.3%)	10 (0.2%)	50 (0.2%)
<b>Total *</b>	<b>15,152</b>	<b>5,266</b>	<b>20,418</b>

\* Totals include 8 cases from categories too small to publish.

A third of hospitalised assault cases had principal diagnoses describing a fracture (33.7%,  $n = 6,866$ ). Fractures were a more common result of an assault injury for males (37.8%, Table 4.12) than for females (21.8%), with a higher proportion of cases involving females attributed to an open wound (23.2%).

Like external cause and principal diagnosis group coding for assault cases, the nature of the injury resulting from the assault did not differ markedly with age for people aged five years and over. Differences in the types of injury resulting from an assault for children 0–4 years and older people were substantial however. Australians aged five years and older most commonly sustained fractures or open wounds as the result of an assault. For children aged 0–4 years, however, fractures accounted for only 9.5% of cases (vs. 34.0% of cases involving older people) and open wounds accounted for only 4.4% (compared to 23.3%). Assault injuries involving children aged 0–4 years more commonly resulted in injuries described as ‘other specified nature of injury’ (48.4%, vs. 2.1% of cases involving older people) or superficial in nature (20.2%, vs. 10.2%).

Similarly, grouping assault cases by the region of the body injured presents very high proportions of cases with head injuries for both people of all ages and people over the age of five years (65–66% vs. 31.3% for children 0–4 years). Conversely, for young children 0–4 years, most hospitalised assault cases were grouped to ‘injuries not specified by body region’ (53.6% vs. 2.7% for people aged five years and older).

These findings are most likely related to the higher proportions of cases for children aged 0–4 years coded to principal diagnoses describing ‘other maltreatment syndromes’ (T74: 48.4% of cases 0–4 years vs. 0.8% of cases 5 years and older).

**Table 4.12: Nature of injury for assault cases: males, females and persons, Australia 2004–05**

Nature of injury	Males	Females	Persons
Superficial (excluding eye)	1,153 (7.6%)	957 (18.2%)	2,110 (10.3%)
Open wound (excluding eye)	3,488 (23.0%)	1,222 (23.2%)	4,710 (23.1%)
Fracture (excluding tooth)	5,721 (37.8%)	1,145 (21.8%)	6,866 (33.7%)
Dislocation	184 (1.2%)	37 (0.7%)	221 (1.1%)
Sprain/strain	52 (0.3%)	35 (0.7%)	87 (0.4%)
Nerve (including spinal cord; excluding brain)	164 (1.1%)	35 (0.7%)	199 (1.0%)
Blood vessel	112 (0.7%)	36 (0.7%)	148 (0.7%)
Muscle/tendon	294 (1.9%)	76 (1.4%)	370 (1.8%)
Amputation (including partial)	34 (0.2%)	7 (0.1%)	41 (0.2%)
Internal organ	503 (3.3%)	129 (2.5%)	632 (3.1%)
Burn/corrosion (excluding eye)	36 (0.2%)	20 (0.4%)	56 (0.3%)
Eye injury (excluding foreign body in external eye)	262 (1.7%)	109 (2.1%)	371 (1.8%)
Intracranial (including concussion)	1,711 (11.3%)	334 (6.4%)	2,045 (10.0%)
Dental (including fractured tooth)	39 (0.3%)	12 (0.2%)	51 (0.2%)
Asphyxia/threat to breathing	6 (0.0%)	5 (0.1%)	11 (0.1%)
Poison/toxic effect (excluding bite)	27 (0.2%)	48 (0.9%)	75 (0.4%)
Other specified nature of injury	245 (1.6%)	303 (5.8%)	548 (2.7%)
Unspecified nature of injury	1,095 (7.2%)	732 (13.9%)	1,827 (9.0%)
Injuries of more than one nature	15 (0.1%)	7 (0.1%)	22 (0.1%)
<b>Total *</b>	<b>15,145</b>	<b>5,256</b>	<b>20,401</b>

\* Totals include 11 cases from categories too small to publish.

## Assault—relationship of perpetrator to victim

The patterns of the relationship between the hospitalised victim and the assault's perpetrator were markedly different for males and females (Table 4.13). Four in ten cases involving females were recorded as being due to assault by the victim's spouse or domestic partner (39.2%,  $n = 2,063$ ), compared to only 2.8% of cases involving males. Conversely, a much higher proportion of cases involving males were attributed to an unspecified person (65.6%,  $n = 9,947$ ) than cases involving females (35.3%).

Not surprisingly, the reported relationship with perpetrator of the assault was also strongly associated with the age of the hospitalised victim. Parents were the most frequently specified perpetrators of cases of assault involving children 0–4 years of age (61.9%,  $n = 156$ ) while for all people aged five years and older 'unspecified person' was the most frequent class of perpetrator (58.2% of cases for people of this age).

It is important to remember that 'unspecified person' as perpetrator on an assault is not equivalent to 'person unknown to the victim' and the large proportion of cases coded to an unspecified perpetrator clouds our understanding of these cases.

**Table 4.13: Relationship of perpetrator to victim for assault cases: males, females and persons, Australia 2004–05**

Reported perpetrator	Males	Females	Persons
Spouse or domestic partner	420 (2.8%)	2,063 (39.2%)	2,483 (12.2%)
Parent	188 (1.2%)	178 (3.4%)	366 (1.8%)
Other family member	588 (3.9%)	395 (7.5%)	983 (4.8%)
Carer	11 (0.1%)	8 (0.2%)	19 (0.1%)
Acquaintance or friend	898 (5.9%)	307 (5.8%)	1,205 (5.9%)
Official authorities	137 (0.9%)	16 (0.3%)	153 (0.7%)
Person unknown to the victim	1,239 (8.2%)	170 (3.2%)	1,409 (6.9%)
Multiple persons unknown to the victim	1,001 (6.6%)	79 (1.5%)	1,080 (5.3%)
Other specified person	671 (4.4%)	185 (3.5%)	856 (4.2%)
Unspecified person	9,947 (65.6%)	1,857 (35.3%)	11,804 (57.8%)
Not violence-related	52 (0.3%)	8 (0.2%)	60 (0.3%)
<b>Total</b>	<b>15,152</b>	<b>5,266</b>	<b>20,418</b>

## Assault—length of stay

The total number of patient-days attributed to hospitalised cases of assault-related injuries in 2004–05 was 47,373, 3.3% of all patient-days due to community injuries in this year.

Four in ten hospital separations attributed to assault in 2004–05 were discharged on the same day as admitted (44.2 %,  $n = 9,595$ ) and, including these same-day separations, most separations for assault injuries (72.0%,  $n = 15,613$ ) had a length of stay of only one day.

Only four assault separations had a length of stay in excess of 100 days. Accordingly, the mean length of stay per case was quite short; 2.3 days. Mean lengths of stay per assault injury case for males (2.3 days) was very similar to that for females (2.4 days).

The pattern of mean length of stay per case by age was different for assault injuries than for most other types of community injury; the longest mean lengths of stay per assault injury case were observed for children aged 0–9 years and adults aged 70 years and older. From late childhood through to late middle age, the ages at which the bulk of such injuries were sustained, mean lengths of stay for assault cases were quite short. Mean lengths of stay for males and females by age were very similar except for the 5–9 years age group, when the length of stay for cases involving females was more than twice that for males (Figure 4.7). Wide fluctuations in mean lengths of stay per case for assault injuries from the age of 60 years is most likely due to the relatively small number of cases involving people of this age (hospitalised assault injuries in people 60 years and older:  $n = 586$ , 2.9% of all such cases).

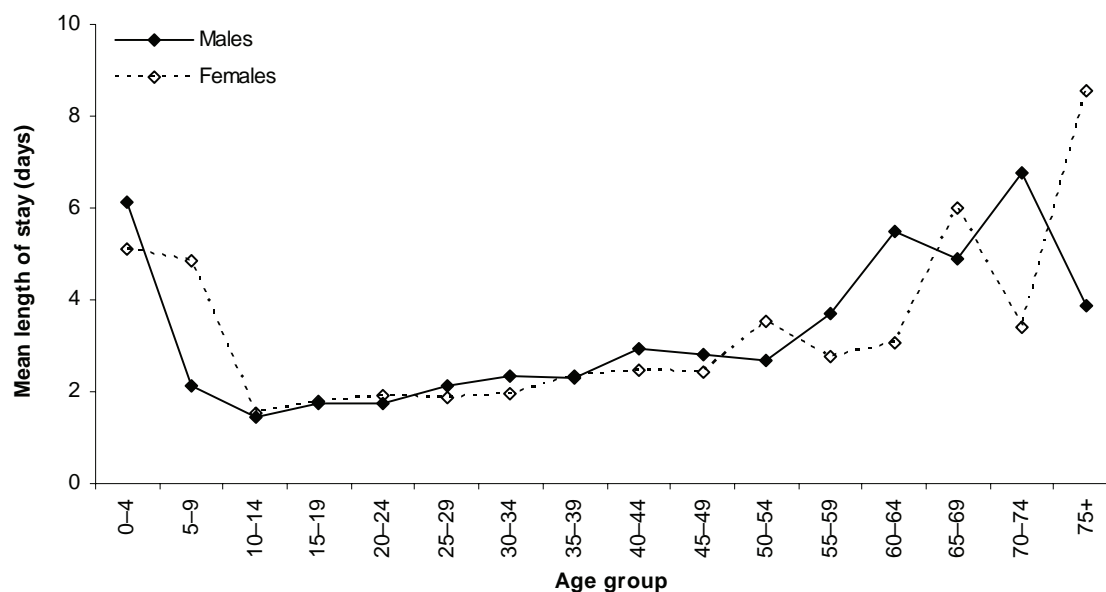
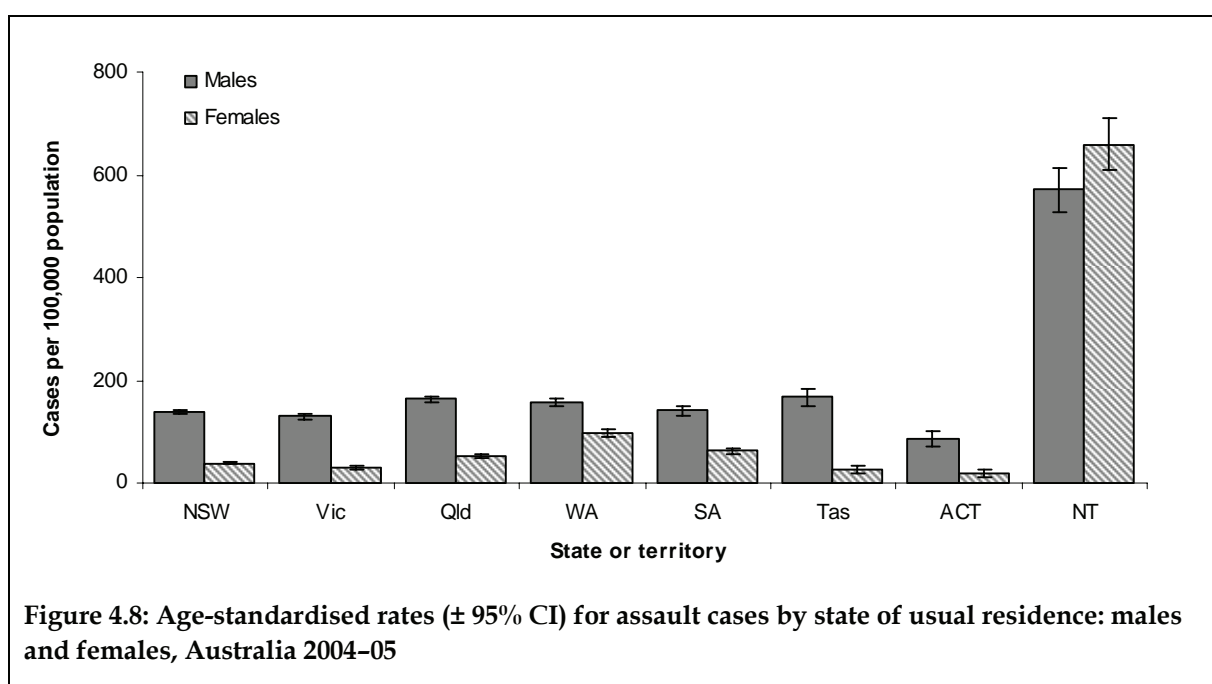


Figure 4.7: Mean length of stay per case for assault injuries: males and females by age, Australia 2004–05

## Assault—state of usual residence

Residents of the Northern Territory had a substantially higher rate of hospitalised assault injury cases than residents of all other jurisdictions in 2004–05 (Figure 4.8). The rate of assault cases for males resident in the Northern Territory (571.1 per 100,000 population) was 3–7 times higher than for residents of other jurisdictions while the rate for females resident in the Northern Territory (659.8 per 100,000) was 7–37 times higher.

Of the remaining states and territories, rates for cases of assault involving males were highest for residents of Tasmania (166.5 per 100,000 population) and lowest for residents of the Australian Capital Territory (85.5 per 100,000). While the rate of cases of assault involving females resident in the ACT were similarly low (17.9 per 100,000), the highest rate for cases of hospitalised assault (other than for residents of the NT) was observed for female residents of Western Australia; 96.9 per 100,000 population.

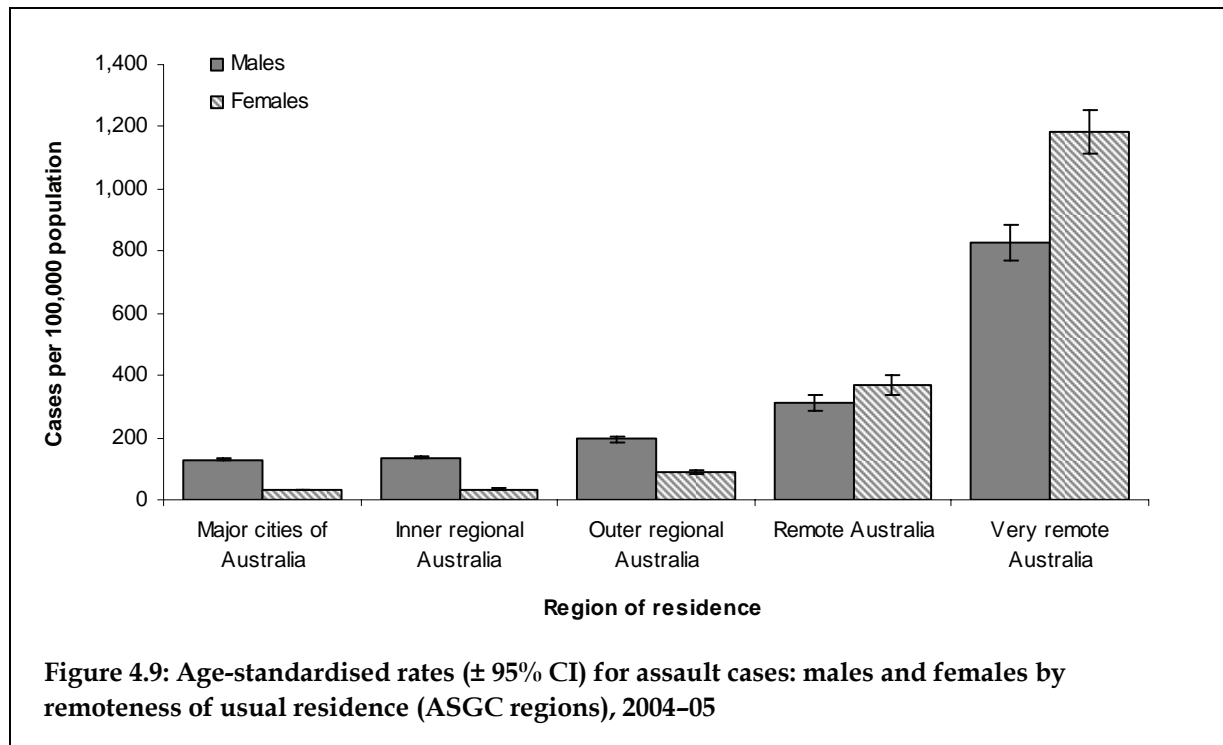


## Assault—remoteness of usual residence

Substantial increase in the rate of hospitalised assault injuries was observed with the increasing in remoteness of the person's usual residence (Figure 4.9). The lowest rate of hospitalised assaults for both males and females was that for residents of Australia's Major cities). Significant increases in the rate of assault cases involving males were noted for each increase in remoteness of usual residence. The rate of assault cases for male residents of Very remote regions in 2004–05 (828.9 per 100,000) was six times that of males resident in Major cities. This difference was even more substantial for rates of assault injuries involving females; rate of cases for female residents of Very remote regions in 2004–05 (1,182.7 per 100,000) was 39 times that of females resident in Major cities. Rates of cases involving females resident in both Remote and Very remote regions of Australia were significantly higher than that for males. In more urban areas, males had considerably higher rates of assault injuries than females.



The high rates of hospitalised assault injury cases for residents of the Northern Territory and of Remote regions reflect the high rates of hospitalised assault for Indigenous Australians, who comprise a large proportion of the population in these areas (see Jamieson et al. 2008).



## 4.3 Undetermined intent injury cases

ICD-10-AM inclusion criteria:

- Principal diagnosis [S00–T75](#) or [T79](#), and
- First external cause [Y10–Y34](#) or [Y87.2](#), and
- Mode of admission other than ‘transfer from another acute hospital’.

**Table 4.14: Key indicators for hospitalised undetermined intent injury: males, females and persons, Australia 2004–05**

Key indicators	Males	Females	Persons
Total number of hospital separations due to undetermined intent injury	1,906	2,247	4,153
Undetermined intent separations as proportion of all community injury separations	0.9%	1.4%	1.1%
Estimated number of undetermined intent injury cases <sup>(a)</sup>	1,832	2,172	4,004
Cases per 100,000 population	18.2	21.4	19.8
Cases per 100,000 population—age-standardised <sup>(b)</sup>	18.3	21.7	20.0
Total patient-days due to undetermined intent injury <sup>(c)</sup>	4,880	4,437	9,317
Mean patient-days per case	2.7	2.0	2.3

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

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

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

This chapter includes cases where intent was unspecified, not stated or could not be otherwise determined. Most such cases are uncertain self-harm or uncertain assault.

