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Hospital separations due to injury and poisoning, Australia 2003–04

Jesia Berry, James Harrison

AIHW

Hospital separations due to injury and poisoning, Australia 2003–04

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Hospital separations due to injury and poisoning, Australia 2003–04

Jesia Berry
and
James E Harrison

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Any enquiries about or comments on this publication should be directed to:

Jesia Berry
Research Centre for Injury Studies
Flinders University of South Australia
GPO Box 2100,
Adelaide 5001, South Australia

Phone: (08) 8201 7602
Email: Jesia.Berry@flinders.edu.au

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Executive summary

Overview

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

During the period 1 July 2003 to 30 June 2004, there were 449,607 hospital separations with a Principal Diagnosis in the ICD-10-AM range S00–T98 of *Injury, poisoning and certain other consequences of external causes*, which constitutes 6.6% of all hospital separations. These cases are considered in two categories; *Community injury* (*n*=372,533) and *Complications of surgical and medical care* (*n*=72,549) (Table 1). Residual separations that had a Principal Diagnosis in the ICD-10-AM range S00–T98 but that do not fit into these categories are considered briefly (*n*=4,525).

Table 1: Major causes of injury hospitalisation in 2003–04

Major causes of injury hospitalisation[(a)]	Number of separations[(a)]	Percentage of all separations (n=6,841,192)	Estimated cases[(b)]	Rate per 100,000 population[(c)]
Community injury	372,533	5.4%	344,849	1,717.0
Complications of surgical and medical care	72,549	1.1%	67,518	331.3

(a) 4,525 injury separations do not fit into either of these categories.
(b) Omits inward transfers from acute hospitals.
(c) Age-standardised to the ABS estimated resident population in 2001.

Community injury accounted for 372,533 separations and 1.4 million patient days at an average of 4.1 days per episode. *Complications of surgical and medical care* as defined in this report, accounted for 72,549 separations and 437,492 patient days at an average of 6.5 days per episode.

An approximate estimate of incident injury cases in one year was derived by omitting separations that were transfers from another acute-care hospital. There were an estimated 416,808 incident injury cases in 2003–04 (*Community injury n*=344,849; *Complications of surgical and medical care n*= 67,518; residual groups *n*=4,441). The age-standardised rate of *Community injury* was 1,717 episodes per 100,000 persons. The age-standardised rate of *Complications of surgical and medical care* was 331 episodes per 100,000 persons.

Table 2: Community injury

Major causes of Community injury hospitalisation	Number of separations	Total patient days	Percentage of all Community injury separations	Estimated cases[(a)]	Rate per 100,000 population[(b)]	Ranking[(c)]
Intentional						
Self-harm	24,087	61,220	6.5	22,950	115.4	3
Assault	20,537	45,832	5.5	19,325	97.5	4
Undetermined intent	3,005	6,435	0.8	2,902	14.6	7
Unintentional						
Falls	135,619	761,601	36.4	123,461	605.1	1
Transportation	53,696	219,966	14.4	48,511	243.6	2
Poisoning, pharmaceuticals	7,902	16,261	2.1	7,611	38.4	5
Poisoning, other substances	2,804	4,732	0.8	2,672	13.5	8
Fires, burns and scalds	5,819	27,383	1.6	5,117	26.0	6
Drowning	546	1,158	0.2	494	2.5	9
Other unintentional	116,325	241,036	31.2	109,805	550.6	–
Other/missing	2,193	15,693	0.6	2,001	9.8	–
Total	**372,533**	**1,401,317**	**100.0**	**344,849**	**1,717.0**	**–**

(a) Omits inward transfers from acute hospitals.
(b) Age-standardised to the ABS Estimated Resident Population in 2001.
(c) Based on the number of separations.

Community injury

The most commonly reported identifiable cause of *Community injury* was unintentional falls which accounted for 36% of all injury cases in 2003–04 (Table 2 and Figure 1) and took up the greatest number of patient days (54%; *n*=761,601) with an average length of stay of 6 days. Transport-related injuries were the second highest group accounting for 14% of all injury cases and 17% of patient days (*n*=219,966), with an average length of stay of 5 days.

The third leading cause of injury was intentional self-harm, which accounted for 7% of injury cases and 4% of patient days (*n*=61,220). Ranked fourth was assault, which accounted for 6% of injury cases and 3% of patient days (*n*=45,832). Intentional self-harm and assault had an average length of stay of 3 and 2 days, respectively.

The fifth and sixth ranked leading causes of injury were poisoning by pharmaceuticals (2% of injury cases) and fires burns and scalds (2% of injury cases), which accounted for 1% (*n*=16,261) and 2% of patient days (*n*=27,383), respectively. The length of stay for poisoning by pharmaceuticals was short, with an average stay of 2 days. Fires, burns and scalds injury contributed more patient days than poisoning by pharmaceuticals, mainly because such injuries require a longer length of stay, with an average stay of 5 days.

Falls

Nearly half of unintentional fall injuries occurred in people aged 65 years and over (49%) (Table 3). Fairly even numbers of males and females were injured by unintentional falls, but nearly three times as many elderly females aged 65+ years sustained a fall injury compared with elderly males aged 65+ years. The highest rate of fall injuries occurred in females aged 85 years and over, with an age-specific rate of 8,803 per 100,000. The rate in males aged 85 years and over was 5,531 per 100,000.

Table 3: Fall cases by age group, Australia, 2003–04

	Males		Females		Persons	
Age group	**Count**	**%**	**Count**	**%**	**Count**	**%**
0–14 years	14,731	27.0	9,475	13.8	24,206	19.6
15–24 years	6,139	11.2	1,830	2.7	7,969	6.5
25–44 years	8,432	15.4	4,566	6.6	12,998	10.5
45–64 years	8,551	15.7	9,240	13.4	17,791	14.4
65+ years	16,779	30.7	43,718	63.5	60,497	49.0
Total	**54,632**	**100.0**	**68,829**	**100.0**	**123,461**	**100.0**

Fracture of the limbs accounted for half of all unintentional fall injuries; the most common fractures involved the forearm and the femur, 18% and 16% of all fall injuries, respectively. The most commonly identified mechanism was falling due to slipping, tripping and stumbling on the same level (26% of all fall injuries) and occurred most frequently in older people aged 65 years and over (17% of all fall injuries). The mean length of stay due to fall injuries for older people aged 65 years and over was 10 days.

Age-standardised rates of hospitalised fall injuries changed little in recent years; rates were 602 per 100,000 population in 1999–00 and 605 per 100,000 population in 2003–04. A slight increase in age-standardised rates of fall injuries was observed in older people aged 65 years and over; from 2,218 per 100,000 in 1999–00 up to 2,301 per 100,000 in 2003–04.

Transportation

Almost 60% of transport-related injuries occurred to people aged 15–44 years and males comprised 68% of transport-related injury cases (Table 4). The highest rate of transport-related injuries occurred in males aged 15–19 years, with an age-specific rate of 680 per 100,000—over twice the rate in females aged 15–19 years (299 per 100,000).

Table 4: Transportation cases by age group, Australia, 2003–04

	Males		Females		Persons	
Age group	**Count**	**%**	**Count**	**%**	**Count**	**%**
0–14 years	5,668	17.1	2,521	16.4	8,191[(a)]	16.9
15–24 years	9,216	27.8	3,619	23.5	12,835	26.5
25–44 years	11,123	33.6	4,241	27.5	15,364	31.7
45–64 years	4,948	15.0	2,820	18.3	7,768	16.0
65+ years	2,150	6.5	2,203	14.3	4,353	9.0
Total	**33,105**	**100.0**	**15,404**	**100.0**	**48,511[(a)]**	**100.0**

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

Most transport-related injuries occurred on land (97%; *n*=47,212) and 38% of the injured were car occupants, 23% were motorcyclists, 17% were pedal cyclists, 8% were pedestrians and 14% were other vehicles. The 5 most common mechanisms of injury were 1) a collision of a car with a car, pick-up truck or van (16% of land transport cases), 2) a motorcycle in a non-collision transport accident (11%), 3) a collision of a car with a fixed or stationary object (9%), 4) a pedal cyclist in a non-collision transport accident (9%), and 5) a car in a non-collision transport accident (8%). Accidents which occurred on a public highway (i.e. traffic) accounted for 62% of land transport accidents and the most frequent mode of transport of the injured person was a car (55%) followed by a motorcycle (38%). For non-traffic accidents (27% of land transport), the most frequent mode of transport was a motorcycle (38%), followed by a pedal cycle (31%). Of the accidents designated as unspecified as to whether traffic or non-traffic (11% of land transport) the majority (58%) involved an animal rider or occupant of an animal-drawn vehicle and nearly 80% were injured riders who had fallen or were thrown from a horse in a non-collision accident.

Age-standardised rates for car occupants declined from 195 per 100,000 of the population in 1999–00 to 184 per 100,000 in 2003–04. Rates for motorcyclists increased from 96 per 100,000 in 1999–00 to 107 per 100,000 in 2003–04. Pedal cyclists rates remained stable over time (79 per 100,000 in 1999–00 and 79 per 100,000 in 2003–04) and rates for pedestrians declined from 24 per 100,000 in 1999–00 to 19 per 100,000 in 2003–04.

Intentional self-harm

Three-quarters of intentional self-harm cases were aged from 15–44 years (28% were aged 15-24 years and 47% were aged 25–44 years) (Table 5). Females constituted 62% of intentional self-harm cases. The highest rate of intentional self-harm occurred among women aged 15–19 years, with an age-specific rate of 397 per 100,000—over three times the rate in males aged 15–19 years (122 per 100,000).

Table 5: Intentional self-harm cases by age group, Australia, 2003–04

	Males		Females		Persons	
Age group	**Count**	**%**	**Count**	**%**	**Count**	**%**
0–14 years	118	1.4	475	3.3	593	2.6
15–24 years	2,005	23.0	4,421	31.1	6,426	28.0
25–44 years	4,567	52.4	6,224	43.7	10,791	47.0
45–64 years	1,643	18.8	2,646	18.6	4,289	18.7
65+ years	389	4.5	462	3.3	851	3.7
Total	**8,722**	**100.0**	**14,228**	**100.0**	**22,950**	**100.0**

The mechanism for 84% of intentional self-harm was self-poisoning, and nearly twice as many females as males used this method. The drugs most commonly involved in self-poisoning were benzodiazepines (20% of self-harm cases), 4-aminophenol derivatives such as paracetamol (15% of self-harm cases), and other and unspecified antidepressants—likely to be selective serotonin reuptake inhibitors (10% of self-harm cases). The second most common mechanism was self-harm with a sharp object (12% of self-harm cases) and half of these involved an open wound of the wrist, hand or forearm.

Age-standardised rates for intentional self-harm increased in recent years from 106 per 100,000 of the population in 1999–00 to 115 per 100,000 in 2003–04. The increase in intentional self-harm was mainly attributable to female cases; female age-standardised rates increased from 125 per 100,000 in 1999–00 to 144 per 100,000 in 2003–04, whereas male rates stayed relatively constant (87 per 100,000 in 1999–00 and 88 per 100,000 in 2003–04).

Assault

The majority (82%) of assault cases were aged from 15–44 years (32% were aged 15-24 years and 50% were aged 25–44 years). Males constituted 73% of assault cases. The highest rate of assault occurred among men aged 20–24 years, with an age-specific rate of 402 per 100,000—close to four times the rate in women aged 20–24 years (112 per 100,000).

The most common mechanism of injury for males was assault by bodily force (57%), or assault by a sharp or blunt object (25%). For males, the perpetrator responsible for about 60% of assault cases was a person unknown to the male, multiple persons unknown to the male or an acquaintance or friend. Females were most commonly injured by bodily force (51%) or assault by a sharp or blunt object (25%). Other maltreatment syndromes such as physical or sexual abuse, or torture and sexual assault by bodily force accounted for 5% and 3% of female assault cases, respectively. For females, the perpetrator responsible for about 60% of assault cases was their spouse or domestic partner.

Age-standardised rates for assault were 98 per 100,000 of the population in 1999–00 and 98 per 100,000 in 2003–04 with a slight increase in intervening years. For each year, age-standardised rates for males were about three times higher than for females. The Northern Territory had assault rates 5.5 times above the national rate.

Poisoning by pharmaceuticals

Over half of poisoning by pharmaceuticals occurred in young children aged 0–4 years (21%) and adults aged 24–44 years (31%). Fairly even numbers of males and females were poisoned by pharmaceuticals. The highest age-specific rate of poisoning by pharmaceuticals occurred in young children aged 0–4 years (134 per 100,000 in boys and 125 per 100,000 in girls) and rates were much lower in older children aged 5–14 years whom accounted for only 4% of poisoning by pharmaceutical cases.

The drugs most commonly involved in poisoning by pharmaceuticals were benzodiazepines (16% of poisoning by pharmaceutical cases) and 4-aminophenol derivatives such as paracetamol (11% of poisoning cases).

Age-standardised rates for poisoning by pharmaceuticals decreased in recent years from 50 per 100,000 of the population in 1999–00 to 38 per 100,000 in 2003–04, and the decrease was observed for both sexes; male rates decreased from 50 per 100,000 in 1999–00 to 37 per 100,000 in 2003–04 and female rates decreased from 49 per 100,000 in 1999–00 to 40 per 100,000 in 2003–04. The decline was mainly attributable to a reduction in poisonings among adults aged 15–44 years from narcotics and hallucinogens and drugs classified as *antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic* (which includes benzodiazepines and other antidepressants).

Fires, burns and scalds

Nearly 40% of fires, burns and scalds injury occurred in children aged 0–14 years (28% were young children aged 0–4 years) and 23% occurred in adults aged 25–44 years. Two-thirds of fires, burns and scalds injury cases were male. The highest age-specific rate of fires, burns and scalds injury occurred in young children aged 0–4 years (133 per 100,000 in boys and 89 per 100,000 in girls) and rates were much lower in older children aged 5–14 years whom accounted for 12% of fires, burns and scalds injury.

The most common mechanism of injury was from contact with hot drinks, food, fats and cooking oil (22% of cases) followed by contact with other hot fluids e.g. water heated on a stove (15%) and exposure to ignition of highly flammable material (e.g. gasoline, kerosene, petrol) (13%). Burns of the wrist and hand were the most common injuries, followed by burns of the head and neck.

A slight decline in age-standardised rates for fires, burns and scalds injury occurred in recent years from 28 per 100,000 of the population in 1999–00 to 26 per 100,000 in 2003–04. The decrease was mainly attributable to male cases; male age-standardised rates declined from 38 per 100,000 in 1999–00 to 34 per 100,000 in 2003–04, whereas female rates stayed relatively constant (18 per 100,000 in 1999–00 and 18 per 100,000 in 2003–04).

Community injury rates in Victoria and South Australia were similar to the age-standardised national rate, but rates were lower in New South Wales, Western Australia, Tasmania and the Australian Capital Territory. The Northern Territory and Queensland had rates that exceeded the national average. A different state and territory profile was observed for each of the major groups of injury and poisoning.

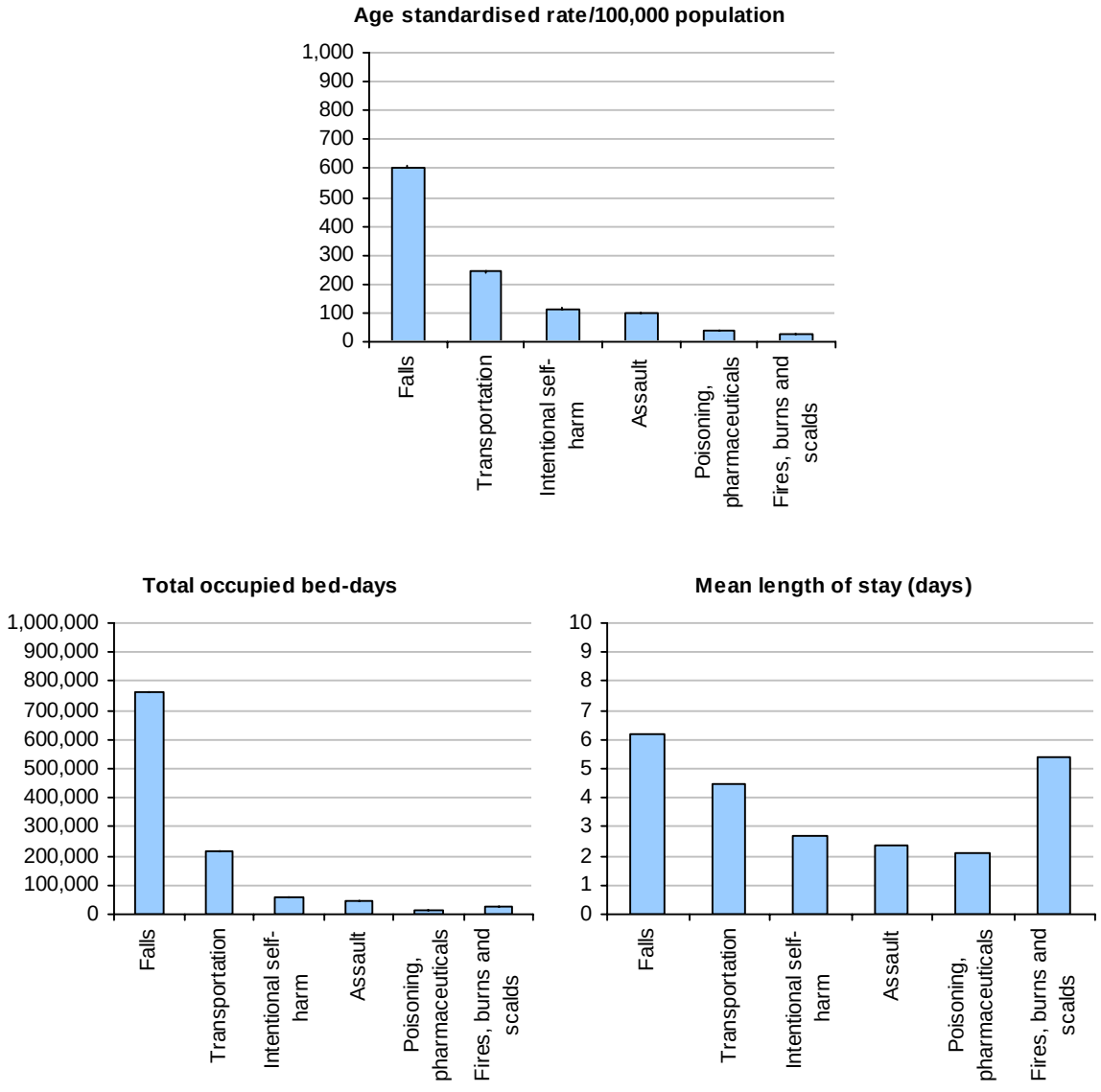


Figure 1: Summary of key indicators for the top 6 causes of injury and poisoning, Australia, 2003–04

Complications of surgical and medical care

One per cent of hospital separations in 2003–04 were associated with a *Complication of surgical and medical care,* as defined in this report. This is likely to be an underestimate, as adverse events that are not explicitly described or recorded in hospital medical records will usually not be ascribed the ICD-10-AM codes specified in this report. The method used in this report to describe adverse events uses different specifications from those used by the Australian Institute of Health and Welfare (AIHW) in Australian Hospital Statistics 2003–04, which can be expected to result in lower estimates than in that publication. The most commonly reported adverse events were an infection following a procedure (20% of all adverse events), a haemorrhage or haematoma (12%) and a mechanical complication of an internal joint prosthesis (8%). Of the adverse events described above, 93% resulted from a surgical operation or other surgical procedure, without mention of misadventure at the time of the procedure.

Abbreviations used

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

1 Introduction

This report uses data for hospital separations due to injury and poisoning that occurred in Australia during 2003–04 (1st of July 2003 to 30th June, 2004) to describe the occurrence of hospitalised injury in Australia. It follows on from the previous in the series which examines hospitalised injury in Australia during 2001–02 (Berry & Harrison 2006). Hospitalised injury is described according to major types of injury and poisoning and detailed analysis of the external causes of injury is undertaken.

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

Hospital separations data

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

> A formal, or statistical process, by which an episode of care for an admitted patient ceases (Australian Institute of Health and Welfare 2001).

Hospital separations reported here were coded according to the 3rd edition of ICD-10-AM (National Centre for Classification in Health 2002).

Selecting injury and poisoning cases

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

- Australian hospital separations occurring July 1st, 2003 to June 30th, 2004; and
- Principal Diagnosis in the ICD-10-AM range S00–T98 using Chapter XIX *Injury, poisoning and certain other consequences of external causes* codes.

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

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

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

Since Australian hospital separations records should include a Principal Diagnosis code and, for 2003–04, could include up to 50 Additional Diagnosis codes, *Community injury* and *Complications of surgical and medical care* can be specified in various ways.

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

We have used Principal Diagnosis as the basis of case inclusion (Table 1.1). The case selection criteria used in this report has the effect of almost completely restricting the cases included to the acute care type (99.4% of *Community injury*, 99.1% of *Complications of surgical and medical care* and 99.9% of *residual groups*).

Table 1.1: Selection criteria for cases due to injury and poisoning, Australia, 2003–04

Selection criteria [a]	Males	Females	Persons
Community injury (ICD-10-AM Principal Diagnosis range S00–T75, T79), and			
• lack any external cause code	218	143	361
• have a first reported external cause code of *Complications of surgical and medical care*	787	853	1,640
• have a first reported external cause code in the range V01–Y36, Y85–Y87, Y89	199,056	143,789	342,848[b]
Total case numbers for *Community injury*	**200,061**	**144,785**	**344,849[b]**
Complications of surgical and medical care (ICD-10-AM Principal Diagnosis range T80–T88), and			
• lack any external cause code	47	53	100
• have a first reported external cause code of *Community injury*	188	169	357
• have a first reported external cause in the range Y40–T84, Y88	34,052	33,009	67,061
Total case numbers for *Complications of surgical and medical care*	**34,287**	**33,231**	**67,518**
Case numbers where Principal Diagnosis is in ICD-10-AM Chapter XIX *Injury and poisoning* but is not classified as *Community injury* or *Complications of surgical and medical care*	**2,141**	**2,300**	**4,441**
All cases with Principal Diagnosis in the ICD-10-AM range S00–T98	**236,489**	**180,316**	**416,808[c]**

(a) Omits inward transfers from acute hospitals.
Includes (b) 3, and (c) 3 separations for which sex was not reported.

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

Developments

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

Profiles of priority injury areas

The National Injury Prevention and Safety Promotion Plan: 2004 Onwards has identified 7 national injury prevention areas for action (Strategic Injury Prevention Partnership 2005; Pointer et al. 2003); children (0–14 years), youth and young people (15–24 years), adults (25–64 years), older people (65+ years), Aboriginal and Torres Strait Islander people, rural and remote populations, and alcohol and injury. Where appropriate, results have been presented to highlight the impact of injury on the targeted age groups. Aboriginal and Torres Strait Islander cases are not distinguished in this report, largely because limitations of identification of Indigenous status necessitate a special approach. Injury among Aboriginal and Torres Strait Islander Australians is the subject of separate reports (Helps & Harrison 2004; Helps & Harrison 2006). Results for rural and remote populations, according to the Australian Standard Geographical Classification (ASGC) remoteness structure, were presented in the previous report in this series (Berry & Harrison 2006). The contribution of alcohol to hospitalised injury in Australia is not considered in this report as it is not yet possible to assess the alcohol-relatedness of this data with adequate reliability (Pidd et al. 2006).

Trends in injury rates

Valid reporting of trends over time in hospitalised injury is not easy to achieve. By the end of the financial year 1999–00, all jurisdictions had progressed from ICD-9-CM to ICD-10-AM as the basis for classifying diagnoses and external causes of injury. There are some inconsistencies between the two classification systems that limit comparability of major groups of injury. There is potential for variation over time in admission practice, especially for lower severity cases, and changes over time in the coding of external causes (Harrison & Steenkamp 2002).

2 Community injury, Australia

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79

2.1 All injury hospitalisations

Table 2.1.1: Key indicators for cases due to all external causes of injury and poisoning, Australia, 2003–04

Indicator	Males	Females	Persons
All hospital separations	3,194,681	3,646,434	6,841,192[(a)]
Separations from hospital due to injury and poisoning	215,840	156,690	372,533[(b)]
Percentage of all separations	6.8	4.3	5.4
Estimated cases*	200,061	144,785	344,849[(b)]
Crude rate/100,000 population	2014.3	1440.6	1725.8
Age-standardised rate/100,000 population	2042.0	1356.0	1717.0
Total patient days	667,292	734,022	1,401,317[(c)]
Mean length of stay (days)	3.3	5.1	4.1

Includes (a) 77 separations and (b) 3 separations and (c) 3 patient days for which sex was not reported.

* Omits inward transfers from acute hospitals.

Overview

For public and private hospitals combined, *Injury, poisoning and certain other consequences of external causes* ranked fifth in the number of separations after *Factors influencing health status and contact with health services*, *Diseases of the digestive system*, *Neoplasms*, and *Pregnancy, childbirth and the puerperium* (Australian Institute of Health and Welfare 2005).

In 2003–04, injury and poisoning due to external causes accounted for 372,533 hospital separations, 5.4% of a total of 6,841,192 hospital separations from public, private and psychiatric hospitals in Australia (Table 2.1.1) (Australian Institute of Health and Welfare 2005). There were an estimated 344,849 incident injury cases in 2003–04. Injury and poisoning due to external causes accounted for 1.40 million patient days, at an average of 4.1 days per episode (Table 2.1.1).

The six most commonly reported identifiable causes of injury were:

1. Falls (36%)
2. Transportation (14%)
3. Intentional self-harm (7%)
4. Assault (6%)
5. Poisoning, pharmaceuticals (2%)
6. Fires, burns and scalds (2%)

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

Many injury cases are likely to be included in both the NHMD and national mortality unit record data collection. Patients who sustain severe injuries may die rapidly and may not reach hospital or die in the Emergency Department (ED), prior to admission. Such injury cases may be omitted from hospital separations data, but will be captured in the national mortality database. Difficulties in differentiating between severe and fatal injuries complicate measurement of the extent of overlap between the NHMD and national mortality database.

The method used here is slightly different from that used in the previous report in this series (Berry & Harrison 2006) in that cases with a Principal Diagnosis of S00–T75, T79 are included in Table 2.1.1, even if they lack an external cause or have a first reported external cause code of Complications of surgical and medical care (Table 1.1). Cases so defined were excluded from analyses in the previous report (*n*=6,956 in 2001–02) but are included here (*n*=2,001 in 2003–04). These cases constitute a small proportion of Community injury (2% in 2001–02 and 0.6% in 2003–04). There is some difficulty in determining how to treat these cases as they meet the Principal Diagnosis definition of Community injury but lack a meaningful external cause which necessitates coding of these cases as 'other/missing' for analysis of external cause.

Age and sex distribution

The age and sex profile of community injury in 2003–04 was almost identical to 2001–02 (Berry & Harrison 2006) (Figure 2.1.1). Male age-specific rates were higher than for females until the age of 65 years, after which females rates overtook males. Male age-specific rates increased in the teens, peaked in the early 20s and declined until 65 years of age. The pattern differed for females; there was a small peak in the late teens, after which age-specific rates were relatively constant up to 65 years of age. For both sexes, a steep increment occurred from 70+ years, peaking in the 85+ age group (M:F rate ratio of 0.7:1).

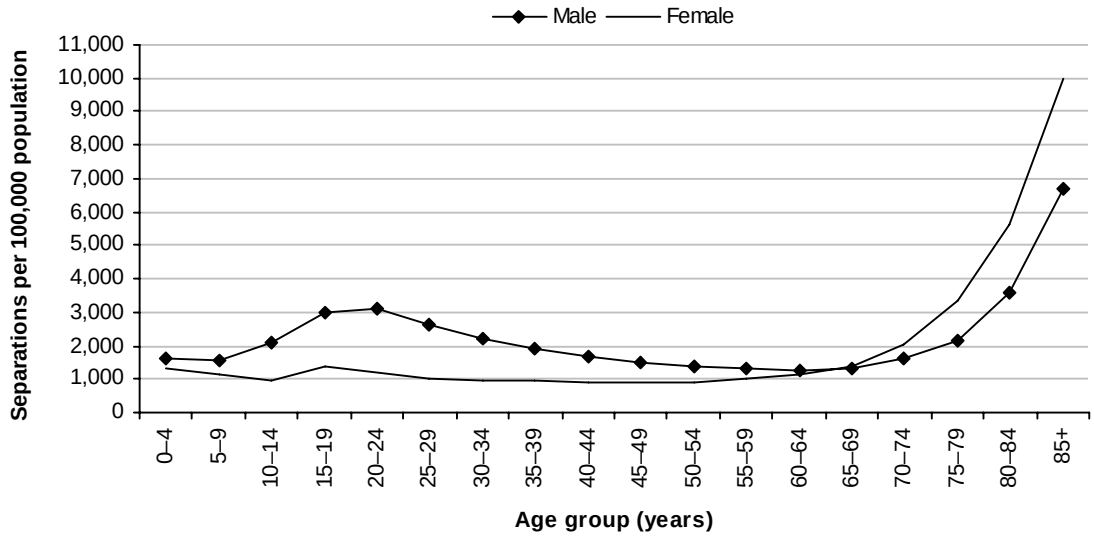


Figure 2.1.1: Age-specific hospital separation rates for all external causes of injury and poisoning by sex, Australia, 2003–04

The percentage of injury and poisoning hospitalisations attributed to the age groups identified in the National Injury Prevention and Safety Promotion Plan: 2004–2014 (Strategic Injury Prevention Partnership 2005) were 17% (*n*=58,085) for children aged 0–14 years, 17% (*n*=59,806) for youth and young adults aged 15–24 years, 42% (*n*=146,393) for adults aged 25–64 years and 23% (*n*=80,565) for older people aged 65 years and over (Table 2.1.2).

Table 2.1.2: Case counts by age group for all external causes of injury and poisoning, Australia, 2003–04

	Age group (years)						
External cause	**0–4**	**5–14**	**15–24**	**25–44**	**45–64**	**65+**	**Total**
Intentional							
Intentional self-harm	8	585	6,426	10,791	4,289	851	22,950
Assault	287	457	6,170	9,693	2,362	356	19,325
Undetermined intent	63	112	813	1,303	487	124	2,902
Unintentional							
Falls	6,921	17,285	7,969	12,998	17,791	60,497	123,461
Transportation	941	7,250	12,835	15,364	7,768	4,353	48,511
Poisoning, pharmaceuticals	1,636	283	1,410	2,347	1,091	844	7,611
Poisoning, other substances	558	174	460	772	486	222	2,672
Fires, burns, scalds	1,415	618	795	1,180	703	406	5,117
Drowning	227	64	56	56	59	32	494
Other unintentional injuries	6,512	12,563	22,715	35,212	20,891	11,912	109,805
Other/missing	40	86	157	316	434	968	2,001
Total	**18,608**	**39,477**	**59,806**	**90,032**	**56,361**	**80,565**	**344,849**

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

State and territory differences

Victoria and South Australia has similar rates of all external causes of injury and poisoning to the national age-standardised rate (Figure 2.1.2 and Table 2.1.3). New South Wales, Western Australia, Tasmania and the Australian Capital Territory had rates lower than the national rate. Queensland and the Northern Territory had rates that were higher than the national rate. *State of residence not reported* was only 0.8% (*n*=2,599) and 0.1% (*n*=310) were from *Other Territories*. The *Other Territories* consist of the Cocos and Keeling Islands, Christmas Island and Jervis Bay.

Table 2.1.3: Age-standardised rates of all external causes of injury and poisoning, states and territories, 2003–04

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI
NSW	1,658	1,649–1,668
Vic	1,707	1,695–1,718
Qld	1,837	1,824–1,851
WA	1,566	1,548–1,584
SA	1,725	1,704–1,745
Tas	1,583	1,547– 1,619
ACT	1,305	1,264–1,345
NT	2,490	2,409–2,571
Australia	**1,717**	**1,711–1,723**

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

Figure 2.1.2: Age-standardised rates of all external causes of injury and poisoning, states and territories, 2003–04

Major types of injury

Falls constituted the largest proportion of injury hospitalisations, and accounted for 87% of hospitalisation in those aged 85+ years (Figure 2.1.3). Transport emerged in early adolescent years as responsible for one-fifth of injury hospitalisations and remained a substantial contributor up to and including 25–29 years, thereafter gradually declining to 2% of injury hospitalisations in the 85+ age group. Intentional self-harm was a lesser cause of injury, constituting to about 10% of injury hospitalisation in each age group from 15–19 years up to and including 45–49 years. Assault accounted for about 10% of injury hospitalisations in each age group from 15–19 years up to and including 40–44 years. Poisoning by pharmaceuticals and fires, burns and scalds were most prevalent in children aged 0–4 years, comprising 9% and 8%, respectively of injury hospitalisations in 0–4 year olds.

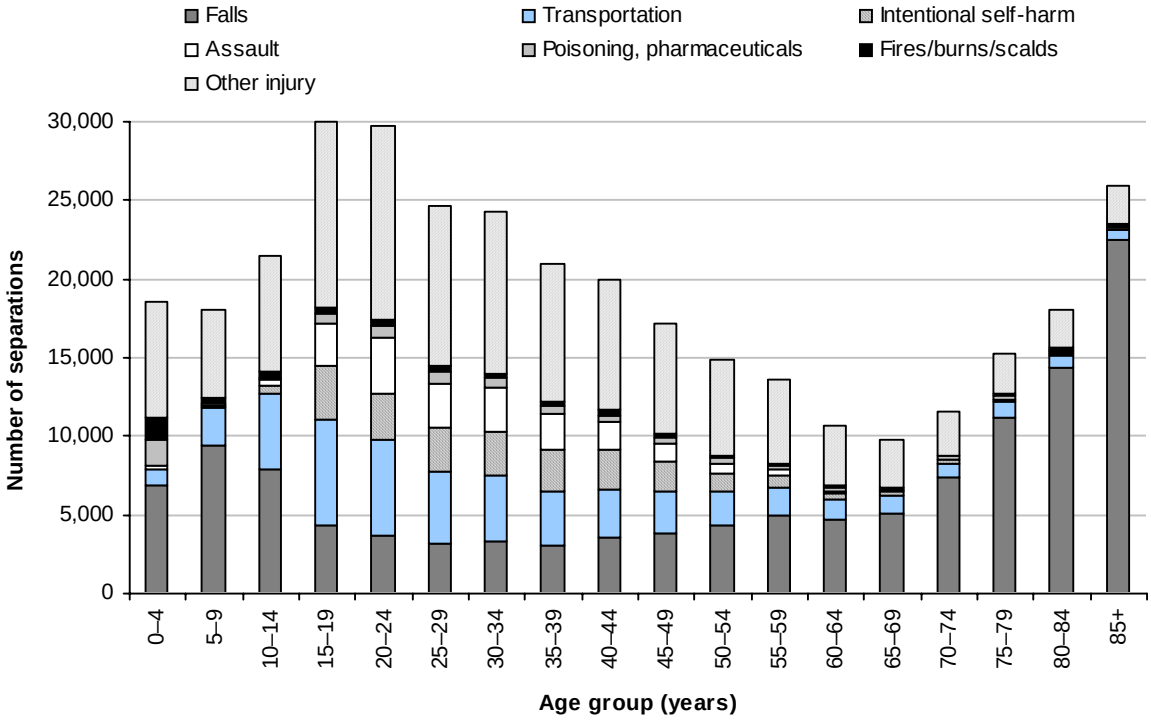


Figure 2.1.3: Age distribution of cases for selected major causes of injury, Australia, 2003–04

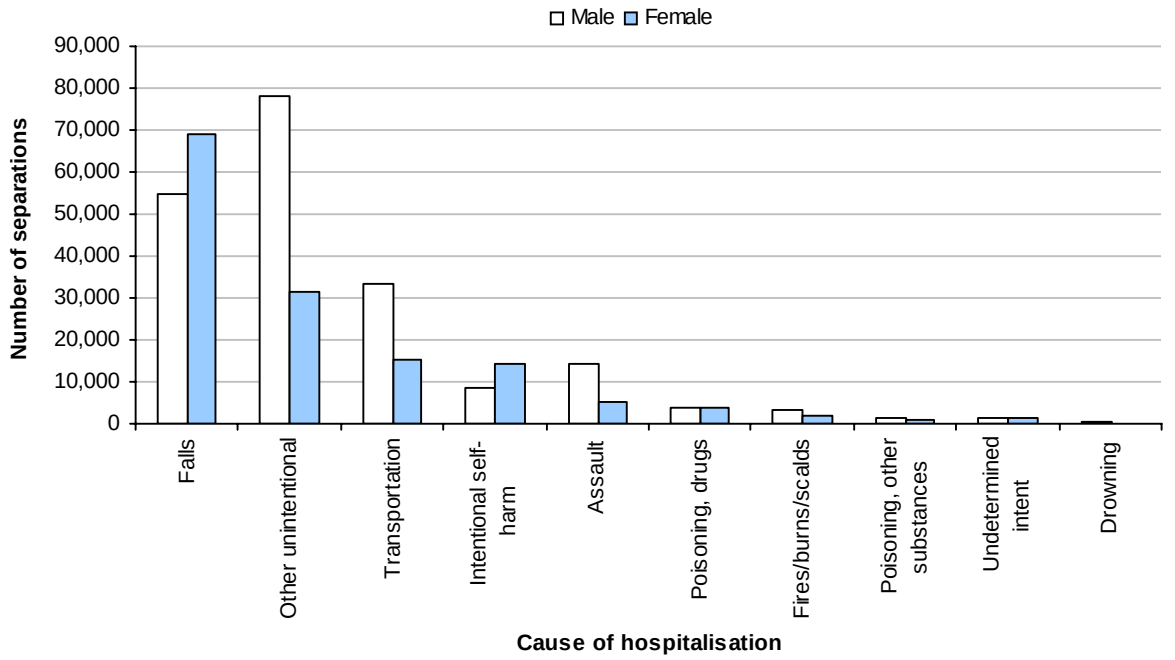


Figure 2.1.4: Major causes of injury by gender, Australia, 2003–04

The gender distribution differed according to external cause (Figure 2.1.4). The only external causes of injury where there were more females than males were for falls and intentional self-harm (see Table 2.11.3).

The *Community injury* category with the largest number of cases after falls was other unintentional injuries. This was a heterogenous category; it contained a large proportion of work- and sports-related injuries, but not all of them. Consistent with the previous report in this series (Berry & Harrison 2006), other unintentional injuries is retained as the subject of one chapter instead of attempting to separate it into its component injury groups, which creates more problems than it solves.

Body part

Body part is classified here and in similar tables elsewhere in this report according to Principal Diagnosis. If a patient is admitted due to injury and has injuries to more than one body part, then the most seriously injured is normally coded as Principal Diagnosis and others as Additional Diagnoses. Shoulder and upper limb was the most commonly injured body region overall and in particular, for males. Hip and lower limb was the most commonly injured body region for females followed closely by shoulder and upper limb (Table 2.1.4).

Table 2.1.4: Principal Diagnosis by body region and sex for all external causes of injury and poisoning, Australia, 2003–04

Principal Diagnosis by body region	Males		Females		Persons	
	Count	Per cent	Count	Per cent	Count	Per cent
Head	40,640	20.3	20,846	14.4	61,487[(a)]	17.8
Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis)	21,741	10.9	18,324	12.7	40,065	11.6
Shoulder and upper limb	68,461	34.2	37,661	26.0	106,123[(a)]	30.8
Hip and lower limb	41,807	20.9	40,143	27.7	81,950	23.8
Other injuries not specified by body region	27,412	13.7	27,811	19.2	55,224[(a)]	16.0
All body regions	**200,061**	**100.0**	**144,785**	**100.0**	**344,849[(b)]**	**100.0**

Includes (a) 1 and (b) 3 separations for which sex was not reported.

Length of stay

Patient days is the number of full and partial days a patient was in hospital if they separated from hospital during the reporting period, and is summed for all patients to give an aggregate of the length of stay (LOS). Re-admissions, transfers and newly admitted cases are included in the calculation of LOS, but only estimated cases are included in the estimation of case counts (as a best available approximation of newly admitted cases). One patient day is counted for same day patients (admitted and discharged from hospital on the same day). LOS provides an approximate indication of case severity, that is, severe injuries are more likely to result in longer episodes of care than minor injuries. The mean length of stay (MLOS) is the average number of days each patient stays in hospital. This is calculated by dividing the total number of patient days for a reporting period (including inward transfers) by the estimated number of actual cases for the same period. Table 2.1.5 presents an aggregate estimate of LOS and MLOS.

Table 2.1.5: Length of stay for all external causes of injury and poisoning: case counts, length of stay, percentage of total patient days for acute care of injury and mean length of stay, Australia, 2003–04

External cause	Males				Females				Persons			
	Count	LOS	Per cent	MLOS	Count	LOS	Per cent	MLOS	Count	LOS	Per cent	MLOS
Intentional												
Intentional self-harm	8,722	26,550	4.0	3.0	14,228	34,670	4.7	2.4	22,950	61,220	4.4	2.7
Assault	14,201	33,110	5.0	2.3	5,124	12,722	1.7	2.5	19,325	45,832	3.3	2.4
Undetermined intent	1,280	3,189	0.5	2.5	1,622	3,246	0.4	2.0	2,902	6,435	0.5	2.2
Unintentional												
Falls	54,632	265,643	39.8	4.9	68,829	495,958	67.6	7.2	123,461	761,601	54.4	6.2
Transportation	33,105	149,109	22.4	4.5	15,404	70,855	9.7	4.6	48,511[(a)]	219,966[(a)]	15.7	4.5
Poisoning, pharmaceuticals	3,613	7,582	1.1	2.1	3,998	8,679	1.2	2.2	7,611	16,261	1.2	2.1
Poisoning, other substances	1,645	3,048	0.5	1.9	1,027	1,684	0.2	1.6	2,672	4,732	0.3	1.8
Fires, burns, scalds	3,390	17,805	2.7	5.3	1,727	9,578	1.3	5.5	5,117	27,383	2.0	5.4
Drowning	312	834	0.1	2.7	182	324	0.0	1.8	494	1,158	0.1	2.3
Other unintentional injuries	78,156	153,309	23.0	2.0	31,648	87,726	12.0	2.8	109,805[(b)]	241,036[(b)]	17.2	2.2
Other/missing	1,005	7,113	1.1	7.1	996	8,580	1.2	8.6	2,001	15,693	1.1	7.8
Total	**200,061**	**667,292**	**100.0**	**3.3**	**144,785**	**734,022**	**100.0**	**5.1**	**344,849[(c)]**	**1,401,317[(c)]**	**100.0**	**4.1**

Includes (a) 2, (b) 1 and (b) 3 separations and patient days where sex was not reported.
Note: Shaded areas indicate three highest figures for each column.

The MLOS in 2003–04 for injury and poisoning was 4.1 days (1,401,317 patient days for 344,849 estimated cases). Discharge occurred on the same day of admission for 36% (*n*=123,451) of these injury cases. Excluding same day cases and re-admissions and transfers, the total number of patient days was 1,275,292 for 221,398 injury cases, resulting in an MLOS of 5.8 patient days per injury case. About 26% of admitted patients had a stay of 3 days or more (*n*=89,124; see Table 2.1.6).

Table 2.1.6: Length of stay for all external causes of injury and poisoning, Australia, 2003–04

Length of stay (days)	All cases		Excluding 'same day' cases	
	Frequency	Per cent	Frequency	Per cent
Up to 1	223,227	64.7	99,776	45.1
2	32,498	9.4	32,498	14.7
3–4	29,242	8.5	29,242	13.2
5–7	21,822	6.3	21,822	9.9
8–14	21,991	6.4	21,991	9.9
15–21	7,899	2.3	7,899	3.6
22–28	3,371	1.0	3,371	1.5
29–35	1,965	0.6	1,965	0.9
36–49	1,626	0.5	1,626	0.7
More than 7 weeks	1,208	0.4	1,208	0.6
Total	**344,849**	**100.0**	**221,398**	**100.0**

The mean length of stay for all external causes of injury and poisoning rose with age (Figure 2.1.5). The mean length of stay was 1.8 days for children aged 0–14 years, 2.3 days for young people aged 15–24 years, 2.6 days for adults aged 25–44 years, 3.6 days for adults aged 45–64 years and 8.9 days for older people aged 65+ years.

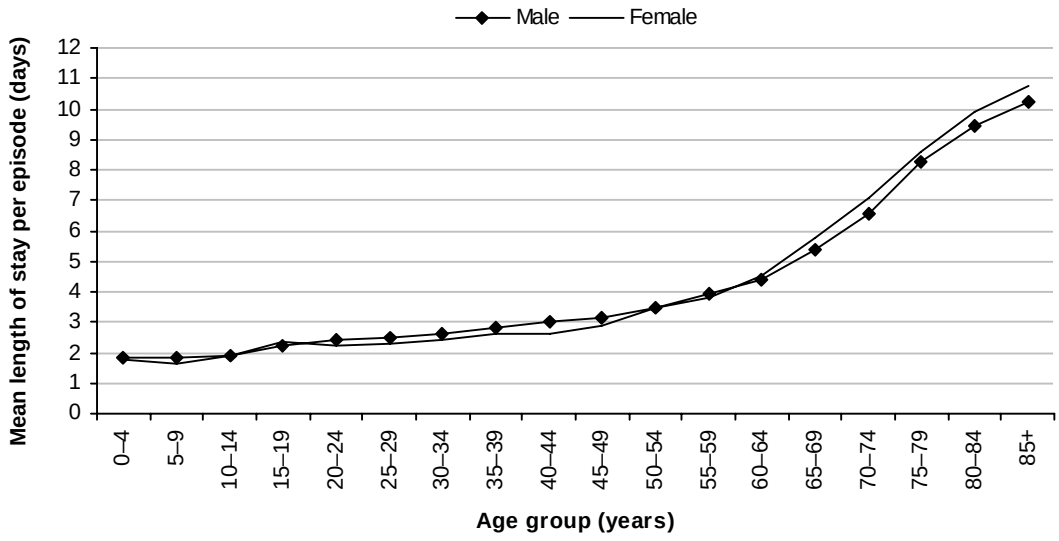


Figure 2.1.5: Length of stay per episode for all external causes of injury and poisoning by age and sex, Australia, 2003–04

Time trends

Age-standardised rates for *Community injury* appear to change little over time from 1,725 per 100,000 of the population in 1999–00 (males: 2,069 per 100,000, females: 1,343 per 100,000) to 1,717 per 100,000 of the population in 2003–04 (males: 2,042 per 100,000, females: 1,356 per 100,000). Age-standardised rates for males were consistently higher than for females (Figure 2.1.6).

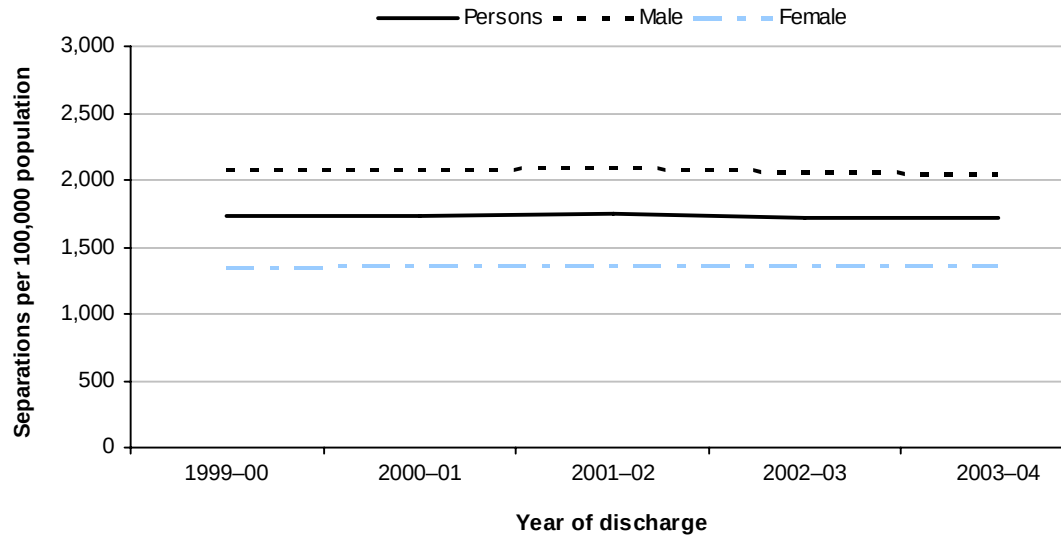


Figure 2.1.6: Age-standardised rates for Community injury, Australia, 1999–00 to 2003–04

Activity and place

According to standard ICD-10-AM coding rules, activity codes are applicable within the range of external cause categories V01–Y34. According to this criterion, 342,469 *Community injury* cases were eligible to receive an activity code, although 2,380 records outside the specified range were assigned a code. In 72.5% of cases eligible to be assigned a code, the type of activity being undertaken at the time of injury was recorded as *Other specified activity*, *Unspecified activity*, or *Activity not reported/not applicable*. Only in 94,094 (27.5%) of eligible cases was a particular activity recorded (Table 2.1.7).

Table 2.1.7: Activity when injury occurred for all external causes of injury and poisoning, case counts, Australia, 2003–04

Activity	Persons	Per cent
While engaged in sports	35,685	10.4
While engaged in leisure	7,432	2.2
While working for income	21,708	6.3
While engaged in other types of work	12,170	3.6
While resting, sleeping, eating or engaging in other vital activities	17,099	5.0
Other specified activity	77,675	22.7
Unspecified activity	169,624	49.5
Activity not reported/not applicable	1,076	0.3
Total eligible for an activity code	**342,469**	**100.0**

Place of occurrence codes are applicable within the range of external cause categories V01–Y89. According to this criterion, 344,491 injury cases were eligible to receive a place code, although 105 records outside the specified range were assigned a code. Place of occurrence was recorded as *Other specified*, *Unspecified*, or *Place not reported/not applicable* in 43.2% of these cases (Table 2.1.7).The most commonly recorded type of place in which the injury occurred was *Home* (27.2% of injuries) followed by *Street, highway* (10.5% of injuries) (Table 2.1.8). To enable more meaningful comparisons, records which were *Unspecified* or *Place not reported/not applicable* are omitted in place of occurrence tables for subsequent chapters.

Table 2.1.8: Place of occurrence for all external causes of injury and poisoning, case counts, Australia, 2003–04

Place	Persons	Per cent
Home	93,795	27.2
Residential institution	14,952	4.3
School	6,588	1.9
Health service area	4,182	1.2
Other specified institution and public administered area	1,097	0.3
Sport, athletics area	18,792	5.5
Street, highway	36,037	10.5
Trade, service area	10,074	2.9
Industrial, construction area	6,746	2.0
Farm	3,369	1.0
Other specified	14,298	4.2
Unspecified	133,927	38.9
Place not reported/not applicable	634	0.2
Total eligible for a place code	**344,491**	**100.0**

The large number of injury cases lacking detail on the activity code limits meaningful interpretation of these counts. For this reason, activity data are not reported extensively in this report, although sports injuries and work-related injuries are considered in Chapter 2.11—Other unintentional injuries. Coding was more complete for place of occurrence, but over a third did not specify useful information on where the injury occurred. Variability may exist in the completeness of the coding of the activity being undertaken at the time of injury and the place of occurrence. For example, injuries that occur at work or while working for income may be better coded than other injuries. The activity and place of occurrence codes may have a different distribution for cases not given a code compared with injury cases that have a specified activity or place of occurrence.

Part A: Intentional injuries

2.2 Intentional self-harm

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79 and

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

Table 2.2.1: Key indicators for intentional self-harm cases, Australia, 2003–04

Indicator	Males	Females	Persons
Separations from hospital due to intentional self-harm	9,222	14,865	24,087
Percentage of all injury separations	4.3	9.5	6.5
Estimated cases*	8,722	14,228	22,950
Crude rate/100,000 population	87.8	141.6	114.9
Age-standardised rate/100,000 population	87.8	143.7	115.4
Mean length of stay (days)	3.0	2.4	2.7
Total patient days	26,550	34,670	61,220

* Omits inward transfers from acute hospitals.

Intentional self-harm accounted for 7% of all injury hospitalisations in the financial year 2003–04 (Table 2.2.1). It includes suicide and attempts of suicide, as well as cases where people have intentionally hurt themselves, but not necessarily with the intention to kill e.g. self-mutilation. This chapter does not include cases where the intent was unspecified, unstated or cannot be determined (see Chapter 2.4).

Age and sex distribution

Females have higher rates of hospitalised intentional self-harm compared with males up to the age of 65 years (Figure 2.2.1 and Table 2.2.2). The difference in female rates was greatest for adolescents aged 15–19 years (age-specific rate of 397 per 100,000 for females compared with 122 per 100,000 for males). More females than males were hospitalised for intentional self-harm (based on age-standardised rates), with a M:F ratio of 0.6:1.

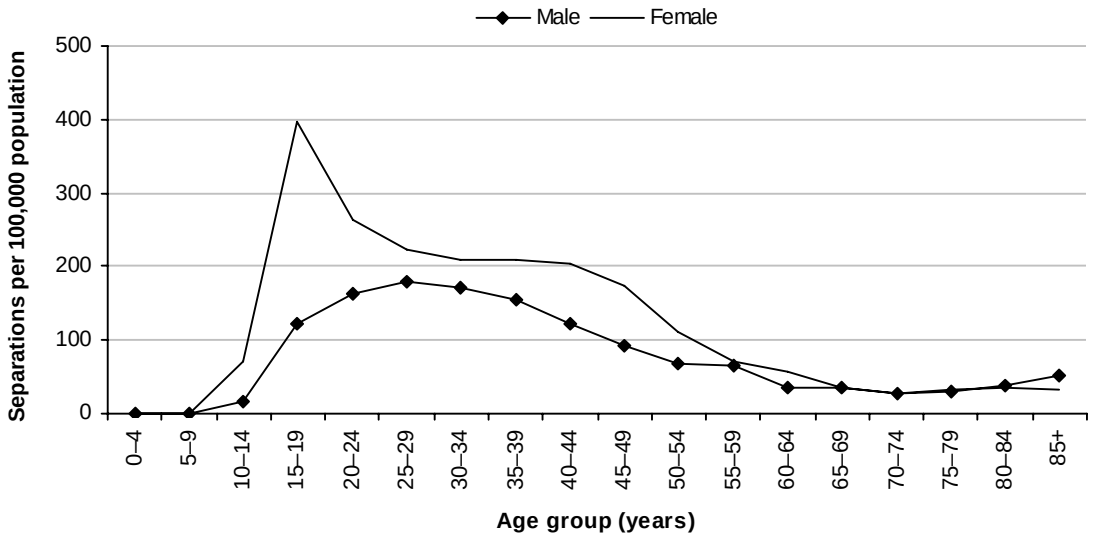


Figure 2.2.1: Age-specific hospital separation rates for intentional self-harm by sex, Australia, 2003–04

Table 2.2.2: Intentional self-harm cases by age group, Australia, 2003–04

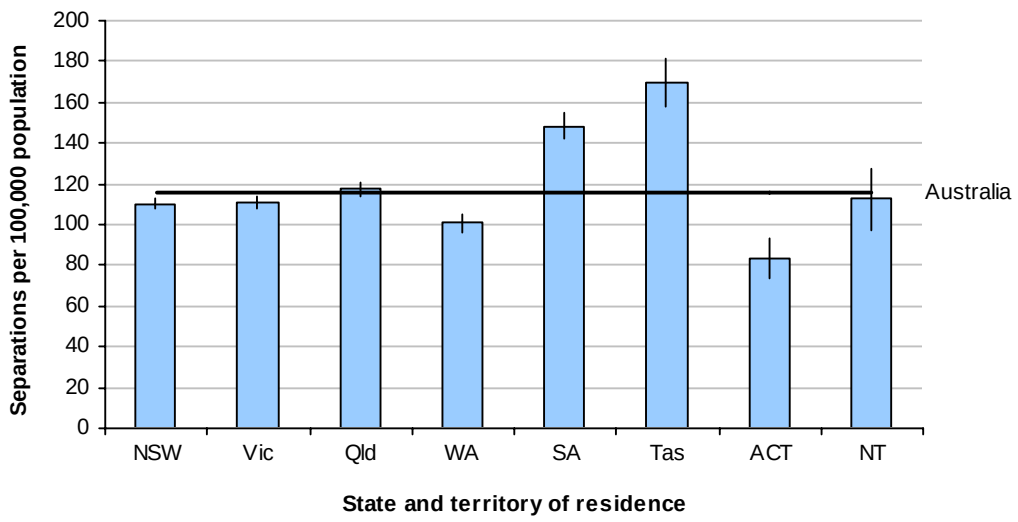
	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–14 years	118	1.4	475	3.3	593	2.6
15–24 years	2,005	23.0	4,421	31.1	6,426	28.0
25–44 years	4,567	52.4	6,224	43.7	10,791	47.0
45–64 years	1,643	18.8	2,646	18.6	4,289	18.7
65+ years	389	4.5	462	3.3	851	3.7
Total	**8,722**	**100.0**	**14,228**	**100.0**	**22,950**	**100.0**

State and territory differences

Similar rates of intentional self-harm to the national age-standardised rate were found in Queensland and the Northern Territory (Table 2.2.3 and Figure 2.2.2). New South Wales, Victoria, Western Australia and the Australian Capital Territory had rates that were below the national rate. South Australia and Tasmania had rates that were above the national rate.

Table 2.2.3: Age-standardised rates of intentional self-harm, states and territories, 2003–04

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI
NSW	110	107–113
Vic	111	108–113
Qld	117	114–121
WA	101	96–105
SA	148	142–155
Tas	169	157–181
ACT	83	74–93
NT	112	97–128
Australia	**115**	**114–117**



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

Figure 2.2.2: Age-standardised rates of intentional self-harm, states and territories, 2003–04

Body part

The majority of admitted injury cases due to intentional self-harm did not specify a particular body region that was injured (Table 2.2.4). This reflects the fact that the mechanism in most cases was poisoning.

Table 2.2.4: Principal Diagnosis by body region and sex for intentional self-harm cases, Australia, 2003–04

Principal Diagnosis by body region	Males		Females		Persons	
	Count	Per cent	Count	Per cent	Count	Per cent
Head	148	1.7	62	0.4	210	0.9
Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis)	411	4.7	224	1.6	635	2.8
Shoulder and upper limb	1,043	12.0	1,078	7.6	2,121	9.2
Hip and lower limb	96	1.1	88	0.6	184	0.8
Other injuries not specified by body region	7,024	80.5	12,776	89.8	19,800	86.3
All body regions	**8,722**	**100.0**	**14,228**	**100.0**	**22,950**	**100.0**

Mechanism

There were 22,950 cases of hospitalised intentional self-harm in the financial year 2003–04 (Table 2.2.5). The large majority of cases (84%) of self-harm were intentional self-poisoning and almost twice as many females as males used this method. Intentional self-harm by a sharp object accounted for 12% of cases of self-harm and slightly more males than females used this method. Hanging, strangulation and suffocation accounted for less than 2% of self-harm cases (of which 71% were males) and shooting by handgun or firearm was even less common (0.2%—almost all were males).