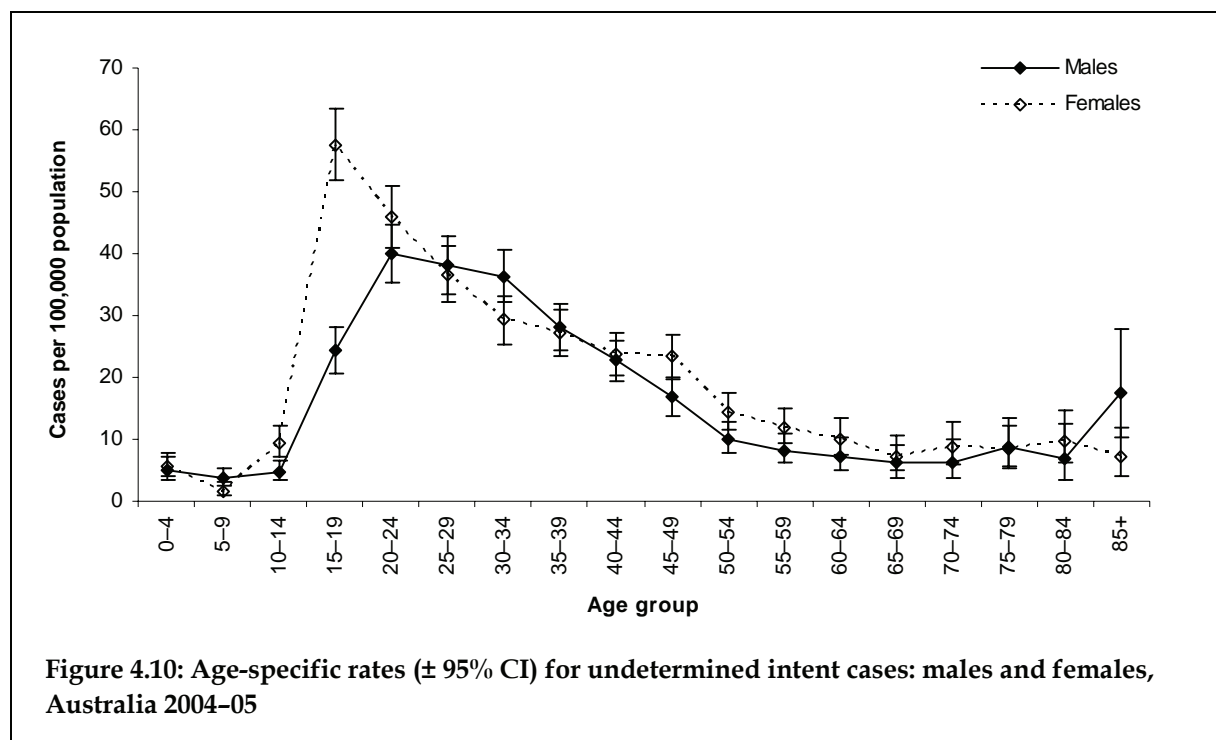
Undetermined intent external cause codes (Y10–Y34) ‘are designed for use when the intent is unspecified, unstated or cannot be determined. That is, the injuries are not specified as accidental (unintentional), self-inflicted with intent to self-harm, or assault’ (NCCH 2004). The use of undetermined intent codes in hospital records therefore differs from the way that analogous undetermined intent codes are applied for injury death records (normally, such codes are only used in death records if intent has been explicitly stated to be undetermined after formal investigation).

An estimated 4,004 hospitalised injury cases were due to events of undetermined intent in 2004–05 (Table 4.14) and the age-standardised rate of hospitalised undetermined intent cases was 20.0 per 100,000 population.

### Undetermined intent—age and sex

Unlike many types of community injury, males accounted for only 45.8% ( $n = 1,832$ ) of injury cases of undetermined intent, and accordingly, had a slightly lower age-standardised rate of such injuries (18.3 per 100,000 population) than females (21.7 per 100,000). Age-specific rates for both males and females were lowest for younger children 0–14 years (Figure 4.10). Rates then increased markedly for both males and

females, being highest for females aged 15–19 years (57.6 per 100,000) and males aged 20–24 years (40.1 per 100,000). After these peaks, rates for both males and females declined with increasing age, with a slight upturn in the rate of injury cases of undetermined intent noted for males aged 85 years and older.



## Undetermined intent—external cause

The most frequent external cause assigned to hospitalised injury cases of undetermined intent in 2004–05 was Y11, poisoning of undetermined intent by antiepileptic, sedative-hypnotic, anti-parkinsonism and psychotropic drugs (40.4%,  $n = 1,616$ ). This class of drugs was also the most common cause of hospitalisation for both accidental poisonings involving pharmaceuticals and intentional self-poisoning injury cases in 2004–05.

Y11, poisoning of undetermined intent by antiepileptic, sedative-hypnotic, anti-parkinsonism and psychotropic drugs, was the most common specific external cause code assigned to injuries of undetermined intent for both males and females (Table 4.15). This external cause was also the most common for injuries of undetermined intent for every age group.

A higher proportion of cases involving females were assigned Y11 as the first external cause (44.8%) than cases involving males (35.1%, Table 4.15). Similarly, a much higher proportion of cases involving females were coded as Y10, poisoning of undetermined intent by non-opioid analgesics, antipyretics and anti-rheumatics (16.8%) than cases involving males (7.3%). Conversely, a higher proportion of cases involving males were coded as Y12, poisoning of undetermined intent by narcotics and psychodysleptics (15.8%) than cases involving females (10.0%). Similarly, cases due to alcohol poisoning (undetermined intent) and contact with sharp object (undetermined intent) were more numerous for males than for females.

**Table 4.15: First external cause for undetermined intent cases: males, females and persons, Australia 2004–05**

External cause	Males	Females	Persons
Poisoning: non-opioid analgesics, antipyretics & anti-rheumatics, undetermined intent (Y10)	134 (7.3%)	364 (16.8%)	498 (12.4%)
Poisoning: antiepileptic, sedative-hypnotic, anti-parkinsonism & psychotropic drugs, not elsewhere classified, undetermined intent (Y11)	643 (35.1%)	973 (44.8%)	1,616 (40.4%)
Poisoning: narcotics & psychodysleptics [hallucinogens], not elsewhere classified, undetermined intent (Y12)	290 (15.8%)	217 (10.0%)	507 (12.7%)
Poisoning: other drugs acting on the autonomic nervous system, undetermined intent (Y13)	18 (1.0%)	17 (0.8%)	35 (0.9%)
Poisoning: other & unspecified drugs, medicaments & biological substances, undetermined intent (Y14)	145 (7.9%)	250 (11.5%)	395 (9.9%)
Poisoning: alcohol, undetermined intent (Y15)	99 (5.4%)	79 (3.6%)	178 (4.4%)
Poisoning: organic solvents & halogenated hydrocarbons & their vapours, undetermined intent (Y16)	40 (2.2%)	26 (1.2%)	66 (1.6%)
Poisoning: other gases & vapours, undetermined intent (Y17)	14 (0.8%)	9 (0.4%)	23 (0.6%)
Poisoning: pesticides, undetermined intent (Y18)	61 (3.3%)	9 (0.4%)	70 (1.7%)
Poisoning: other & unspecified chemicals & noxious substances, undetermined intent (Y19)	31 (1.7%)	34 (1.6%)	65 (1.6%)
Hanging, strangulation & suffocation, undetermined intent (Y20)	* (1.3%)	* (0.2%)	28 (0.7%)
Other & unspecified firearm discharge, undetermined intent (Y24)	* (1.2%)	* (0.1%)	24 (0.6%)
Exposure to smoke, fire & flames, undetermined intent (Y26)	44 (2.4%)	23 (1.1%)	67 (1.7%)
Contact with sharp object, undetermined intent (Y28)	143 (7.8%)	84 (3.9%)	227 (5.7%)
Contact with blunt object, undetermined intent (Y29)	* (0.9%)	* (0.2%)	21 (0.5%)
Falling, jumping or pushed from a high place, undetermined intent (Y30)	* (0.8%)	* (0.2%)	19 (0.5%)
Other specified events, undetermined intent (Y33)	9 (0.5%)	10 (0.5%)	19 (0.5%)
Unspecified event, undetermined intent (Y34)	60 (3.3%)	36 (1.7%)	96 (2.4%)
Sequelae of events of undetermined intent (Y87)	10 (0.5%)	10 (0.5%)	20 (0.5%)
Other undetermined intent (Y21, Y22, Y27, Y31 & Y32)	13 (0.7%)	17 (0.8%)	30 (0.7%)
<b>Total</b>	<b>1,832</b>	<b>2,172</b>	<b>4,004</b>

\* Small cell counts have been suppressed.

## Undetermined intent—place and activity

Nearly half of all hospitalised injury cases of undetermined intent in 2004–05 were coded with an unspecified place of occurrence (48.7%,  $n = 1,950$ ). A higher proportion of cases involving males were given an unspecified place of occurrence code (53.9%) than cases involving females (44.3%, Table 4.16). Most of the remaining cases were reported to have occurred in the home (38.4%,  $n = 1,539$ ) and a higher proportion of cases for females were reported to have occurred in the home (44.1%) than cases involving males (31.8%).

Nearly all injury cases of undetermined intent in 2004–05 were reported to have occurred while the person was involved in other and unspecified activities (95.2%, Table 4.17).

**Table 4.16: Place of occurrence for undetermined intent cases: males, females and persons, Australia 2004–05**

Place of occurrence	Males	Females	Persons
Home	582 (31.8%)	957 (44.1%)	1,539 (38.4%)
Residential institution	18 (1.0%)	15 (0.7%)	33 (0.8%)
School	9 (0.5%)	14 (0.6%)	23 (0.6%)
Health service area	50 (2.7%)	75 (3.5%)	125 (3.1%)
Other specified institution & public administrative area	* (0.4%)	* (0.1%)	10 (0.2%)
Sports & athletics area	* (0.5%)	* (0.2%)	13 (0.3%)
Street & highway	44 (2.4%)	15 (0.7%)	59 (1.5%)
Trade & service area	68 (3.7%)	81 (3.7%)	149 (3.7%)
Other specified place of occurrence (including industrial & construction areas & farms)	46 (2.5%)	32 (1.5%)	78 (1.9%)
Unspecified place of occurrence	987 (53.9%)	963 (44.3%)	1,950 (48.7%)
Place not reported/not applicable	12 (0.7%)	13 (0.6%)	25 (0.6%)
<b>Total</b>	<b>1,832</b>	<b>2,172</b>	<b>4,004</b>

\* Small cell counts have been suppressed.

**Table 4.17: Activity at time of occurrence for undetermined intent cases: males, females and persons, Australia 2004–05**

Activity	Males	Females	Persons
While engaged in sports	* (0.4%)	* (0.2%)	11 (0.3%)
While engaged in leisure	18 (1.0%)	29 (1.3%)	47 (1.2%)
While working for income	* (1.1%)	* (0.2%)	25 (0.6%)
While engaged in other types of work	8 (0.4%)	5 (0.2%)	13 (0.3%)
While resting, sleeping, eating, etc.	21 (1.1%)	20 (0.9%)	41 (1.0%)
Other specified activity	657 (35.9%)	958 (44.1%)	1,615 (40.3%)
Unspecified activity	1,078 (58.8%)	1,118 (51.5%)	2,196 (54.8%)
Activity not reported/not applicable	22 (1.2%)	34 (1.6%)	56 (1.4%)
<b>Total</b>	<b>1,832</b>	<b>2,172</b>	<b>4,004</b>

\* Small cell counts have been suppressed.

## Undetermined intent—principal diagnosis

Three-quarters of all hospitalised injury cases of undetermined intent in 2004–05 were assigned a principal diagnosis describing poisoning by pharmaceutical substances (76.2%,  $n = 3,050$ ). Poisoning by pharmaceutical substances was the leading cause of undetermined intent cases for both males and females and for every age group. A higher proportion of undetermined intent cases involving females were assigned such principal diagnoses (83.8%) than cases involving males (67.1%, Table 4.18). Conversely, notably higher proportions of cases involving males were assigned principal diagnoses describing toxic effects of non-pharmaceutical substances, burns, injuries to the wrist and hand and head injuries, than cases involving females.

Similarly, nearly nine in ten hospitalised injury cases of undetermined intent were described as being poisoning or toxic effects in nature (86.0%,  $n = 3,445$ ) and again a higher proportion of cases involving females were described as such than cases involving males (90.8% vs. 80.3%, respectively). Not surprisingly, then, most injury cases of undetermined intent (89.5%,  $n = 3,584$ ) were classed as ‘other injuries not specified by body region’.

**Table 4.18: Principal diagnosis for undetermined intent cases: males, females and persons, Australia 2004–05**

Principal diagnosis	Males	Females	Persons
Injuries to the head	47 (2.6%)	25 (1.2%)	72 (1.8%)
Injuries to the neck	* (0.3%)	* (0.1%)	7 (0.2%)
Injuries to the thorax	13 (0.7%)	9 (0.4%)	22 (0.5%)
Injuries to the abdomen, lower back, lumbar spine & pelvis	16 (0.9%)	10 (0.5%)	26 (0.6%)
Injuries to the shoulder & upper arm	19 (1.0%)	8 (0.4%)	27 (0.7%)
Injuries to the elbow & forearm	31 (1.7%)	25 (1.2%)	56 (1.4%)
Injuries to the wrist & hand	94 (5.1%)	43 (2.0%)	137 (3.4%)
Injuries to the hip & thigh	12 (0.7%)	10 (0.5%)	22 (0.5%)
Injuries to the knee & lower leg	20 (1.1%)	7 (0.3%)	27 (0.7%)
Injuries to the ankle & foot	18 (1.0%)	6 (0.3%)	24 (0.6%)
Injuries to unspecified parts of trunk, limb or body region	* (0.2%)	* (0.2%)	7 (0.2%)
Burns	49 (2.7%)	31 (1.4%)	80 (2.0%)
Poisoning by drugs, medicaments & biological substances	1,229 (67.1%)	1,821 (83.8%)	3,050 (76.2%)
Toxic effects of non-medical substances	243 (13.3%)	157 (7.2%)	400 (10.0%)
Other & unspecified effects of external causes	24 (1.3%)	7 (0.3%)	31 (0.8%)
Certain early complications of trauma	6 (0.3%)	7 (0.3%)	13 (0.3%)
<b>Total <sup>†</sup></b>	<b>1,832</b>	<b>2,172</b>	<b>4,004</b>

\* Small cell counts have been suppressed.

† Totals include 3 cases from categories too small to publish.

## Undetermined intent—length of stay

The total number of patient-days attributed to hospitalised cases of injuries of undetermined intent in 2004–05 was 9,317, 0.7% of all patient-days due to community injuries in this year. Two in five separations for injuries of undetermined intent were discharged on the same day as admitted to hospital (41.9%,  $n = 1,742$ ). Including these separations, 78.4% of all separations for injuries of undetermined intent had a length of stay of only one day ( $n = 3,254$ ). Some very long lengths of stay were observed for injuries of undetermined intent, however, in excess of 200 days ( $n = 2$ ). Accordingly, the overall mean length of stay per case was twice as long as actually observed for most cases; 2.3 days.

Males had a longer mean length of stay for injuries of undetermined intent (2.7 days) than females (2.0 days), but the patterns of mean lengths of stay according to age were quite similar for both males and females (Figure 4.11). The large fluctuations in mean lengths of stay for different age groups are, in part, due to the quite small numbers of cases underpinning these means, particularly at older ages.

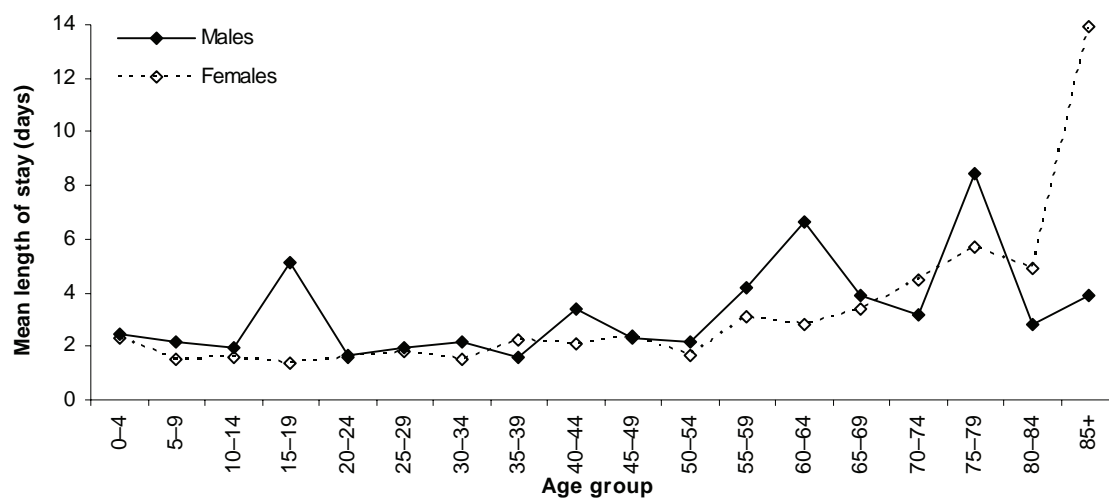


Figure 4.11: Mean length of stay ( $\pm$  SE) for undetermined intent cases: males and females by age, Australia 2004–05

## Undetermined intent—state of usual residence

Age-standardised rates of injury cases of undetermined intent for both males and females were highest for residents of Victoria and these rates were significantly higher than those observed for residents of most other states and territories (Figure 4.12). Further, the rate of injuries of undetermined intent for females resident in Victoria was significantly higher than that for Victorian males, while in most other states and territories, the rates of cases involving males and females were statistically similar.

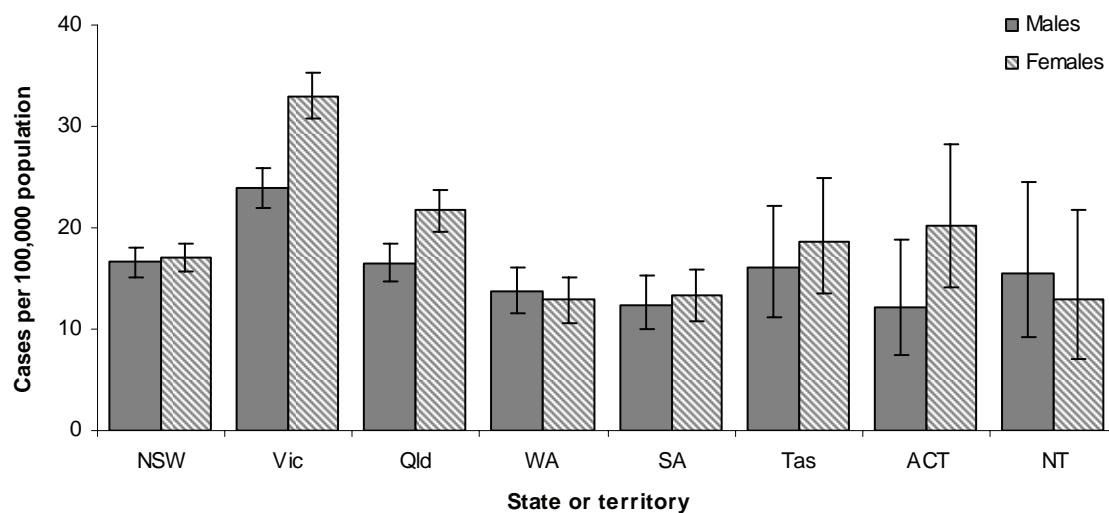
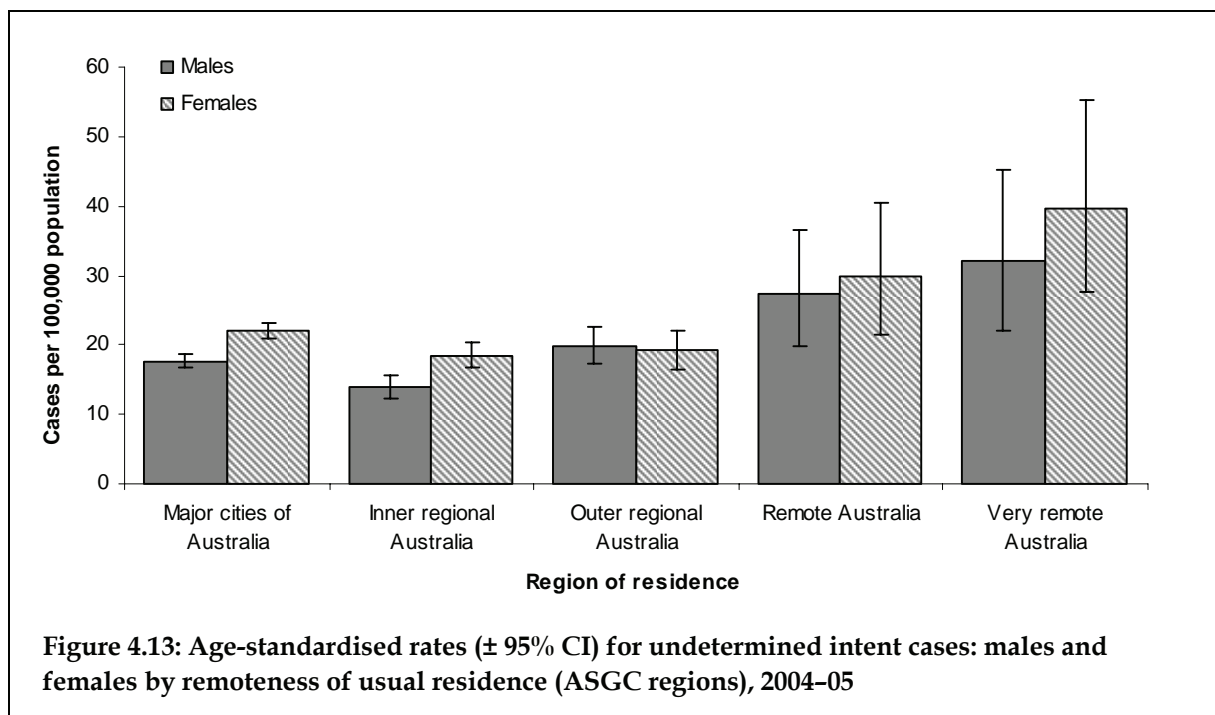


Figure 4.12: Age-standardised rates ( $\pm$  95% CI) for undetermined intent cases: males and females by state of usual residence, 2004–05



## Undetermined intent—remoteness of usual residence

While rates of hospitalised cases of injuries of undermined intent differed somewhat according to the remoteness of the person's usual residence (being lowest for both males and females in Inner regional areas and highest in Very remote regions), the width of the 95% confidence intervals suggest that these differences are not significant (Figure 4.13). The exception to this is the rate of cases involving males resident in Inner regional areas of Australia, which was significantly lower than that of both males resident in Major cities and males resident in Outer regional areas.