Close to half of all cases of intentional self-harm were poisoning with antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs. This category includes benzodiazepines (20% of self-harm cases; *n*=4,657) other and unspecified antidepressants—likely to be selective serotonin reuptake inhibitors (10% of self-harm cases; *n*=2,326), other and unspecified antipsychotics and neuroleptics (4% of self-harm cases; *n*=885), other antiepileptic and sedative-hypnotic drugs (3% of self-harm cases; *n*=731), tricyclic and tetracyclic antidepressants (3% of self-harm cases; *n*=636) phenothiazene antipsychotics and neuroleptics (3% of self-harm cases; *n*=579) and psychostimulants with potential for use disorder (1% of self-harm cases; *n*=228).

The second most frequent category of self-poisoning was poisoning with nonopioid analgesics, antipyretics and antirheumatics. This category includes 4-aminophenol derivatives such as paracetamol (15% of self-harm cases; *n*=3,355), nonsteroidal anti-inflammatory drugs (2% of self-harm cases; *n*=556) and salicylates such as aspirin (0.5% of self-harm cases; *n*=113).

For self-poisoning with other gases and vapours (2% of self-harm cases; *n*=396), the majority (82%) were from toxic effects of carbon monoxide and male numbers were more than double female numbers.

Intentional pesticide poisoning was an uncommon cause of hospitalisation (less than 1%; *n*=153). Most pesticide poisonings were from rodenticides (*n*=52), organophosphate and carbamate insecticides (*n*=35) and herbicides and fungicides (*n*=22).

The second most common cause of self-harm was intentional self-harm by a sharp object (12% of self-harm cases; *n*=2,733) and the two most common Principal Diagnoses were an open wound of the wrist and hand (*n*=920) and an open wound of the forearm (*n*=544).

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

Table 2.2.5: External cause of intentional self-harm injury cases, Australia, 2003–04

ICD-10-AM Code	External cause	Males		Females		Persons	
		Count	Per cent	Count	Per cent	Count	Per cent
	Intentional self-poisoning by and exposure to:	6,711	76.9	12,542	88.2	19,253	83.9
X60	• nonopioid analgesics, antipyretics and antirheumatics	*1,029*	*11.8*	*3,209*	*22.6*	*4,238*	*18.5*
X61	• antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	*3,814*	*43.7*	*7,049*	*49.5*	*10,863*	*47.3*
X62	• narcotics and psychodysleptics [hallucinogens]	*510*	*5.9*	*607*	*4.3*	*1,117*	*4.9*
X63	• other drugs acting on the autonomic nervous system	*95*	*1.1*	*143*	*1.0*	*238*	*1.0*
X64	• other and unspecified drugs, medicaments and biological substances	*616*	*7.1*	*1,039*	*7.3*	*1,655*	*7.2*
X65	• alcohol	*131*	*1.5*	*133*	*0.9*	*264*	*1.2*
X66	• organic solvents and their halogenated hydrocarbons and their vapours	*31*	*0.4*	*18*	*0.1*	*49*	*0.2*
X67	• other gases and vapours (eg. carbon monoxide)	*278*	*3.2*	*118*	*0.8*	*396*	*1.7*
X68	• pesticides	*90*	*1.0*	*63*	*0.4*	*153*	*0.7*
X69	• other and unspecified chemicals and noxious substances	*117*	*1.3*	*163*	*1.2*	*280*	*1.2*
X70	Intentional self-harm by hanging, strangulation and suffocation	276	3.2	114	0.8	390	1.7
X71	Intentional self-harm by drowning and submersion	6	0.1	10	0.1	16	0.1
X72	Intentional self-harm by handgun discharge	6	0.1	0	0.0	6	0.0
X74	Intentional self-harm by other and unspecified firearm discharge	46	0.5	*	*	*	*
X75	Intentional self-harm by explosive material	*	*	*	*	5	0.0
X76	Intentional self-harm by smoke, fire and flames	33	0.4	39	0.3	72	0.3
X77	Intentional self-harm by steam, hot vapours and hot objects	*	*	9	0.1	*	*
X78	Intentional self-harm by sharp object	1,388	15.9	1,345	9.5	2,733	11.9
X79	Intentional self-harm by blunt object	33	0.4	8	0.1	41	0.2
X80	Intentional self-harm by jumping from a high place	50	0.6	37	0.3	87	0.4
X81	Intentional self-harm by jumping or lying before moving object	17	0.2	12	0.1	29	0.1
X82	Intentional self-harm by crashing of motor vehicle	35	0.4	19	0.1	54	0.2
X83	Intentional self-harm by other specified means	97	1.1	48	0.3	145	0.6
X84, Y87.0	Intentional self-harm by unspecified means and sequelae of intentional self-harm	18	0.2	43	0.3	61	0.3
Total		**8,722**	**100.0**	**14,228**	**100.0**	**22,950**	**100.0**

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

Length of stay

Mean length of stay for intentional self-harm hospital cases rose with age (Figure 2.2.3). The small number of intentional self-harm cases for children aged 0–9 years (*n*=14) are mostly due to self-poisoning from a variety of substances including 4-aminophenol derivatives (e.g. paracetamol), soaps and detergents, local antifungal, anti-infective and anti-inflammatory drugs, and antiepileptic and sedative-hypnotic drugs. The mean length of stay was 2.4 days for children aged 0–14 years, 2.1 days for young people aged 15–24 years, 2.5 days for adults aged 25–44 years, 3.2 days for adults aged 45–64 years and 6.6 days for older people aged 65+ years.

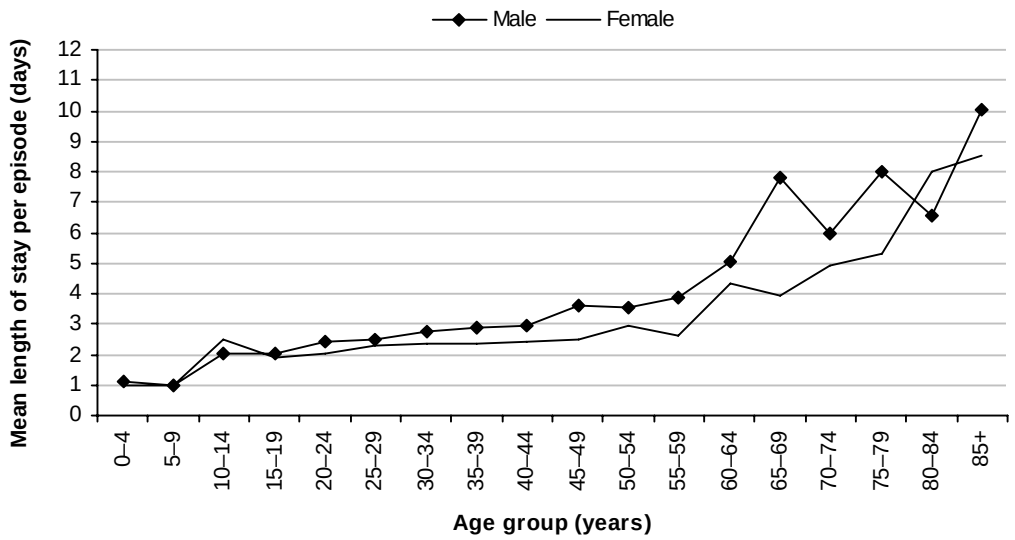


Figure 2.2.3: Length of stay per episode for intentional self-harm by age and sex, Australia, 2003–04

Time trends

Age-standardised rates for intentional self-harm increased in recent years from 106 per 100,000 of the population in 1999–00 to 115 per 100,000 in 2003–04. The increase in intentional self-harm was mainly attributable to female cases; female age-standardised rates increased from 125 per 100,000 in 1999–00 to 144 per 100,000 in 2003–04, whereas male age-standardised rates stayed relatively constant (87 per 100,000 in 1999–00 and 88 per 100,000 in 2003–04). Age-standardised rates for females were higher than for males (Figure 2.2.4).

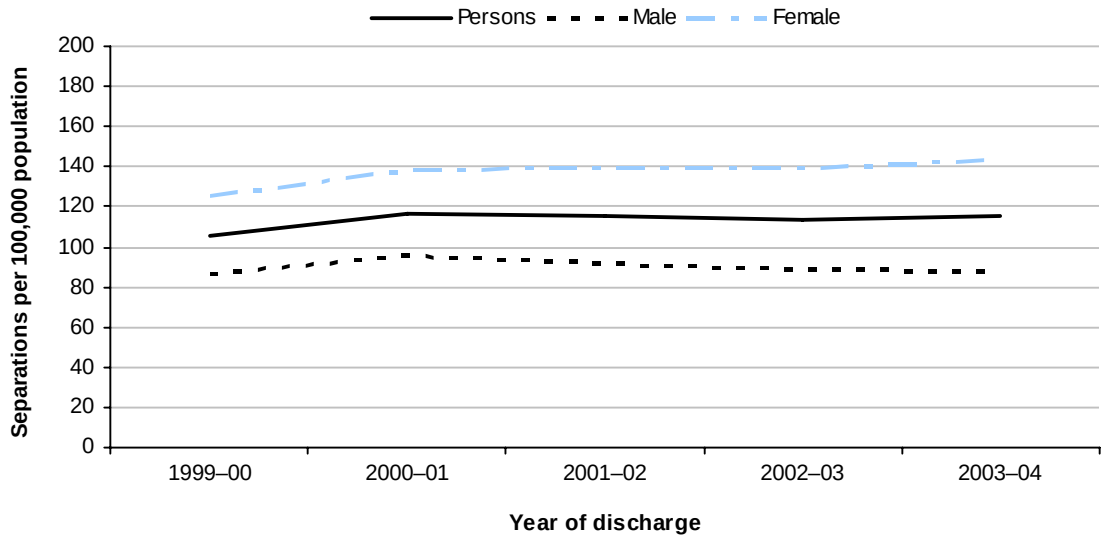


Figure 2.2.4: Age-standardised rates for intentional self-harm, Australia, 1999–00 to 2003–04

Place of occurrence

For almost a third of records, place of occurrence was unspecified (30.8%; *n*=7,057) or not reported (0.2%; *n*=37). The following observations are restricted to those records in which the place of occurrence was specified (Table 2.2.6). The majority of the intentional self-harm injury hospitalisations occurred in the home (89%; *n*=14,096).

For poisoning by carbon monoxide (*n*=323), 152 occurred at home (not in the driveway), 18 occurred in the driveway to home, 26 on a roadway, highway, or street and 5 occurred in a parking lot. For intentional self-harm by a sharp object (*n*=2,733), 1,355 occurred at home (not in the driveway), 44 in a prison or juvenile detention centre, 35 in a health service area, 28 on a roadway, highway or street, 24 in a café, hotel or restaurant, 13 in aged care facilities, and 12 at school. For intentional self-harm by hanging, strangulation and suffocation (*n*=390), 249 occurred at home (not in the driveway), 16 occurred in a prison or juvenile detention centre and 10 occurred in a health service area.

Table 2.2.6: Place of occurrence for cases of intentional self-harm, Australia, 2003–04

Place	Persons	Per cent
Home	14,096	88.9
Residential institution	277	1.8
School	103	0.7
Health service area	313	2.0
Other specified institution and public administrative area	47	0.3
Sports and athletics area	6	0.0
Street and highway	249	1.6
Trade and service area	321	2.0
Industrial and construction area	12	0.1
Farm	10	0.1
Other specified places	422	2.7
Total	**15,856**	**100.0**

Ascertainment of intentional self-harm

According to inclusion notes in ICD-10-AM, cases should be assigned codes in the range X60–X84 if they are purposely self-inflicted poisoning or injury, suicide, or attempted suicide [see page 483 (National Centre for Classification in Health 2002)]. Determining whether an injury is due to intentional self-harm is not always straightforward. Intent is a complex concept and not easily defined. Cases may appear to be intentional self-harm, but their inconclusiveness may preclude them being coded as such (e.g. Y30–Y32 *Falling, jumping or pushed from a high place, undetermined intent*, *Falling, lying or running before or into moving object, undetermined intent*, or by *Crashing of motor vehicle, undetermined intent*). It is possible that through the coding process, some types of injury may be more readily attributed to intentional self-harm than others. The intent for many injuries is difficult to determine e.g. near-drowning by falling overboard on a water-craft (V92), falling from a building structure (e.g. W13, out of a window, bridge or roof), or a cliff (W15), other specified threats to breathing (e.g. W83, suffocation by plastic bag), and exposure to electric current (W85–W87). An unknown proportion of transport accidents could be intentional self-harm e.g. when a pedestrian is injured in a collision with a car, pick-up truck or van, or heavy transport vehicle or railway train (e.g. V03, V04, V05), or a small vehicle (e.g. car, motorcycle) collides with a heavy transport vehicle or train (e.g. V24, V25, V44, V45) or a fixed or stationary object (e.g. V27, V47). Some patients may choose not to disclose that their injuries resulted from intentional self-harm, or may be unable to do so due to the nature of the injuries, or because their motives were ambiguous. Such sources of uncertainty about the assignment of intent limit the certainty of any estimates of intentional self-harm based on routine hospital data. Coding categories provided for use when intent is recognised to be undetermined are a partial solution to this (see Chapter 2.4).

2.3 Assault

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79 and

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

Table 2.3.1: Key indicators for assault cases, Australia, 2003–04

Indicator	Males	Females	Persons
Separations from hospital due to assault	15,127	5,410	20,537
Percentage of all injury separations	7.0	3.5	5.5
Estimated cases*	14,201	5,124	19,325
Crude rate/100,000 population	143.0	51.0	96.7
Age-standardised rate/100,000 population	142.5	52.0	97.5
Mean length of stay (days)	2.3	2.5	2.4
Total patient days	33,110	12,722	45,832

* Omits inward transfers from acute hospitals.

Assault accounted for 6% of all injury hospitalisations in the financial year 2003–04 (Table 2.3.1). As defined here, this category includes all cases in which a person, or more than one person, intentionally injured another person. This chapter does not include cases where the intent was unspecified, unstated or cannot be determined (see Chapter 2.4).

Age and sex distribution

Almost three times as many males as females were hospitalised for injury resulting from assault with a M: F ratio of 2.7:1 (based on age-standardised rates) (Figure 2.3.1 and Table 2.3.2). Male rates peaked in the 20–24 year age group with an age-specific rate of 402 hospitalisations for assault per 100,000 compared with 112 per 100,000 for females in the same age range. Age-specific rates of assault declined with age for both sexes.

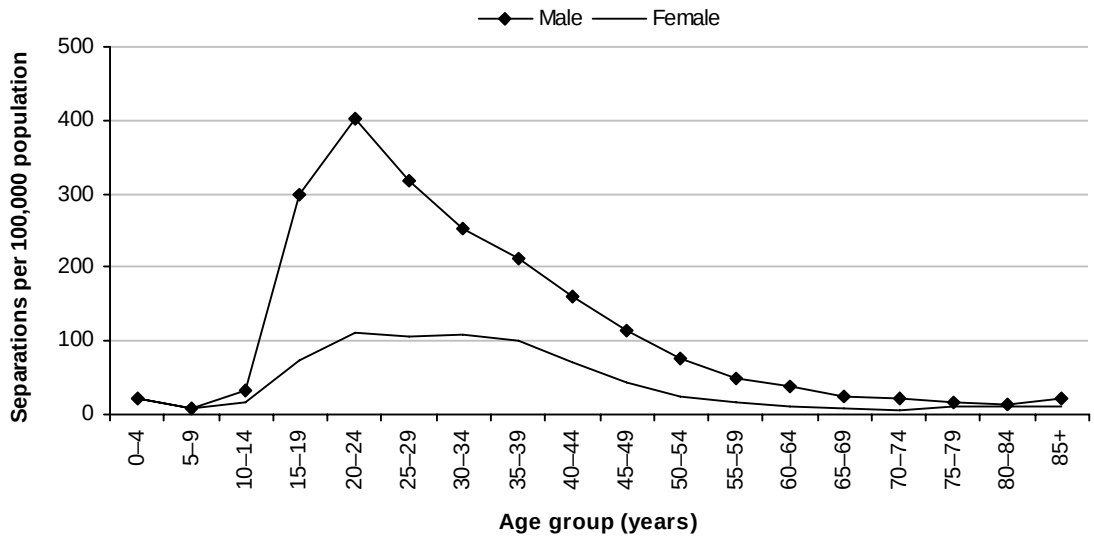


Figure 2.3.1: Age-specific hospital separation rates for assault by sex, Australia, 2003–04

Thirty-five per cent of male assault cases occurred in youth and young people aged 15–24 years and 48% were in adults aged 25–44 years (Table 2.3.2). Twenty-four per cent of female assault cases were in youth and young people aged 15–24 years and 56% involved adults aged 25–44 years. Only 4% involved children aged 0–14 years.

Table 2.3.2: Assault cases by age group, Australia, 2003–04

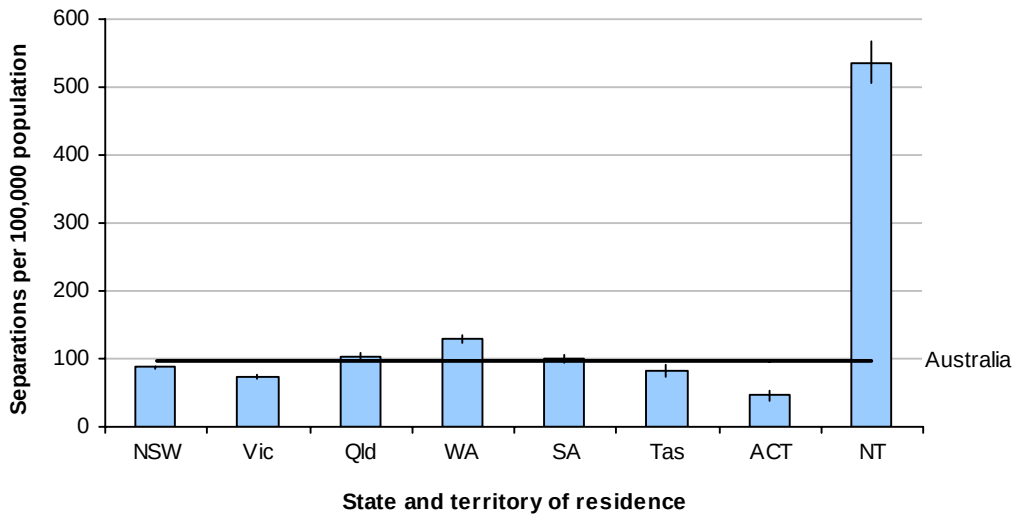
	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–14 years	449	3.2	295	5.8	744	3.9
15–24 years	4,922	34.7	1,248	24.4	6,170	31.9
25–44 years	6,844	48.2	2,849	55.6	9,693	50.2
45–64 years	1,752	12.3	610	11.9	2,362	12.2
65+ years	234	1.7	122	2.4	356	1.8
Total	**14,201**	**100.0**	**5,124**	**100.0**	**19,325**	**100.0**

State and territory differences

The rate of hospitalisation due to assault in the Northern Territory was 5.5 times higher than the national rate (Table 2.3.3 and Figure 2.3.2). Of the 1,174 hospital cases of residents in the Northern Territory, 83% (*n*=973) were recorded as being Aboriginal and Torres Strait Islander persons. Queensland and Western Australia also had rates that were above the national rate. The assault rate in South Australia was similar to the national rate. Rates that were below the national rate were found in New South Wales, Victoria, Tasmania and the Australian Capital Territory.

Table 2.3.3: Age-standardised rates of assault, states and territories, 2003–04

Jurisdiction	**Age-standardised rate (per 100,000 population)**	**95% CI**
NSW	87	85–89
Vic	73	71–75
Qld	104	101–107
WA	130	125–135
SA	100	94–105
Tas	83	74–91
ACT	46	38–53
NT	536	505–568
Australia	**98**	**96–99**



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

Figure 2.3.2: Age-standardised rates of assault, states and territories, 2003–04

Body part

The majority of hospital cases due to assault involved injuries to the head (Table 2.3.4).

Table 2.3.4: Principal Diagnosis by body region for assault cases, Australia, 2003–04

	Males		Females		Persons	
Principal Diagnosis by body region	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Head	9,633	67.8	2,807	54.8	12,440	64.4
Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis)	1,566	11.0	750	14.6	2,316	12.0
Shoulder and upper limb	2,118	14.9	834	16.3	2,952	15.3
Hip and lower limb	604	4.3	313	6.1	917	4.8
Other injuries not specified by body region	280	2.0	420	8.2	700	3.6
All body regions	**14,201**	**100.0**	**5,124**	**100.0**	**19,325**	**100.0**

Mechanism

Of the 14,201 male cases, 57% (*n*=8,061) were due to *Assault by bodily force* (Table 2.3.5), 13% (*n*=1,880) were due to *Assault by blunt object,* 13% (*n*=1,897) were *Assault by unspecified means,* and 12% were *Assault by sharp object* (*n*=1,712).

For the 5,124 female cases, *Assault by bodily force* accounted for 51% of the assault hospitalisations (*n*=2,613), 16% were due to *Assault by blunt object* (*n*=819), 11% (*n*=537) were *Assault by unspecified means,* and 9% were *Assault by sharp object* (*n*=478).

Seventy-three per cent of assault cases in children aged 0–14 years (*n*=744) were due to *Assault by bodily force* (males *n*=226; females *n*=73), *Other maltreatment syndromes* (males *n*=95; females *n*=93) and *Neglect and Abandonment* (males *n*=30; females *n*=36).

Eighty-four per cent of assault cases in youth and young people aged 15–24 years (*n*=6,170) were due to *Assault by bodily force* (males *n*=3,041; females *n*=652), *Assault by blunt object* (males *n*=559; females *n*=184), and *Assault by sharp object* (males *n*=592; females *n*=132).

Eighty-two per cent of assault cases in adults aged 25–44 years (*n*=9,693) were due to *Assault by bodily force* (males *n*=3,704; females *n*=1,497), *Assault by blunt object* (males *n*=1,005; females *n*=501), and *Assault by unspecified means* (males *n*=958; females *n*=299).

Eighty-four per cent of assault cases in adults aged 45–64 years (*n*=2,362) were due to *Assault by bodily force* (males *n*=963; females *n*=318), *Assault by unspecified means* (males *n*=295; females *n*=83), and *Assault by blunt object* (males *n*=239; females *n*=97).

Eighty-six per cent of assault cases in older people aged 65+ years (*n*=356) were due to *Assault by bodily force* (males *n*=127; females *n*=73), *Assault by unspecified means* (males *n*=33; females *n*=15), and *Assault by blunt object* (males *n*=47; females *n*=10).

Table 2.3.5: External cause of assault cases, Australia, 2003–04

ICD-10-AM Code	External cause	Males		Females		Persons	
		Count	Per cent	Count	Per cent	Count	Per cent
X85	Assault by drugs, medicaments and biological substances	13	0.1	37	0.7	50	0.3
X86–X90	Assault by corrosive substances, pesticides, gases and vapours, other specified or unspecified chemicals and noxious substances	7	0.0	9	0.2	16	0.1
X91	Assault by hanging, strangulation and suffocation	5	0.0	21	0.4	26	0.1
X92	Assault by drowning and submersion	*	*	0	0.0	*	*
X93	Assault by handgun discharge	31	0.2	*	*	*	*
X95	Assault by other and unspecified firearm discharge	60	0.4	8	0.2	68	0.4
X96	Assault by explosive material	*	*	*	*	4	0.0
X97	Assault by smoke, fire and flames	13	0.1	11	0.2	24	0.1
X98	Assault by steam, hot vapours and hot objects	15	0.1	17	0.3	32	0.2
X99	Assault by sharp object	1,712	12.1	478	9.3	2,190	11.3
Y00	Assault by blunt object	1,880	13.2	819	16.0	2,699	14.0
Y01	Assault by pushing from a high place	19	0.1	16	0.3	35	0.2
Y02	Assault by pushing or placing victim before moving object	*	*	0	0.0	*	*
Y03	Assault by crashing of motor vehicle	16	0.1	*	*	*	*
Y04	Assault by bodily force	8,061	56.8	2,613	51.0	10,674	55.2
Y05	Sexual assault by bodily force	24	0.2	149	2.9	173	0.9
Y06	Neglect and abandonment	35	0.3	40	0.8	75	0.4
Y07	Other maltreatment syndromes	106	0.8	228	4.5	334	1.7
Y08	Assault by other specified means	251	1.8	124	2.4	375	1.9
Y09	Assault by unspecified means	1,897	13.4	537	10.5	2,434	12.6
Y35	Legal intervention	31	0.2	4	0.1	35	0.2
Y36	Operations of war	0	0.0	0	0.0	0	0.0
Y87.1	Sequelae of assault	17	0.1	5	0.1	22	0.1
Y89.0	Sequelae of legal intervention	0	0.0	0	0.0	0	0.0
Y89.1	Sequelae of war operations	*	*	0	0.0	*	*
	Total	**14,201**	**100.0**	**5,124**	**100.0**	**19,325**	**100.0**

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

Perpetrator

The code for the relationship of the victim to the perpetrator was newly added to ICD-10-AM 3rd edition and this report provides the first substantial examination of the coded data. The perpetrator code is applicable within the range of external cause categories X85–Y09. According to this criterion, 19,266 hospital cases were eligible to receive a perpetrator code. A perpetrator was specified for only 42% (*n*=8,171) of eligible cases and varied by age and gender (e.g. the perpetrator was an *unspecified person* in 66% of male cases and 35% of female cases). The large number of separations lacking detail on the perpetrator code limits meaningful interpretation of these counts. The following observations are restricted to those records in which the perpetrator was specified.

For males, the perpetrator was most commonly one or more persons unknown to the victim, or an acquaintance or friend (Table 2.3.6). There were some notable exceptions; for cases of *Assault by a sharp object* (*n*=739), the most common perpetrator was the spouse or domestic partner (*n*=185) and 136 of these cases were assault by knife (includes dagger and sword). For male cases of *Neglect and abandonment* (*n*=31), the most common perpetrator was a parent (*n*=24). For male cases of *Other maltreatment syndromes* (e.g. mental cruelty, physical abuse, sexual abuse and torture) (*n*=81), the most common perpetrator was a parent (*n*=72).

For females, their spouse or domestic partner was the most commonly reported perpetrator, followed by other family member or an acquaintance or friend (Table 2.3.6). Almost all cases of *Assault by hanging, strangulation and suffocation* (*n*=17) were perpetrated by the spouse or domestic partner (*n*=16). For female cases of *Sexual assault by bodily force* (*n*=76), the most common perpetrator was the spouse or domestic partner (*n*=20), followed by an acquaintance or friend (*n*=16), a person unknown to the female (*n*=15), multiple persons unknown to the female (*n*=10), or a parent or other family member (*n*=7). For female cases of *Neglect and abandonment* (*n*=34), the most common perpetrator was a parent (*n*=27). For female cases of *Other maltreatment syndromes* (e.g. mental cruelty, physical abuse, sexual abuse and torture) (*n*=197), the most common perpetrator was the spouse or domestic partner (*n*=109), followed by a parent (*n*=59), other family member (*n*=11) acquaintance or friend (*n*=10) or carer (*n*=6).

Table 2.3.6: Relationship of the perpetrator to the victim of assault, Australia, 2003–04

	Males		Females		Persons	
Perpetrator	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Spouse or domestic partner	407	8.4	2,049	61.7	2,456	30.1
Parent	201	4.1	172	5.2	373	4.6
Other family member	551	11.4	345	10.4	896	11.0
Carer	7	0.1	16	0.5	23	0.3
Acquaintance or friend	813	16.8	315	9.5	1,128	13.8
Official authorities	135	2.8	12	0.4	147	1.8
Person unknown to the victim	1,216	25.1	177	5.3	1,393	17.0
Multiple persons unknown to the victim	875	18.0	67	2.0	942	11.5
Other specified person	645	13.3	168	5.1	813	9.9
Total of cases where perpetrator is specified	**4,850**	**100.0**	**3,321**	**100.0**	**8,171**	**100.0**

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

Length of stay

Mean length of stay for assault was higher in young children 0–4 years than for other age groups (below 60 years of age), declined in older children and then gradually rose with age (Figure 2.3.3). The mean length of stay was 3.5 days for children aged 0–14 years, 1.8 days for young people aged 15–24 years, 2.4 days for adults aged 25–44 years, 3.0 days for adults aged 45–64 years and 5.3 days for older people aged 65+ years.