## 5 Work-related community injury

ICD-10-AM inclusion criteria:

- Principal diagnosis [S00–T75](#) or [T79](#), and
- Activity code [U73.0](#), and
- Mode of admission other than ‘transfer from another acute hospital’.

**Table 5.1: Key indicators for hospitalised work-related injury: males, females and persons, Australia 2004–05**

Key indicators	Males	Females	Persons
Total number of hospital separations due to work-related injury	21,052	3,128	24,180
Work-related separations as proportion of all community injury separations	9.4%	1.9%	6.3%
Estimated number of work-related injury cases <sup>(a)</sup>	19,553	2,959	22,512
Cases per 100,000 population	194.6	29.1	111.4
Cases per 100,000 population—age-standardised <sup>(b)</sup>	193.1	29.1	111.3
Total patient-days due to work-related injury <sup>(c)</sup>	52,866	7,308	60,174
Mean patient-days per case	2.7	2.5	2.7

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

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

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

This chapter includes all hospitalised community injury cases in 2004–05 that were recorded as occurring while working for income. These cases were also covered in the previous chapters, but are brought together here to enable this aspect of hospitalised injury to be seen more clearly.

An estimated 22,512 community injury cases in 2004–05 were sustained while working for income (Table 5.1). The age-standardised rate of hospitalised work-related injuries was 111.3 per 100,000 population.

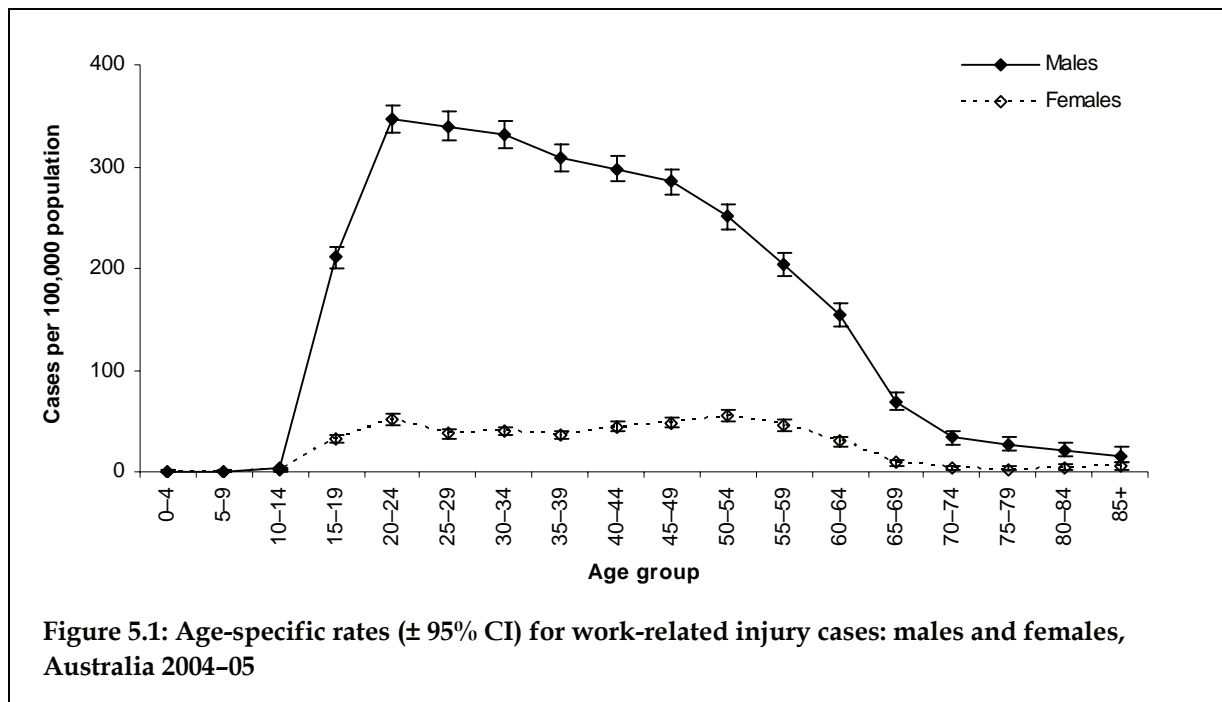
### Work-related injury—age and sex

Most work-related community injures involved males (86.9%,  $n = 19,553$ ). Accordingly, the age-standardised rate of hospitalised injuries due to work-related injury was much higher for males (193.1 per 100,000 population) than for females (29.1 per 100,000).

Similarly, age-specific rates for males were significantly higher than those for females for most age groups (Figure 5.1).

The lowest age-specific rates of hospitalised work-related injury cases (for both males and females) were observed for children under the age of 15. As expected, adults over the age of 65 years also had quite low rates of work-related injuries requiring hospitalisation.

The highest rate of hospitalised work-related injury was observed for males aged 20–24 years (347.2 per 100,000 population). While rates of work-related injury for adult males consistently declined with increasing age, they did not drop below 200 per 100,000 until the age of 60 years. A relatively high rate of work-related injury was also noted for females aged 20–24 years (51.0 per 100,000) but an even higher rate was observed for females in the 50–54 years age group (54.6 per 100,000 population).



## Work-related injury—industry types

The fourth edition of the ICD-10-AM includes codes that describe the broad industry type in which the person was working (for income) when injured (NCCH 2004). The types of industries attributed to work-related injuries differed markedly according to the sex of the injured person. Males were more commonly injured while working for income in the agriculture, forestry and fishing and construction industries whereas females were more commonly injured while working for income in the wholesale and retail trade and health services industries (Table 5.2).

The agriculture, forestry and fishing industry was also the most commonly specified industry for work-related injuries involving children younger than 15 years (although case counts are small) and adults aged 45 years and older (Table 5.3). The construction industry was the most commonly specified industry for work-related injuries involving people aged 15–44 years. As expected, the largest proportion of injuries while working for income were observed for adults aged 25–44 years in all industry sectors other than the health services industry. In the health services industry, however, work-related injuries were most common for adults aged 45–64 years.

**Table 5.2: Industry type for work-related injury cases: males, females and persons, Australia 2004–05**

Industry	Males	Females	Persons
Agriculture, forestry & fishing	2,011 (10.3%)	241 (8.1%)	2,252 (10.0%)
Mining	570 (2.9%)	16 (0.5%)	586 (2.6%)
Manufacturing	1,655 (8.5%)	128 (4.3%)	1,783 (7.9%)
Construction	2,345 (12.0%)	38 (1.3%)	2,383 (10.6%)
Wholesale & retail trade	1,054 (5.4%)	353 (11.9%)	1,407 (6.3%)
Transport & storage	1,102 (5.6%)	49 (1.7%)	1,151 (5.1%)
Government administration & defence	271 (1.4%)	49 (1.7%)	320 (1.4%)
Health services	124 (0.6%)	317 (10.7%)	441 (2.0%)
Other specified work for income	3,884 (19.9%)	766 (25.9%)	4,650 (20.7%)
While working for income, unspecified	6,537 (33.4%)	1,002 (33.9%)	7,539 (33.5%)
<b>Total</b>	<b>19,553</b>	<b>2,959</b>	<b>22,512</b>

Note: Shading denotes two highest specific categories for each sex.

**Table 5.3: Industry type for work-related injury cases by age, Australia 2004–05**

Industry	0–14	15–24	25–44	45–64	65+	All ages
Agriculture, forestry & fishing	8	427	885	727	205	2,252
Mining	*	83	341	159	*	586
Manufacturing	*	441	863	455	*	1,783
Construction	*	588	1,109	653	*	2,383
Wholesale & retail trade	6	433	594	357	17	1,407
Transport & storage	*	101	554	457	*	1,151
Government administration & defence	*	66	169	84	*	320
Health services	0	34	169	220	18	441
Other specified work for income	20	956	2,237	1,363	74	4,650
While working for income, unspecified	7	1,429	3,616	2,347	140	7,539
<b>Total</b>	<b>47</b>	<b>4,558</b>	<b>10,537</b>	<b>6,822</b>	<b>548</b>	<b>22,512</b>

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

\* Small cell counts have been suppressed.

## Work-related injury–external cause

While the industries in which males and females were working for income when they were injured differed markedly (described above), the types of injuries sustained were broadly similar; the majority of cases were classified as ‘other unintentional injuries’ while falls were the second most common type of injury sustained while working for income (Table 5.4). Falls were proportionately more common for females (28.8% vs. 14.6% for males) however, while other unintentional injuries were more common for males (70.3% of cases vs. 54.3% for females).

‘Other unintentional injuries’ were also the most common type of injury sustained while working for income in each of the different industry groups (Table 5.5). The proportion of cases attributed to ‘other unintentional injuries’ differed somewhat by industry however; accounting for 86.0% of cases in the manufacturing industry but only 40.9% of cases in the transport and storage industry. Interestingly, ‘other unintentional injuries’ sustained while working for income in the transport and storage industry ( $n = 471$ ) were as numerous as injuries attributed to transportation external causes for this industry sector ( $n = 467$ ).

Falls were proportionately most common for people injured while working for income in the health services and construction industries (30.4% and 28.5% of cases attributed to these industries, respectively). Falls were least common for people injured working for income in the manufacturing industry (6.2% of cases attributed to manufacturing).

**Table 5.4: Major external cause groups for work-related injury cases: males, females and persons, Australia 2004–05**

External cause	Males	Females	Persons
Transportation	1,884 (9.6%)	292 (9.9%)	2,176 (9.7%)
Drowning	5 (0.0%)	0 (0.0%)	5 (0.0%)
Poisoning, pharmaceuticals	8 (0.0%)	19 (0.6%)	27 (0.1%)
Poisoning, other substances	280 (1.4%)	48 (1.6%)	328 (1.5%)
Falls	2,855 (14.6%)	853 (28.8%)	3,708 (16.5%)
Fires, burns & scalds	354 (1.8%)	69 (2.3%)	423 (1.9%)
Other unintentional injuries	13,747 (70.3%)	1,606 (54.3%)	15,353 (68.2%)
Intentional, self inflicted (self-harm)	17 (0.1%)	14 (0.5%)	31 (0.1%)
Intentional, inflicted by another (assault)	370 (1.9%)	52 (1.8%)	422 (1.9%)
Undetermined intent	* (0.1%)	* (0.1%)	25 (0.1%)
Other & missing	* (0.1%)	* (0.1%)	14 (0.1%)
<b>Total</b>	<b>19,553</b>	<b>2,959</b>	<b>22,512</b>

\* Small cell counts have been suppressed.

**Table 5.5: Major external cause groups for work-related injury cases by industry group, Australia 2004–05**

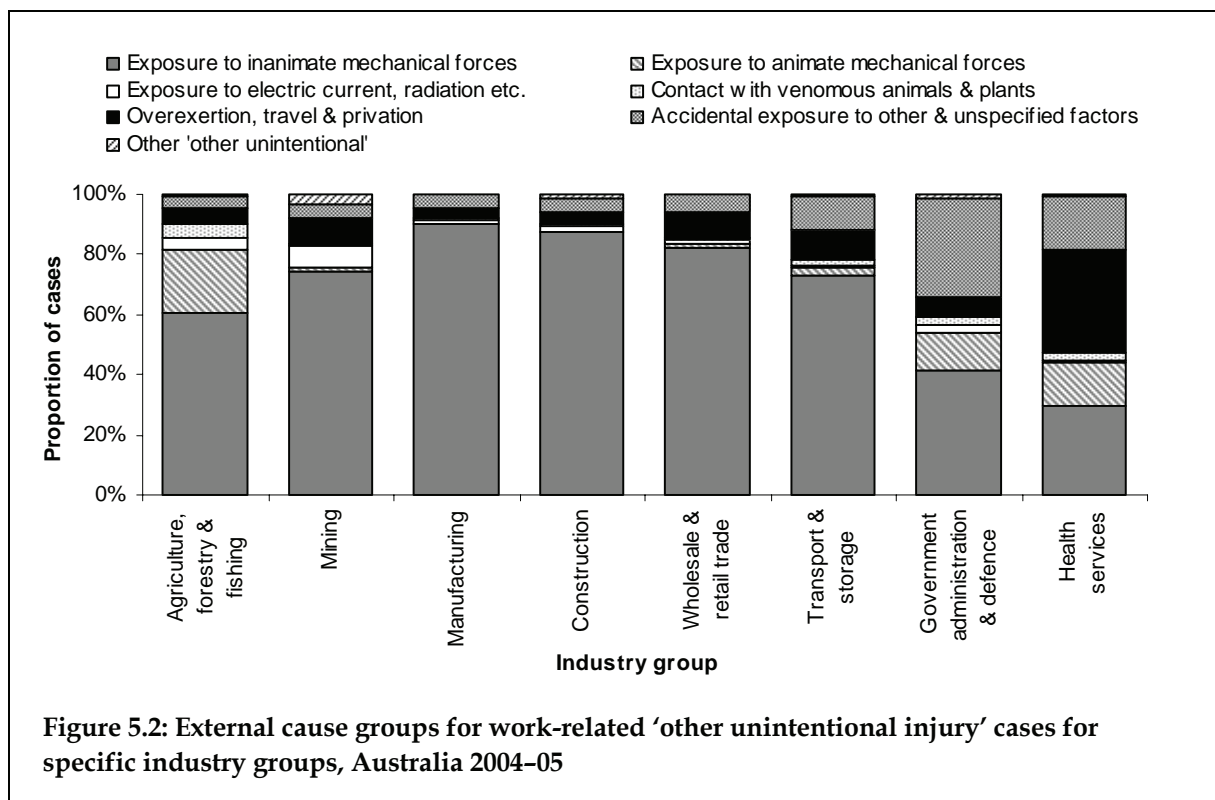
External cause	Agriculture, forestry & fishing	Mining	Manufacturing	Construction	Wholesale & retail trade	Transport & storage	Government administration & defence	Health services	Other & unspecified work for income	Total
Transportation	487	68	31	65	70	467	77	39	872	2,176
Drowning	0	0	0	0	0	*	*	0	*	5
Poisoning, pharmaceuticals	*	*	*	0	*	*	0	6	13	27
Poisoning, other substances	26	29	38	30	24	8	5	15	153	328
Falls	209	47	110	680	237	147	62	134	2,082	3,708
Fires, burns & scalds	31	19	63	21	65	9	*	*	211	423
Other unintentional injuries	1,483	418	1,533	1,581	937	471	156	218	8,556	15,353
Intentional, self inflicted (self-harm)	*	0	*	0	*	0	0	*	24	31
Intentional, inflicted by another (assault)	7	*	*	6	65	46	17	24	253	422
Undetermined intent	*	0	*	0	*	0	*	0	18	25
Other & missing	*	*	*	0	*	*	0	0	*	14
<b>Total</b>	<b>2,252</b>	<b>586</b>	<b>1,783</b>	<b>2,383</b>	<b>1,407</b>	<b>1,151</b>	<b>320</b>	<b>441</b>	<b>12,189</b>	<b>22,512</b>

Note: Shading denotes most common external cause category for each industry group.

\* Small cell counts have been suppressed.

As ‘other unintentional injuries’ were so common for hospitalised work-related injury cases, further analysis of these cases was undertaken. Similar to other unintentional injuries overall, exposure to inanimate mechanical forces was the most common type of other unintentional work-related injury for every industry category coded other than for people injured while working for income in the health services industry ( $n = 10,695$  cases overall, see Figure 5.2). Exposure to inanimate mechanical forces external causes describe such situations as being struck by objects, injured in explosions or through contact with tools and machines, thus it is quite understandable that many work-related injuries would be of this type. Similarly, it is not surprising to observe that exposure to animate mechanical forces (e.g. accidentally struck by other people or non-venomous animals) was a relatively common cause of ‘other unintentional injury’ for people working in the agriculture, forestry and fishing industry (20.6% of such cases). Work-related injuries due to contact with venomous animals and plants were also most frequent for people working for income in the agriculture, forestry and fishing industry (4.6% of ‘other unintentional’ cases vs. 0.3–2.6% for people working in other industries).

While exposure to inanimate mechanical forces was still a common cause of ‘other unintentional injury’ for people working in the health services industry (29.4% of such cases), injuries due to overexertion, travel and privation were most frequent for this industry sector (34.4%). In comparison, overexertion, travel and privation external causes accounted for less than 10% of ‘other unintentional injuries’ for people injured while working in the other industry categories described by the ICD-10-AM.



## Work-related injury—place of occurrence

The recorded place of occurrence for injuries sustained while working for income was largely as expected. For example; 81.9% of injuries involving people working in the mining industry occurred in mines, 72.5% of injuries in the manufacturing industry were sustained in factories, and 64.3% of injuries for people working the agriculture, forestry and fishing industry occurred on farms. Somewhat unexpectedly, however, a relatively large proportion of work-related injuries recorded an unspecified place of occurrence (38.0% of cases overall). This proportion is similar to that for community injury more generally (39.9%, see Table 2.4), but was surprising given the presumed increased level of information supplied/required regarding injuries which may be compensable. The proportion of cases assigned an unspecified place of occurrence differed markedly according to the particular industry in which the person was working for income however, ranging from only 2.4% for people injured while working in the mining industry to 33.6% for people injured while working in the construction industry. More understandably, the majority (68.5%) of people injured 'while working for income, unspecified' recorded an unspecified place of occurrence.

## Work-related injury—principal diagnosis

Injuries to the wrist and hand were the most common result of an injury while working for income in 2004-05 ( $n = 8,457$ , Table 5.6). Such injuries accounted for between 15-62% of cases for each industry group and 37.6% of work-related community injuries overall. In comparison, only 13.3% of community injuries from any activity had a principal diagnosis of injuries to the wrist and hand. Injuries to the wrist and hand were proportionately most common for people injured while working for income in the manufacturing (62.0% of cases) and wholesale and retail trade (43.5%) industries.