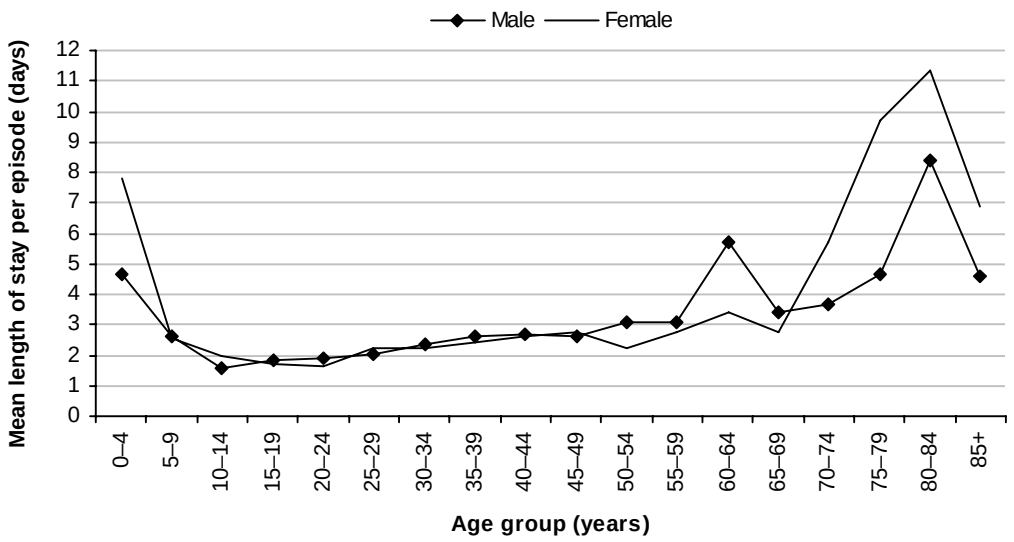


Figure 2.3.3: Length of stay per episode for assault by age and sex, Australia, 2003–04

Time trends

Age-standardised rates for assault were 98 per 100,000 of the population in 1999–00 and 98 per 100,000 in 2003–04, with a slight increase in intervening years. For each year, age-standardised rates for males were about three times higher than for females (Figure 2.3.4).

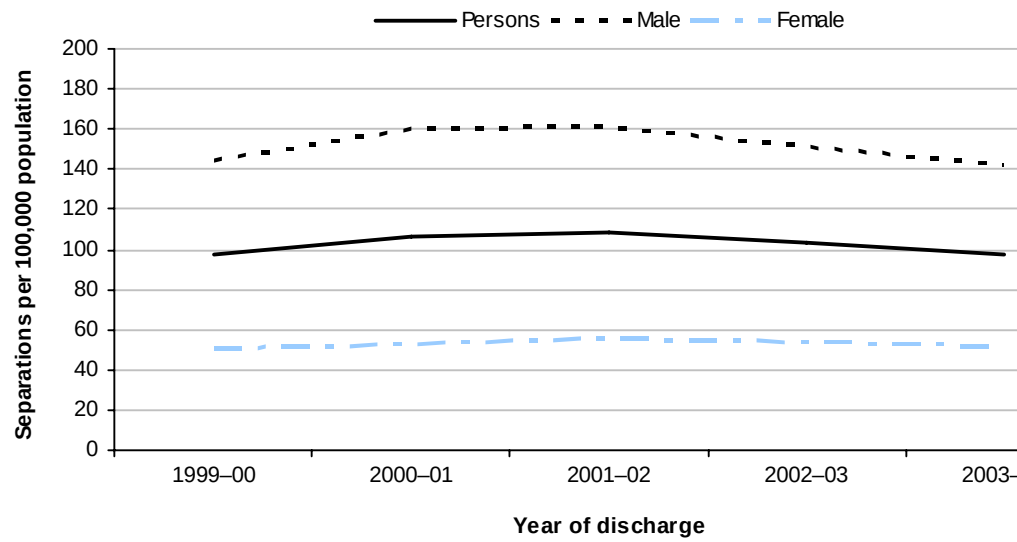


Figure 2.3.4: Age-standardised rates for assault, Australia, 1999–00 to 2003–04

Place of occurrence

The hospitalisations from assault injury occurred in diverse locations. Most were unspecified (55%; *n*=10,573) or not reported (0.1%; *n*=27).

The following observations are restricted to those cases in which the place of occurrence was specified. Overall, about 70% of females were assaulted in the home (Table 2.3.7). Trade and service areas (which includes hotels and many other entertainment venues) and a street or highway were the second (15%) and third (12%) most common place of injury for young women (15–24 years). Women aged 65+ years were also often injured on a street or highway (18%) or in residential institutions (12%—almost all being in aged care facilities). Boys (0–14 years) were most commonly injured in the home (48%) and at school (30%). Young men (15–24 years) were often assaulted in a trade or service area (39%—e.g. hotels) or on a street or highway (24%). Trade or service areas were the most common place to be injured for males aged 25–44 years (35%), and home was second (26%). Older males (45+ years) were most frequently assaulted in the home.

Ascertainment of assault

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

Table 2.3.7: Place of occurrence for assault cases by age and sex, Australia, 2003–04

Place	0–14 yrs	Per cent	15–24 yrs	Per cent	25–44 yrs	Per cent	45–64 yrs	Per cent	65+ yrs	Per cent	Total	Per cent
Male												
Home	129	47.6	328	16.5	781	25.9	292	35.7	87	56.5	1,617	25.9
Residential institution	0	0.0	46	2.3	141	4.7	20	2.4	13	8.4	220	3.5
School	81	29.9	45	2.3	*	*	*	*	0	0.0	131	2.1
Health service area	*	*	4	0.2	12	0.4	7	0.9	*	*	28	0.5
Other specified institution	*	*	32	1.6	38	1.3	17	2.1	*	*	90	1.4
Sports and athletics area	7	2.6	45	2.3	45	1.5	13	1.6	0	0.0	110	1.8
Street and highway	23	8.5	474	23.8	597	19.8	175	21.4	21	13.6	1,290	20.7
Trade and service area	6	2.2	775	38.9	1,066	35.4	201	24.5	20	13.0	2,068	33.1
Industrial and construction area	0	0.0	*	*	14	0.5	5	0.6	*	*	22	0.4
Farm	0	0.0	0	0.0	*	*	*	*	0	0.0	*	*
Other specified places	19	7.0	241	12.1	312	10.4	87	10.6	10	6.5	669	10.7
Total	**271**	**100.0**	**1,992**	**100.0**	**3,012**	**100.0**	**819**	**100.0**	**154**	**100.0**	**6,248**	**100.0**
Female												
Home	141	77.1	336	59.4	967	74.7	255	75.7	53	54.6	1,752	70.7
Residential institution	*	*	8	1.4	14	1.1	*	*	12	12.4	36	1.5
School	15	8.2	11	1.9	0	0.0	*	*	*	*	27	1.1
Health service area	*	*	4	0.7	9	0.7	4	1.2	*	*	20	0.8
Other specified institution	0	0.0	*	*	7	0.5	0	0.0	*	*	12	0.5
Sports and athletics area	*	*	5	0.9	5	0.4	*	*	0	0.0	13	0.5
Street and highway	7	3.8	70	12.4	87	6.7	26	7.7	17	17.5	207	8.4
Trade and service area	4	2.2	83	14.7	105	8.1	30	8.9	7	7.2	229	9.3
Industrial and construction area	0	0.0	0	0.0	*	*	0	0.0	0	0.0	*	*
Farm	0	0.0	0	0.0	*	*	0	0.0	0	0.0	*	*
Other specified places	*	*	47	8.3	98	7.6	18	5.3	*	*	179	7.2
Total	**183**	**100.0**	**566**	**100.0**	**1,294**	**100.0**	**337**	**100.0**	**97**	**100.0**	**2,477**	**100.0**

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

2.4 Undetermined intent

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79 and

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

Table 2.4.1: Key indicators for undetermined intent cases, Australia, 2003–04

Indicator	Males	Females	Persons
Separations from hospital due to undetermined intent	1,342	1,663	3,005
Percentage of all injury separations	0.6	1.1	0.8
Estimated cases*	1,280	1,622	2,902
Crude rate/100,000 population	12.9	16.1	14.5
Age-standardised rate/100,000 population	12.9	16.3	14.6
Mean length of stay (days)	2.5	2.0	2.2
Total patient days	3,189	3,246	6,435

* Omits inward transfers from acute hospitals.

Injuries where the intent is undetermined accounted for 1% of all injury hospitalisations in the financial year 2003–04 (Table 2.4.1). This chapter includes cases where intent was unspecified, unstated or could not be determined. Most such cases are uncertain self-harm or uncertain assault.

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

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

Age and sex distribution

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

The male and female profiles of age-specific rates for undetermined intent appears to be similar to that of intentional self-harm, rather than assault. Very similar cases can be coded so they appear in this chapter or in Chapter 2.2 (intentional self-harm), depending on the extent of evidence in the record concerning intent and how this is interpreted by clinical coders. Hence, there is the possibility that changes in information or coding over time could result in apparent trends which are, in fact, due to these data issues. In practice, this does not appear to have occurred to an important extent: strong trends are not apparent in either group, and the undetermined intent category is small in relation to the intentional self-harm group.

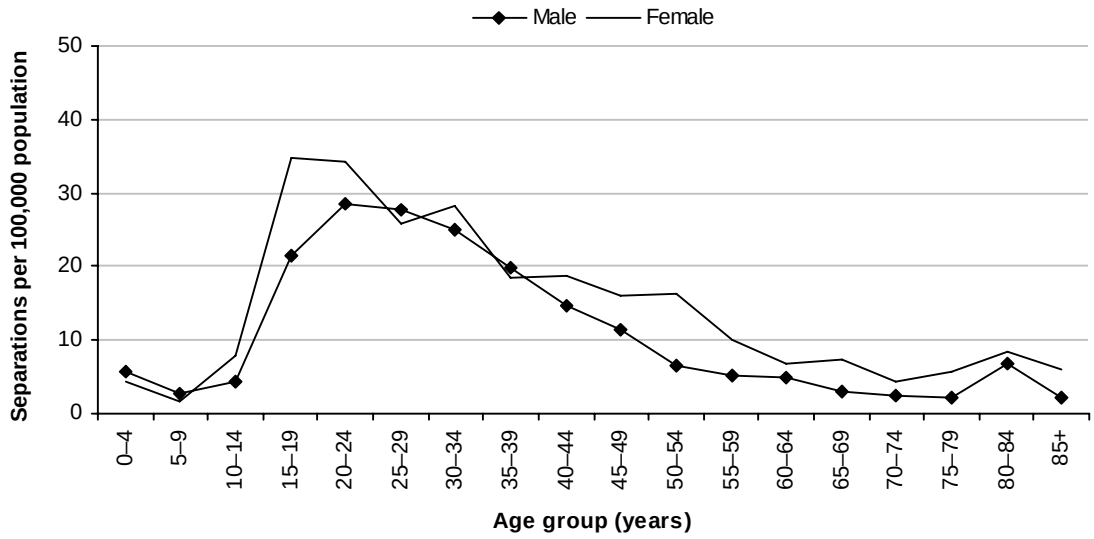


Figure 2.4.1: Age-specific hospital separation rates for injuries of undetermined intent by sex, Australia, 2003–04

Fourty-five per cent of injuries of undetermined event occurred in adults aged 25–44 years (Table 2.4.2).

Table 2.4.2: Injuries of undetermined intent by age group, Australia, 2003–04

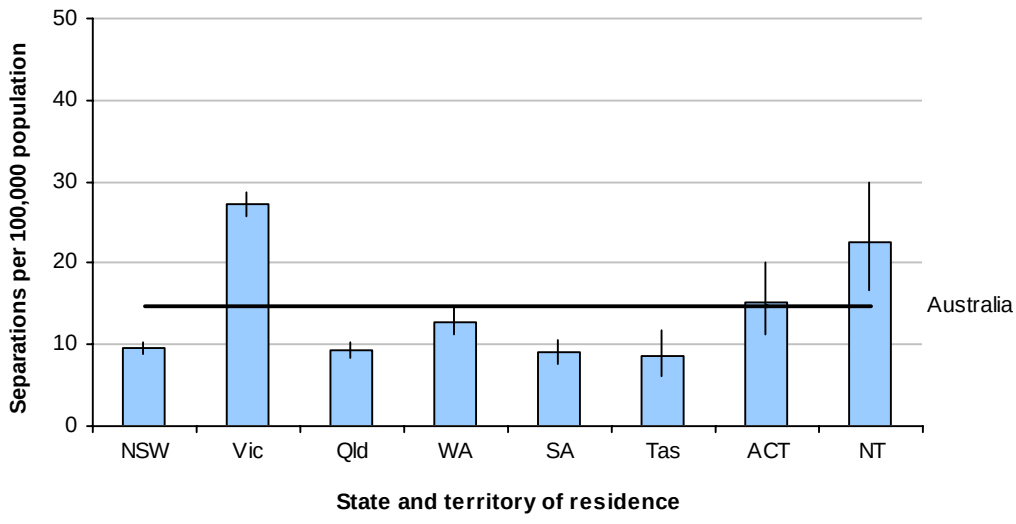
	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–14 years	85	6.6	90	5.6	175	6.0
15–24 years	351	27.4	462	28.5	813	28.0
25–44 years	634	49.5	669	41.3	1,303	44.9
45–64 years	175	13.7	312	19.2	487	16.8
65+ years	35	2.7	89	5.5	124	4.3
Total	**1,280**	**100.0**	**1,622**	**100.0**	**2,902**	**100.0**

State and territory differences

Rates that were below the national rate for injures of undetermined intent were found in New South Wales, Queensland, South Australia and Tasmania (Table 2.4.3 and Figure 2.4.2). Western Australia and the Australian Capital Territory had rates that were similar to the national rate. Victoria and the Northern Territory had rates that were above the national rate.

Table 2.4.3: Age-standardised rates of injuries of undetermined intent, states and territories, 2003–04

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI
NSW	9.5	8.8–10.3
Vic	27.3	25.8–28.8
Qld	9.2	8.3–10.2
WA	12.9	11.3–14.4
SA	9.1	7.5–10.6
Tas	8.6	6.2–11.8
ACT	15.3	11.4–20.0
NT	22.6	16.7–29.9
Australia	**14.6**	**14.1–15.1**



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

Figure 2.4.2: Age-standardised rates for injuries of undetermined intent, states and territories, 2003–04

Length of stay

The mean length of stay for injuries of undetermined intent showed no strong trend of increasing by age (Figure 2.4.3). The mean length of stay was 2.4 days for children aged 0–14 years, 1.5 days for young people aged 15–24 years, 2.0 days for adults aged 25–44 years, 3.0 days for adults aged 45–64 years and 5.9 days for older people aged 65+ years. The large fluctuations at older ages reflect small case numbers. The peak for males aged 75–79 years is due to one record having a length of stay of several months.

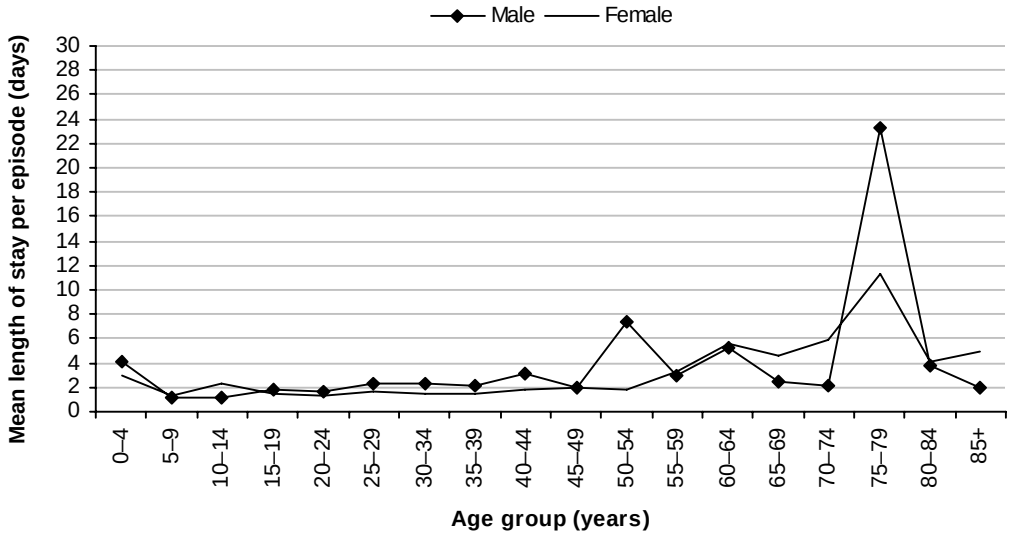


Figure 2.4.3: Length of stay per episode for injuries of undetermined intent by age and sex, Australia, 2003–04

Time trends

Age-standardised rates for injuries of undetermined intent were 14.2 per 100,000 of the population in 1999–00 and 14.6 per 100,000 in 2003–04 (Figure 2.4.4).

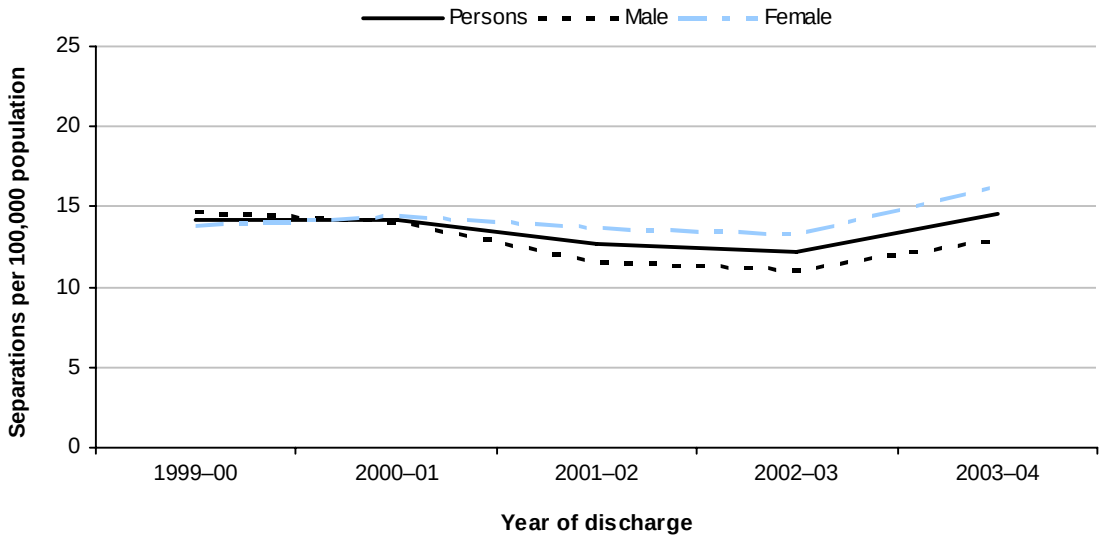


Figure 2.4.4: Age-standardised rates for injuries of undetermined intent, Australia, 1999–00 to 2003–04

Body part

The majority of admitted injury cases due to undetermined intent did not specify a particular body region that was injured (Table 2.4.4). This reflects the fact that the mechanism in most cases was poisoning.

Table 2.4.4: Principal Diagnosis by body region for injuries of undetermined intent, Australia, 2003–04

	Males		Females		Persons	
Principal Diagnosis by body region	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Head	67	5.2	25	1.5	92	3.2
Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis)	49	3.8	15	0.9	64	2.2
Shoulder and upper limb	113	8.8	77	4.8	190	6.6
Hip and lower limb	54	4.2	31	1.9	85	2.9
Other injuries not specified by body region	997	77.9	1,474	90.9	2,471	85.2
All body regions	**1,280**	**100.0**	**1,622**	**100.0**	**2,902**	**100.0**

Mechanism

Overall, 83% of injuries of undetermined intent resulted from poisoning (Table 2.4.5). Poisoning by antiepileptic, sedative-hypnotic, antiparkisonism and psychotropic drugs comprised 42% (*n*=1,207) of injuries of undetermined intent, and mainly consisted of poisoning by benzodiazepines (*n*=508), other and unspecified antidepressants—likely to be selective serotonin reuptake inhibitors (*n*=181) and psychostimulants with potential for use disorder (*n*=104).

Thirteen per cent (*n*=362) of injuries of undetermined intent were poisoning by nonopioid analgesics, antipyretics and antirheumatics, and mainly consisted of 4-aminophenol derivatives such as paracetamol (*n*=281) and other non-steroidal anti-inflammatory drugs (NSAID) (*n*=52).

Ten per cent (*n*=299) of injuries of undetermined intent were from narcotics and hallucinogens, and mainly consisted of heroin (*n*=140), and other opioids such as codeine and morphine (*n*=63).

Table 2.4.5: External cause of injuries of undetermined intent, Australia, 2003–04

ICD-10-AM Code	External cause	Males		Females		Persons	
		Count	Per cent	Count	Per cent	Count	Per cent
	Poisoning by and exposure to:	951	74.3	1,443	89.0	2,394	82.5
Y10	• nonopioid analgesics, antipyretics and antirheumatics	*96*	*7.5*	*266*	*16.4*	*362*	*12.5*
Y11	• antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	*439*	*34.3*	*768*	*47.4*	*1,207*	*41.6*
Y12	• narcotics and psychodysleptics [hallucinogens]	*185*	*14.5*	*114*	*7.0*	*299*	*10.3*
Y13	• other drugs acting on the autonomic nervous system	*15*	*1.2*	*16*	*1.0*	*31*	*1.1*
Y14	• other and unspecified drugs, medicaments and biological substances	*92*	*7.2*	*174*	*10.7*	*266*	*9.2*
Y15	• alcohol	*51*	*4.0*	*64*	*4.0*	*115*	*4.0*
Y16	• organic solvents and their halogenated hydrocarbons and their vapours	*11*	*0.9*	*10*	*0.6*	*21*	*0.7*
Y17	• other gases and vapours (eg. Carbon monoxide)	*15*	*1.2*	*4*	*0.3*	*19*	*0.7*
Y18	• pesticides	*14*	*1.1*	*7*	*0.4*	*21*	*0.7*
Y19	• other and unspecified chemicals and noxious substances	*33*	*2.6*	*20*	*1.2*	*53*	*1.8*
Y20	Hanging, strangulation and suffocation	15	1.2	*	*	*	*
Y21	Drowning and submersion	*	*	*	*	*	*
Y22	Handgun discharge	0	0.0	0	0.0	0	0.0
Y24	Other and unspecified firearm discharge	24	1.9	*	*	*	*
Y25	Contact with explosive material	*	*	0	0.0	*	*
Y26	Exposure to smoke, fire and flames	15	1.2	10	0.6	25	0.9
Y27	Contact with steam, hot vapours and hot objects	*	*	*	*	5	0.2
Y28	Contact with sharp object	101	7.9	55	3.4	156	5.4
Y29	Contact with blunt object	26	2.0	6	0.4	32	1.1
Y30	Falling, jumping or pushed from a high place	15	1.2	5	0.3	20	0.7
Y31	Falling, lying or running before or into moving object	*	*	*	*	6	0.2
Y32	Crashing of motor vehicle	*	*	*	*	*	*
Y33	Other specified events	11	0.9	14	0.9	25	0.9
Y34	Unspecified event	101	7.9	76	4.7	177	6.1
Y87.2	Sequelae of events of undetermined intent	*	*	*	*	13	0.5
	Total	**1,280**	**100.0**	**1,622**	**100.0**	**2,902**	**100.0**

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

Place of occurrence

Location was not specified or reported for 49% of cases (unspecified; *n*=1,409, not reported/not applicable; *n*=22). The following observations are restricted to those cases in which the place of occurrence was specified. The majority of hospital cases resulted from injuries that occurred in the home (76%; *n*=1,114) (Table 2.4.6).

Table 2.4.6: Place of occurrence for injury cases of undetermined intent, Australia, 2003–04

Place	Persons	Per cent
Home	1,114	75.7
Residential institution	37	2.5
School	9	0.6
Health service area	89	6.1
Other specified institution and public administrative area	11	0.8
Sports and athletics area	7	0.5
Street and highway	44	3.0
Trade and service area	94	6.4
Industrial and construction area	7	0.5
Farm	3	0.2
Other specified places	56	3.8
Total	**1,471**	**100.0**

Part B: Unintentional injuries

2.5 Falls

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79 and

First reported external cause: W00–W19

Table 2.5.1: Key indicators for unintentional fall cases, Australia, 2003–04

Indicator	Males	Females	Persons
Separations from hospital due to falls	59,660	75,959	135,619
Percentage of all injury separations	27.6	48.5	36.4
Estimated cases*	54,632	68,829	123,461
Crude rate/100,000 population	550.0	684.8	617.8
Age-standardised rate/100,000 population	579.4	601.0	605.1
Mean length of stay (days)	4.9	7.2	6.2
Total patient days	265,643	495,958	761,601

* Omits inward transfers from acute hospitals.

This chapter covers hospitalised injury due to unintentional falls. Falls were responsible for 36% of all injury hospitalisations in the financial year 2003–04 (Table 2.5.1).

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

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

This chapter does not include falls due to intentional self-harm (*n*=116), assault (*n*=38) or falls of undetermined intent (*n*=26), falls inside or from trains or trams (*n*=88), noncollision pedal or motorcycle accidents which can include falls (*n*=9,094) falls from watercraft (*n*=55) fall in, on or from aircraft (*n*=5), parachutist accidents (*n*=61) falls from animals or animal-driven vehicles (*n*=2,423), exposure to uncontrolled fire in a building or structures which can include falls (*n*=195), or falls into water that resulted in drowning or other effects of immersion (*n*=158).

Age and sex distribution

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

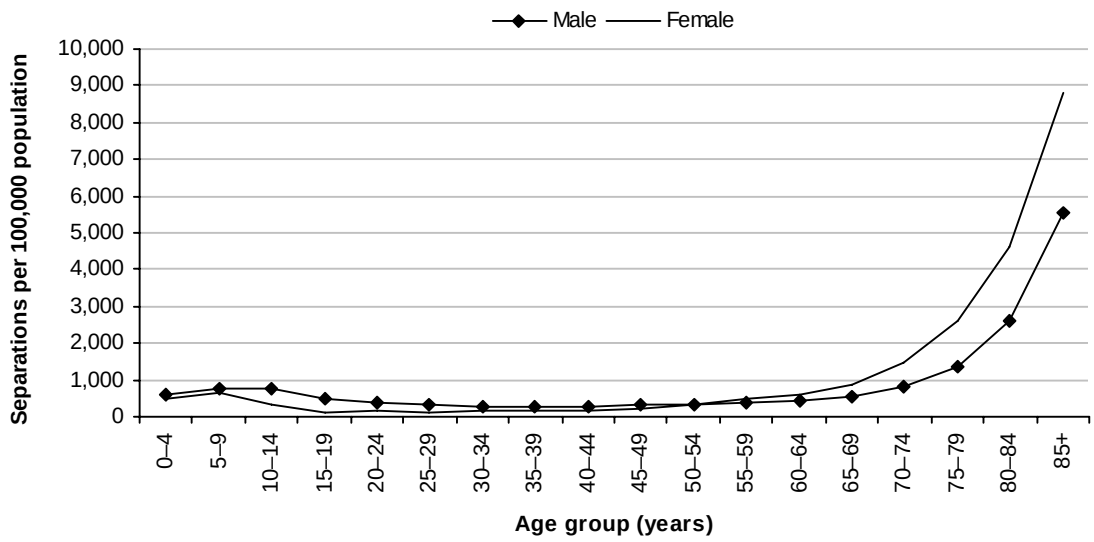


Figure 2.5.1: Age-specific hospital separation rates for unintentional falls by sex, Australia, 2003–04

Nearly 50% of fall injuries occurred in elderly adults aged 65+ years and 20% occurred in children aged 0–14 years (Table 2.5.2). Nearly three times as many elderly females aged 65+ years sustained a fall injury compared with elderly males aged 65+ years.

Table 2.5.2: Fall cases by age group, Australia, 2003–04

	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–14 years	14,731	27.0	9,475	13.8	24,206	19.6
15–24 years	6,139	11.2	1,830	2.7	7,969	6.5
25–44 years	8,432	15.4	4,566	6.6	12,998	10.5
45–64 years	8,551	15.7	9,240	13.4	17,791	14.4
65+ years	16,779	30.7	43,718	63.5	60,497	49.0
Total	**54,632**	**100.0**	**68,829**	**100.0**	**123,461**	**100.0**

State and territory differences

New South Wales and Victoria had rates of fall injury that were above the national rate (Table 2.5.3 and Figure 2.5.2). Queensland and the Northern Territory (653; 95% CI: 601–705) had rates that were similar to the national rate. Rates that were below the national rate were found in Western Australia, South Australia, Tasmania and the Australian Capital Territory.

Table 2.5.3: Age-standardised rates of fall injury, states and territories, 2003–04

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI
NSW	619	613–625
Vic	630	623–637
Qld	607	600–615
WA	523	513–533
SA	546	535–557
Tas	506	487–526
ACT	528	501–556
NT	653	601–705
Australia	**605**	**602–608**

Figure 2.5.2: Age-standardised rates of fall injury, states and territories, 2003–04

Body part

Two-thirds of admitted injury cases due to falls involved injuries to the shoulder and upper limb or hip and lower limb (Table 2.5.4).

Table 2.5.4: Principal Diagnosis by body region for fall injury, Australia, 2003–04

	Males		Females		Persons	
Principal Diagnosis by body region	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Head	12,011	22.0	10,333	15.0	22,344	18.1
Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis)	7,573	13.9	9,367	13.6	16,940	13.7
Shoulder and upper limb	19,047	34.9	21,689	31.5	40,736	33.0
Hip and lower limb	15,471	28.3	26,913	39.1	42,384	34.3
Other injuries not specified by body region	530	1.0	527	0.8	1,057	0.9
All body regions	**54,632**	**100.0**	**68,829**	**100.0**	**123,461**	**100.0**

Seven specific injury types accounted for two-thirds (*n*=81,111) of all fall injuries (*n*=123,461) (Table 2.5.5). Fracture of the limbs accounted for half of all fall injuries (50%; *n*=62,061).

Fracture of forearm was the most common injury (18%) and the lower end of the radius was most frequently broken (51%; *n*=11,631).

For the second most common fall injury—*fracture of femur* (16%), 89% were neck of femur fractures (neck of femur *n*=9,154; pertrochanteric fracture *n*=7,157; subtrochanteric *n*=692). There were 2.6 times as many females as males with a broken femur.

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

The upper (*n*=3,612) and lower end (*n*=3,210) of the humerus were most frequently broken (78%) for *fracture of shoulder and upper arm*.

An open wound of the scalp was most common for *open wound of head* (40%; *n*=3,233).

For *fracture of lumbar spine and pelvis*, 52% were fracture of pubis (*n*=2,849) and 25% (*n*=1,396) were fracture of lumbar vertebra.

For *intracranial injury*, 61% were concussive injury (*n*=3,265) the majority of which were concussion (*n*=1,184) or loss of consciousness for less than 30 minutes (*n*=1,560). Twenty per cent of *intracranial injury* cases were traumatic subdural haemorrhage (*n*=1,091).

Table 2.5.5: Top 7 specific injuries for unintentional falls, Australia, 2003–04

	Males		Females		Persons	
Principal Diagnosis	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Fracture of forearm	10,316	18.9	12,378	18.0	22,694	18.4
Fracture of femur	5,355	9.8	13,774	20.0	19,129	15.5
Fracture of lower leg, including ankle	4,992	9.1	6,496	9.4	11,488	9.3
Fracture of shoulder and upper arm	3,365	6.2	5,385	7.8	8,750	7.1
Open wound of head	4,311	7.9	3,869	5.6	8,180	6.6
Fracture of lumbar spine and pelvis	1,632	3.0	3,900	5.7	5,532	4.5
Intracranial injury	3,205	5.9	2,133	3.1	5,338	4.3
Sub-total of top 7 diagnoses	**33,176**	**60.7**	**47,935**	**69.6**	**81,111**	**65.7**

Among children aged 0–14 years of age injured by a fall (*n*=24,206), *fracture of forearm* (*n*=10,510) was the most common injury, followed by *fracture of shoulder and upper arm* (*n*=2,771) and *open wound of head* (*n*=2,222).

Among youth and young people aged 15–24 years injured by a fall (*n*=7,969), *fracture of forearm* (*n*=1,354) was the most common injury, followed by *fracture of lower leg, including ankle* (*n*=1,291) and *intracranial injury* (*n*=642).

For adults aged 24–44 years of age (*n*=12,998), *fracture of lower leg, including ankle* (*n*=2,417), *fracture of forearm* (*n*=2,021), *open wound of head* (*n*=748) and *intracranial injury* (*n*=703) were the most common fall injuries.

Among adults aged 45–64 years (*n*=17,791), the most common fall injuries were *fracture of forearm* (*n*=3,328), *fracture of lower leg, including ankle* (*n*=3,220), *fracture of shoulder and upper arm* (*n*=1,122), and *fracture of femur* (1,108).

For older people aged 65+ years (*n*=60,497), *fracture of femur* (*n*=17,218) was the most common injury, followed by *fracture of forearm* (*n*=5,481), *fracture of lumbar spine and pelvis* (*n*=4,597), *fracture of shoulder and upper arm* (*n*=4,076) *open wound of head* (*n*=3,924) and *fracture of lower leg, including ankle* (*n*=3,333).

Mechanism

The most commonly identified mechanism for all persons was *fall on the same level from slipping, tripping and stumbling* (26% of all fall injuries; *n*=32,466) for which females outnumbered males 2:1 (Table 2.5.6). Most *falls on the same level from slipping, tripping and stumbling* involved older people aged 65+ years (17% of all fall injuries; *n*=20,737, males *n*=5,017; females *n*=15,720), of which 12,585 cases (males *n*=2,962; females *n*=9,623) were *fall on the same level from tripping*; 5,681 cases were *fall on the same level from slipping* (males *n*=1,362; females *n*=4,319) and 2,471 cases were *fall on the same level from stumbling* (males *n*=693; females *n*=1,778).

A *fall involving playground equipment* accounted for only 5% of fall injuries (*n*=5,835), yet it was the most common mechanism of injury for children aged 0–14 years (*n*=5,611), with 59% of child fall injuries being from playground climbing equipment e.g. the monkey bar or jungle gym (males *n*=859; females *n*=987) and trampolines (males *n*=770; females *n*=671).

Six per cent of fall injuries (*n*=7,870) were a *fall on and from stairs and steps* and 44% of such cases occurred in older people aged 65+ years (males *n*=997; females *n*=2,469).

Four per cent of fall injuries were from *other fall on the same level due to collision with, or pushing, by another person* (*n*=4,870) and males outnumbered females by 5:1. Although a large number of injury cases lack detail on the activity code, only 10% (*n*=467) of falls due to collision with or pushing by another person were unspecified or not reported, so the activity code is meaningful in this context. Most cases occurred while engaged in sports (males *n*=3,634; females *n*=365). Falls from collision or pushing by another person were the most common mechanism of injury among youth and young people aged 15–24 years (22%; *n*=1,761).

Three per cent of fall injuries were falls *involving ice-skates, skis, roller-skates or skateboards* (*n*=3,049) and males outnumbered females 3:1. Most (60%) were falls from a skateboard (male *n*=1,538; female *n*=298).

Males outnumbered females 5:1 for fall injuries due to fall on and from ladder, 44:1 for *fall on and from scaffolding*, 4:1 for *fall from, out of or through building or structure*, 3:1 for *fall from tree*, 2:1 for *fall from cliff* and 3:1 for *diving and jumping into water*.

Table 2.5.6: External causes of unintentional fall injury by sex, Australia, 2003–04

ICD-10-AM Code	External cause	Males		Females		Persons	
		Count	Per cent	Count	Per cent	Count	Per cent
W00	Fall on same level involving ice and snow	29	0.1	34	0.1	63	0.1
W01	Fall on same level from slipping, tripping and stumbling	10,313	18.9	22,153	32.2	32,466	26.3
W01.0	Fall on same level from slipping	*3,341*	*6.1*	*7,086*	*10.3*	*10,427*	*8.5*
W01.1	Fall on same level from tripping	*5,578*	*10.2*	*12,784*	*18.6*	*18,362*	*14.9*
W01.2	Fall on same level from stumbling	*1,394*	*2.6*	*2,283*	*3.3*	*3,677*	*3.0*
W02	Fall involving ice-skates, skis, roller-skates or skateboards	2,273	4.2	776	1.1	3,049	2.5
W02.0	Fall involving roller-skates	*263*	*0.5*	*257*	*0.4*	*520*	*0.4*
W02.1	Fall involving skateboard	*1,538*	*2.8*	*298*	*0.4*	*1,836*	*1.5*
W02.2	Fall involving waterski	*94*	*0.2*	*16*	*0.0*	*110*	*0.1*
W02.3	Fall involving snow ski	*173*	*0.3*	*118*	*0.2*	*291*	*0.2*
W02.4	Fall involving snow board	*138*	*0.3*	*32*	*0.1*	*170*	*0.1*
W02.5	Fall involving ice-skates	*67*	*0.1*	*55*	*0.1*	*122*	*0.1*
W03	Other fall on same level due to collision with, or pushing by, another person	4,094	7.5	776	1.1	4,870	3.9
W04	Fall while being carried or supported by other persons	224	0.4	234	0.3	458	0.4
W05	Fall involving wheelchair	269	0.5	322	0.5	591	0.5
W06	Fall involving bed	1,466	2.7	2,658	3.9	4,124	3.3
W07	Fall involving chair	1,364	2.5	2,236	3.3	3,600	2.9
W08	Fall involving other furniture	467	0.9	480	0.7	947	0.8
W09	Fall involving playground equipment	3,168	5.8	2,667	3.9	5,835	4.7
W09.0	Fall involving tree house	*61*	*0.1*	*32*	*0.1*	*93*	*0.1*
W09.1	Fall involving flying fox	*200*	*0.4*	*168*	*0.2*	*368*	*0.3*
W09.2	Fall involving playground climbing apparatus	*866*	*1.6*	*997*	*1.5*	*1,863*	*1.5*
W09.3	Fall involving slide	*322*	*0.6*	*218*	*0.3*	*540*	*0.4*
W09.4	Fall involving swing	*357*	*0.7*	*244*	*0.4*	*601*	*0.5*
W09.5	Fall involving seesaw	*29*	*0.1*	*29*	*0.0*	*58*	*0.1*
W09.6	Fall involving trampoline	*832*	*1.5*	*701*	*1.0*	*1,533*	*1.2*
W09.8	Fall involving other specified playground equipment	*212*	*0.4*	*129*	*0.2*	*341*	*0.3*
W09.9	Fall involving unspecified playground equipment	*289*	*0.5*	*149*	*0.2*	*438*	*0.4*
W10	Fall on and from stairs and steps	3,062	5.6	4,808	7.0	7,870	6.4
W11	Fall on and from ladder	2,982	5.5	662	1.0	3,644	3.0
W12	Fall on and from scaffolding	261	0.5	6	0.0	267	0.2
W13	Fall from, out of or through building or structure	2,761	5.1	746	1.1	3,507	2.8
W14	Fall from tree	916	1.7	282	0.4	1,198	1.0
W15	Fall from cliff	223	0.4	98	0.1	321	0.3
W16	Diving or jumping into water causing injury other than drowning or submersion	331	0.6	115	0.2	446	0.4
W17	Other fall from one level to another	3,318	6.1	1,769		5,087	4.1
W18	Other fall on same level	7,324	13.4	11,483	16.7	18,807	15.2
W19	Unspecified fall	9,787	17.9	16,524	24.0	26,311	21.3
	Total	**54,632**	**100.0**	**68,829**	**100.0**	**123,461**	**100.0**

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

Figure 2.5.3 depicts male and female age-specific rates for fall injuries for selected categories of external cause. The vertical axis in both figures has been cut off at 600 for clarity.

Falls involving playground equipment was the most common cause of injury for children under 10 years of age, particularly in the 5–9 year age group (age-specific rate of 270 per 100,000 for males and 263 per 100,000 for females).

The most frequent cause of injury for male children aged 10–14 years was falls on the same level due to collision with, or pushing by, another person (age-specific rate of 161 per 100,000) followed by falls involving ice-skates, skis, roller-skates or skateboards (age-specific rate of 124 per 100,000; most of which were falls involving a skateboard—96 males per 100,000). For female children aged 10–14 years, the most frequent cause of injury was falls from slipping, tripping and stumbling (age-specific rate of 65 per 100,000).

Young men (15–24 years) and adult males (25–29 years) were most likely to injure themselves from a collision with another person, with rates peaking in the 15–19 year age group (149 per 100,000). Among males aged 30–34 years, slipping, tripping and stumbling was on par with falls from a collision with another person (37 and 38 per 100,000, respectively), and emerged as the predominant cause of injury in older ages, incrementally increasing up to 1,683 per 100,000 in males aged 85+ years. The most common cause of injury in females aged 15–19 years was slipping, tripping and stumbling (25 per 100,000) and this became the predominant cause of injury in older ages, incrementally increasing up to 2,756 per 100,000 in the 85+ age group.

Fall from bed increased sharply in prevalence from 65+ years and peaked in the 85+ age group with age-specific rates of 339 per 100,000 for males and 540 per 100,000 for females. A similar pattern was observed for falls from stairs with a peak in the 85+ age group of 231 per 100,000 for males and 293 per 100,000 for females, and also for falls involving a chair with a peak in the 85+ age group of 180 per 100,000 for males and 267 per 100,000 for females.

Injuries involving a fall from a ladder were more common in males than females and occurred mostly from middle age onwards, particularly in males aged 60–79 years of age (with peaks of 79 per 100,000 in males aged 60–64 years and 81 per 100,000 in males aged 70–74 years).

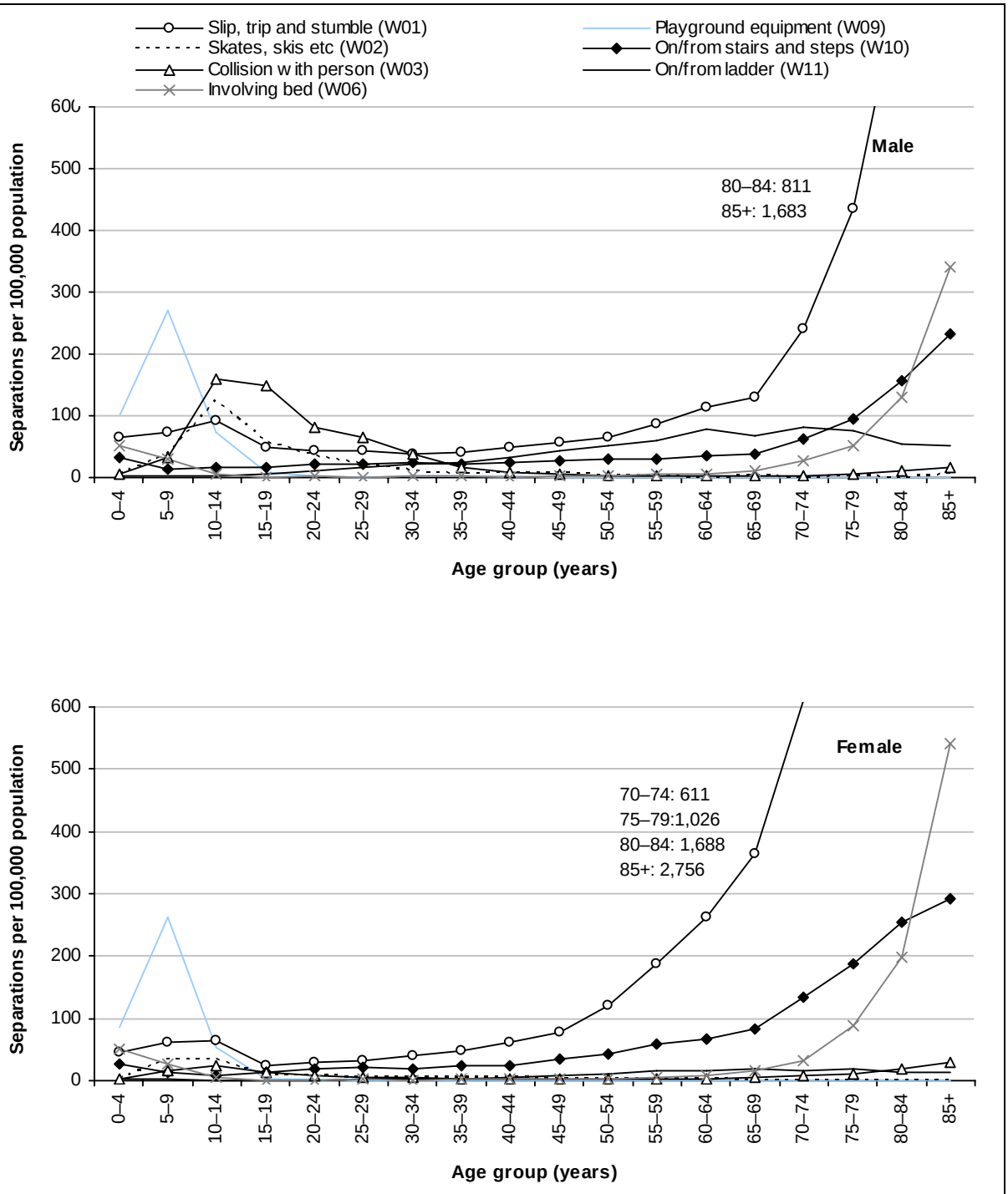


Figure 2.5.3: Age-specific hospital separation rates for fall injury by sex, Australia, 2003–04

Length of stay

Mean length of stay (all ages) was longer for unintentional falls than for any of the other types of *Community injury* that are the topics of chapters in this report. This reflects the long mean length of stay for falls cases at older ages (Figure 2.5.4) which are numerous (Table 2.5.2). The mean length of stay for fall injury hospital cases rose with age (Figure 2.5.4). The mean length of stay was 1.6 days for children aged 0–14 years, 2.3 days for young people aged 15–24 years, 3.0 days for adults aged 25–44 years, 4.6 days for adults aged 45–64 years and 9.7 days for older people aged 65+ years.

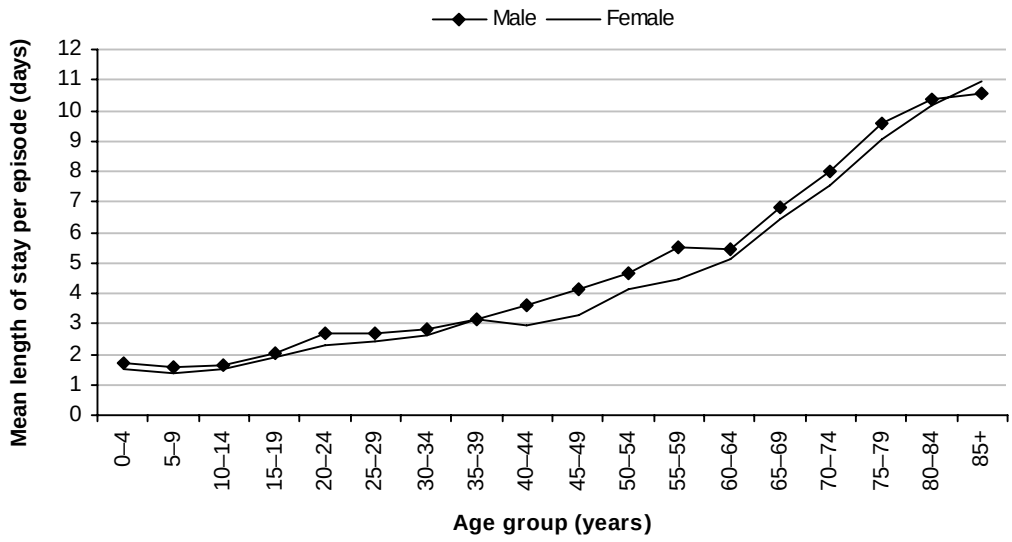


Figure 2.5.4: Length of stay per episode for fall injury by age and sex, Australia, 2003–04

Time trends

Age-standardised rates of hospitalised fall injury changed little over recent years; rates for Australia were 602 per 100,000 of the population in 1999–00 and 605 per 100,000 in 2003–04 (Figure 2.5.5). Age-standardised rates were similar each year for males and females.

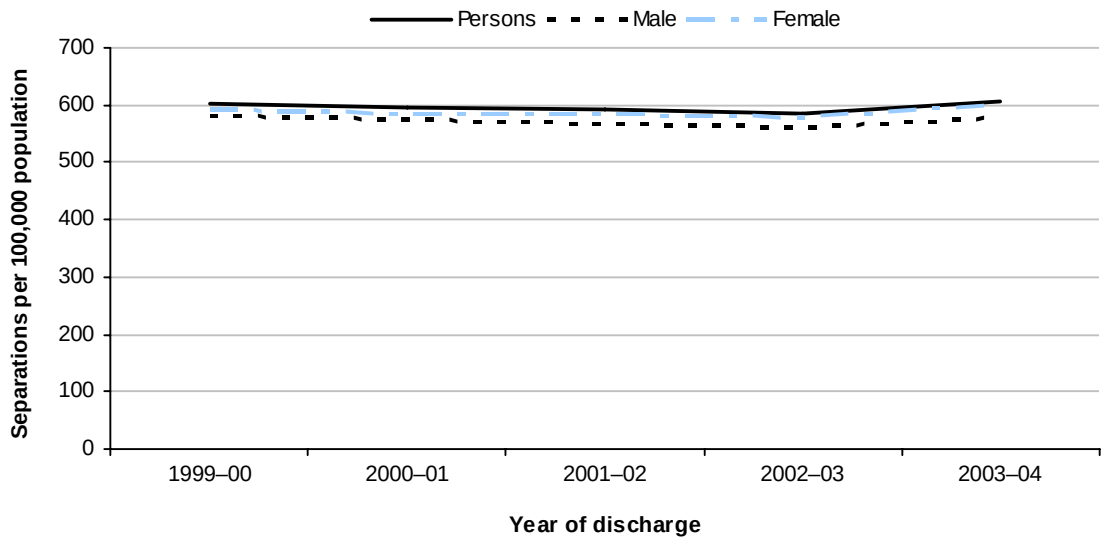


Figure 2.5.5: Age-standardised rates for fall injury, Australia, 1999–00 to 2003–04

For older people aged 65+ years, age-standardised rates of fall injury increased in recent years; from 2,218 per 100,000 population in 1999–00 to 2,301 per 100,000 in 2003–04 (Figure 2.5.6). Age-standardised rates for females aged 65+ years were higher than for males aged 65+ years; female rates increased from 2,661 per 100,000 in 1999–00 to 2,764 per 100,000, and male rates increased from 1,532 per 100,000 to 1,617 per 100,000.

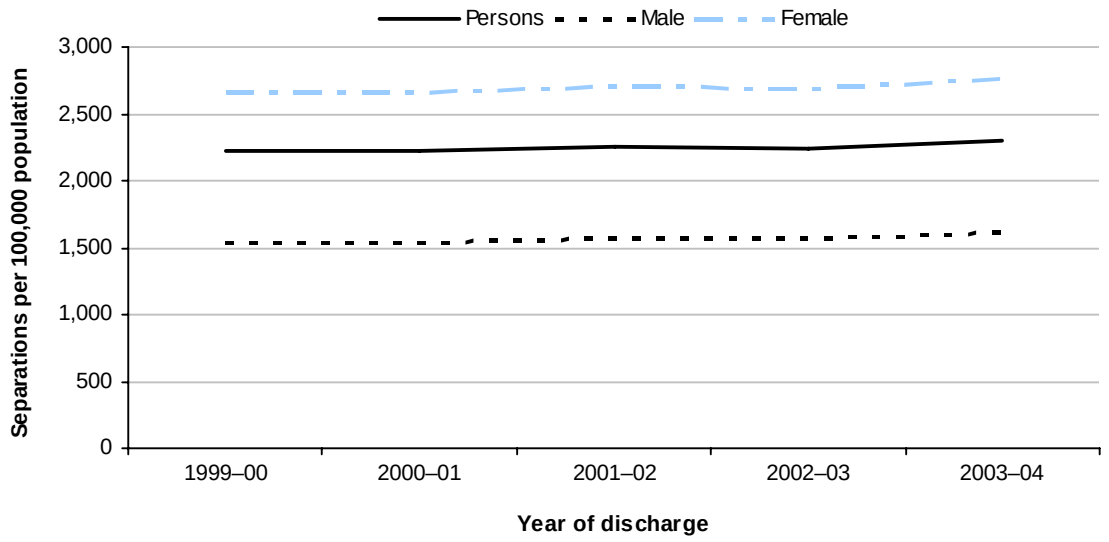


Figure 2.5.6: Age-standardised rates for fall injury in older people aged 65+ years, Australia, 1999–00 to 2003–04

Place of occurrence

Falls resulting in hospitalisation due to unintentional falls injury occurred in diverse locations. Many were unspecified (28%; *n*=34,900) or not reported (0.1%; *n*=102). The following observations are restricted to those cases in which the place of occurrence was specified (Table 2.5.7).

Children aged 0–14 years were most likely to sustain fall injuries in the home (males: 40%, females: 50%), followed by at school (males: 27%, females: 27%), and in sports and athletic areas (males: 19%, females: 9%).

Young men (15–24 years) sustained fall injuries most often in sports and athletic areas (52%), followed by home (14%), whereas the location for females of the same age was most commonly at home (31%), followed by sports and athletic areas (26%) and trade and service areas [13%—60% (*n*=86) of which sustained fall injuries in cafés, hotels and restaurants].

Males aged 25–44 years were most commonly injured in the home (33%), followed by sports and athletic areas (25%) and industrial and construction areas (10%). Over half of females aged 25–44 years were injured in the home (53%), followed by sports and athletic areas (13%) and trade and service areas [11%—half (*n*=157) were injured in cafés, hotel and restaurants].

Males and females aged 45–64 years were most commonly injured in the home (56% and 64%, respectively) followed by a street or highway (males: 8%, females: 9%) and trade and service area (males: 8%, females: 8%). About 65% of fall injuries on a street or highway for persons aged 45–64 years occurred on the sidewalk (males *n*=273, females *n*=334). A considerable proportion of fall injuries that occurred in a trade and service area for people aged 45–64 years were in cafés, hotel and restaurants (males *n*=208, females *n*=149).

Older males and females aged 65+ were most commonly injured in the home (62% and 58%, respectively) followed by residential institutions (21% and 27% respectively). Most fall injuries in the residential institutions were in aged care facilities for those aged 65+ years (males *n*=2,744, females *n*=9,726).

Falls in aged care facilities accounted for 29% (*n*=11,785) of hospitalised fall injuries at ages 75 and older in which place of occurrence was specified (*n*=41,200) and 57% occurred in the home (*n*=23,636). Falls in aged care facilities accounted for 38% (*n*=7,669) of hospitalised fall injuries at ages 85 and older in which place of occurrence was specified (*n*=19,981) and 51% occurred in the home (*n*=10,197).

Table 2.5.7: Place of occurrence of fall injury cases by age and sex, Australia, 2003–04

Place	0–14 yrs	Per cent	15–24 yrs	Per cent	25–44 yrs	Per cent	45–64 yrs	Per cent	65+ yrs	Per cent	Total	Per cent
Male												
Home	3,551	40.1	532	14.0	1,629	33.4	2,871	56.2	8,380	61.9	16,963	46.9
Residential institution	12	0.1	23	0.6	68	1.4	122	2.4	2,796	20.6	3,021	8.3
School	2,400	27.1	232	6.1	16	0.3	23	0.5	6	0.0	2,677	7.4
Health service area	30	0.3	11	0.3	35	0.7	62	1.2	419	3.1	557	1.5
Other specified institution	59	0.7	17	0.5	23	0.5	39	0.8	125	0.9	263	0.7
Sports and athletics area	1,680	19.0	1,987	52.2	1,230	25.2	238	4.7	97	0.7	5,232	14.5
Street and highway	140	1.6	183	4.8	314	6.4	419	8.2	822	6.1	1,878	5.2
Trade and service area	163	1.8	163	4.3	387	7.9	391	7.7	534	3.9	1,638	4.5
Industrial and construction area	20	0.2	134	3.5	471	9.7	369	7.2	33	0.2	1,027	2.8
Farm	24	0.3	18	0.5	49	1.0	73	1.4	40	0.3	204	0.6
Other specified places	786	8.9	506	13.3	659	13.5	501	9.8	296	2.2	2,748	7.6
Total	**8,865**	**100.0**	**3,806**	**100.0**	**4,881**	**100.0**	**5,108**	**100.0**	**13,548**	**100.0**	**36,208**	**100.0**
Female												
Home	2,772	49.7	342	30.6	1,411	52.5	3,846	63.8	21,512	58.4	29,883	57.2
Residential institution	16	0.3	7	0.6	23	0.9	126	2.1	9,929	27.0	10,101	19.3
School	1,517	27.2	64	5.7	30	1.1	78	1.3	17	0.1	1,706	3.3
Health service area	25	0.5	10	0.9	30	1.1	119	2.0	1,010	2.7	1,194	2.3
Other specified institution	33	0.6	12	1.1	28	1.0	45	0.8	308	0.8	426	0.8
Sports and athletics area	524	9.4	288	25.8	359	13.4	210	3.5	170	0.5	1,551	3.0
Street and highway	90	1.6	61	5.5	209	7.8	510	8.5	1,841	5.0	2,711	5.2
Trade and service area	110	2.0	142	12.7	301	11.2	492	8.2	1,355	3.7	2,400	4.6
Industrial and construction area	0	0.0	5	0.5	21	0.8	31	0.5	29	0.1	86	0.2
Farm	16	0.3	11	1.0	12	0.5	23	0.4	28	0.1	90	0.2
Other specified places	479	8.6	176	15.7	262	9.8	551	9.1	635	1.7	2,103	4.0
Total	**5,582**	**100.0**	**1,118**	**100.0**	**2,686**	**100.0**	**6,031**	**100.0**	**36,834**	**100.0**	**52,251**	**100.0**

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

2.6 Transportation

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79 and

First reported external cause: V01–V99

Table 2.6.1: Key indicators for transport cases, Australia, 2003–04

Indicator	Males	Females	Persons
Separations from hospital due to transportation	36,804	16,890	53,696[(a)]
Percentage of all injury separations	17.1	10.8	14.4
Estimated cases*	33,105	15,404	48,511[(a)]
Crude rate/100,000 population	333.3	153.3	242.8
Age-standardised rate/100,000 population	332.7	153.4	243.6
Mean length of stay (days)	4.5	4.6	4.5
Total patient days	149,109	70,855	219,966[(b)]

(a) Includes 2 separations and (b) 2 patient days for which sex was not reported.

* Omits inward transfers from acute hospitals.

This chapter covers all hospitalisations due to unintentional transport-related injuries, including cases occurring in railway, water, land and air transport. Transportation accidents were responsible for 14% of all injury hospitalisations in the financial year 2003–04 (Table 2.6.1).

This chapter excludes transport-related injury cases that were registered as *intentional self-harm by jumping or lying before a moving object* (*n*=29), *intentional self-harm by crashing of motor vehicle* (*n*=54), *assault by pushing or placing victim before moving object* and *assault by crashing of motor vehicle* (*n*=22), *falling, lying or running before or into moving object, undetermined intent* and *crashing of motor vehicle, undetermined intent* (*n*=7) and *sequelae of transport accidents* (*n*=64).

Of the 48,511 transport injury cases in 2003–04, 1.4% were water transport (male *n*=494, female *n*=165), 0.4% were air and space transport (male *n*=147, female *n*=28) and 1.0% were other and unspecified transport (male *n*=350, female *n*=115).

Age and sex distribution

More males than females were hospitalised for transport injury (based on age-standardised rates) with a M:F ratio of 2:2:1. Males had a higher rate of transport injury at almost all ages (except 80–84 years). The age-specific rate for males peaked at 680 per 100,000 at ages 15–19 years, which was over twice the rate of 299 per 100,000 for females of the same age (Figure 2.6.1).