Injuries to the knee and lower leg were another frequent result of an injury while working for income (13.9%,  $n = 3,124$ ), and were more common than wrist and hand injuries for people injured while working in government administration and defence (24.2%) and the health services industries (16.3%).

**Table 5.6: Principal diagnosis groups for work-related injury cases by industry group, Australia 2004–05**

Principal diagnosis	Agriculture, forestry & fishing	Mining	Manufacturing	Construction	Wholesale & retail trade	Transport & storage	Government administration & defence	Health services	Other & unspecified work for income	Total
Injuries to the head	312	84	92	231	136	184	45	55	1,087	2,226
Injuries to the neck	47	32	18	36	27	55	16	14	180	425
Injuries to the thorax	131	20	19	84	33	78	15	20	244	644
Injuries to the abdomen *	148	49	61	150	84	103	20	68	619	1,302
Injuries to the shoulder & upper arm	142	25	36	95	64	73	19	38	876	1,368
Injuries to the elbow & forearm	172	21	95	199	123	85	20	38	928	1,681
Injuries to the wrist & hand	519	148	1,105	935	612	227	59	67	4,785	8,457
Injuries to the hip & thigh	87	9	24	62	28	49	6	13	250	528
Injuries to the knee & lower leg	331	59	120	318	119	185	78	72	1,842	3,124
Injuries to the ankle & foot	98	28	43	136	48	43	17	12	481	906
Burns	47	29	90	47	80	23	0	8	340	664
Toxic effects of non-medical substances	89	27	25	21	24	16	11	17	179	409
Other principal diagnoses	129	55	55	69	29	30	14	19	378	778
<b>Total</b>	<b>2,252</b>	<b>586</b>	<b>1,783</b>	<b>2,383</b>	<b>1,407</b>	<b>1,151</b>	<b>320</b>	<b>441</b>	<b>12,189</b>	<b>22,512</b>

Note: Shading denotes most common external cause category for each industry group.

\* Includes lower back, lumbar spine and pelvis.

## Work-related injury—funding source

Three in five hospitalised injuries sustained while working for income in 2004–05 were recorded as expected to be funded by workers compensation (61.6%, Table 5.7). The highest proportions of workers compensation-funded injury cases were observed for people injured while working in the mining (76.8%) or manufacturing (76.7%) industries while the lowest proportion of workers compensation-funded cases was observed for people injured in the agriculture, forestry and fishing industry (38.7%). The proportion of cases funded under Australian Health Care Agreements told the reverse story; with a high proportion of AHCA-funded cases observed for the agriculture, forestry and fishing industry (44.7%) and substantially lower proportions for the mining and manufacturing industries (19.1% and 16.8%, respectively).

These findings are likely related to the proportion of self-employed workers operating in each of these industry groups.

Table 5.7: Funding source for work-related injury cases by industry group, Australia 2004–05

Industry	Australian Health Care Agreements	Private health insurance	Self-funded	Workers compensation	Motor vehicle third party personal claim	Other funding source	Total	Per cent workers compensation
Agriculture, forestry & fishing	1,006	297	22	871	21	35	2,252	38.7%
Mining	112	13	8	450	*	*	586	76.8%
Manufacturing	300	67	36	1,368	*	*	1,783	76.7%
Construction	847	142	30	1,337	6	21	2,383	56.1%
Wholesale & retail trade	380	65	31	913	8	10	1,407	64.9%
Transport & storage	294	54	15	704	46	38	1,151	61.2%
Government administration & defence	36	39	23	137	5	80	320	42.8%
Health services	100	44	8	275	6	8	441	62.4%
Other specified work for income	1,284	297	75	2,890	32	72	4,650	62.2%
While working for income, unspecified	1,570	474	427	4,916	57	95	7,539	65.2%
<b>Total</b>	<b>5,929</b>	<b>1,492</b>	<b>675</b>	<b>13,861</b>	<b>184</b>	<b>371</b>	<b>22,512</b>	<b>61.6%</b>

\* Small cell counts have been suppressed.

## Work-related injury—length of stay

The total number of patient-days attributed to hospitalised cases of injuries sustained while working for income in 2004–05 was 60,714. Two in five work-related injury separations were discharged from hospital on the same day as admitted; 40.3%,  $n = 9,735$ . Including these, 70.0% of work-related injury separations had a length of stay of only one day ( $n = 16,922$ ). This was a higher proportion of one-day stays than observed for all community injury in 2004–05 (62.5%, see previous section). As expected, then, the mean length of stay for work-related injury cases was quite short, 2.7 days per case, and shorter than that observed for all community injuries (4.0 days per case, see Table 2.1).

Mean lengths of stay per case differed somewhat according to the type of industry in which the person was working for income when injured (Table 5.8). Work-related injuries sustained in the transport and storage industry had the longest stays on average (3.8 days per case) while injuries sustained while working for income in the wholesale and retail industry had the shortest hospital stays (2.2 days per case). Lengths of stay per case increased with age for most industry groups, with injuries sustained while working for income in the transport and storage industry for people aged 65 years and older ( $n = 35$ ) having a particularly long mean length of stay per case; 7.8 days (Table 5.8).

**Table 5.8: Mean days stay per work-related injury case by age and industry group, Australia 2004–05**

Industry	0–14	15–24	25–44	45–64	65+	Total
Agriculture, forestry & fishing	1.1	2.7	3.1	4.2	6.9	3.7
Mining	–	2.2	3.9	2.6	3.7	3.3
Manufacturing	1.0	2.0	2.1	3.1	2.9	2.3
Construction	2.0	2.1	3.0	4.1	7.0	3.1
Wholesale & retail trade	4.2	2.0	2.3	2.2	3.5	2.2
Transport & storage	3.0	2.7	3.4	4.1	7.8	3.8
Government administration & defence	1.0	2.7	2.5	3.6	–	2.8
Health services	–	2.3	2.6	2.6	6.9	2.8
Other specified work for income	1.8	1.9	2.5	3.0	4.6	2.6
While working for income, unspecified	1.1	1.9	1.9	2.7	4.9	2.2
<b>Total</b>	<b>1.9</b>	<b>2.0</b>	<b>2.5</b>	<b>3.2</b>	<b>5.9</b>	<b>2.7</b>

## 6 Sport-related community injury

ICD-10-AM inclusion criteria:

- Principal diagnosis [S00–T75](#) or [T79](#), and
- Activity code [U50–U71](#), and
- Mode of admission other than ‘transfer from another acute hospital’.

**Table 6.1: Key indicators for hospitalised sport-related injury: males, females and persons, Australia 2004–05**

Key indicators	Males	Females	Persons <sup>(a)</sup>
Total number of hospital separations due to sport-related injury	30,859	8,772	39,632
Sport-related separations as proportion of all community injury separations	13.8%	5.5%	10.3%
Estimated number of sport-related injury cases <sup>(b)</sup>	28,977	8,275	37,253
Cases per 100,000 population	288.3	81.4	184.3
Cases per 100,000 population—age-standardised <sup>(c)</sup>	287.3	83.7	187.1
Total patient-days due to sport-related injury <sup>(d), (e)</sup>	62,620	18,221	80,842
Mean patient-days per case	2.2	2.2	2.2

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

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

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

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

(e) Includes 1 day of patient care for which sex was not reported.

This chapter draws together all hospitalised injury cases recorded as occurring while engaged in sports or leisure (ICD-10-AM U50–U71). While we have not included cases coded as occurring during ‘leisure activity not elsewhere classified’ (U72), it should be recognised that the scope is wider than formally organised sport.

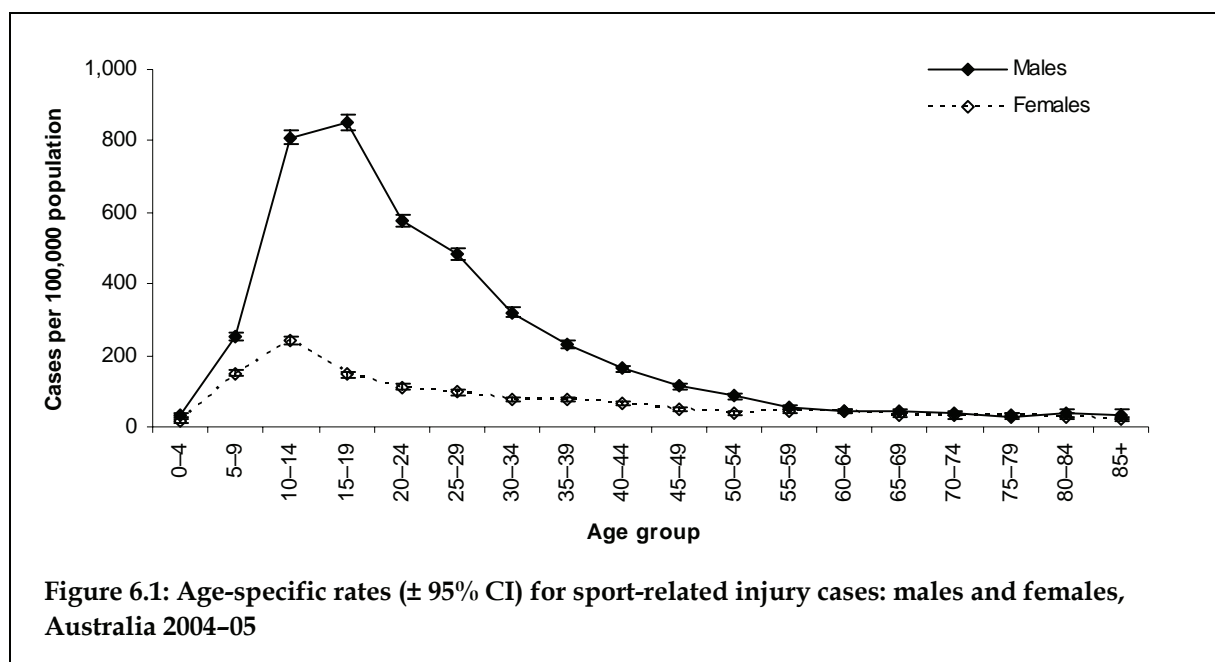
An estimated 37,253 hospitalised community injury cases in 2004–05 were due to injuries sustained while engaged in sport (Table 6.1). The age-standardised rate of these sport-related injury cases was 187.1 per 100,000 population. This is a somewhat lower rate than that reported by Flood and Harrison for the year 2002–03 (Flood & Harrison 2006), but case selection criteria differ slightly.

### Sport-related injury—age and sex

Most sport-related community injury cases involved males (77.8%,  $n = 28,977$ ). Accordingly, the age-standardised rate of sport-related injuries was much higher for males (287.3 per 100,000 population) than for females (83.7 per 100,000). Further, age-specific rates for males were significantly higher than those for females for most age groups (Figure 6.1).

The highest rate of hospitalised sport-related injury was observed for males aged 15–19 years (849.9 per 100,000 population). At this age the difference in male and female rates was also greatest, with a M:F rate ratio of 5.8:1. For females, the highest rate of hospitalised sport-related injury was observed for those aged 10–14 (241.5 per 100,000).

From the age of 55 years rates of sport-related injury for males and females were statistically similar.



## Sport-related injury—sport types

A little under half of all hospitalised sport-related injury cases (43.7%,  $n = 16,270$ ) were sustained while the person was playing a team ball sport (see Table 6.2). Most team ball sport injuries were attributed to football (which includes Australian Rules, Rugby Union, League, soccer and touch football in the one group). For males, more than four in ten of all sport-related injuries were attributed to the various types of football (43.8%,  $n = 12,690$ ) while for females, only one in ten sport-related injuries were attributed to football (11.2%,  $n = 924$ ). Netball accounted for a further 11.7% ( $n = 970$ ) of female sport-related injury cases, but less than one per cent of male cases.

Second to team ball sports, 'wheeled non-motor sports' accounted for 13.2% of sport-related injury cases. These principally consisted of cycling ( $n = 2,893$ ) and skate-boarding injuries ( $n = 1,240$ ). Wheeled motor sports (car racing, go-carting etc.) were the third most common cause of hospitalised sports injuries in 2004-05 (7.4% of cases).

While more sports injuries involved males overall, similar proportions of cases were attributed to the various sporting categories for both males and females (Table 6.2). The exceptions to this were some team ball sports (as described above) and equestrian activities. The majority of cases attributed to equestrian activities involved females ( $n = 1,132$  compared to 564 for males), ranking equestrian activities the second most common cause of sport-related injuries for females after team-ball sports in general.

The types of sports in which people seriously injured themselves did not differ markedly according to age. Injuries sustained during team ball sports were the most frequent for all age groups up to the 65 years and older group. For people 65 years and older, 'target and precision' sports (e.g. bowling and golf) were most common, accounting for 20.5% ( $n = 183$ ) of cases. While team ball sports accounted for 38.1% of sport-related injuries for children aged 0-14 years, significant proportions of children were also injured through participation in wheeled non-motor sports (24.0%).

**Table 6.2: Types of sport engaged in when injured for sport-related injury cases: males, females and persons, Australia 2004–05**

Sporting activity		Males	Females	Persons *
Team ball sports	Football (Aust. Rules, rugby, soccer etc.)	12,690 (43.8%)	924 (11.2%)	13,614 (36.5%)
	Basketball	989 (3.4%)	356 (4.3%)	1,345 (3.6%)
	Handball, team	23 (0.1%)	5 (0.1%)	28 (0.1%)
	Netball	119 (0.4%)	970 (11.7%)	1,089 (2.9%)
	Volleyball	104 (0.4%)	42 (0.5%)	146 (0.4%)
	Other & unspecified team ball sports	33 (0.1%)	15 (0.2%)	48 (0.1%)
	<i>Total team ball sports</i>	<i>13,958 (48.2%)</i>	<i>2,312 (27.9%)</i>	<i>16,270 (43.7%)</i>
Team bat or stick sports		1,394 (4.8%)	295 (3.6%)	1,689 (4.5%)
Team water sports		11 (0.0%)	0 (0.0%)	11 (0.0%)
Boating sports		223 (0.8%)	88 (1.1%)	311 (0.8%)
Individual water sports		1,839 (6.3%)	503 (6.1%)	2,342 (6.3%)
Ice & snow sports		709 (2.4%)	477 (5.8%)	1,186 (3.2%)
Individual athletic activities		351 (1.2%)	346 (4.2%)	697 (1.9%)
Acrobatic sports		122 (0.4%)	206 (2.5%)	329 (0.9%)
Aesthetic activities		96 (0.3%)	267 (3.2%)	363 (1.0%)
Racquet sports		456 (1.6%)	319 (3.9%)	775 (2.1%)
Target & precision sports		285 (1.0%)	154 (1.9%)	439 (1.2%)
Combative sports		410 (1.4%)	82 (1.0%)	492 (1.3%)
Power sports		58 (0.2%)	5 (0.1%)	63 (0.2%)
Equestrian activities		564 (1.9%)	1,132 (13.7%)	1,696 (4.6%)
Adventure sports		113 (0.4%)	71 (0.9%)	184 (0.5%)
Wheeled motor sports		2,578 (8.9%)	168 (2.0%)	2,746 (7.4%)
Wheeled non-motored sports	Cycling	2,367 (8.2%)	526 (6.4%)	2,893 (7.8%)
	In-line skating & rollerblading	226 (0.8%)	172 (2.1%)	398 (1.1%)
	Roller skating	64 (0.2%)	90 (1.1%)	154 (0.4%)
	Skate-boarding	1,157 (4.0%)	83 (1.0%)	1,240 (3.3%)
	Scooter riding	129 (0.4%)	77 (0.9%)	206 (0.6%)
	Other & unspecified wheeled non-motor sports	17 (0.1%)	5 (0.1%)	22 (0.1%)
	<i>Total wheeled non-motored sports</i>	<i>3,960 (13.7%)</i>	<i>953 (11.5%)</i>	<i>4,913 (13.2%)</i>
Multidiscipline sports		7 (0.0%)	10 (0.1%)	17 (0.0%)
Aero sports		117 (0.4%)	21 (0.3%)	138 (0.4%)
Other school-related recreational activities		438 (1.5%)	314 (3.8%)	752 (2.0%)
Other specified sport & exercise activity		621 (2.1%)	307 (3.7%)	928 (2.5%)
Unspecified sport & exercise activity		667 (2.3%)	245 (3.0%)	912 (2.4%)
<b>Total</b>		<b>28,977</b>	<b>8,275</b>	<b>37,253</b>

\* Persons includes 1 case for which sex was not reported.

## Sport-related injury—external cause

Most of the sport-related community injury cases hospitalised during 2004–05 were attributed to ‘other unintentional’ external causes (45.3%,  $n = 16,861$ ). Other unintentional external causes were the most common cause of sport-related injury for both males and females and for all age-groups other than the very young and very old (see Table 6.3). More than a quarter (27.5%) of these other unintentional injuries were coded to X59 ‘exposure to unspecified factor’ and these accounted for 12.5% of sports-related injuries overall. Other common ‘other unintentional’ sport injuries were those due to overexertion and strenuous or repetitive movements (8.1% of all sports-related cases), being hit, struck, kicked, twisted, bitten or scratched by another person (6.2%), striking against or being struck by sports equipment (5.6%) and striking against or being bumped into by another person (5.5%). Unsurprisingly, then, other unintentional external causes were the most frequent cause of injuries sustained during team bat or stick sports (79.9%) and team ball sports (63.4%, see Table 6.4).

Falls were the second most common cause of sport-related injuries in 2004–05, accounting for a third of all cases (33.1%). Falls were the most common cause of hospitalised sports injury for both the youngest (0–14 years) and oldest (65 years and older) Australians. Falls were the cause of the majority of cases attributed to ‘other school-related recreational activities’ (81.3%), acrobatic sports (71.7%), ice and snow sports (64.6%), aesthetic activities (64.2%) and individual athletic activities (59.1%).

Transportation external causes were the third most common type of cause attributed to sport-related injuries, accounting for one in five cases (20.7%, Table 6.4). As expected, transportation external cause codes were assigned to nearly all injuries sustained while engaged in wheeled motor sports (96.4%). Similarly, 90.3% of injuries sustained during equestrian activities were assigned transportation codes. More specifically, 87.3% of all equestrian injuries were assigned external cause code V80 ‘animal-rider or occupant of animal-drawn vehicle injured in transport accident’. Wheeled non-motor sport injuries (e.g. cycling) were also frequently coded with transportation external causes.

**Table 6.3: First external cause for sport-related injury cases by age, Australia 2004–05**

External cause	0–14	15–24	25–44	45–64	65+	All ages
Transportation	2,399	2,103	2,210	845	152	7,709
Drowning	44	35	35	31	16	161
Poisoning, pharmaceuticals	0	*	*	0	0	6
Poisoning, other substances	*	*	*	5	0	11
Falls	5,123	3,348	2,459	886	513	12,329
Fires, burns & scalds	10	*	*	*	*	19
Other unintentional injuries	2,817	6,355	6,246	1,238	205	16,861
Intentional, self inflicted (self-harm)	*	*	5	0	*	9
Intentional, inflicted by another (assault)	14	50	34	6	0	104
Undetermined intent	*	*	*	0	*	11
Other & missing	10	10	9	*	*	33
<b>Total</b>	<b>10,422</b>	<b>11,916</b>	<b>11,009</b>	<b>3,013</b>	<b>893</b>	<b>37,253</b>

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

\* Small cell counts have been suppressed.