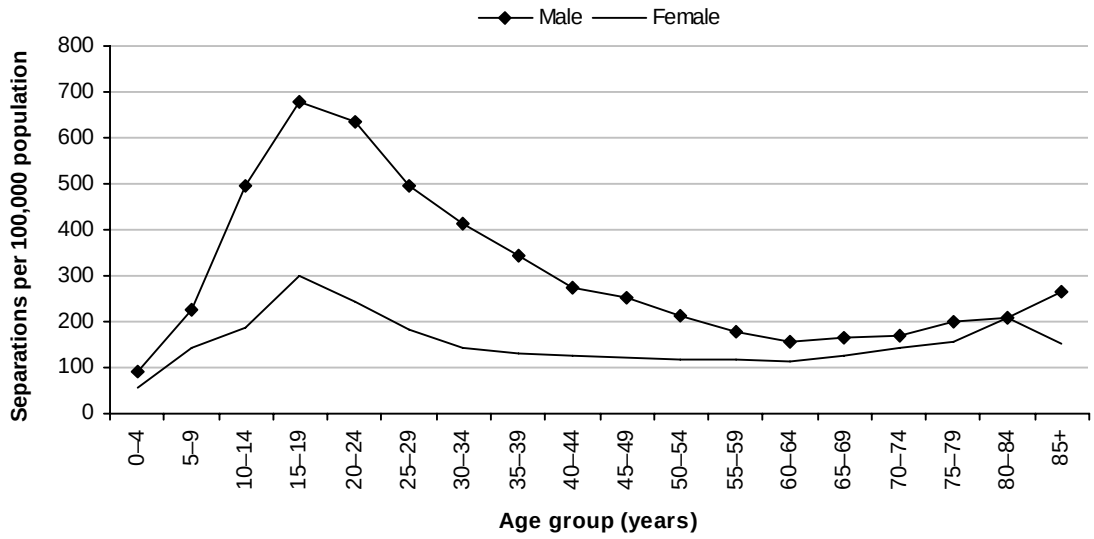


Figure 2.6.1: Age-specific hospital separation rates for transport injury by sex, Australia, 2003–04

Almost 60% of transport injuries occurred to people aged 15–44 years (Table 2.6.2).

Table 2.6.2: Transportation cases by age group, Australia, 2003–04

	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–14 years	5,668	17.1	2,521	16.4	8,191[(a)]	16.9
15–24 years	9,216	27.8	3,619	23.5	12,835	26.5
25–44 years	11,123	33.6	4,241	27.5	15,364	31.7
45–64 years	4,948	15.0	2,820	18.3	7,768	16.0
65+ years	2,150	6.5	2,203	14.3	4,353	9.0
Total	**33,105**	**100.0**	**15,404**	**100.0**	**48,511[(a)]**	**100.0**

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

Table 2.6.3 shows age and sex differences for injuries by the mode of transport. More male car occupants were hospitalised due to injury than female car occupants. The highest proportion of male car occupants who were injured were young men aged 15–24 years (followed closely by adults aged 25–44 years) and for females it was adults aged 25–44 years (followed closely by young women aged 15–24 years). Eleven times more males than females were hospitalised due to motorcycle accidents. The highest proportion of motorcycle injuries occurred in adults aged 25–44 years for both males (42%) and females (37%). Males had over four times as many pedal cycle accidents as females. The majority of pedal cycle accidents occurred to young children aged 0–14 years (44% of male and 52% of female pedal cycle injuries). More male pedestrians were injured compared with females. For males, the highest proportion of pedestrian accidents were in the 25–44 year age group, whereas for females, pedestrians aged 65+ were most frequently injured. More females were injured in bus accidents compared with males; the highest proportion of those injured was aged 65+ years for both males (36%) and females (66%). Animal rider or occupant of an animal-driven vehicle injuries occurred more often in females than males. For females, the highest proportion of animal rider or occupant of an animal-driven vehicle accidents occurred among children aged 0–14 years (33%), followed closely by women aged 25–44 years (31%), whereas for males the highest proportion occurred in men aged 25–44 years.

Table 2.6.3: Injured person's vehicle by age group, Australia, 2003–04

Place	0–14 yrs	Per cent	15–24 yrs	Per cent	25–44 yrs	Per cent	45–64 yrs	Per cent	65+ yrs	Per cent	Total[(c)]	Per cent
Male												
Pedestrian	475	20.5	436	18.8	630	27.1	423	18.2	357	15.4	2,321	100.0
Pedal cycle	2,812	43.9	1,364	21.3	1,384	21.6	669	10.5	173	2.7	6,402	100.0
Motorcycle	1,257	12.9	3,181	32.5	4,084	41.8	1,101	11.3	152	1.6	9,775	100.0
Three-wheeled motor vehicle	9	13.6	5	7.6	15	22.7	12	18.2	25	37.9	66	100.0
Car	562	5.7	3,339	34.1	3,279	33.5	1,526	15.6	1,084	11.1	9,790	100.0
Pick-up truck or van	36	7.7	119	25.5	166	35.6	114	24.5	31	6.7	466	100.0
Heavy transport vehicle	6	0.9	49	6.9	330	46.5	304	42.8	21	3.0	710	100.0
Bus	21	14.6	16	11.1	30	20.8	25	17.4	52	36.1	144	100.0
Animal or animal-driven vehicle	158	13.8	270	23.6	393	34.3	265	23.1	59	5.2	1,145	100.0
Other land transport	164	12.7	264	20.4	453	35.0	287	22.2	127	9.8	1,295	100.0
Water transport	42	8.5	80	16.2	203	41.1	134	27.1	35	7.1	494	100.0
Air and space transport	0	0.0	18	12.2	76	51.7	42	28.6	11	7.5	147	100.0
Total[(a)]	**5,542**	**16.9**	**9,141**	**27.9**	**11,043**	**33.7**	**4,902**	**15.0**	**2,127**	**6.5**	**32,755**	**100.0**
Female												
Pedestrian	252	16.9	227	15.2	306	20.5	274	18.3	435	29.1	1,494	100.0
Pedal cycle	793	51.5	160	10.4	338	22.0	210	13.7	38	2.5	1,539	100.0
Motorcycle	176	19.8	202	22.7	332	37.3	149	16.7	32	3.6	891	100.0
Three-wheeled motor vehicle	*	*	4	13.8	*	*	6	20.7	17	58.6	29	100.0
Car	495	5.9	2,365	28.2	2,439	29.1	1,755	20.9	1,328	15.8	8,382	100.0
Pick-up truck or van	20	16.4	38	31.2	29	23.8	23	18.9	12	9.8	122	100.0
Heavy transport vehicle	10	23.3	*	*	12	27.9	12	27.9	*	*	43	100.0
Bus	12	4.7	24	9.5	23	9.1	28	11.0	167	65.8	254	100.0
Animal or animal-driven vehicle	626	32.8	468	24.5	592	31.0	205	10.7	18	0.9	1,909	100.0
Other land transport	62	14.3	74	17.1	97	22.4	92	21.3	108	24.9	433	100.0
Water transport	18	10.9	35	21.2	44	26.7	46	27.9	22	13.3	165	100.0
Air and space transport	0	0.0	6	21.4	11	39.3	7	25.0	4	14.3	28	100.0
Total[(b)]	**2,465**	**16.1**	**3,606**	**23.6**	**4,224**	**27.6**	**2,807**	**18.4**	**2,187**	**14.3**	**15,289**	**100.0**

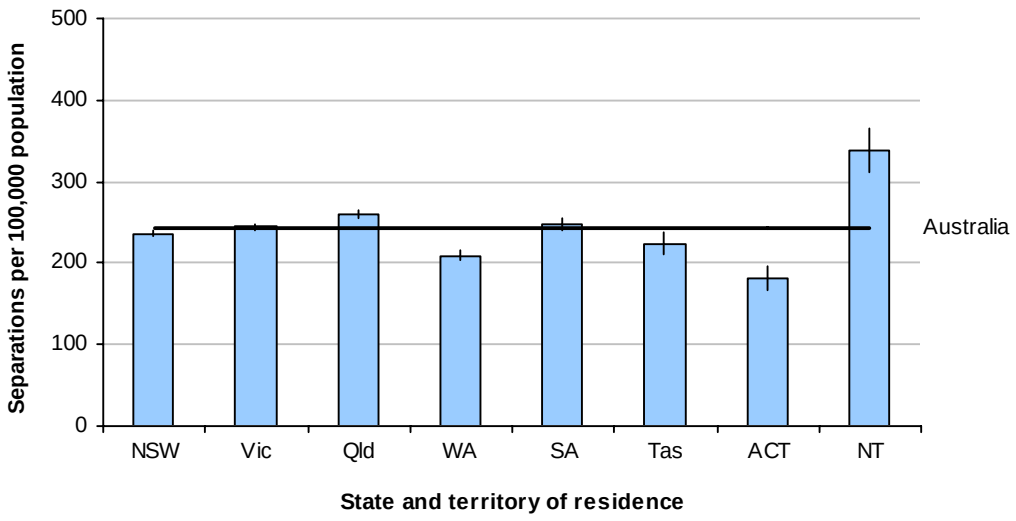
Note: Shaded areas indicate the highest figure for a row. Excludes (a) 350 and (b) 115 injury cases that are other and unspecified transport, and (c)2 for which sex was not reported.

State and territory differences

New South Wales, Western Australia, Tasmania and the Australian Capital Territory had rates of transport injury that were below the national rate (Table 2.6.4 and Figure 2.6.2). Victoria and South Australia had rates that were similar to the national rate. Rates that were above the national rate were found in Queensland and the Northern Territory.

Table 2.6.4: Age-standardised rates of transport injury, states and territories, 2003–04

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI
NSW	235	232–239
Vic	244	240–248
Qld	260	255–265
WA	209	202–215
SA	248	240–256
Tas	223	210–237
ACT	181	166–195
NT	338	311–365
Australia	**244**	**241–246**



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

Figure 2.6.2: Age-standardised rates of transport injury, states and territories, 2003–04

Body part

Injuries sustained in transportation accidents involved all major body regions with similar frequency (Table 2.6.5).

Table 2.6.5: Principal Diagnosis by body region and sex for transport injury, Australia, 2003–04

	Males		Females		Persons	
Principal Diagnosis by body region	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Head	7,699	23.3	3,477	22.6	11,177[(a)]	23.0
Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis)	7,986	24.1	5,596	36.3	13,582	28.0
Shoulder and upper limb	9,158	27.7	3,279	21.3	12,437	25.6
Hip and lower limb	7,641	23.1	2,767	18.0	10,408	21.5
Other injuries not specified by body region	621	1.9	285	1.9	907[(a)]	1.9
All body regions	**33,105**	**100.0**	**15,404**	**100.0**	**48,511[(b)]**	**100.0**

(a) Includes 1, and (b) 2 separation(s) for which sex was not reported.

Length of stay

Mean length of stay for transportation injury cases rose with age (Figure 2.6.3). The mean length of stay was 2.8 days for children aged 0–14 years, 4.0 days for young people aged 15–24 years, 4.5 days for adults aged 25–44 years, 5.2 days for adults aged 45–64 years and 8.4 days for older people aged 65+ years.

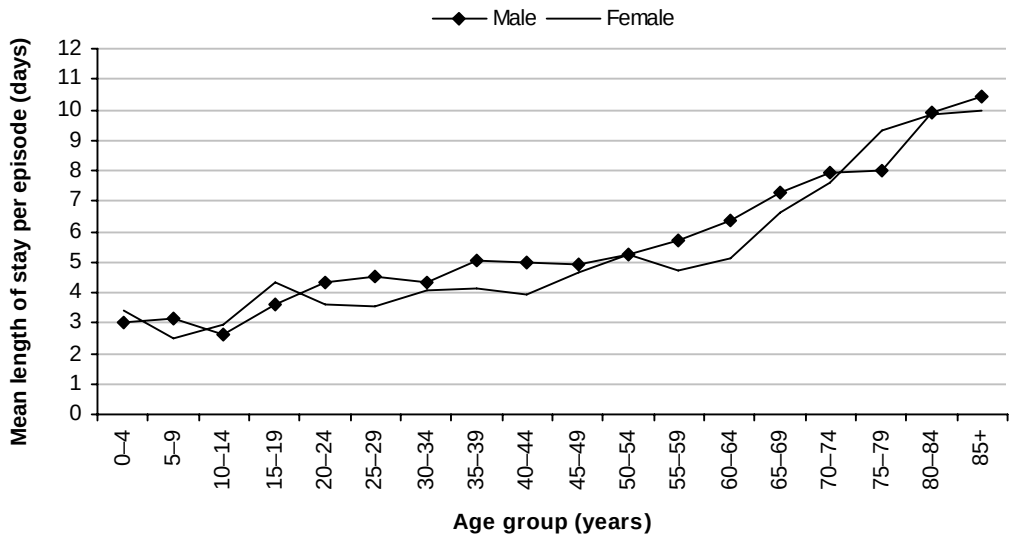


Figure 2.6.3: Length of stay per episode for transport injury by age and sex, Australia, 2003–04

Time trends

Age-standardised rates for hospitalised transport injury declined from 249 per 100,000 of the population in 1999–00 to 244 per 100,000 in 2003–04, with fluctuations in intervening years (Figure 2.6.4). Age-standardised rates for males underwent a similar pattern of fluctuation, decreasing from 337 per 100,000 in 1999–00 to 333 per 100,000 in 2003–04. Male rates were consistently higher than female rates, which underwent a steady decline from 161 per 100,000 in 1999–00 to 153 per 100,000 in 2003–04.

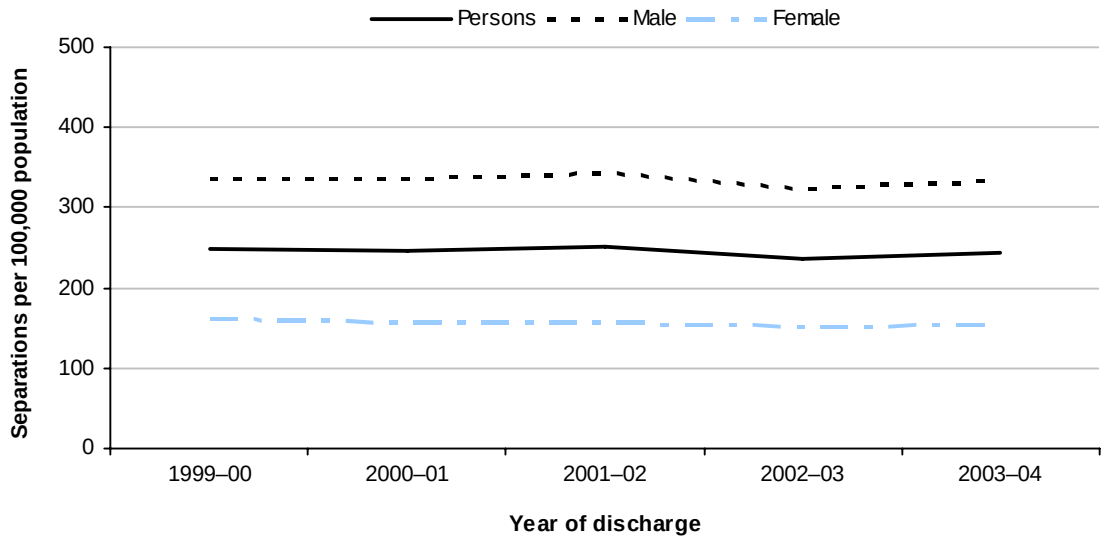


Figure 2.6.4: Age-standardised rates for transport injury, Australia, 1999–00 to 2003–04

2.6.1 Land transportation

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79 and

First reported external cause: V01–V89

The following section concentrates on land transport accidents (*n*=47,212; see Table 2.6.6); 38% of people hospitalised due to land transport accidents were car occupants (*n*=18,173); 23% (*n*=10,666) were motorcyclists; 17% (*n*=7,941) were pedal cyclists; and 8% (*n*=3,815) were pedestrians. More males than females were injured in land transportation accidents (based on age-standardised rates), with a M:F rate ratio of 2.1:1.0.

A traffic accident is any vehicle accident occurring on a public highway. A non-traffic accident is any vehicle accident that occurs entirely in any place other than a public highway. Of all people hospitalised due to land transport accidents, 62% were injured in traffic accidents (see Table 2.6.6).

Table 2.6.6 and Figure 2.6.6 describes mode of transport for traffic and non-traffic cases. For traffic accident cases (*n*=29,074), the most frequent mode of transport of the injured person was a car (55%; 15,906) followed by a motorcycle (19%; 5,431). There were gender differences; 74% of females injured in traffic accidents were car occupants (*n*=7,412) and 10% were pedestrians (*n*=1,041), whereas 45% of males were car occupants (*n*=8,493) and 26% were on a motorcycle (*n*=4,929).

For non-traffic accidents (*n*=12,876), the most frequent modes of transport was a motorcycle (38%; 4,880) followed by a pedal cycle (31%; 3,966). There were gender differences; the most common mode of transport for females injured in non-traffic accidents were pedal cycles (32%; 762) followed closely by cars (30%; 718), whereas the most common for males were motorcycles (43%; 4,517) followed by pedal cycles (31%; 3,204).

Of accidents designated unspecified as to whether traffic or non-traffic (Table 2.6.6), the majority (58%; *n*=3,054) involved an animal rider or occupant of an animal-drawn vehicle.

Male case numbers exceeded females in most instances; exceptions were bus occupant injuries and animal rider or occupant of animal-driven vehicle injuries (Table 2.6.6).

Table 2.6.6: Mode of transport for land transport injury cases, Australia, 2003–04

Injured person's vehicle	Non-traffic accident	Traffic accident	Unspecified	Total
Males				
Pedestrian	438	1,625	258	2,321
Pedal cycle	3,204	2,961	237	6,402
Motorcycle	4,517	4,929	329	9,775
Three-wheeled motor vehicle	43	22	1	66
Car	1,070	8,493	227	9,790
Pick-up truck or van	135	281	50	466
Heavy transport vehicle	218	386	106	710
Bus	31	58	55	144
Animal or animal-driven vehicle	0	0	1,145	1,145
Other land transport	826	295	174	1,295
Total	**10,482**	**19,050**	**2,582**	**32,114**
Females				
Pedestrian	265	1,041	188	1,494
Pedal cycle	762	725	52	1,539
Motorcycle	363	502	26	891
Three-wheeled motor vehicle	17	11	1	29
Car	718	7,412	252	8,382
Pick-up truck or van	33	74	15	122
Heavy transport vehicle	16	22	5	43
Bus	57	94	103	254
Animal or animal-driven vehicle	0	0	1,909	1,909
Other land transport	163	141	129	433
Total	**2,394**	**10,022**	**2,680**	**15,096**
Persons				
Pedestrian	703	2,666	446	3,815
Pedal cycle	3,966	3,686	289	7,941
Motorcycle	4,880	5,431	355	10,666
Three-wheeled motor vehicle	60	33	2	95
Car	1,788	15,906	479	18,173
Pick-up truck or van	168	355	65	588
Heavy transport vehicle	234	408	111	753
Bus	88	153	158	399
Animal or animal-driven vehicle	0	0	3,054	3,054
Other land transport[(a)]	989	436	303	1,728
Total[(b)]	**12,876**	**29,074**	**5,262**	**47,212[(c)]**

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

(a) The injured person was an occupant of a railway train or railway vehicle (*n*=112), tram (*n*=88), special industrial vehicle (*n*=136), special agricultural vehicle (*n*=190), special construction vehicle (*n*=72), special all-terrain or other motor vehicle designed primarily for off-road use (*n*=609) and victim's mode of transport unknown (*n*=521).

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

(c) Excludes 1,299 hospital separations that are water, air and space, and other and unspecified transport.

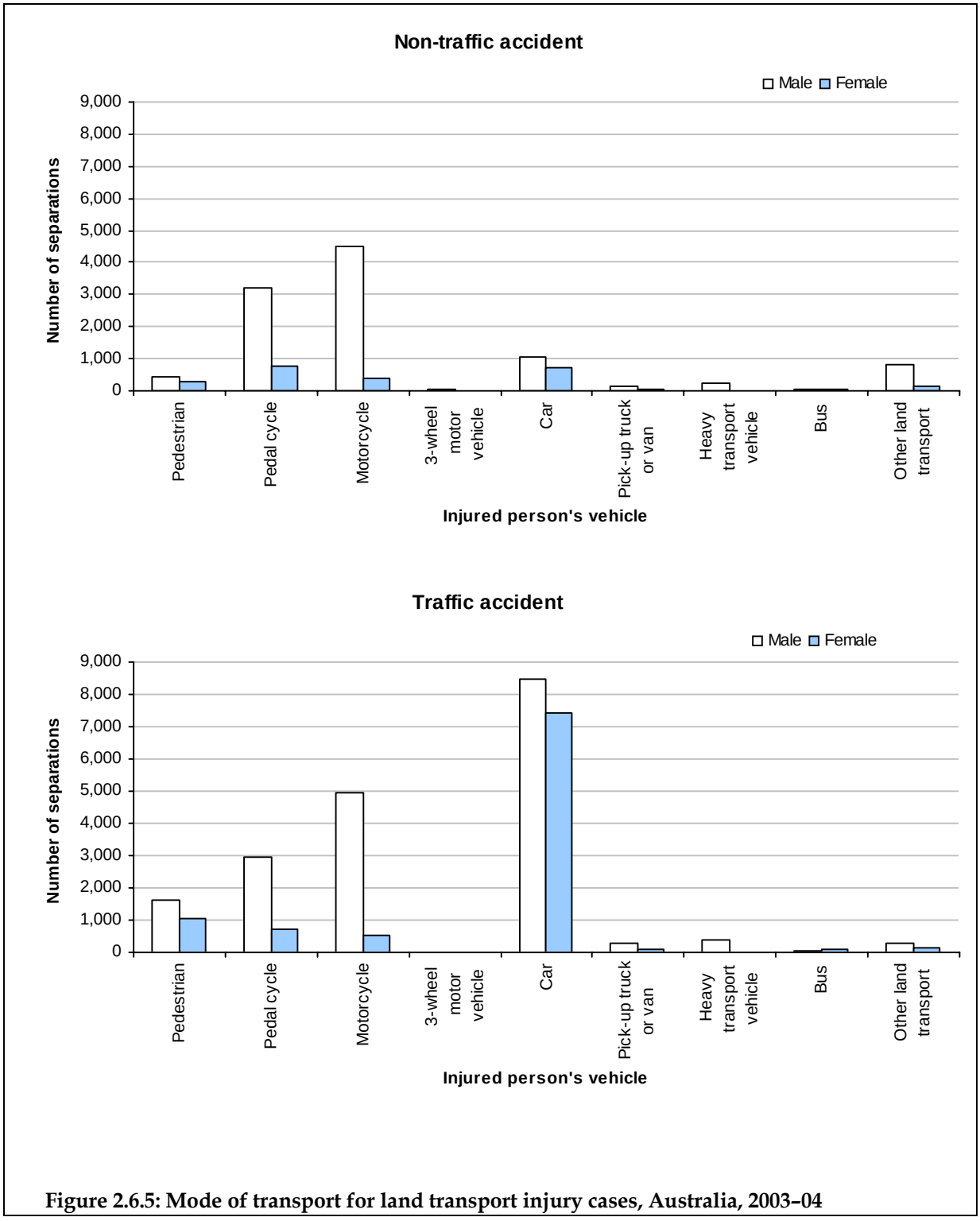


Figure 2.6.5: Mode of transport for land transport injury cases, Australia, 2003–04

Many injuries result from collision between a person's mode of transport and another vehicle, or collision with some other object. The other vehicle or object is often called the 'counterpart'. Table 2.6.7 details the counterpart in land transport crashes.

There are three points of note in this report that expand upon analyses undertaken in the previous report from this series (Berry & Harrison 2006). Firstly, the 2001–02 report omitted *other land transport accidents* (V80–V89) from the counterpart in the collision table (the equivalent to Table 2.6.7 in this report) on the basis that for most cases, the counterpart was not specified. Although *Animal rider or occupant of animal-driven vehicle* (i.e. V80) specified the counterpart, it was excluded on the basis that coding limitations precluded differentiation between the counterpart being *car, pick-up truck, or van* and *heavy transport vehicle or bus*. This report takes a different approach and includes *animal rider or occupant of animal-driven vehicle* cases in the counterpart in the collision table with a note explaining that two counterpart categories are not mutually exclusive. As there were no cases for either category, it has not presented as a problem in interpretation. A remaining 1,728 *other land transport* injury cases (ICD-10-AM V81–V89) have been omitted from the counterpart in the collision table due to counterpart not being specified.

Secondly, the *non-collision transport accident* category was heavily populated and was the leading mechanism of land transport accidents for all road user groups except pedestrians and car occupants. The *non-collision transport accident* category should only include non-collision accidents such as overturning, falling or being thrown from a vehicle, but the possibility exists that the *non-collision transport accident* category may have been used as a residual (i.e. 'dump') code for cases lacking information on whether the accident involved a collision with a counterpart, despite the provision of the *other and unspecified transport category* for this purpose. The *non-collision transport accidents* group of cases does not appear to contain a greater proportion of minor injuries than transport accidents involving a collision, as the proportion of high threat to life cases for *non-collision transport accident*s (20%) does not differ markedly from the proportions for other categories, for which the counterpart is specified. These range from 25% for *other non-motor vehicle* to 41% and 42% for *heavy transport vehicle or bus* and *railway train or railway vehicle*, respectively (data not shown). This report (as does the 2001–02 report) includes *non-collision transport accidents* in the list of the most common mechanism of injury for land transport injury cases despite this uncertainty concerning the types of cases included (Table 2.6.8).

Thirdly, Table 2.6.8 expresses the most common mechanisms of injury for land transport as a proportion of all land transport cases, whereas the 2001–02 report expressed the most common mechanisms of injury as a proportion of all cases that were allocated a code for counterpart in collision (i.e. it excluded *animal rider or occupant of animal-driven vehicle* and *other land transport accidents* coded V80–V89).

Table 2.6.8 lists the 5 most common mechanisms of injury in land transport crashes as being 1) a collision of a car with either a car, pick-up truck or van, 2) a motorcycle in a non-collision transport accident, 3) a collision of a car with a fixed or stationary object, 4) a pedal cycle in a non-collision transport accident, and 5) a car in a non-collision transport accident.

Tables 2.6.9 to 2.6.11 characterise the road user group (e.g. the position of the injured in the vehicle) for land transport accidents according to whether they were traffic, non-traffic or unspecified as to whether traffic or non-traffic.

Of hospitalised car occupants, 42% were involved in a collision with a car, pick-up truck or van, the car collided with a fixed or stationary object in 24%, and 21% were involved in a non-collision accident. For traffic accidents, 62% of those injured were drivers and 31% were passengers. Similar proportions were observed in non-traffic accidents (56% were drivers and 29% were passengers). A person on the outside of the vehicle constituted only 0.4% of traffic injuries, but the proportion was higher for non-traffic injuries (6%).

Table 2.6.7: Mechanism of injury for land transport injury cases, Australia, 2003–04

Injured person	Counterpart in collision									
	Pedestrian or animal	Pedal cyclist	Two- or three-wheeled motor vehicle	Car, pick-up truck or van	Heavy transport vehicle or bus	Railway train or railway vehicle	Other non-motor vehicle	Fixed or stationary object	Non-collision transport accident	Other and unspecified transport
Pedestrian	0	118	80	2,880	158	24	54	0	0	501
Pedal cyclist	44	153	9	988	44	*	*	407	4,053	2,236
Motorcyclist	187	9	304	1,471	68	5	15	1,144	5,041	2,422
Occupant of three-wheeled motor vehicle	0	0	*	10	0	0	*	10	53	21
Car occupant	109	6	37	7,681	591	21	15	4,317	3,836	1,560
Occupant of pick-up truck or van	5	0	*	103	25	4	*	81	264	103
Occupant of heavy transport vehicle	4	*	0	52	45	4	*	60	412	173
Bus occupant	*	0	0	31	11	*	0	19	234	99
Animal rider or occupant of animal-driven vehicle	18	0	0	0[(b)]	0[(b)]	0	10	38	2,423	565
Total (n=45,484)[(a)]	**370**	**287**	**431**	**13,216**	**942**	**61**	**105**	**6,076**	**16,316**	**7,680**

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

* Small counts are omitted.

(a) Excludes 1,728 cases that are 'Other land transport accidents' (V81–V89) and 1,299 cases due to water, air and space, and other and unspecified transport.

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

Table 2.6.8: Most common mechanisms of injury for land transport injury cases, Australia, 2003–04

Type of collision	Count	Percentage of land transport cases (n=47,212)[(a)]
Car collides with car, pick-up truck or van	7,681	16.3
Motorcycle in non-collision transport accident	5,041	10.7
Car collides with fixed, or stationary object	4,317	9.1
Pedal cycle in non-collision transport accident	4,053	8.6
Car in non-collision transport accident	3,836	8.1
Total	**24,928**	**52.8**

(a) Excludes 1,299 hospitalised transport injury cases due to water, air and space, and other and unspecified transport.

The high proportion of drivers injured in car crashes relative to passengers reflects the fact 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.

Nearly half (47%) of motorcyclists were involved in a non-collision transport accident, 14% were hit by a car, pick-up truck or van and 11% collided with a fixed or stationary object. Motorcycles are frequently ridden by one occupant; in 65% of motorcycle traffic accidents, a rider was injured and only 4% injured a passenger, although 31% were unspecified. Most non-traffic motorcycle accidents involved a rider (79%), only 2% were a passenger and 19% were unspecified.

Over half (51%) of pedal cyclists were involved in a non-collision transport accident and 12% were hit by a car, pick-up truck or van. Pedal cycles usually carry a sole occupant, the cyclist; in 51% of pedal cycle traffic accidents the cyclist was injured and only 0.8% injured a passenger, although 48% were unspecified. Most non-traffic pedal cycle accidents involved the cyclist (72%), only 1.4% were a passenger and 27% were unspecified.

Of pedestrians injured, 75% were hit by a car, pick-up truck or van. Nearly four times as many pedestrians were injured in traffic compared with non-traffic conditions.

For animal rider or occupant of an animal-driven vehicle (*n*=3,054), most injuries were sustained by a rider injured by falling from, or being thrown from, a horse in a non-collision accident (*n*=79%; *n*=2,423). The ICD-10-AM classification does not enable these cases to be specified as *traffic* or *non-traffic*.

Of heavy transport vehicle occupants, 55% were involved in a non-collision transport accident, 8% collided with a fixed or stationary object, 7% hit a car, pick-up truck or van and 6% collided with another heavy transport vehicle or bus. For traffic accidents, 77% of those injured were drivers, 12% were passengers, 2% were a person on the outside of the vehicle and 9% were not specified. In non-traffic accidents, a person on the outside of the vehicle constituted a much larger proportion of the injuries (29%) and only 31% of injuries were the driver and 8% were the passenger.

Of pick-up truck or van occupants, 45% were involved in a non-collision transport accident, 18% hit a car, pick-up truck or van and 14% collided with a fixed or stationary object. A similar pattern to heavy transport vehicles was seen with pick-up trucks or vans. In traffic accidents, 60% were drivers, 27% were passengers and 5% were a person on the outside of the vehicle. In non-traffic accidents, people on the outside of the vehicle constituted 30% of the injuries and only 22% of injuries were the driver and 21% were the passenger.

Fifty-nine per cent of bus occupants were involved in a non-collision transport accident, in 8% the bus hit a car, pick-up truck or van and in 5% it hit a fixed or stationary object. For bus occupants, a high proportion of passengers were injured relative to drivers for both traffic (65% were passengers and 14% were drivers) and non-traffic (63% were passengers and 5% were drivers).

Fifty-six per cent of three-wheeled motor vehicle occupants were involved in non-collision transport accidents, 11% collided with a car, pick-up truck or van and 11% collided with a fixed or stationary object. Three-wheeled motor vehicles are frequently ridden by one occupant; in 55% of traffic accidents, a rider was injured and 18% injured a passenger. Most non-traffic accidents involved a rider (80%) and 5% injured a passenger.

Table 2.6.9: Mode of transport for traffic land transport injury cases, Australia, 2003–04

Injured person's vehicle	Pedestrian	Driver	Passenger	Person on outside of vehicle	Not specified	Total
Pedestrian	2,666	0	0	0	0	2,666
Pedal cycle	0	1,888	29	0	1,769	3,686
Motorcycle	0	3,532	207	0	1,692	5,431
3-wheeled motor vehicle	0	18	6	0	9	33
Car	0	9,823	4,892	63	1,128	15,906
Pick-up truck or van	0	214	97	16	28	355
Heavy transport vehicle	0	314	48	7	39	408
Bus	0	21	100	1	31	153
Other land transport	0	74	36	5	321	436
Total	**2,666**	**15,884**	**5,415**	**92**	**5,017**	**29,074**

Table 2.6.10: Mode of transport for non-traffic land transport injury cases, Australia, 2003–04

Injured person's vehicle	Pedestrian	Driver	Passenger	Person on outside of vehicle	Not specified	Total
Pedestrian	703	0	0	0	0	703
Pedal cycle	0	2,857	56	0	1,053	3,966
Motorcycle	0	3,838	119	0	923	4,880
3-wheeled motor vehicle	0	48	3	0	9	60
Car	0	1,007	518	104	159	1,788
Pick-up truck or van	0	37	35	50	46	168
Heavy transport vehicle	0	72	18	68	76	234
Bus	0	4	55	1	28	88
Other land transport	0	563	75	111	240	989
Total	**703**	**8,426**	**879**	**334**	**2,534**	**12,876**

Table 2.6.11: Mode of transport for land transport injury cases unspecified as to whether traffic or non-traffic, Australia, 2003–04

Injured person's vehicle	Pedestrian	Passenger	Person boarding or alighting	Person on outside of vehicle	Not specified	Animal rider or occupant of animal-driven vehicle	Total
Pedestrian	446	0	0	0	0	0	446
Pedal cycle	0	0	16	0	273	0	289
Motorcycle	0	0	19	0	336	0	355
3-wheeled motor vehicle	0	0	0	0	2	0	2
Car	0	0	256	0	223	0	479
Pick-up truck or van	0	0	32	0	33	0	65
Heavy transport vehicle	0	0	42	0	69	0	111
Bus	0	0	115	0	43	0	158
Animal or animal-driven vehicle	0	0	0	0	0	3,054	3,054
Other land transport	0	78	117	24	84	0	303
Total	**446**	**78**	**597**	**24**	**1,063**	**3,054**	**5,262**

Traffic accidents—age and sex distribution

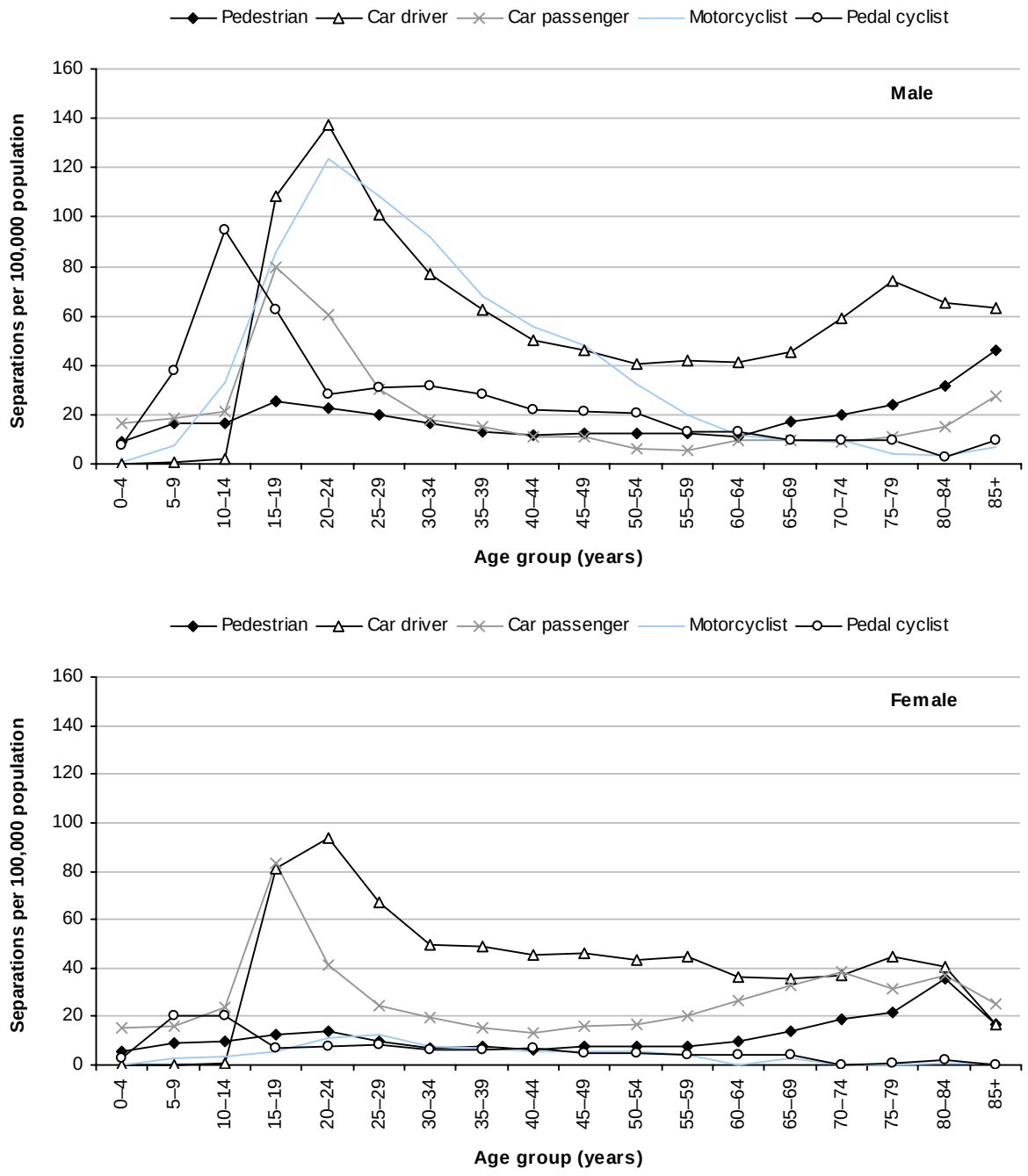


Figure 2.6.6: Traffic accidents—age-specific hospital separation rates by sex, Australia, 2003–04

For traffic accidents, car drivers were the group most commonly injured—male and female car driver rates of hospitalisation were highest between ages 15–24 years and peaked in the 20–24 year age group (age-specific rate of 138 per 100,000 for males and 94 per 100,000 for females) (Figure 2.6.6). Motorcyclists were the second most commonly injured group in traffic for males, peaking at 20–24 years with a rate of 123 per 100,000, but it was relatively uncommon for females (peaking at 13 per 100,000 for 25–29 year olds). For females, car passengers were the second most commonly injured group in traffic accidents, peaking in the 15–19 year age group (83 per 100,000). Rates of pedal cycle injury in traffic peaked in the 10–14 year age group (95 and 21 per 100,000 for males and females, respectively). Pedestrian injury rates in traffic peaked at older ages (46 per 100,000 for males aged 85+ years and 36 per 100,000 for females aged 80–84 years).

Non-traffic accidents—age and sex distribution

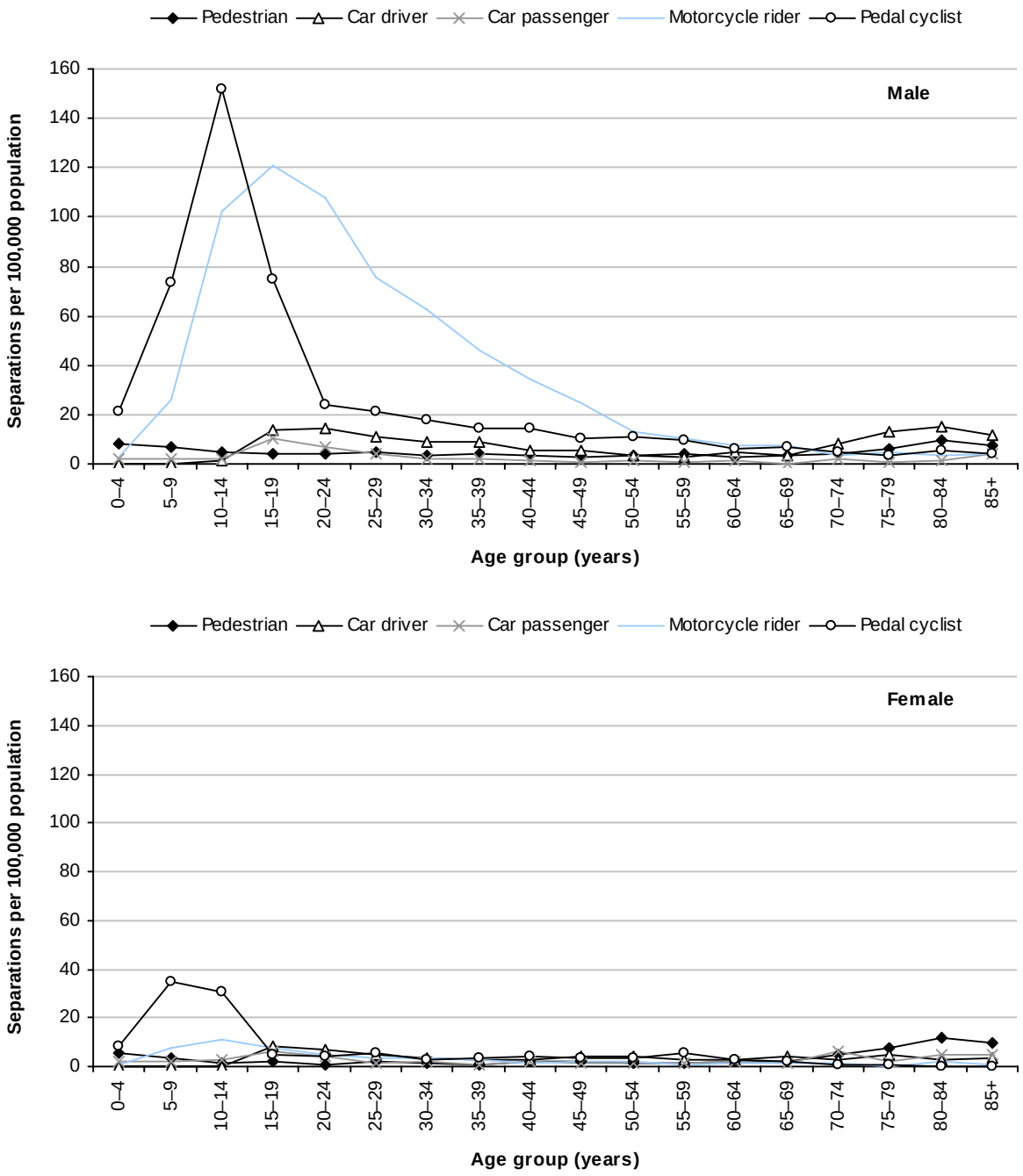


Figure 2.6.7: Non-traffic accidents—age-specific hospital separation rates by sex, Australia, 2003–04

For males, motorcyclists were the group most commonly injured in non-traffic accidents (Figure 2.6.7), peaking at 15–19 years with an age-specific rate of 121 per 100,000, but it was relatively uncommon for females (peaking at 11 per 100,000 for 10–14 year olds). Pedal cyclists were the second most commonly injured group in non-traffic for males, peaking at 10–14 years with a rate of 152 per 100,000, and pedal cyclists were the most commonly injured group for females (peaking at 35 per 100,000 for 5–9 year olds), although rates were much lower than for males. Injury rates for pedestrians, car drivers and car passengers were low for non-traffic accidents.

Length of stay by road user group

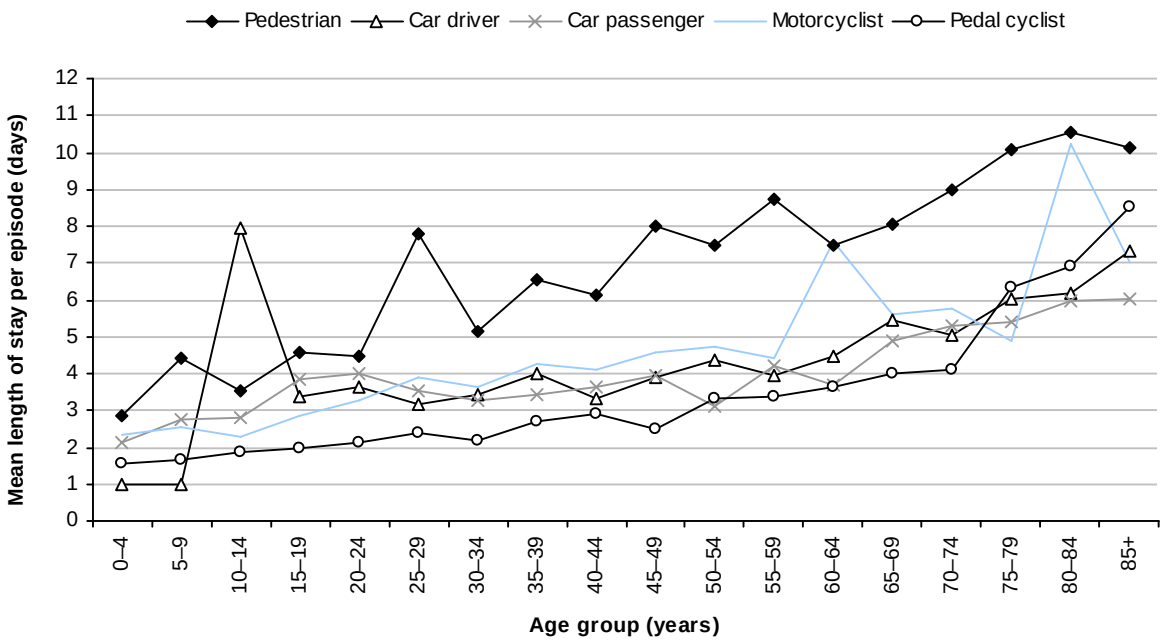


Figure 2.6.8: Length of stay per episode by injured person's vehicle, Australia, 2003–04

Pedestrians contributed the most patient days for land transport injury and mean length of stay was greater for pedestrians than other road users for most age groups (Figure 2.6.8). The peak for car drivers at 10–14 years was due to one severe case having a length of stay of 6 months.

Time trends by road user group

Age-standardised rates for injury hospitalisation of car occupants declined from 195 per 100,000 of the population in 1999–00 to 184 per 100,000 in 2003–04 (Figure 2.6.9). Rates for motorcyclists increased from 96 per 100,000 in 1999–00 to 107 per 100,000 in 2003–04. Pedal cyclist rates remained stable over time (79 per 100,000 in 1999–00 and 79 per 100,000 in 2003–04). Rates for pedestrians declined from 24 per 100,000 of the population in 1999–00 to 19 per 100,000 in 2003–04

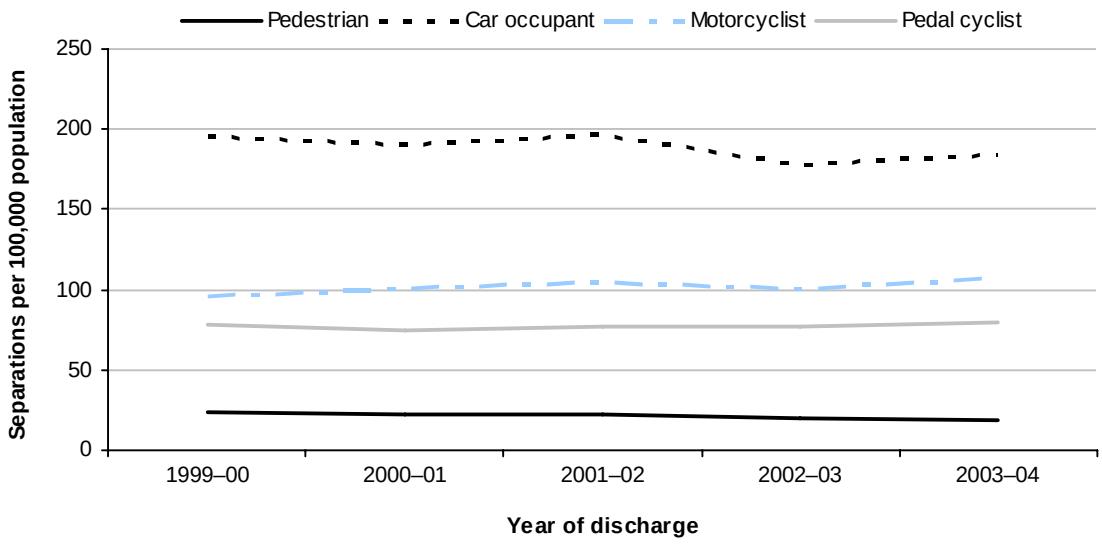


Figure 2.6.9: Age-standardised rates by road user group, Australia, 1999–00 to 2003–04

2.7 Poisoning, pharmaceuticals

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79 and

First reported external cause: X40–X44

Table 2.7.1: Key indicators for poisoning by pharmaceutical cases, Australia, 2003–04

Indicator	Males	Females	Persons
Separations from hospital due to poisoning by pharmaceuticals	3,766	4,136	7,902
Percentage of all injury separations	1.7	2.6	2.1
Estimated cases*	3,613	3,998	7,611
Crude rate/100,000 population	36.4	39.8	38.1
Age-standardised rate/100,000 population	36.8	40.1	38.4
Mean length of stay (days)	2.1	2.2	2.1
Total patient days	7,582	8,679	16,261

* Omits inward transfers from acute hospitals.

This chapter describes injury admissions where the first reported external cause code refers to accidental poisoning by a drug or medicament. It includes drugs given or taken in error or inadvertently, and accidental over-dosage. Poisoning by pharmaceuticals accounted for 2% of all injury hospitalisations in the financial year 2003–04 (Table 2.7.1).

This chapter does not include poisoning from non-pharmaceutical substances (*n*=2,672; see Chapter 2.8), intentional self-poisoning (*n*=19,253; see Chapter 2.2), assault by poisoning (*n*=66; see Chapter 2.3), or poisoning of undetermined intent (*n*=2,394; see Chapter 2.4).

Age and sex distribution

More females than males were hospitalised for accidental poisoning by pharmaceuticals (based on age-standardised rates) with a M:F rate ratio of 0.9:1. Age-specific rates of poisoning by pharmaceuticals were highest in children aged 0–4 years (males: 134 per 100,000, females: 125 per 100,000) but much lower in older children (Figure 2.7.1). Rates rose for youth and young people (15–24 years) and then declined gradually with age, with a rise again from 70+ years.

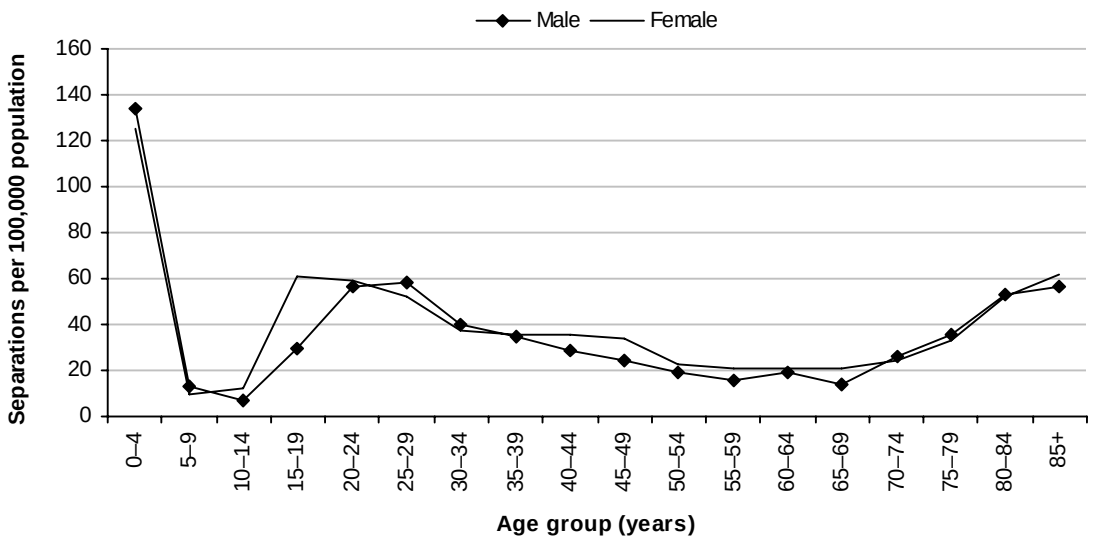


Figure 2.7.1: Age-specific hospital separation rates for poisoning by pharmaceuticals by sex, Australia, 2003–04

A fifth of poisoning by pharmaceuticals occurred in young children aged 0–4 years of age and a third occurred in adults aged 25–44 years (Table 2.7.2).

Table 2.7.2: Cases of poisoning by pharmaceuticals by age group, Australia, 2003–04

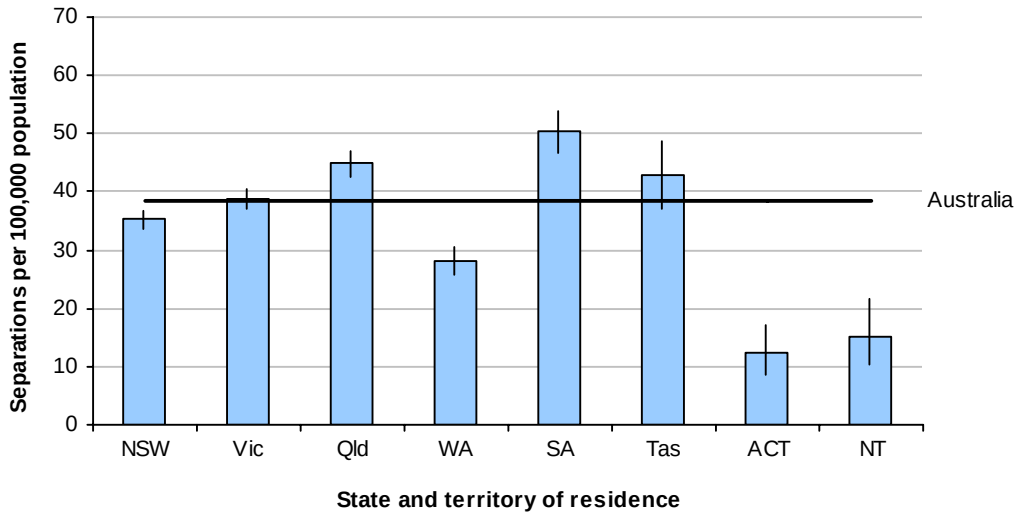
	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–4 years	867	24.0	769	19.2	1,636	21.5
5–14 years	137	3.8	146	3.7	283	3.7
15–24 years	606	16.8	804	20.1	1,410	18.5
25–44 years	1,171	32.4	1,176	29.4	2,347	30.8
45–64 years	484	13.4	607	15.2	1,091	14.3
65+ years	348	9.6	496	12.4	844	11.1
Total	**3,613**	**100.0**	**3,998**	**100.0**	**7,611**	**100.0**

State and territory differences

New South Wales, Western Australia, the Australian Capital Territory and the Northern Territory had rates of poisoning by pharmaceuticals that were below the national rate (Table 2.7.3 and Figure 2.7.2). Victoria and Tasmania had rates that were similar to the national rate. Rates that were above the national rate were found in Queensland and South Australia.

Table 2.7.3: Age-standardised rates of poisoning by pharmaceuticals, states and territories, 2003–04

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI
NSW	35.2	33.8–36.6
Vic	38.7	37.0–40.5
Qld	44.8	42.7–47.0
WA	28.3	25.9–30.7
SA	50.4	46.8–54.0
Tas	42.9	36.9–48.8
ACT	12.4	8.6–17.3
NT	15.2	10.3–21.6
Australia	**38.4**	**37.6–39.3**



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

Figure 2.7.2: Age-standardised rates of poisoning by pharmaceuticals, states and territories, 2003–04

Mechanism

Almost all (99.8%; *n*=7,595) of admitted injury cases did not specify a particular body part that was injured due to the mechanism being poisoning.

Fourty-four percent (*n*=3,324) of hospital cases were *accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkisonism and psychotropic drugs* (Table 2.7.4). This category includes benzodiazepines (16% of all pharmaceutical poisonings cases; *n*=1,235), other and unspecified antidepressants—likely to be selective serotonin reuptake inhibitors (6% of all cases; *n*=458) and psychostimulants with potential for use disorder (6% of all cases; *n*=433).

Twenty-five percent (*n*=1,879) of injury cases were *accidental poisoning by and exposure to other and unspecified drugs, medicaments, and biological substances*. This is a diverse group which include a range of drugs in the broad categories of *poisoning by agents primarily affecting the cardiovascular system* (*n*=429), *systemic and haematological agents, not elsewhere classified* (*n*=364), *poisoning by diuretics and other unspecified drugs, medicaments and biological substances* (*n*=346) and various others.

Fifteen per cent (*n*=1,124) of cases were *accidental poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics*—most of which were 4-aminophenol derivatives such as paracetamol (11% of all pharmaceutical poisoning cases; *n*=826) and other non-steroidal anti-inflammatory drugs (3% of all poisoning cases; *n*=208).

Fourteen per cent (*n*=1,029) were *accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified*—of which 335 were heroin (4% of all pharmaceutical poisoning cases), 304 were other opioids such as codeine and morphine (4% of all poisoning cases) and 101 were other unspecified narcotics (1% of all poisoning cases).

Three per cent (*n*=255) were *accidental poisoning by and exposure to other drugs acting on the autonomic nervous system*.