**Table 6.4: External cause for sport-related injury cases by sport group, Australia 2004–05**

<b>Sport group</b>	<b>Transportation</b>	<b>Falls</b>	<b>Other unintentional</b>	<b>Other external causes</b>
Team ball sports	* (0.0%)	5,882 (36.2%)	10,321 (63.4%)	66 (0.4%)
Team bat or stick sports	* (0.1%)	332 (19.7%)	1,350 (79.9%)	6 (0.4%)
Boating sports	135 (43.4%)	31 (10.0%)	131 (42.1%)	14 (4.5%)
Individual water sports	201 (8.6%)	577 (24.6%)	1,404 (59.9%)	160 (6.8%)
Ice and snow sports	13 (1.1%)	766 (64.6%)	407 (34.3%)	0 (0.0%)
Individual athletic activities	13 (1.9%)	412 (59.1%)	264 (37.9%)	8 (1.1%)
Acrobatic sports	0 (0.0%)	236 (71.7%)	92 (28.0%)	* (0.3%)
Aesthetic activities	0 (0.0%)	233 (64.2%)	118 (32.5%)	12 (3.3%)
Racquet sports	0 (0.0%)	297 (38.3%)	478 (61.7%)	0 (0.0%)
Target and precision sports	31 (7.1%)	197 (44.9%)	194 (44.2%)	17 (3.9%)
Combative sports	0 (0.0%)	80 (16.3%)	405 (82.3%)	7 (1.4%)
Equestrian activities	1,532 (90.3%)	27 (1.6%)	133 (7.8%)	* (0.2%)
Wheeled motor sports	2,646 (96.4%)	18 (0.7%)	70 (2.5%)	12 (0.4%)
Wheeled non-motored sports	2,842 (57.8%)	1,833 (37.3%)	224 (4.6%)	14 (0.3%)
Other school-related recreational activities	5 (0.7%)	611 (81.3%)	126 (16.8%)	10 (1.3%)
Other & unspecified sports	289 (12.8%)	797 (35.4%)	1,144 (50.8%)	23 (1.0%)
<b>Total</b>	<b>7,709 (20.7%)</b>	<b>12,329 (33.1%)</b>	<b>16,861 (45.3%)</b>	<b>354 (1.0%)</b>

Note: Shading denotes most common external cause group for each sport group.

\* Small cell counts have been suppressed.

## Sport-related injury—place of occurrence

As expected, about half of all sport-related injury cases in 2004–05 were reported to have occurred in sports and athletics areas (48.3%,  $n = 17,988$ ). Higher proportions of cases involving males occurred on sporting grounds (35.5%) and sports and athletics areas more generally (50.5%) than observed for females (18.4% and 40.5%, respectively). This reflects the high proportion of male cases that occurred during football and other team ball sports. Females, on the other hand, were more commonly injured in sporting halls (7.0% vs. 3.7% for males, see Table 6.5). Otherwise, little difference was noted between males and females in terms of the place of occurrence reported for a sport-related injury.

Sports and athletics areas were also the most commonly specified place of occurrence for many specific sport groups, accounting for more than two-thirds of cases attributed to racquet sports (77.2%), ice and snow sports (75.2%), target and precision sports (74.7%), team ball sports (72.8%) and team bat or stick sports (67.2%, see Table 6.6). Somewhat counter-intuitively, a low proportion of wheeled motor sports occurred on streets or highways (6.0%), while one in five (20.0%) of wheeled non-motor sports occurred in these locations. High proportions of water-related sports injuries occurred in 'other specified places' (> 90%), principally 'large areas of water' such as oceans or lakes (> 44%). Unlike many other types of community injuries, quite low proportions of sport-related cases were reported to have occurred in the home (2.3% overall).

**Table 6.5: Place of occurrence for sport-related injury cases: males, females and persons, Australia 2004–05**

Place of occurrence		Males	Females	Persons <sup>†</sup>
<b>Home</b>		554 (1.9%)	303 (3.7%)	858 (2.3%)
<b>Residential institution</b>		56 (0.2%)	16 (0.2%)	72 (0.2%)
<b>School</b>		1,338 (4.6%)	560 (6.8%)	1,898 (5.1%)
<b>Health Service area</b>		10 (0.0%)	11 (0.1%)	21 (0.1%)
<b>Other specified institution &amp; public administrative area</b>		28 (0.1%)	25 (0.3%)	53 (0.1%)
<b>Sports &amp; athletics area</b>	Sporting grounds (outdoor)	10,275 (35.5%)	1,525 (18.4%)	11,800 (31.7%)
	Sporting hall (indoor)	1,079 (3.7%)	580 (7.0%)	1,659 (4.5%)
	Swimming centre	71 (0.2%)	43 (0.5%)	114 (0.3%)
	Racetrack & racecourse	1,114 (3.8%)	104 (1.3%)	1,218 (3.3%)
	Equestrian facility	20 (0.1%)	82 (1.0%)	102 (0.3%)
	Skating rink	347 (1.2%)	117 (1.4%)	464 (1.2%)
	Skiing	459 (1.6%)	306 (3.7%)	765 (2.1%)
	Other specified sports & athletic areas	350 (1.2%)	143 (1.7%)	493 (1.3%)
	Sports & athletic areas, unspecified	925 (3.2%)	448 (5.4%)	1,373 (3.7%)
	<i>Total sports &amp; athletics area</i>	<i>14,640 (50.5%)</i>	<i>3,348 (40.5%)</i>	<i>17,988 (48.3%)</i>
<b>Street &amp; highway</b>	Roadway	768 (2.7%)	201 (2.4%)	969 (2.6%)
	Sidewalk	114 (0.4%)	100 (1.2%)	214 (0.6%)
	Cycleway	49 (0.2%)	16 (0.2%)	65 (0.2%)
	Other specified highway, street or road	57 (0.2%)	11 (0.1%)	68 (0.2%)
	Unspecified highway, street or road	49 (0.2%)	17 (0.2%)	66 (0.2%)
	<i>Total street &amp; highway</i>	<i>1,037 (3.6%)</i>	<i>345 (4.2%)</i>	<i>1,382 (3.7%)</i>
<b>Trade &amp; service area</b>		63 (0.2%)	62 (0.7%)	125 (0.3%)
<b>Industrial &amp; construction area</b>		* (0.0%)	* (0.0%)	13 (0.0%)
<b>Farm</b>		120 (0.4%)	83 (1.0%)	203 (0.5%)
<b>Other specified place</b>	Area of still water	90 (0.3%)	38 (0.5%)	128 (0.3%)
	Stream of water	207 (0.7%)	55 (0.7%)	262 (0.7%)
	Large area of water	970 (3.3%)	254 (3.1%)	1,224 (3.3%)
	Beach	540 (1.9%)	140 (1.7%)	680 (1.8%)
	Forest	148 (0.5%)	70 (0.8%)	218 (0.6%)
	Desert	* (0.1%)	* (0.0%)	17 (0.0%)
	Other specified countryside	399 (1.4%)	137 (1.7%)	536 (1.4%)
	Parking lot	* (0.0%)	* (0.0%)	13 (0.0%)
	Other specified place of occurrence	796 (2.7%)	215 (2.6%)	1,011 (2.7%)
	<i>Total other specified place of occurrence</i>	<i>3,177 (11.0%)</i>	<i>912 (11.0%)</i>	<i>4,089 (11.0%)</i>
<b>Unspecified place of occurrence</b>		7,930 (27.4%)	2,607 (31.5%)	10,537 (28.3%)
<b>Place not reported/not applicable</b>		* (0.0%)	* (0.0%)	14 (0.0%)
<b>Total</b>		<b>28,977</b>	<b>8,275</b>	<b>37,253</b>

\* Small cell counts have been suppressed.

† Persons includes 1 case for which sex was not reported.

**Table 6.6: Place of occurrence for sport-related injury cases by sport group, Australia 2004–05**

Sport group	Home	School	Sports & athletics area	Street & highway	Other & unspecified places
Team ball sports	124 (0.8%)	783 (4.8%)	11,852 (72.8%)	20 (0.1%)	3,491 (21.5%)
Team bat or stick sports	31 (1.8%)	60 (3.6%)	1,135 (67.2%)	* (0.1%)	462 (27.4%)
Boating sports	0 (0.0%)	0 (0.0%)	15 (4.8%)	0 (0.0%)	296 (95.2%)
Individual water sports	67 (2.9%)	5 (0.2%)	153 (6.5%)	0 (0.0%)	2,117 (90.4%)
Ice & snow sports	* (0.1%)	0 (0.0%)	892 (75.2%)	* (0.1%)	292 (24.6%)
Individual athletic activities	24 (3.4%)	97 (13.9%)	88 (12.6%)	115 (16.5%)	373 (53.5%)
Acrobatic sports	45 (13.7%)	30 (9.1%)	131 (39.8%)	0 (0.0%)	123 (37.4%)
Aesthetic activities	29 (8.0%)	12 (3.3%)	21 (5.8%)	0 (0.0%)	301 (82.9%)
Racquet sports	* (0.6%)	14 (1.8%)	598 (77.2%)	* (0.1%)	157 (20.3%)
Target & precision sports	10 (2.3%)	* (0.2%)	328 (74.7%)	* (0.5%)	98 (22.3%)
Combative sports	32 (6.5%)	12 (2.4%)	176 (35.8%)	0 (0.0%)	272 (55.3%)
Equestrian activities	79 (4.7%)	* (0.2%)	344 (20.3%)	29 (1.7%)	1,240 (73.1%)
Wheeled motor sports	74 (2.7%)	0 (0.0%)	1,026 (37.4%)	165 (6.0%)	1,481 (53.9%)
Wheeled non-motored sports	180 (3.7%)	25 (0.5%)	619 (12.6%)	981 (20.0%)	3,108 (63.3%)
Other school-related recreational activities	0 (0.0%)	713 (94.8%)	14 (1.9%)	* (0.1%)	24 (3.2%)
Other & unspecified sport & exercise activity	157 (7.0%)	142 (6.3%)	596 (26.5%)	66 (2.9%)	1,292 (57.3%)
<b>Total</b>	<b>858 (2.3%)</b>	<b>1,898 (5.1%)</b>	<b>17,988 (48.3%)</b>	<b>1,382 (3.7%)</b>	<b>15,127 (40.6%)</b>

Note: Shading denotes most common place of occurrence for each sport group.

\* Small cell counts have been suppressed.

## Sport-related injury—principal diagnosis

Injuries to the knee and lower leg were the most common principal diagnosis assigned to sport-related injuries in 2004–05, accounting for a quarter of all such cases (25.0%, see Table 6.7). Injuries to the knee and lower leg were slightly more common for females (28.2% of cases) than for males (24.1%). Females also sustained a higher proportion of injuries to the elbow and forearm (24.0% of cases) than males (17.5%). Males, on the other hand, sustained a greater proportion of head injuries (18.4% of cases) than females (13.9%). These types of injuries were, respectively, the second and third most common principal diagnoses assigned to sport-related injuries in 2004–05.

Injuries to the knee and lower leg were also the most common principal diagnosis for sport-related injuries in most age groups (Table 6.8). The exceptions to this were the 0–14 years age group, where injuries to the elbow and forearm were far more common, and the 65 years and older age group, where injuries to the hip and thigh were slightly more common than injuries to the knee and lower leg. The frequency of head injuries was proportionately greater for people aged 15–24 years than for other ages.

The body region injured, as described by the principal diagnosis, according to the type of sporting activity engaged in when the injury was sustained is described in Table 6.9, and presents a slightly different story; the shoulder and upper limb region being the most frequently injured region of the body for most sports activities.

**Table 6.7: Principal diagnosis groups for sport-related injury cases: males, females and persons, Australia 2004–05**

Principal diagnosis	Males	Females	Persons <sup>†</sup>
Injuries to the head	5,333 (18.4%)	1,147 (13.9%)	6,480 (17.4%)
Injuries to the neck	767 (2.6%)	225 (2.7%)	992 (2.7%)
Injuries to the thorax	812 (2.8%)	166 (2.0%)	978 (2.6%)
Injuries to the abdomen, lower back, lumbar spine & pelvis	1,290 (4.5%)	427 (5.2%)	1,717 (4.6%)
Injuries to the shoulder & upper arm	2,691 (9.3%)	603 (7.3%)	3,294 (8.8%)
Injuries to the elbow & forearm	5,072 (17.5%)	1,985 (24.0%)	7,058 (18.9%)
Injuries to the wrist & hand	3,583 (12.4%)	598 (7.2%)	4,181 (11.2%)
Injuries to the hip & thigh	859 (3.0%)	289 (3.5%)	1,148 (3.1%)
Injuries to the knee & lower leg	6,980 (24.1%)	2,331 (28.2%)	9,311 (25.0%)
Injuries to the ankle & foot	832 (2.9%)	246 (3.0%)	1,078 (2.9%)
Injuries involving multiple body regions	* (0.1%)	* (0.0%)	18 (0.0%)
Injuries to unspecified parts of trunk, limb or body region	101 (0.3%)	26 (0.3%)	127 (0.3%)
Effects of foreign body entering through natural orifice	* (0.1%)	* (0.0%)	19 (0.1%)
Burns	* (0.1%)	* (0.0%)	37 (0.1%)
Frostbite	20 (0.1%)	11 (0.1%)	31 (0.1%)
Poisoning by drugs, medicaments & biological substances	9 (0.0%)	5 (0.1%)	14 (0.0%)
Toxic effects of non-medical substances	86 (0.3%)	49 (0.6%)	135 (0.4%)
Other & unspecified effects of external causes	401 (1.4%)	150 (1.8%)	551 (1.5%)
Certain early complications of trauma	76 (0.3%)	8 (0.1%)	84 (0.2%)
<b>Total</b>	<b>28,977</b>	<b>8,275</b>	<b>37,253</b>

\* Small cell counts have been suppressed.

† Persons includes 1 case for which sex was not reported.

**Table 6.8: Principal diagnosis groups for sport-related injury cases by age, Australia 2004–05**

Principal diagnosis	0–14	15–24	25–44	45–64	65+	All ages
Injuries to the head	1,962	2,616	1,490	303	109	6,480
Injuries to the neck	224	379	317	63	9	992
Injuries to the thorax	85	262	404	184	43	978
Injuries to the abdomen, lower back, lumbar spine & pelvis	369	569	565	155	59	1,717
Injuries to the shoulder & upper arm	801	1,108	956	327	102	3,294
Injuries to the elbow & forearm	4,014	1,401	1,065	418	160	7,058
Injuries to the wrist & hand	883	1,609	1,399	270	20	4,181
Injuries to the hip & thigh	326	251	280	126	165	1,148
Injuries to the knee & lower leg	1,371	3,113	3,707	965	155	9,311
Injuries to the ankle & foot	230	400	377	49	22	1,078
Toxic effects of non-medical substances	39	33	39	18	6	135
Other & unspecified effects of external causes	47	89	272	106	37	551
Other principal diagnoses	71	86	138	29	6	330
<b>Total</b>	<b>10,422</b>	<b>11,916</b>	<b>11,009</b>	<b>3,013</b>	<b>893</b>	<b>37,253</b>

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

**Table 6.9: Body region affected by principal diagnosis for sport-related injury cases, Australia 2004–05**

Principal diagnosis	Head	Trunk *	Shoulder & upper limb	Hip & lower limb	Other injuries not specified by body region
Team ball sports	2,986 (18.4%)	1,142 (7.0%)	6,322 (38.9%)	5,723 (35.2%)	97 (0.6%)
Team bat or stick sports	445 (26.3%)	99 (5.9%)	733 (43.4%)	400 (23.7%)	12 (0.7%)
Boating sports	68 (21.9%)	70 (22.5%)	65 (20.9%)	83 (26.7%)	25 (8.0%)
Individual water sports	364 (15.5%)	392 (16.7%)	477 (20.4%)	487 (20.8%)	622 (26.6%)
Ice and snow sports	124 (10.5%)	141 (11.9%)	320 (27.0%)	592 (49.9%)	9 (0.8%)
Individual athletic activities	63 (9.0%)	50 (7.2%)	230 (33.0%)	323 (46.3%)	31 (4.4%)
Acrobatic sports	35 (10.6%)	34 (10.3%)	196 (59.6%)	62 (18.8%)	2 (0.6%)
Aesthetic activities	38 (10.5%)	15 (4.1%)	136 (37.5%)	163 (44.9%)	11 (3.0%)
Racquet sports	54 (7.0%)	27 (3.5%)	260 (33.5%)	426 (55.0%)	8 (1.0%)
Target and precision sports	87 (19.8%)	39 (8.9%)	120 (27.3%)	172 (39.2%)	21 (4.8%)
Combative sports	90 (18.3%)	44 (8.9%)	234 (47.6%)	120 (24.4%)	4 (0.8%)
Equestrian activities	411 (24.2%)	431 (25.4%)	562 (33.1%)	278 (16.4%)	14 (0.8%)
Wheeled motor sports	401 (14.6%)	468 (17.0%)	939 (34.2%)	888 (32.3%)	50 (1.8%)
Wheeled non-motored sports	927 (18.9%)	472 (9.6%)	2,553 (52.0%)	931 (18.9%)	30 (0.6%)
Other school-related recreation activities	131 (17.4%)	41 (5.5%)	515 (68.5%)	57 (7.6%)	8 (1.1%)
Other & unspecified	256 (11.4%)	222 (9.9%)	871 (38.7%)	832 (36.9%)	72 (3.2%)
<b>Total</b>	<b>6,480 (17.4%)</b>	<b>3,687 (9.9%)</b>	<b>14,533 (39.0%)</b>	<b>11,537 (31.0%)</b>	<b>1,016 (2.7%)</b>

Note: Shading denotes most common body region injured for each sport group.

\* Trunk includes the neck, thorax, abdomen, lower back, lumbar spine & pelvis.

## Sport-related injury—length of stay

The total number of patient-days attributed to hospitalised sports injuries in 2004–05 was 80,842, giving a mean length of stay of 2.2 days per case. Just over a third of sport-related injury separations were discharged from hospital on the same day as admitted (36.4%,  $n = 14,422$ ) and including these, 71.2% of sport-related injury separations had a length of stay of only one day ( $n = 28,232$ ). This was a slightly higher proportion of one-day stays than observed for all community injury in 2004–05.

Males and females had the same mean length of stay for sport-related injuries (Table 6.10) and little difference in length of stay was noted between males and females for sports categories that contained robust numbers of cases.

The longest mean lengths of stay per case were observed for injuries sustained during aero sports (e.g. gliding, hang-gliding, parachuting; 6.5 days per case) and adventure sports (e.g. abseiling, white-water rafting, bungee jumping; 6.0 days per case). The shortest mean length of stay was observed for injuries sustained while engaged in team water sports (1.1 days). Injuries sustained while engaged in team ball sports, the most common types of sport-related injuries, had a quite short mean length of stay; 1.7 days (Table 6.10).

**Table 6.10: Mean days stay per sport-related injury case by sport group: males, females and persons, Australia 2004–05**

<b>Sporting activity</b>	<b>Males</b>	<b>Females</b>	<b>Persons</b>
Team ball sports	1.7	1.6	1.7
Team bat or stick sports	1.5	1.7	1.5
Team water sports	1.1	–	1.1
Boating sports	3.6	3.8	3.7
Individual water sports	2.6	2.0	2.4
Ice & snow sports	2.4	2.2	2.3
Individual athletic activities	2.4	2.8	2.6
Acrobatic sports	2.2	1.5	1.8
Aesthetic activities	2.2	2.6	2.5
Racquet sports	1.8	2.3	2.0
Target & precision sports	3.4	4.9	3.9
Combative sports	1.6	1.3	1.5
Power sports	2.2	1.0	2.1
Equestrian activities	3.4	3.0	3.1
Adventure sports	5.6	6.7	6.0
Wheeled motor sports	3.7	2.7	3.6
Wheeled non-motored sports	2.4	2.2	2.4
Multidiscipline sports	6.0	1.6	3.4
Aero sports	6.9	4.2	6.5
Other school-related recreational activities	1.4	1.5	1.4
Other & unspecified sport & exercise activity	2.2	2.4	2.2
<b>Total</b>	<b>2.2</b>	<b>2.2</b>	<b>2.2</b>

## 7 Complications of surgical and medical care, Australia

ICD-10-AM inclusion criteria:

- Principal diagnosis [T80–T88](#).

Hospital separations with a principal diagnosis in the ICD-10-AM range T80–T88 are injuries most likely sustained in the context of receiving medical care (as opposed to injuries most likely sustained in the community), and include post-operative infections, complications associated with prosthetic devices, implants and grafts, and failure or rejection of transplanted organs. While these separations provide a rudimentary measure of the incidence of adverse events related to hospital care, records with principal diagnosis codes outside the range of T80–T88 may also be related to adverse events (e.g. where external cause codes explicitly describe complications when the diagnoses codes do not). As such, the estimated incidence of adverse events related to surgical and medical care may be lower in this report than stated elsewhere (e.g. AIHW 2006).

Using this definition, 74,626 complications of surgical and medical care separations were identified for the period 2004–05 (Table 7.1). These separations represent 16.1% of all hospital separations due to injury and poisoning in 2004–05 and 1.1% of the 7,018,850 episodes of hospital care, for any cause, in Australia in this year.

Accounting for the multiple separations generated by inter-hospital transfers, it is estimated that 69,650 complications of surgical and medical care events (cases) resulted in inpatient hospital care in the 2004–05 period.

**Table 7.1: Key indicators for hospitalised complications of surgical and medical care, Australia 2004–05**

Key indicators	Males	Females	Persons
Total number of hospital separations due to injury and poisoning	264,139	199,410	463,554
Complications of surgical & medical care separations (T80–T88)	38,199	36,427	74,626
Complications separations as proportion of all injury separations	14.5%	18.3%	16.1%
Estimated number of complications of surgical & medical care cases <sup>(a)</sup>	35,616	34,034	69,650
Cases per 100,000 population	354.4	335.0	344.6
Cases per 100,000 population—age-standardised <sup>(b)</sup>	361.1	318.1	335.7
Total patient-days due to complications of surgical & medical care <sup>(c)</sup>	227,589	217,768	445,357
Mean patient-days per case	6.4	6.4	6.4

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

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

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



## 7.1 Complications of surgical and medical care cases

ICD-10-AM inclusion criteria:

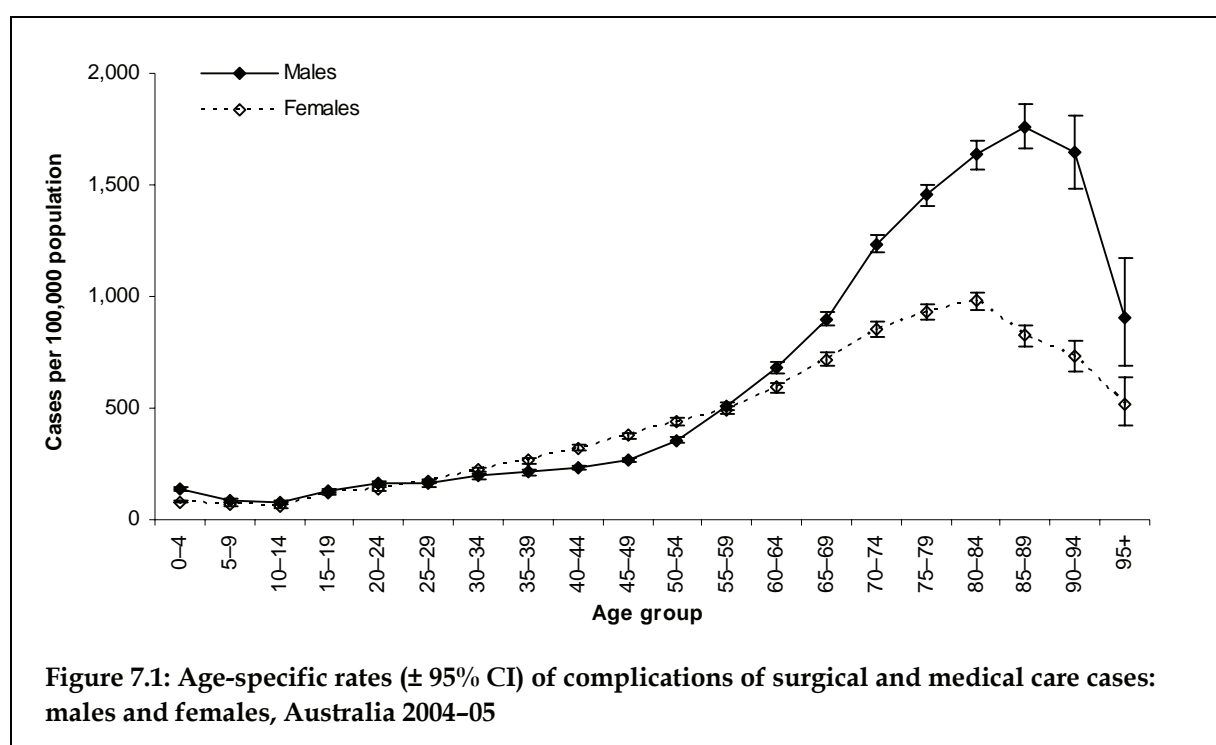
- Principal diagnosis T80–T88, and
- Mode of admission other than ‘transfer from another acute hospital’.

As described above, an estimated 69,650 injury cases attributed to complications of surgical and medical care resulted in hospitalisation in 2004–05. The age-standardised rate of these serious injury events was 335.7 per 100,000 population.

### Age and sex

The age and sex profile of complications of surgical and medical care in 2004–05 was similar to that presented in earlier years (Berry & Harrison 2007a). Males accounted for a similar proportion of complications cases as for females (males: 51.1%,  $n = 35,616$ ). Accordingly, the age-standardised rate of complications injury cases for males (361.1 per 100,000 population) was only slightly higher than that for females (318.1 per 100,000, a M:F rate ratio of 1.1).

Age-specific rates of complications of surgical and medical care for males and females were similar until the age of 34 years (Figure 7.1). In the middle-adult years (40–54 years), however, rates for females were significantly higher than those for males. As for community injury cases, rates of complications cases increased markedly with increasing age for both males and females, but unlike community injuries, complications rates for older males were significantly higher than those for females from the age of 60 years on. Further, rates of hospitalised complications cases decreased markedly for people in the very oldest age groups.



## External cause

Not surprisingly, the vast majority of cases with T80–T88 principal diagnoses were assigned a first external cause describing complications of surgical and medical care (99.5%, Table 7.2). The proportion of complications cases with complications of medical and surgical care external causes was similar for both males (99.4%,  $n = 35,414$ ) and females (99.5%,  $n = 33,865$ ). A small number of complications cases had external causes describing injury events more commonly associated with community injury cases ( $n = 293$ ), most frequently falls and the miscellaneous causes grouped as other unintentional injuries. A further 78 cases (0.1%) either lacked an external cause code entirely or had a first-listed external cause code outside the V01–Y89 range (e.g. sequelae, supplementary factors).

The most common specific type of complications external cause reported for complications of surgical and medical care cases was 'surgical and other medical procedures as the cause of abnormal reaction of the patient, or of later complication, without mention of misadventure at the time of the procedure (Y83–Y84)'. Cases of this type accounted for 96.3% ( $n = 67,083$ ) of all complications of surgical and medical care cases in 2004–05 (Table 7.3). Of cases of this type, the most common specific external cause reported was Y83.1 (surgical operation with implant of artificial internal device), accounting for a third (34.4%) of all complications cases ( $n = 23,976$ ). Y83.1 was the most frequent external cause code assigned to complications cases involving people aged 45 years and over (Table 7.4), but complications cases involving younger people were more commonly coded to Y83.8 (other surgical procedures).

**Table 7.2: Major external cause groups for complications of surgical and medical care cases: males, females and persons, Australia 2004–05**

External cause	Males	Females	Persons
<b>Unintentional injuries</b>			
Transportation	* (0.0%)	* (0.0%)	11 (0.0%)
Drowning	0 (0.0%)	0 (0.0%)	0 (0.0%)
Poisoning, pharmaceuticals	7 (0.0%)	10 (0.0%)	17 (0.0%)
Poisoning, other substances	0 (0.0%)	* (0.0%)	* (0.0%)
Falls	41 (0.1%)	38 (0.1%)	79 (0.1%)
Fires, burns & scalds	* (0.0%)	0 (0.0%)	* (0.0%)
Other unintentional injuries	97 (0.3%)	62 (0.2%)	159 (0.2%)
<i>Total unintentional injuries</i>	<i>154 (0.4%)</i>	<i>113 (0.3%)</i>	<i>267 (0.4%)</i>
<b>Intentional injuries</b>			
Intentional, self inflicted	5 (0.0%)	8 (0.0%)	13 (0.0%)
Intentional, inflicted by another	* (0.0%)	* (0.0%)	6 (0.0%)
Undetermined intent	* (0.0%)	* (0.0%)	7 (0.0%)
<i>Total intentional injuries</i>	<i>8 (0.0%)</i>	<i>18 (0.1%)</i>	<i>26 (0.0%)</i>
Complications of medical & surgical care	35,414 (99.4%)	33,865 (99.5%)	69,279 (99.5%)
Other or missing <sup>†</sup>	40 (0.1%)	38 (0.1%)	78 (0.1%)
<b>Total complications of medical &amp; surgical care cases</b>	<b>35,616</b>	<b>34,034</b>	<b>69,650</b>

\* Small cell counts have been suppressed.

<sup>†</sup> Unlike Table 2.2, 'other or missing' here does not include external cause codes describing complication of surgical and medical care.

**Table 7.3: External cause code categories for complications of surgical and medical care cases: males, females and persons, Australia 2004–05**

External cause	Males	Females	Persons
Not complications external cause	182 (0.5%)	159 (0.5%)	341 (0.5%)
Drugs, medicaments & biological substances causing adverse effects in therapeutic use (Y40–Y59)	615 (1.7%)	856 (2.5%)	1,471 (2.1%)
Misadventures to patients during surgical & medical care (Y60–Y69)	265 (0.7%)	285 (0.8%)	550 (0.8%)
Medical devices associated with misadventures in diagnostic & therapeutic use (Y70–Y82)	69 (0.2%)	75 (0.2%)	144 (0.2%)
Surgical & other medical procedures as the cause (...), without mention of misadventure at the time of the procedure (Y83–Y84)	34,452 (96.7%)	32,631 (95.9%)	67,083 (96.3%)
Sequelae of external causes of morbidity & mortality (Y85–Y89)	33 (0.1%)	28 (0.1%)	61 (0.1%)
<b>Total</b>	<b>35,616</b>	<b>34,034</b>	<b>69,650</b>

**Table 7.4: First external cause codes for complications of surgical and medical care cases where external cause is Y83 or Y84 by age, Australia 2004–05**

External cause	0–4	5–14	15–24	25–44	45–64	65+	All ages <sup>†</sup>
Surgical operation with transplant of whole organ (Y83.0)	18	52	127	566	897	150	1,810
Surgical operation with implant of artificial internal device (Y83.1)	306	492	962	3,693	7,368	11,155	23,976
Surgical operation with anastomosis, bypass or graft (Y83.2)	37	51	222	971	2,223	3,526	7,030
Surgical operation with formation of external stoma (Y83.3)	96	166	64	117	330	633	1,406
Other reconstructive surgery (Y83.4)	46	66	107	395	534	367	1,515
Amputation of limb(s) (Y83.5)	*	*	15	264	336	444	1,073
Removal of other organ (partial/total) (Y83.6)	171	419	622	1,374	1,736	1,161	5,483
Other surgical procedures (Y83.8)	378	534	1,288	3,961	5,077	4,472	15,710
Surgical procedure, unspecified (Y83.9)	6	5	34	115	192	176	528
Cardiac catheterisation (Y84.0)	0	0	*	*	101	130	247
Kidney dialysis (Y84.1)	16	12	40	260	604	801	1,733
Radiological procedure & radiotherapy (Y84.2)	*	0	0	*	41	40	99
Aspiration of fluid (Y84.4)	*	*	*	7	25	16	54
Insertion of gastric or duodenal sound (Y84.5)	0	0	0	0	*	*	10
Urinary catheterisation (Y84.6)	17	13	30	157	397	1,684	2,298
Blood-sampling (Y84.7)	*	*	*	*	0	*	8
Other medical procedures (Y84.8)	181	132	180	699	1,332	1,335	3,859
Medical procedure, unspecified (Y84.9)	*	*	19	54	76	82	241
<b>Total <sup>†</sup></b>	<b>1,281</b>	<b>1,964</b>	<b>3,714</b>	<b>12,668</b>	<b>21,272</b>	<b>26,184</b>	<b>67,083</b>

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

\* Small cell counts have been suppressed.

† Totals include 3 cases coded to Y84.3 (shock therapy).

## Place and activity

Nearly all complications of surgical and medical care cases were reported to have occurrence in a health service area (96.4%, Table 7.5). Similar proportions of cases for both males and females occurred in health service areas (96.6% vs. 96.3%, respectively). Significantly, the home, the setting for over a quarter of community injury cases, was the reported place of occurrence for only 1.1% of complications cases.

**Table 7.5: Place of occurrence for complications of surgical and medical care cases: males, females and persons, Australia 2004–05**

Place of occurrence	Males	Females	Persons
Home	354 (1.0%)	385 (1.1%)	739 (1.1%)
Residential institution	41 (0.1%)	35 (0.1%)	76 (0.1%)
School	* (0.0%)	* (0.0%)	6 (0.0%)
Health service area	34,409 (96.6%)	32,763 (96.3%)	67,172 (96.4%)
Other specified institution & public administrative area	* (0.0%)	* (0.0%)	* (0.0%)
Sports & athletics area	* (0.0%)	* (0.0%)	* (0.0%)
Street & highway	13 (0.0%)	5 (0.0%)	18 (0.0%)
Trade & service area	10 (0.0%)	6 (0.0%)	16 (0.0%)
Industrial & construction area	* (0.0%)	* (0.0%)	6 (0.0%)
Other specified place of occurrence	11 (0.0%)	11 (0.0%)	22 (0.0%)
Unspecified place of occurrence	721 (2.0%)	771 (2.3%)	1,492 (2.1%)
Place not reported/not applicable	42 (0.1%)	53 (0.2%)	95 (0.1%)
<b>Total</b>	<b>35,616</b>	<b>34,034</b>	<b>69,650</b>

\* Small cell counts have been suppressed.

**Table 7.6: Activity at time of occurrence for complications of surgical and medical care cases: males, females and persons, Australia 2004–05**

Activity	Males	Females	Persons
While engaged in sports	* (0.1%)	* (0.0%)	* (0.0%)
While engaged in leisure	* (0.0%)	* (0.0%)	* (0.0%)
While working for income	37 (0.1%)	7 (0.0%)	44 (0.1%)
While engaged in other types of work	11 (0.0%)	8 (0.0%)	19 (0.0%)
While resting, sleeping, eating, etc.	83 (0.2%)	87 (0.3%)	170 (0.2%)
Other specified activity	2,884 (8.1%)	2,779 (8.2%)	5,663 (8.1%)
Unspecified activity	1,130 (3.2%)	1,142 (3.4%)	2,272 (3.3%)
Activity not reported/not applicable	31,446 (88.3%)	30,008 (88.2%)	61,454 (88.2%)
<b>Total</b>	<b>35,616</b>	<b>34,034</b>	<b>69,650</b>

\* Small cell counts have been suppressed.

The lack of an ICD-10-AM activity code describing ‘while receiving medical care’ or similar is apparent when it comes to complications of surgical and medical care injury cases. Nearly nine in ten complications cases in 2004–05 (88.2%,  $n = 61,454$ ) did not have an activity code reported. In part, this is due to ICD-10-AM coding rules, which only demand the use of activity codes with external causes V01–Y34 (NCCH 2004).

Nonetheless, for prevention purposes it would be useful to understand the circumstances of complications of surgical and medical care cases more fully, including activity. For example, while many complications cases may occur during or shortly after a medical procedure (as may be intuited from the assignment of an Y60–Y69, misadventures to patients during surgical and medical care, code), the circumstances of complications coded as adverse effects of drugs, medicaments and biological substances (Y40–Y59) may vary widely.

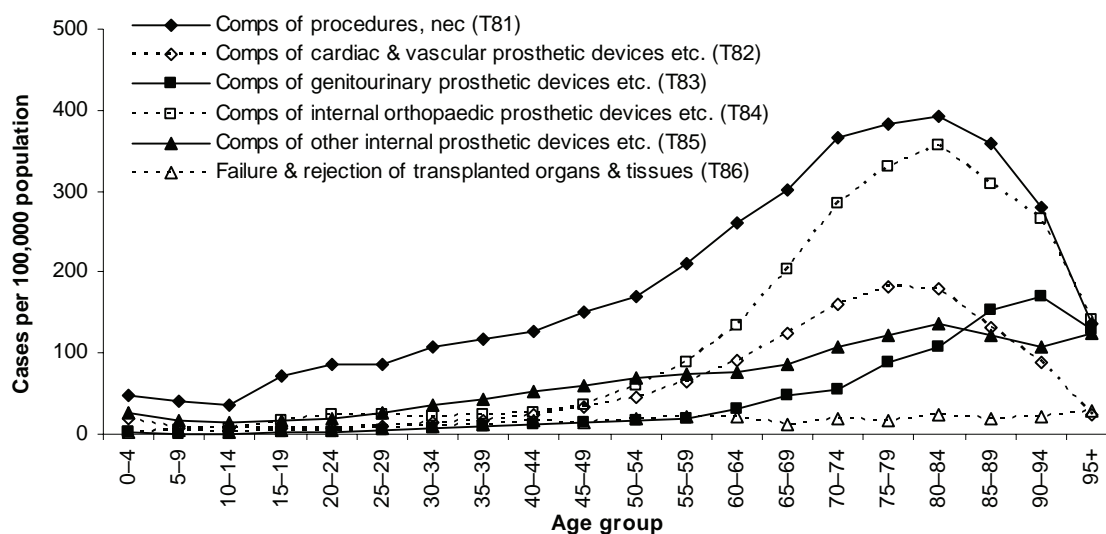
## Principal diagnosis

Two in five (41.6%,  $n = 28,971$ ) hospitalised complications of surgical and medical care cases in 2004–05 were assigned a principal diagnosis of T81 (complications of procedures, not elsewhere classified). Similar proportions of cases for both males and females were given a T81 principal diagnosis (Table 7.7). Further, T81 was the most common principal diagnosis for complications cases for all age groups other than the very old (95 years and older, Figure 7.2). For people of this age, the age-standardised rate of cases coded to T84 (complications of internal orthopaedic prosthetic devices, implants and grafts) was fractionally higher than those coded to T81 (141.0 per 100,000 vs. 136.9 per 100,000, respectively).

The rate of cases coded to most types of complications diagnoses decreased after the age of 80 years (e.g. Figure 7.2). The only type of complications case that was observed to continue to increase in rate with very old age was T86 (failure and rejection of transplanted organs and tissues), which reached a peak rate of 28.2 per 100,000 for people aged 95 years and older.

**Table 7.7: Principal diagnosis groups for complications of surgical and medical care cases: males, females and persons, Australia 2004–05**

Principal diagnosis	Males	Females	Persons
Complications following infusion, transfusion & therapeutic injection (T80)	241 (0.7%)	278 (0.8%)	519 (0.7%)
Complications of procedures, not elsewhere classified (T81)	14,730 (41.4%)	14,241 (41.8%)	28,971 (41.6%)
Complications of cardiac & vascular prosthetic devices, implants & grafts (T82)	4,798 (13.5%)	3,525 (10.4%)	8,323 (11.9%)
Complications of genitourinary prosthetic devices, implants & grafts (T83)	2,334 (6.6%)	1,328 (3.9%)	3,662 (5.3%)
Complications of internal orthopaedic prosthetic devices, implants & grafts (T84)	6,697 (18.8%)	6,554 (19.3%)	13,251 (19.0%)
Complications of other internal prosthetic devices, implants & grafts (T85)	3,898 (10.9%)	6,033 (17.7%)	9,931 (14.3%)
Failure & rejection of transplanted organs & tissues (T86)	1,482 (4.2%)	888 (2.6%)	2,370 (3.4%)
Complications peculiar to reattachment & amputation (T87)	790 (2.2%)	246 (0.7%)	1,036 (1.5%)
Other complications of surgical & medical care, not elsewhere classified (T88)	646 (1.8%)	941 (2.8%)	1,587 (2.3%)
<b>Total</b>	<b>35,616</b>	<b>34,034</b>	<b>69,650</b>

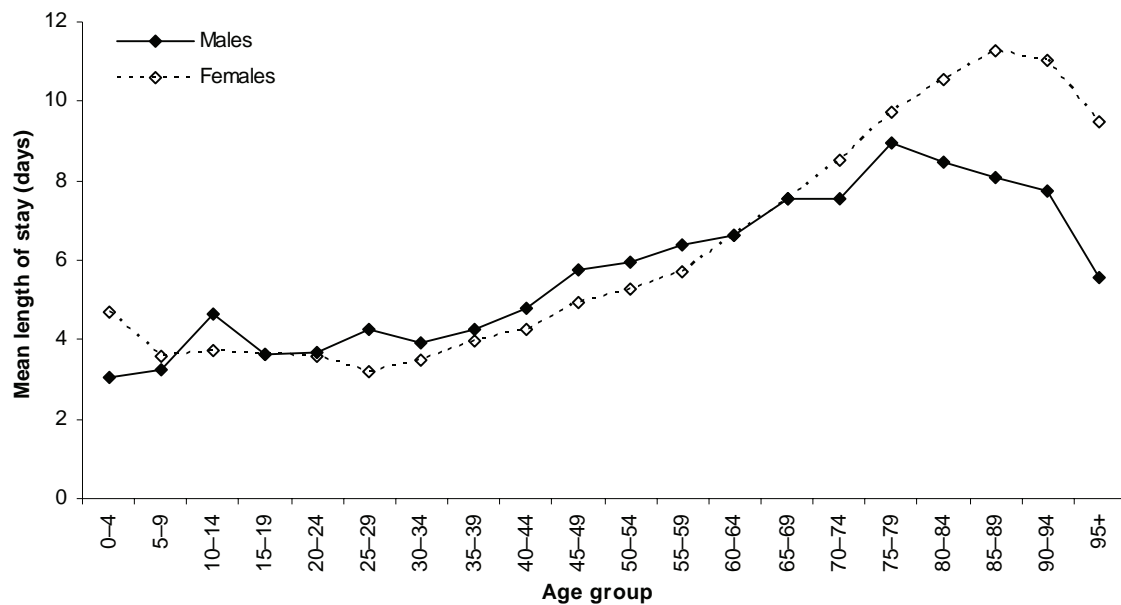


**Figure 7.2: Age-specific rates of complications of surgical and medical care cases for selected principal diagnoses: persons, Australia 2004–05**

## Length of stay

The total number of patient-days attributed to hospitalised complications of surgical and medical care in 2004–05 was 445,357, 23.6% of patient-days due to injury in this year. The mean length of stay per case for complications cases was longer than that for community injury (6.4 days for both males and females). Approximately a fifth of complications of surgical and medical care separated from hospital on the same day as admitted (22.4%,  $n = 16,753$ ) and two in five complications separations, including the same-day separations, reported a length of stay of only one day (39.1%,  $n = 29,155$ ), accounting for a smaller proportion of complications cases than noted for community injury cases. Similarly, a higher proportion of separations attributed to complications (9.1%,  $n = 6,757$ ) had a length of stay of more than 14 days than was observed for community injury case separations.

As for community injury, mean lengths of stay per case for complications of surgical and medical care increased with age (Figure 7.3). Lengths of stay for males and females were similar for all but the oldest people hospitalised due to complications, when the mean length of stay per case for older males declined somewhat after the age of 75 years.



**Figure 7.3: Mean length of stay per case for complications of surgical and medical care: males and females by age, Australia 2004–05**



## 8 Residual groups

ICD-10-AM inclusion criteria:

- Principal diagnosis [T78](#), [T89](#) or [T90–T98](#).

Three types of injury principal diagnoses were excluded from the main analyses and are discussed here; T78, T89 and T90–T98. A diagnosis of T78 describes ‘adverse effects, not elsewhere classified’ while a diagnosis of T89 describes ‘other specified complications of trauma’. Diagnoses in the range T90–T98 describe various sequelae of injury and poisoning, which are defined as; ‘a current condition that was caused by a previously occurring injury, poisoning, toxic effect or other external cause’ (NCCH 2004, volume 5, pg. 246). The proportion of hospital separations falling into this group is small; only 1.0% of all injury separations in 2004–05 ( $n = 4,826$ ).

### 8.1 Residual groups cases

ICD-10-AM inclusion criteria:

- Principal diagnosis [T78](#), [T89](#) or [T90–T98](#), and
- Mode of admission other than ‘transfer from another acute hospital’.

Almost all separations coded to T78, T89 or T90–T98 had a mode of admission other than transfer to another acute hospital and were considered to represent incident cases (98.0%,  $n = 4,730$ ). Just over half of these cases involved females (52.4%,  $n = 2,479$ ). Nearly all of the cases considered here were coded with a principal diagnosis of T78 (adverse effects, not elsewhere classified: 96.8%,  $n = 4,579$ ), with only 139 cases attributed to T89 (2.9%) and 12 to T90–T98 (0.3%). Slightly higher proportions of cases involving males were assigned T89 or T90–T98 principal diagnoses than cases involving females (Table 8.1).

The age-standardised rate of injury cases coded to diagnoses T78, T89 or T90–T98 in 2004–05 was 23.4 per 100,000 population. Males had a slightly lower rate of these types of case (22.5 per 100,000) than females (24.1 per 100,000). Age-specific rates were highest for children aged 0–4 years and lowest for children 10–14 years (Figure 8.1). High rates of injury in early childhood, as well as relatively high rates of cases for people aged 15–34 years, is likely related to the incidence of venomous bite and sting injuries for these age groups, a relatively common cause of T78 diagnoses (see Bradley 2008). However, rates for adults for these residual-type injury cases were relatively low overall and did not significantly increase with age, unlike both community injury and complications of surgical and medical care cases.

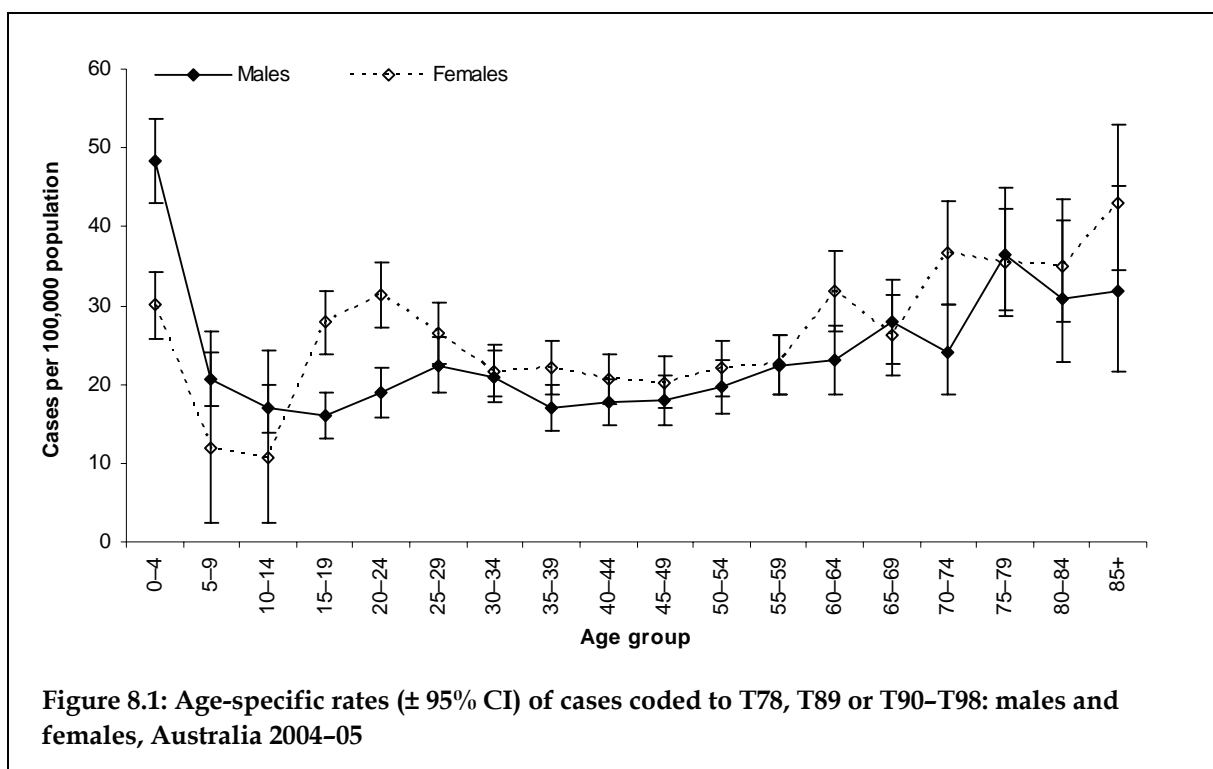
Over half of injury cases coded to T78, T89 or T90–T98 were attributed to ‘other unintentional’ external causes (57.9%,  $n = 2,741$ ), of which the majority (76.9%,  $n = 2,088$ ) received an X59 first external cause code, describing exposure to unspecified factors. Venomous bites and stings (X20–X29) accounted for 7.7% of ‘other unintentional’ external causes cases ( $n = 211$ ), and these were mostly attributed to stings by hornets, wasps and bees (X23,  $n = 160$ ). A further quarter of residual-groups injury cases were assigned complications of surgical and medical care external cause codes (25.6%,  $n = 1,210$ ) and

little difference in the types of external causes attributed to cases involving males and females was noted (Table 8.2).

**Table 8.1: Principal diagnoses for cases coded to T78, T89 or T90–T98: males, females and persons, Australia 2004–05**

Principal diagnosis	Males	Females	Persons
Anaphylactic shock due to adverse food reaction (T78.0)	441 (19.6%)	436 (17.6%)	877 (18.5%)
Other adverse food reactions, not elsewhere classified (T78.1)	299 (13.3%)	305 (12.3%)	604 (12.8%)
Anaphylactic shock, unspecified (T78.2)	339 (15.1%)	363 (14.6%)	702 (14.8%)
Angioneurotic oedema (T78.3)	559 (24.8%)	719 (29.0%)	1,278 (27.0%)
Allergy, unspecified (T78.4)	499 (22.2%)	603 (24.3%)	1,102 (23.3%)
Other adverse effects, not elsewhere classified (T78.8)	* (0.3%)	* (0.2%)	* (0.3%)
Adverse effect, unspecified (T78.9)	* (0.1%)	* (0.1%)	* (0.1%)
Open wound with foreign body (with or without infection, T89.01)	37 (1.6%)	7 (0.3%)	44 (0.9%)
Open wound with infection (T89.02)	52 (2.3%)	28 (1.1%)	80 (1.7%)
Other complications of open wounds (T89.03)	9 (0.4%)	6 (0.2%)	15 (0.3%)
Sequelae (T90–T98)	* (0.4%)	* (0.2%)	12 (0.3%)
<b>Total</b>	<b>2,251</b>	<b>2,479</b>	<b>4,730</b>

\* Small cell counts have been suppressed.



**Table 8.2: Major external cause groups for cases coded to T78, T89 or T90–T98: males, females and persons, Australia 2004–05**

External cause	Males	Females	Persons
Transportation	* (0.5%)	* (0.1%)	15 (0.3%)
Poisoning, pharmaceuticals	5 (0.2%)	13 (0.5%)	18 (0.4%)
Poisoning, other substances	358 (15.9%)	343 (13.8%)	701 (14.8%)
Falls	5 (0.2%)	6 (0.2%)	11 (0.2%)
Fires, burns & scalds	* (0.0%)	* (0.0%)	* (0.0%)
Other unintentional injuries	1,304 (57.9%)	1,437 (58.0%)	2,741 (57.9%)
Intentional, self inflicted	* (0.1%)	* (0.1%)	* (0.1%)
Intentional, inflicted by another	6 (0.3%)	0 (0.0%)	6 (0.1%)
Undetermined intent	* (0.1%)	* (0.2%)	7 (0.1%)
Complications of surgical and medical care	552 (24.5%)	658 (26.5%)	1,210 (25.6%)
Other/missing	5 (0.2%)	11 (0.4%)	16 (0.3%)
<b>Total</b>	<b>2,251</b>	<b>2,479</b>	<b>4,730</b>

\* Small cell counts have been suppressed.

## 9 Data Issues

### 9.1 Data sources

All National Hospital Morbidity Database (NHMD) unit records containing injury diagnosis and external cause codes and separating from hospital between 1st July 2004 and 30th June 2005 were provided by the Australian Institute of Health and Welfare (AIHW). All episodes of care separating from an Australian hospital in 2004–05 were coded to the fourth edition of the Australian Modification of the International Classification of Diseases (ICD-10-AM).

Population data by age, sex and state of usual residence was also obtained from the AIHW. Rates of hospitalised injury were calculated using the estimated resident population as at 31st December 2004, the mid-point of the subject year. Rates by state of usual residence were not calculated for the small proportion of injury cases (< 0.3%) involving Australians resident in the Cocos and Keeling Islands, Christmas Island and Jervis Bay.

This report also calculated rates of injury according to the remoteness of the person's usual residence. Remoteness categories were based on the Australian Standard Geographical Classification system for remoteness, but excluded the small proportion of the population classed as residents of Migratory remoteness areas of Australia (which account for those people who are off-shore on oil rigs, drilling platforms and other structures; on board vessels in and between Australian ports; or are in transit on board long distance trains, buses and aircraft on census night, see ABS, 2004). For more information on the various remoteness classifications please refer to the AIHW publication *Rural, regional and remote health: a guide to remoteness classifications* (AIHW 2004). As 31st December estimates of the Australian population by remoteness of usual residence are not a standard ABS product, this report used the average of estimates produced for 30th June 2004 and 30th June 2005 as the denominator for rates of this type (again supplied by the AIHW).

### 9.2 Selection criteria

#### Period and scope

While it would be preferable to specify cases in terms of date of injury occurrence, such information is not available in the NHMD. Accordingly, this report was restricted to inpatient episodes that separated from hospital between 1st July 2004 and 30th June 2005 as an estimate of the number of serious injuries newly-occurring in this period.

This report included data from all hospitals that contributed to the NHMD in 2004–05. This included nearly all public and private hospitals in Australia that provide acute care services (AIHW 2006).

## Inclusion criteria

This report identified injury separations on the basis of the record's principal diagnosis. Injury diagnoses are those from Chapter XIX, *Injury, poisoning and certain other consequences of external causes*, of the ICD-10-AM, codes S00–T98. Hospital separation records that contained injury codes, but not as the principal diagnosis, were excluded from the analyses in this report. The number of records of this type is shown in Table 9.1. While these episodes of care contribute to the overall burden to the hospital system due to injury (e.g. Bradley & Harrison 2007), the relationship between the injury and the main reason/condition for the episode of care is not well understood and it is considered prudent to omit these records from analysis. In some instances, however, these injuries will have been counted in case estimates on the basis of a previous episode in hospital. In other instances, the injury referred to in the record may have been incidental to the reason for admission and would not, on its own, have prompted admission.

A further selection criterion has been applied for most analyses; the exclusion of injury separations that have a mode of admission of 'transfer from another acute hospital'. This criterion facilitates the estimation of new injurious incidents. An event that results in an injury requiring inpatient hospital care may generate multiple unit records through inter-hospital transfers and subsequent readmissions. As such, the total number of hospital separations identified as being directly attributable to injury overestimates the actual number of events that provoked these hospitalisations. Hence, lacking a date of injury variable or readmission flag in the de-identified NHMD records, the number of discrete injury cases is estimated here by excluding records explicitly categorised as second or subsequent episodes of care (i.e. mode of admission is transfer from another acute hospital). This approach does not account for multiple separations generated by readmissions to hospital after the person had been discharged to their place of usual residence, but unpublished work by NISU with person-linked hospital data suggests that the effect of this is small for most injury cases.

To assess the overall burden of hospital care due to injury (i.e. length of stay), the transfer separations omitted from analyses of cases have been considered, however. While not representing additional incidents of hospitalised injury, these second and subsequent episodes of care to contribute (in some cases substantially) to the time and resources required to treat serious injury in the hospital setting. Accordingly, mean lengths of stay per injury case have been calculated as the total number of patient-days utilised by cases plus the total patient-days utilised by transfer separations, divided by the estimated number of injury cases.

**Table 9.1: Selection criteria for hospitalised cases <sup>(a)</sup> due to injury and poisoning, Australia 2004–05**

Selection criteria	Males	Females	Persons <sup>(b)</sup>
Community injury (principal diagnosis range S00–T75, T79), and			
• lack any external cause code	259	140	399
• have a first reported external cause code of complications of surgical & medical care <sup>(c)</sup>	949	697	1,646
• have a first reported external cause in the range V01–Y36, Y85–Y87, Y89	206,416	147,794	354,215
<b>Total case numbers for community injury</b>	<b>207,624</b>	<b>148,631</b>	<b>356,260</b>
Cases that do not have a principal diagnosis of community injury, but additional diagnoses codes are in range (S00–T75, T79)	33,945	38,322	72,271
<b>Total case numbers where there is a code for community injury in the principal or additional diagnoses fields</b>	<b>241,569</b>	<b>186,953</b>	<b>428,531</b>
Complications of surgical & medical care (principal diagnosis range T80–T88), and			
• lack any external cause code	40	38	78
• have a first reported external cause code of community injury <sup>(d)</sup>	162	131	293
• have a first reported external cause in the range Y40–T84, Y88	35,414	33,865	69,279
<b>Total case numbers for complications of surgical &amp; medical care</b>	<b>35,616</b>	<b>34,034</b>	<b>69,650</b>
Cases that do not have a principal diagnosis of complications, but additional diagnoses codes are in range (T80–T88)	39,762	37,417	77,180
<b>Total case numbers where there is a code for complications of surgical &amp; medical care in the principal or additional diagnoses fields</b>	<b>75,378</b>	<b>71,451</b>	<b>146,830</b>
Case numbers where principal diagnosis is in ICD-10-AM Chapter XIX but is not classified as community injury or complications of surgical & medical care (i.e. 'residual groups')			
• Adverse effects, not elsewhere classified (principal diagnosis T78)	2,145	2,434	4,579
• Other complications of trauma not elsewhere classified (principal diagnosis T89)	98	41	139
• Sequelae of injuries, poisoning and of other consequences of external causes (principal diagnosis T90–T98)	*	*	12
<b>Total case numbers for residual groups</b>	<b>2,251</b>	<b>2,479</b>	<b>4,730</b>
<b>All cases with principal diagnosis in the ICD-10-AM range S00–T98</b>	<b>245,491</b>	<b>185,144</b>	<b>430,640</b>

(a) To estimate case numbers and correct for double-counting, 32,914 separations with a mode of admission of 'transfer from another acute care hospital' were omitted here. Without this exclusion, the total numbers of separations for each class of injury diagnosis were; 384,102 for community injury, 74,626 for complications of surgical and medical care and 4,826 for the residual group of Chapter XIX injury and poisoning separations.

(b) Persons may include a small number of separations for which sex was not reported.

(c) 123 (7.5%) 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).

(d) 51 (17.4%) 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).

## Classes of injury

As outlined in Table 9.1, this report categorises injury hospitalisations into three main groups; community injury, complications of surgical and medical care and residual injury separations.

### Community injury

Community injury separations have been defined in this report as unit records with a principal diagnosis in the range S00–T75 or T79. These injuries are thought to be those sustained within the community setting; the home, the workplace, an educational institution, the street, the natural environment etc. Community injuries are further categorised into two main types; unintentional injuries (e.g. motor vehicle crashes, falls) and intentional injuries (e.g. assault, self-harm).

A total of 384,102 community injury separations were identified for the period 1st July 2004 to 30th June 2005. Less than eight per cent of these records were considered to be the second or subsequent separation in a series of admissions relating to the one injury event and excluded from our estimation of community injury incidence.

### Complications of surgical and medical care

Complications of surgical and medical care have been defined in this report as unit records with a principal diagnosis in the range T80–T88. These injuries are thought to be the result of adverse events of a health intervention and include post-operative infections, complications associated with prosthetic devices, implants and grafts, and failure or rejection of transplanted organs. While injuries classed as complications of surgical and medical care provide a rudimentary measure of the incidence of adverse events related to hospital care, records with principal diagnosis codes outside the range of T80–T88 may also be related to adverse events (e.g. where external cause codes explicitly describe complications when the diagnoses codes do not). As such, the estimated incidence of adverse events related to surgical and medical care may be lower in this report than stated elsewhere (e.g. AIHW 2006).

A total of 74,626 complications of surgical and medical care separations were identified for the period 1st July 2004 to 30th June 2005. Less than seven per cent of these records were considered to be the second or subsequent separation in a series of admissions relating to the one injury event and excluded from our estimation of complications injury incidence.

There is some potential overlap between these community injury and complications of surgical and medical care cases. For example, an injurious fall sustained by a hospital inpatient can be interpreted as both a community injury (falls) and as an adverse event of surgical and medical care. In this report, such cases were assigned on the basis of the record's principal diagnosis.

Similarly, some records are ambiguous as to whether they should be treated as community injury or complications of surgical and medical care. Such records have a principal diagnosis in the community injury range and a first reported external cause code describing complications of surgical and medical care or a principal diagnosis in the complications of surgical and medical care range and a first reported external cause code indicating community injury. Again, such cases were assigned to an injury group (community or complications) on the basis of the record's principal diagnosis.



## Residual groups

Hospital separations coded to T78, T89 or T90–T98 are difficult to classify into injury types and, accordingly, were excluded from the main portions of this report. A diagnosis of T78 describes ‘adverse effects, not elsewhere classified’ while a diagnosis of T89 describes ‘other specified complications of trauma’. Diagnoses in the range T90–T98 describe various sequelae of injury and poisoning, meaning hospital care for a current condition resulting from a previous injury. Such separations have been analysed as a group in this report, and, fortunately, this group is small; only 1.0% of all injury separations in 2004–05 ( $n = 4,826$ ). Most of these ‘residual groups’ separations (98.0%,  $n = 4,730$ ) were considered to be injury cases (i.e. mode of admission was not transfer from another acute hospital).

## 9.3 Rate calculation

Rates of hospitalised injury were calculated per 100,000 population and standardised to the Australian population as at 30th June 2001 using the direct method. Age-specific rates were calculated in 5-year age groups to 95 years and older when counts were sufficiently large. When small counts were observed for older people, rates were instead calculated in 5-year age groups to 85 years and older.

## Confidence intervals

Confidence interval calculations were based on the methods described in Berry and Harrison (2006b). Where cell values were greater or equal to 100, symmetrical 95% confidence intervals were calculated using the formula:

$$1.96 \times \text{age-standardised rate} / \text{square root (N)}$$

Where cell values were less than 100, asymmetrical 95% confidence intervals were calculated using the formula:

$$\begin{aligned} \text{Upper CI:} & \quad \text{Rate} \times \text{upper confidence factor} \\ \text{Lower CI:} & \quad \text{Rate} \times \text{lower confidence factor} \end{aligned}$$

The confidence factors were taken from page 107 of Berry and Harrison (2006b).

## 9.4 Small case count issues

Case counts of less than five cases are suppressed in this report to protect patient confidentiality. In some instances, case counts of less than five have been tabulated but cell values have been replaced with an asterisk. In the instances where only one cell in a row or column has a count of less than five, some other cells in the same row or column have also been suppressed to prevent back-calculation. In other instances, categories with case counts of less than five have been collapsed into the relevant ‘other specified’ category.

Efforts have been taken to ensure that as much information remains in the tables when such suppression has had to be made.

## 9.5 Injury severity

This report utilises the ICD-based Injury Severity Score (ICISS) as a measure of the severity of an injury or set of injuries sustained by each person (Stephenson et al. 2003; Stephenson et al. 2004). Here, cases with an ICISS score of less than 0.941 are considered to represent a high threat to life (see Stephenson et al. 2004). This ICISS score may be interpreted as identifying cases are considered to have less than a six per cent likelihood of survival.

However, when compared to an observed measure, such as the proportion of patients within a predefined group who survive to discharge from hospital, ICISS, in many instances, significantly overestimates mortality. This is largely because the survival rate ratios (SRRs) that underpin the ICISS were calculated using a subset of records that excluded cases where patients were discharged on the same day as their admission, unless discharge was due to death (Stephenson et al. 2003). This exclusion of same-day cases removed a number of low severity cases from the dataset and resulted in a higher estimate of the proportion of cases leading to death. Additionally, the ICISS method, which utilises all injury diagnoses within a record, often assigns a SRR value of less than 1 to injuries which, on their own, would rarely result in death.

Despite these limitations, ICISS serves the intended function of providing a relative measure of threat to life of various injury diagnoses.

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# 11 Appendix

Table 11.1: Rates of hospitalised injury cases per 100,000 population to 85+ years: males by external cause, Australia 2004–05

	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+	Age std
Transportation	92.9	234.7	509.0	702.4	657.3	509.0	435.2	345.5	307.6	265.4	220.7	191.7	161.3	165.2	171.4	177.3	266.4	257.6	345.2
Drowning	19.0	3.1	1.7	3.4	2.5	1.9	1.9	1.5	0.9	1.4	1.7	1.3	1.3	1.3	1.3	0.8	0.6	0.0	2.9
Poisoning, pharmaceuticals	123.3	10.9	6.0	23.4	37.7	43.4	37.5	30.3	22.2	20.0	18.6	15.6	14.1	13.9	24.0	31.3	44.8	60.5	31.2
Poisoning, other substances	37.5	5.0	5.0	13.3	20.0	20.4	16.7	17.8	10.6	9.6	10.0	9.7	9.4	8.5	8.7	10.8	10.7	11.3	13.8
Falls	621.9	762.0	781.0	485.4	394.2	348.6	288.6	274.9	284.4	317.3	326.6	385.3	467.7	566.9	855.4	1,447.8	2,702.1	5,575.9	591.5
Fires, burns & scalds	127.3	28.5	32.8	42.7	39.9	37.4	33.8	27.0	26.6	21.1	19.7	19.0	14.3	20.2	19.6	20.9	23.4	26.7	34.8
Other unintentional	594.7	485.2	727.8	1,353.2	1,349.3	1,175.5	1,019.7	873.7	773.3	684.9	634.9	603.9	547.2	450.0	450.3	459.7	516.3	527.4	800.9
Intentional self-harm	1.2	0.1	15.1	123.6	169.5	178.7	163.6	153.8	131.5	106.7	72.8	58.6	39.8	29.3	29.3	44.1	38.5	49.3	89.9
Assault	19.4	8.5	34.6	324.9	432.3	326.0	265.9	235.5	167.2	116.3	78.9	52.8	37.5	19.7	20.3	14.8	14.5	11.3	150.4
Undetermined intent	5.1	3.7	4.8	24.4	40.1	38.1	36.3	28.1	22.7	16.8	10.0	8.3	7.3	6.1	6.3	8.8	6.9	17.4	18.3
<i>Total community injury<sup>(a)</sup></i>	<i>1,646.0</i>	<i>1,544.4</i>	<i>2,121.3</i>	<i>3,101.4</i>	<i>3,152.1</i>	<i>2,685.0</i>	<i>2,305.1</i>	<i>1,997.8</i>	<i>1,754.9</i>	<i>1,571.4</i>	<i>1,405.2</i>	<i>1,364.2</i>	<i>1,332.8</i>	<i>1,304.9</i>	<i>1,632.6</i>	<i>2,244.9</i>	<i>3,660.2</i>	<i>6,582.5</i>	<i>2,091.0</i>
Complications of medical & surgical care <sup>(b)</sup>	138.3	88.4	81.1	131.1	164.9	159.7	194.0	211.7	231.6	267.6	357.1	509.5	683.0	899.4	1,234.9	1,453.0	1,635.4	1,677.7	361.2
Residual groups	48.4	20.7	17.0	16.0	19.0	22.4	21.0	17.0	17.7	17.9	19.7	22.4	23.1	28.0	24.0	36.5	30.9	31.8	22.5
<b>Total injury</b>	<b>1,832.7</b>	<b>1,653.5</b>	<b>2,219.3</b>	<b>3,248.5</b>	<b>3,336.0</b>	<b>2,867.1</b>	<b>2,520.1</b>	<b>2,226.5</b>	<b>2,004.2</b>	<b>1,857.0</b>	<b>1,782.0</b>	<b>1,896.1</b>	<b>2,038.9</b>	<b>2,232.2</b>	<b>2,891.4</b>	<b>3,734.4</b>	<b>5,326.6</b>	<b>8,292.0</b>	<b>2,474.6</b>

Note: Age-standardised rates in this table may be slightly different to those in the body of the report due to the different age-groups used (i.e. 85+ here vs. 95+, where appropriate, in the report).

(a) Includes cases with principal diagnosis S00–T75 or T79 and first external cause describing complications of surgical and medical care.

(b) Excludes cases with principal diagnosis S00–T75 or T79 and first external cause describing complications of surgical and medical care.

**Table 11.2: Rates of hospitalised injury cases per 100,000 population to 85+ years: females by external cause, Australia 2004–05**

	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+	Age std
Transportation	58.9	154.9	200.3	292.8	256.3	189.1	150.7	145.8	123.7	130.0	124.5	127.7	112.8	118.3	148.4	177.8	215.0	153.6	160.4
Drowning	14.4	2.8	1.3	1.5	1.0	0.3	0.1	0.4	0.3	0.1	0.7	0.3	0.7	1.0	1.5	0.7	0.4	1.0	1.7
Poisoning, pharmaceuticals	110.6	8.7	13.9	56.4	52.9	42.4	35.3	26.0	31.7	31.1	25.4	20.9	15.9	25.0	29.7	34.2	52.6	68.1	36.7
Poisoning, other substances	28.9	3.1	3.3	14.0	14.1	9.6	7.5	8.0	7.1	7.3	6.6	6.2	6.5	10.2	6.4	10.0	6.4	10.6	9.3
Falls	499.2	603.6	312.7	124.1	138.2	134.0	143.1	161.9	183.5	242.1	331.8	486.5	633.1	900.2	1,407.2	2,568.2	4,710.0	8,615.2	597.4
Fires, burns & scalds	90.6	21.8	18.2	14.0	16.6	13.5	13.5	11.9	15.0	13.1	11.1	8.2	8.9	15.4	11.9	13.9	19.7	27.0	19.4
Other																			
unintentional	445.5	319.4	296.0	326.9	320.5	285.6	278.4	278.5	274.0	260.9	276.3	289.0	285.0	280.9	331.7	416.0	558.3	740.3	316.0
Intentional																			
self-harm	0.2	0.2	78.8	431.1	284.8	220.4	215.9	206.8	201.7	177.9	116.2	81.7	51.5	39.9	34.0	32.2	26.1	17.4	148.9
Assault	20.5	6.7	14.9	80.3	106.0	109.5	116.8	98.8	70.5	51.3	22.7	15.8	13.7	7.3	7.6	11.3	13.7	11.1	53.0
Undetermined intent	5.7	1.7	9.5	57.6	45.9	36.7	29.3	27.2	23.8	23.5	14.4	11.8	10.0	7.3	8.9	8.3	9.8	7.2	21.7
<i>Total community injury<sup>(a)</sup></i>	1,277.0	1,124.3	950.6	1,401.7	1,240.3	1,045.0	994.8	973.3	936.9	942.4	934.6	1,059.6	1,151.2	1,423.2	2,009.1	3,300.1	5,644.4	9,697.4	1,372.1
Complications of medical & surgical care <sup>(b)</sup>	80.4	68.5	60.3	118.4	136.9	171.7	225.0	264.0	322.7	375.5	440.7	492.7	591.4	718.9	852.8	934.3	979.4	772.2	318.0
Residual groups	30.0	11.9	10.8	27.8	31.3	26.6	21.6	22.1	20.6	20.2	22.0	22.5	31.9	26.3	36.7	35.5	35.1	43.0	24.1
<b>Total injury</b>	<b>1,387.4</b>	<b>1,204.7</b>	<b>1,021.7</b>	<b>1,547.9</b>	<b>1,408.5</b>	<b>1,243.3</b>	<b>1,241.4</b>	<b>1,259.4</b>	<b>1,280.2</b>	<b>1,338.1</b>	<b>1,397.3</b>	<b>1,574.8</b>	<b>1,774.4</b>	<b>2,168.3</b>	<b>2,898.6</b>	<b>4,269.8</b>	<b>6,658.8</b>	<b>10,512.5</b>	<b>1,714.2</b>

Note: Age-standardised rates in this table may be slightly different to those in the body of the report due to the different age-groups used (i.e. 85+ here vs. 95+, where appropriate, in the report).

(a) Includes cases with principal diagnosis S00–T75 or T79 and first external cause describing complications of surgical and medical care.

(b) Excludes cases with principal diagnosis S00–T75 or T79 and first external cause describing complications of surgical and medical care.

**Table 11.3: Rates of hospitalised injury cases per 100,000 population to 85+ years: persons by external cause, Australia 2004–05**

	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+	Age std
Transportation	76.4	195.8	358.7	502.6	461.8	350.6	292.2	245.1	215.3	197.3	172.4	159.9	137.3	141.5	159.4	177.6	236.0	186.8	253.4
Drowning	16.8	2.9	1.5	2.5	1.8	1.1	1.0	1.0	0.6	0.8	1.2	0.8	1.0	1.2	1.4	0.7	0.5	0.7	2.3
Poisoning, pharmaceuticals	117.1	9.8	9.9	39.5	45.1	42.9	36.4	28.1	26.9	25.6	22.0	18.2	15.0	19.5	26.9	32.9	49.4	65.7	34.0
Poisoning, other substances	33.3	4.1	4.2	13.6	17.1	15.1	12.1	12.9	8.8	8.4	8.3	8.0	8.0	9.4	7.5	10.4	8.2	10.8	11.6
Falls	562.2	684.9	553.0	309.2	269.3	242.4	215.5	218.1	233.8	279.5	329.2	435.6	549.6	735.4	1,142.9	2,061.0	3,899.2	7,642.9	608.2
Fires, burns & scalds	109.4	25.3	25.7	28.7	28.5	25.6	23.6	19.4	20.8	17.1	15.3	13.6	11.7	17.8	15.6	17.1	21.2	26.9	27.2
Other unintentional	522.0	404.5	517.6	852.6	847.7	734.9	647.0	574.4	522.8	471.6	454.5	447.5	417.3	364.5	388.5	435.8	541.3	672.2	561.2
Intentional self-harm	0.7	0.2	46.1	273.6	225.7	199.4	189.9	180.5	166.7	142.5	94.7	70.1	45.6	34.6	31.7	37.6	31.1	27.6	118.9
Assault	19.9	7.6	25.0	205.6	273.2	218.8	190.9	166.8	118.7	83.6	50.6	34.4	25.7	13.4	13.7	12.9	14.0	11.2	102.2
Undetermined intent	5.4	2.7	7.1	40.6	42.9	37.4	32.8	27.7	23.2	20.2	12.2	10.0	8.6	6.7	7.7	8.5	8.7	10.5	20.0
<b>Total community injury<sup>(a)</sup></b>	<b>1,466.3</b>	<b>1,339.9</b>	<b>1,551.3</b>	<b>2,272.3</b>	<b>2,219.9</b>	<b>1,873.0</b>	<b>1,646.4</b>	<b>1,482.6</b>	<b>1,344.5</b>	<b>1,255.0</b>	<b>1,168.6</b>	<b>1,212.9</b>	<b>1,242.8</b>	<b>1,364.7</b>	<b>1,828.8</b>	<b>2,822.4</b>	<b>4,843.5</b>	<b>8,700.9</b>	<b>1,748.7</b>
Complications of medical & surgical care <sup>(b)</sup>	110.1	78.7	71.0	124.9	151.3	165.6	209.6	238.0	277.3	321.9	399.2	501.1	637.6	808.1	1,035.8	1,169.1	1,244.3	1,062.0	335.5
Residual groups	39.5	16.4	14.0	21.8	25.0	24.5	21.3	19.6	19.2	19.1	20.8	22.5	27.5	27.1	30.6	36.0	33.4	39.4	23.4
<b>Total injury</b>	<b>1,615.8</b>	<b>1,435.0</b>	<b>1,636.2</b>	<b>2,419.0</b>	<b>2,396.1</b>	<b>2,063.1</b>	<b>1,877.3</b>	<b>1,740.1</b>	<b>1,641.0</b>	<b>1,596.0</b>	<b>1,588.6</b>	<b>1,736.5</b>	<b>1,907.9</b>	<b>2,199.9</b>	<b>2,895.2</b>	<b>4,027.4</b>	<b>6,121.1</b>	<b>9,802.3</b>	<b>2,107.6</b>

Note: Age-standardised rates in this table may be slightly different to those in the body of the report due to the different age-groups used (i.e. 85+ here vs. 95+, where appropriate, in the report)

a Includes cases with principal diagnosis S00–T75 or T79 and first external cause describing complications of surgical and medical care

b Excludes cases with principal diagnosis S00–T75 or T79 and first external cause describing complications of surgical and medical care



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# AIHW

This report presents national statistics on injuries that resulted in admission to hospitals in Australia. It includes cases discharged during the year to 30 June 2005.

Unintentional falls, transport-related injury, intentional self-harm and assault are common causes of hospitalised injury in the Australian community. Injuries due to these and other causes are described, in terms of case numbers and rates, by age and sex, place of usual residence, length of stay in hospital and other characteristics. Injuries sustained while working for income or while engaged in sporting activities are also described.

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

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