Table 2.7.4: Mechanism of pharmaceutical poisoning by age and sex, Australia, 2003–04

ICD-10-AM Code	Accidental poisoning by and exposure to:	0–14 yrs	Per cent	15–24 yrs	Per cent	25–44 yrs	Per cent	25–44 yrs	Per cent	65+ yrs	Per cent	Total	Per cent
	Male												
X40	• nonopioid analgesics, antipyretics and antirheumatics	144	14.3	78	12.9	111	9.5	65	13.4	22	6.3	420	11.6
X41	• antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	326	32.5	312	51.5	573	48.9	219	45.3	99	28.5	1,529	42.3
X42	• narcotics and psychodysleptics [hallucinogens]	33	3.3	126	20.8	332	28.4	82	16.9	43	12.4	616	17.1
X43	• other drugs acting on the autonomic nervous system	74	7.4	10	1.7	18	1.5	10	2.1	27	7.8	139	3.9
X44	• other and unspecified drugs, medicaments and biological substances	427	42.5	80	13.2	137	11.7	108	22.3	157	45.1	909	25.2
	Total	**1,004**	**100.0**	**606**	**100.0**	**1,171**	**100.0**	**484**	**100.0**	**348**	**100.0**	**3,613**	**100**
	Female												
X40	• nonopioid analgesics, antipyretics and antirheumatics	166	18.1	230	28.6	187	15.9	78	12.9	43	8.7	704	17.6
X41	• antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	282	30.8	390	48.5	669	56.9	337	55.5	117	23.6	1,795	44.9
X42	• narcotics and psychodysleptics [hallucinogens]	33	3.6	82	10.2	166	14.1	92	15.2	40	8.1	413	10.3
X43	• other drugs acting on the autonomic nervous system	49	5.4	15	1.9	14	1.2	6	1.0	32	6.5	116	2.9
X44	• other and unspecified drugs, medicaments and biological substances	385	42.1	87	10.8	140	11.9	94	15.5	264	53.2	970	24.3
	Total	**915**	**100.0**	**804**	**100.0**	**1,176**	**100.0**	**607**	**100.0**	**496**	**100.0**	**3,998**	**100.0**

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

Young children aged 0–4 years

A considerable proportion of accidental pharmaceutical poisonings occurred in young children aged 0–4 years (21.5%; *n*=1,636), and most of these (87%) occurred in young children aged 1–3 years, whereas only 5% occurred in infants aged less than 1 year (Table 2.7.5).

A*ccidental poisoning by and exposure to other and unspecified drugs, medicaments, and biological substances* in children aged 0–4 years (*n*=712) accounted for 9.4% of all hospital cases due to poisoning by pharmaceuticals. The drugs implicated were a diverse group, and included the broad categories of *poisoning by systemic and haematological agents, not elsewhere classified* (*n*=162), *agents primarily affecting the cardiovascular system* (*n*=135), *poisoning by topical agents primarily affecting skin and mucous membranes and by ophthalmological, otorhinolaryngological and dental drugs* (*n*=116) and various others.

A*ccidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkisonism and psychotropic drugs* in children aged 0–4 years (*n*=509) accounted for 6.7% of all hospital cases due to poisoning by pharmaceuticals. This category included benzodiazepines (*n*=219), other and unspecified antidepressants—likely to be selective serotonin reuptake inhibitors (*n*=83) and psychostimulants with potential for use disorder (*n*=43).

A*ccidental poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics* in children aged 0–4 years (*n*=252) accounted for 3.3% of all hospital cases due to poisoning by pharmaceuticals. Most were poisoning by 4-aminophenol derivatives such as paracetamol (*n*=188) and other non-steroidal anti-inflammatory drugs (*n*=51).

Accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified and *other drugs acting on the autonomic nervous system* in children aged 0–4 years constituted only a small proportion of all hospital cases due to poisoning by pharmaceuticals; 0.7% and 1.4%, respectively.

Table 2.7.5: Mechanism of poisoning by pharmaceuticals in children 0–4 years, Australia, 2003–04

ICD-10-AM Code	Accidental poisoning by and exposure to:	Age at admission					
		0–11 months	1 year	2 years	3 years	4 years	Total
X40	• nonopioid analgesics, antipyretics and antirheumatics	23	49	119	47	14	252
X41	• antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	6	106	252	96	49	509
X42	• narcotics and psychodysleptics [hallucinogens]	4	16	20	8	5	53
X43	• other drugs acting on the autonomic nervous system	13	21	47	23	6	110
X44	• other and unspecified drugs, medicaments and biological substances	31	212	289	122	58	712
Total		**77**	**404**	**727**	**296**	**132**	**1,636**
Per cent		**4.7**	**24.7**	**44.4**	**18.1**	**8.1**	**100.0**

Length of stay

Mean length of stay for poisoning by pharmaceuticals increased with age (Figure 2.7.3). The mean length of stay was 1.2 days for children aged 0–14 years, 1.5 days for young people aged 15–24 years, 1.8 days for adults aged 25–44 years, 3.0 days for adults aged 45–64 years and 5.0 days for older people aged 65+ years.

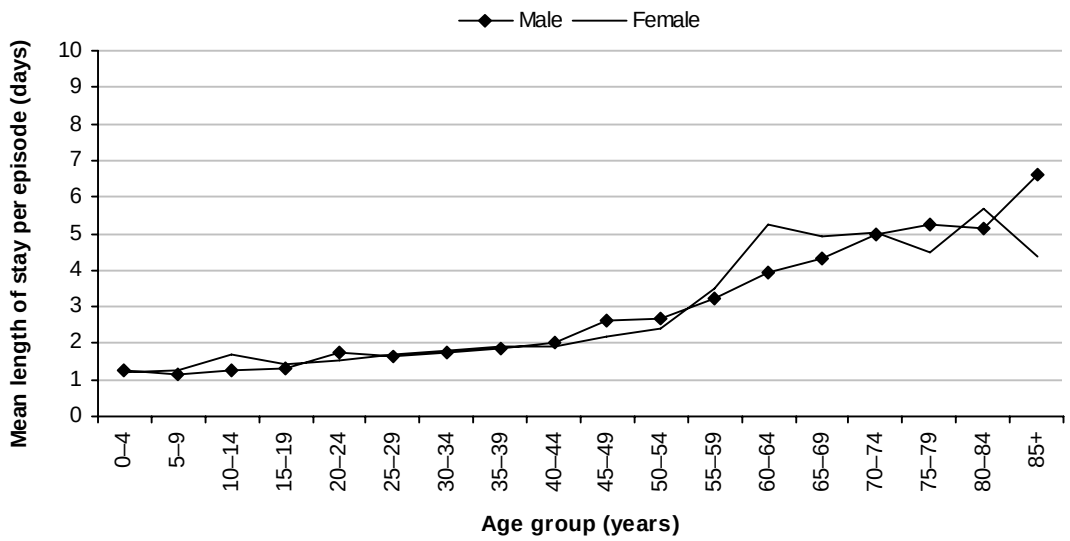


Figure 2.7.3: Length of stay per episode for poisoning by pharmaceuticals by age and sex, Australia, 2003–04

Time trends

Age-standardised rates for poisoning by pharmaceuticals decreased in recent years from 49.5 per 100,000 of the population in 1999–00 to 38.4 per 100,000 in 2003–04 (Figure 2.7.4). Age-standardised rates decreased for both males and females (males: from 49.7 per 100,000 in 1999–00 to 36.8 per 100,000 in 2003–04, females: from 49.4 per 100,000 in 1999–00 to 40.1 per 100,000 in 2003–04).

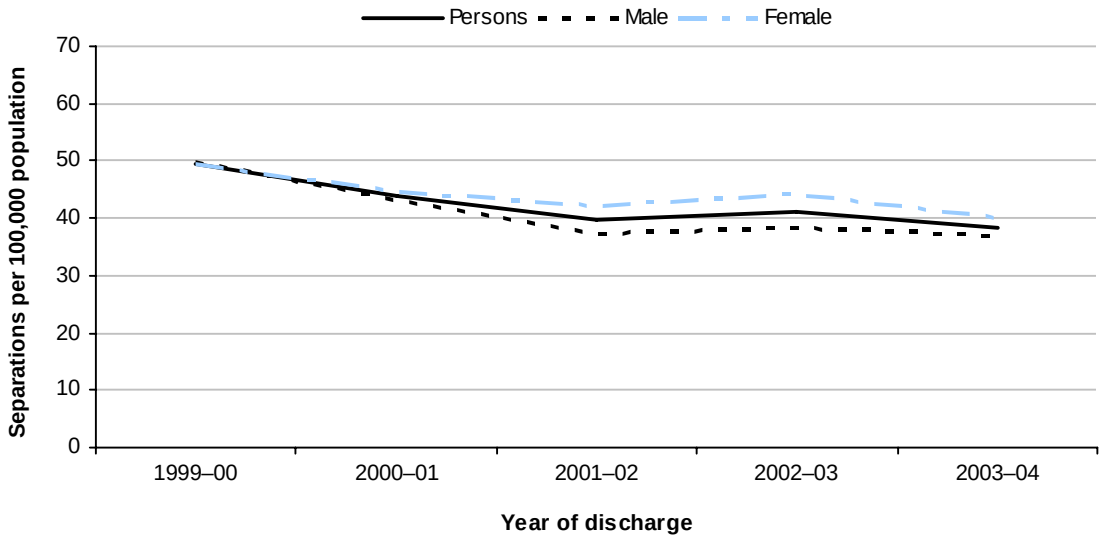


Figure 2.7.4: Age-standardised rates for poisoning by pharmaceuticals, Australia, 1999–00 to 2003–04

The decrease in age-standardised rates for all ages in recent years was mainly attributable to a decline in age-standardised rates for youth and young adults aged 15–24 years and adults aged 25–44 years (Table 2.7.5).

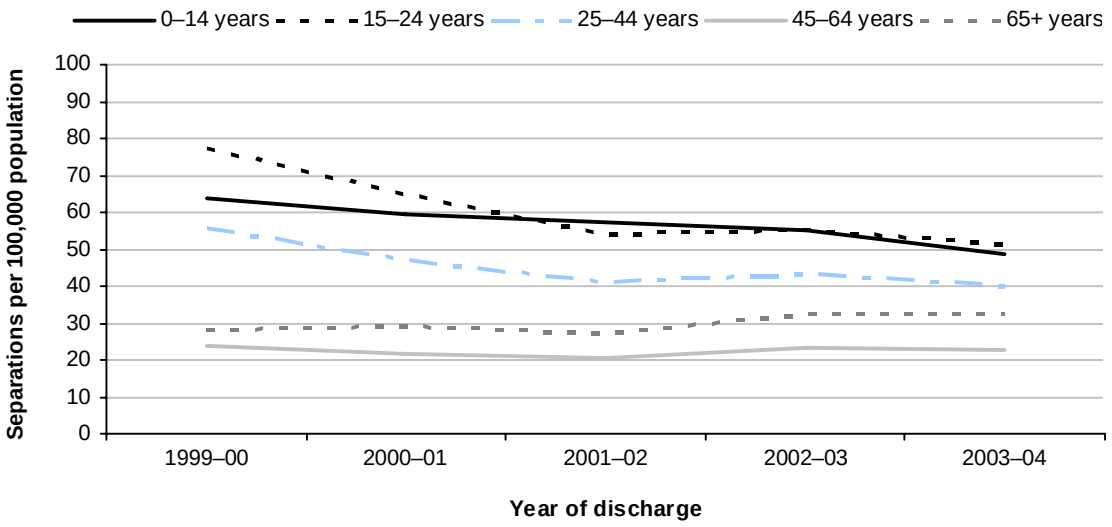


Figure 2.7.5: Age-standardised rates for poisoning by pharmaceuticals by age group, Australia, 1999–00 to 2003–04

For persons aged 15–44 years, the decrease in age-standardised rates was mainly attributable to a decline in *narcotics and psychodysleptics [hallucinogens], not elsewhere classified* (X42) and *antiepileptic, sedative-hypnotic, antiparkisonism and psychotropic drugs* (X41) (Figure 2.7.6).

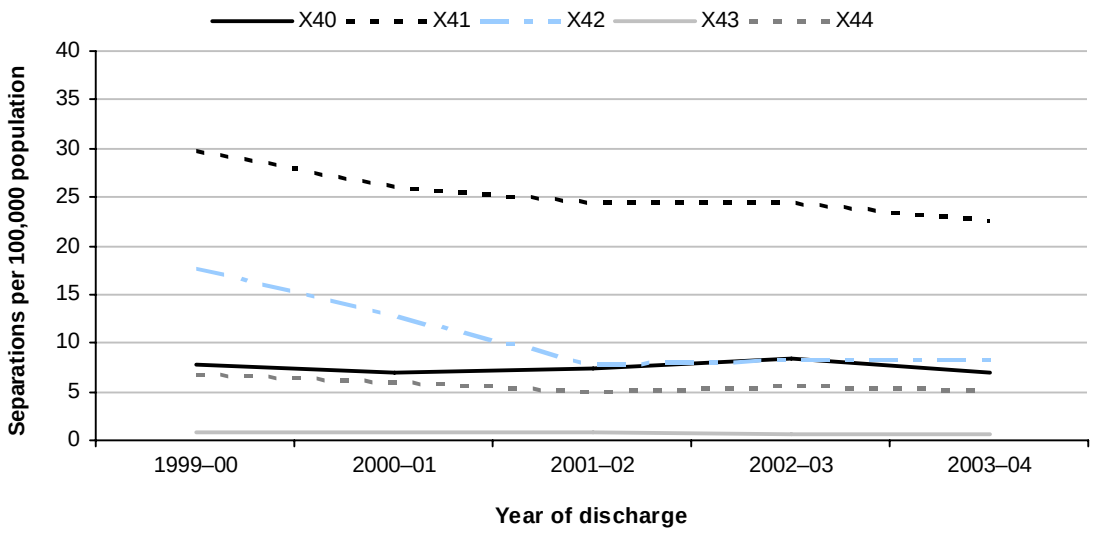


Figure 2.7.6: Age-standardised rates for poisoning by pharmaceuticals by drug category for persons aged 15–44 years, Australia, 1999–00 to 2003–04

Place of occurrence

Location was not specified or reported for 31% of cases (unspecified; *n*=2,378, not reported/not applicable; *n*=15). The following observations are restricted to those cases in which the place of occurrence was specified. The majority of hospitalised cases due to poisoning by pharmaceuticals occurred in the home (85%; *n*=4,428) (Table 2.7.6). Of the 136 cases that occurred in a residential institution, nearly 60% (*n*=80) occurred in aged care facilities. Of the 194 cases that occurred in a trade and service area, nearly three-quarters occurred in a café, hotel or restaurant (*n*=144).

For children aged 0–4 years for whom a place of occurrence was specified (*n*=1,285), almost all poisoning by pharmaceuticals occurred in the home (97%; *n*=1,245).

Table 2.7.6: Place of occurrence for cases of poisoning by pharmaceuticals, Australia, 2003–04

Place	Persons	Per cent
Home	4,428	84.9
Residential institution	136	2.6
School	19	0.4
Health service area	244	4.7
Other specified institution and public administrative area	15	0.3
Sports and athletics area	14	0.3
Street and highway	73	1.4
Trade and service area	194	3.7
Industrial and construction area	9	0.2
Farm	5	0.1
Other specified places	81	1.6
Total	**5,218**	**100.0**

2.8 Poisoning, other substances

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79 and

First reported external cause: X45–X49

Table 2.8.1: Key indicators for poisoning by other substances cases, Australia, 2003–04

Indicator	Males	Females	Persons
Separations from hospital due to poisoning, other substances	1,736	1,068	2,804
Percentage of all injury separations	0.8	0.7	0.8
Estimated cases*	1,645	1,027	2,672
Crude rate/100,000 population	16.6	10.2	13.4
Age-standardised rate/100,000 population	16.6	10.4	13.5
Mean length of stay (days)	1.9	1.6	1.8
Total patient days	3,048	1,684	4,732

* Omits inward transfers from acute hospitals.

This chapter includes hospitalisations arising from the toxic effects of accidental contact with substances which are chiefly non-medicinal. These accounted for 1% of all injury hospitalisations in the financial year 2003–04 (Table 2.8.1).

This chapter does not include poisoning by pharmaceuticals (*n*=7,902; see Chapter 2.7), intentional self-poisoning (*n*=19,253; see Chapter 2.2), assault by poisoning (*n*=66; see Chapter 2.3), or poisoning of undetermined intent (*n*=2,394; see Chapter 2.4).

Age and sex distribution

More males than females were hospitalised for accidental poisoning by other substances (based on age-standardised rates) with a M:F rate ratio of 1.6:1 (Figure 2.8.1). Rates of poisoning from non-medicinal sources were highest in children aged 0–4 years (males: 50.3 per 100,000, females: 37.7 per 100,000) but much lower in older children. Rates rose for youth and young people (15–24 years) and then declined gradually with age.

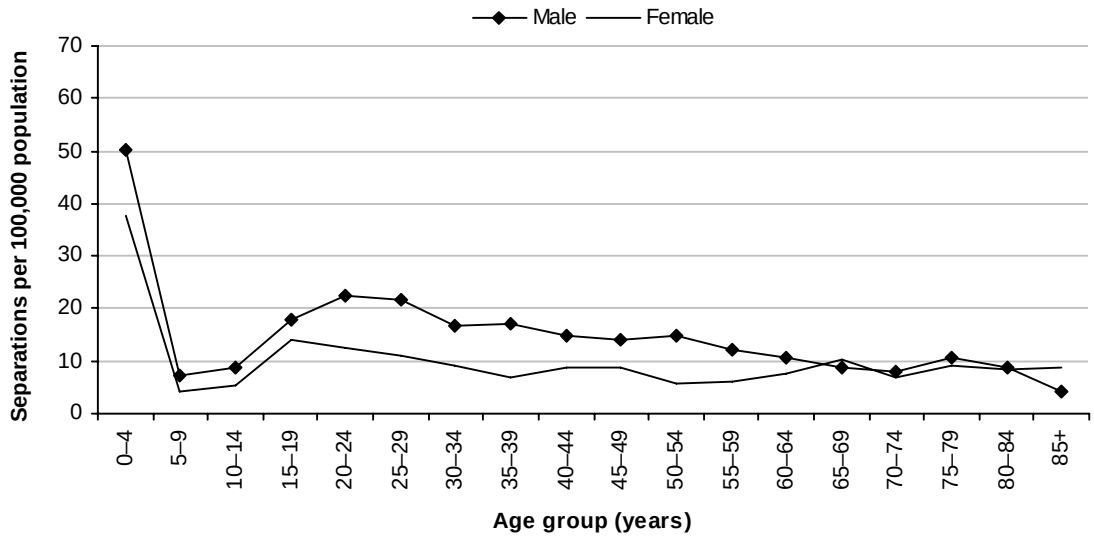


Figure 2.8.1: Age-specific hospital separation rates for poisoning by other substances by sex, Australia, 2003–04

A fifth of poisoning by other substances occurred in young children aged 0–4 years of age and approximately a third occurred in adults aged 25–44 years (Table 2.8.2).

Table 2.8.2: Cases of poisoning by other substances by age group, Australia, 2003–04

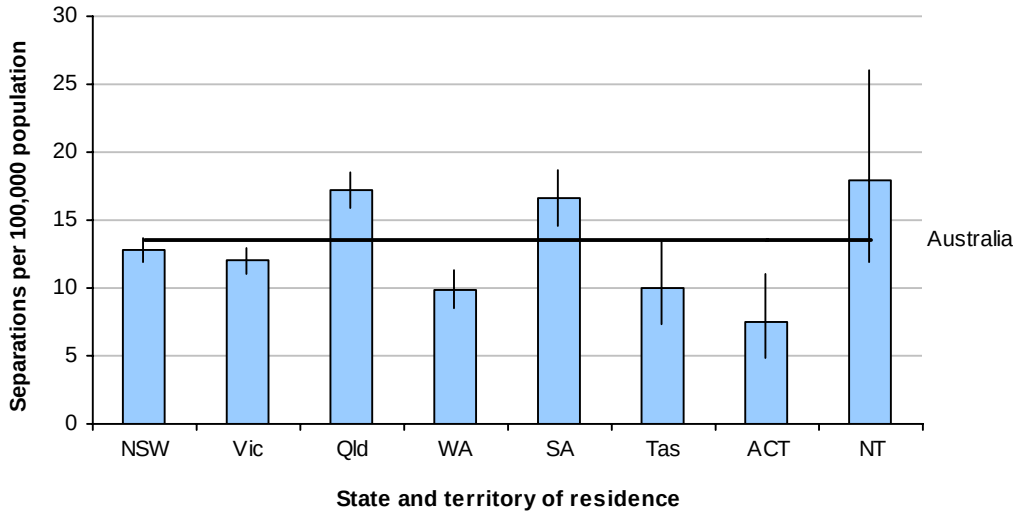
	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–4 years	326	19.8	232	22.6	558	20.9
5–14 years	111	6.8	63	6.1	174	6.5
15–24 years	283	17.2	177	17.2	460	17.2
25–44 years	510	31.0	262	25.5	772	28.9
45–64 years	316	19.2	170	16.6	486	18.2
65+ years	99	6.0	123	12.0	222	8.3
Total	**1,645**	**100.0**	**1,027**	**100.0**	**2,672**	**100.0**

State and territory differences

Western Australia and the Australian Capital Territory had rates of poisoning by other substances that were below the national rate (Table 2.8.3 and Figure 2.8.2). New South Wales, Victoria, Tasmania and the Northern Territory had rates that were similar to the national rate. Rates that were above the national rate were found in Queensland and South Australia.

Table 2.8.3: Age-standardised rates of poisoning by other substances, states and territories, 2003–04

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI
NSW	12.8	11.9–13.6
Vic	12.0	11.0–13.0
Qld	17.2	15.9–18.6
WA	9.9	8.5–11.3
SA	16.6	14.5–18.7
Tas	10.1	7.4–13.4
ACT	7.5	4.8–11.1
NT	18.0	11.9–26.1
Australia	**13.5**	**13.0–14.0**



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

Figure 2.8.2: Age-standardised rates of poisoning by other substances, states and territories, 2003–04

Mechanism

Almost all (97.3%; *n*=2,600) of admitted injury cases did not specify a particular body part that was injured due to the mechanism being poisoning.

Almost 60% of hospital cases of non-medicinal poisoning were as a result of *accidental poisoning by and exposure to other and unspecified chemicals and noxious substances* (*n*=1,589). This is a diverse category that includes corrosive and caustic agents, glues and adhesives, paints, dyes, soaps and detergents, poisonous foodstuffs and poisonous plants, among others. In this category, 111 (4% of all poisoning cases) were toxic effects of corrosive substances, 92 (3% of all poisoning cases) were toxic effects of noxious substances eaten as seafood (Principal Diagnosis of T61) and 582 (22% of all cases of poisoning by other substances) were toxic effects of other noxious substances eaten as food (Principal Diagnosis of T62) which includes toxic reaction to ingested mushrooms and berries but excludes gastroenteritis and analphylactic shock.

Thirteen percent of hospital cases were as a result of *accidental poisoning by and exposure to alcohol* and most were ethanol (*n*=244; 9% of all cases of poisoning by other substances).

Eleven per cent of hospital cases were from *accidental poisoning by and exposure to other gases and vapours*. This category includes carbon monoxide (*n*=79) and chlorine gas (*n*=45), among various others.

Ten per cent of hospital cases were from *accidental poisoning by and exposure to pesticides* and 101 (4% of all cases of poisoning by other substances) were from organophosphate and carbamate insecticides (Principal Diagnosis of T60.0).

Eight per cent of hospital cases were from *accidental poisoning by and exposure to organic solvents and halogenated hydrocarbons and their vapours* and 63 (2% of all cases of poisoning by other substances) were from petroleum products (Principal Diagnosis of T52.0).

Table 2.8.4 shows the distribution of cases of poisoning by other substances by gender and age group. Poisoning by *organic solvents and halogenated hydrocarbon and their vapours* and *poisoning by pesticides* was most common in children aged 0–14 years. *Alcohol* poisoning occurred mostly in youth and young people (15–24 years) and adults aged 25–44 years. Poisoning by *other and unspecified chemicals and noxious substances* was most common in children aged 0–14 years and adults aged 25–44 years.

Table 2.8.4: External causes of poisoning by other substances by age and sex, Australia, 2003–04

ICD-10-AM Code	Accidental poisoning by and exposure to:	0–14 years		15–24 years		25–44 years		45–64 years		65+ years		Total	
		Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %	Count	Row %
	Male												
X45	• Alcohol	30	15.7	63	33.0	56	29.3	37	19.4	5	2.6	191	100.0
X46	• Organic solvents and halogenated hydrocarbons and their vapours	76	50.0	24	15.8	33	21.7	14	9.2	5	3.3	152	100.0
X47	• Other gases and vapours	39	18.0	35	16.1	79	36.4	49	22.6	15	6.9	217	100.0
X48	• Pesticides	61	33.9	29	16.1	53	29.4	28	15.6	9	5.0	180	100.0
X49	• Other and unspecified chemicals and noxious substances	231	25.5	132	14.6	289	31.9	188	20.8	65	7.2	905	100.0
	Total	**437**	**26.6**	**283**	**17.2**	**510**	**31.0**	**316**	**19.2**	**99**	**6.0**	**1,645**	**100.0**
	Female												
X45	• Alcohol	19	12.9	60	40.8	45	30.6	17	11.6	6	4.1	147	100.0
X46	• Organic solvents and halogenated hydrocarbons and their vapours	34	61.8	*	*	9	16.4	7	12.7	*	*	55	100.0
X47	• Other gases and vapours	11	16.7	17	25.8	21	31.8	11	16.7	6	9.1	66	100.0
X48	• Pesticides	47	62.7	6	8.0	12	16.0	6	8.0	4	5.3	75	100.0
X49	• Other and unspecified chemicals and noxious substances	184	26.9	90	13.2	175	25.6	129	18.9	106	15.5	684	100.0
	Total	**295**	**28.7**	**177**	**17.2**	**262**	**25.5**	**170**	**16.6**	**123**	**12.0**	**1,027**	**100.0**

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

Young children aged 0–4 years

A considerable proportion of accidental poisonings from non-medicinal sources occurred in young children aged 0–4 years (21%; *n*=558), and most of these (80%) occurred before the third birthday (Table 2.8.5).

Accidental poisoning by and exposure to other and unspecified chemicals and noxious substances in children aged 0–4 years of age accounted for 12% (*n*=313) of all case of poisoning due to other substances. This category included the toxic effects of; corrosive substances (*n*=56), soaps and detergents (*n*=33), tobacco and nicotine (*n*=33), noxious substances eaten as food (*n*=49), among others. *Organic solvents and halogenated hydrocarbons and their vapours* accounted for 4% (*n*=105) of all cases of poisoning by other substances; most cases were petroleum products (*n*=43) and other specified organic solvents (*n*=43). *Accidental poisoning and exposure to pesticides* accounted for 4% (*n*=98) of all cases of poisoning by other substances; most cases were organophosphate and carbamate insecticides (*n*=47) and rodenticides (*n*=21). *Accidental poisoning by and exposure to alcohol* and *other gases and vapours* in children aged 0–4 years constituted only a small proportion of poisoning by other substances, 0.8% and 0.7%, respectively.

Table 2.8.5: Mechanism of poisoning by other substances in children 0–4 years, Australia, 2003–04

ICD-10-AM Code	Accidental poisoning by and exposure to:	Age at admission					
		0–11 months	1 year	2 years	3 years	4 years	Total
X45	• Alcohol	*	8	7	*	*	22
X46	• Organic solvents and halogenated hydrocarbons and their vapours	*	54	24	17	*	105
X47	• Other gases and vapours	4	5	*	*	5	20
X48	• Pesticides	11	41	26	13	7	98
X49	• Other and unspecified chemicals and noxious substances	42	149	69	33	20	313
	Total	**63**	**257**	**129**	**69**	**40**	**558**
	Per cent	**11.3**	**46.1**	**23.1**	**12.4**	**7.2**	**100.0**

* Small counts are omitted.

Length of stay

Mean length of stay was shorter for unintentional poisoning by other substances (1.8 days for persons, all ages) than for the types of cases reported in any other chapter of this report. Mean length of stay for poisoning by other substances increased with age, though less than for most types of *Community injury* (Figure 2.8.3). The mean length of stay was 1.3 days for children aged 0–14 years, 1.3 days for young people aged 15–24 years, 1.8 days for adults aged 25–44 years, 2.2 days for adults aged 45–64 years and 3.1 days for older people aged 65+ years.

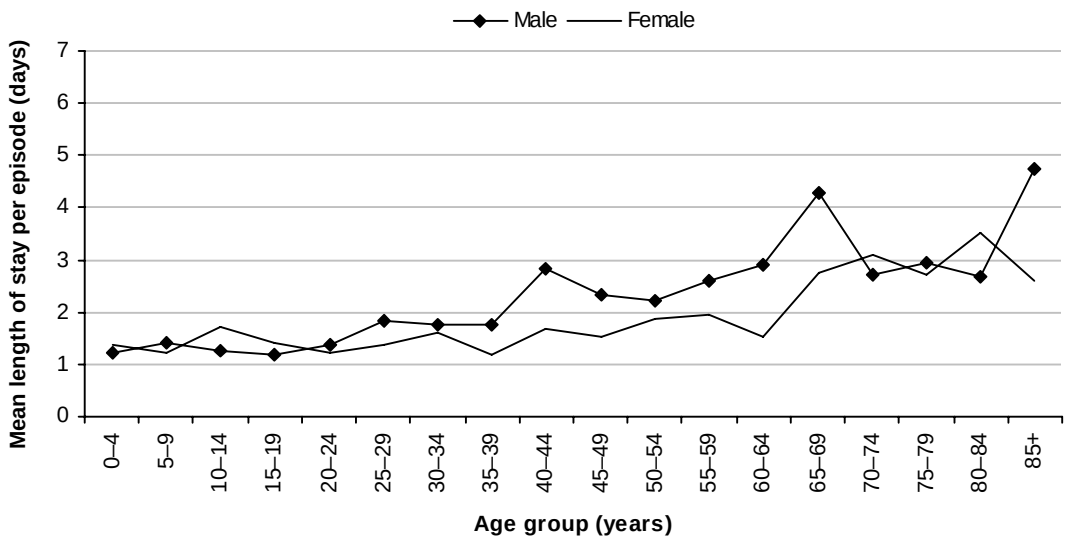


Figure 2.8.3: Length of stay per episode for poisoning by other substances by age and sex, Australia, 2003–04

Time trends

Age-standardised rates for poisoning by other substances declined in recent years from 15.0 per 100,000 of the population in 1999–00 to 13.5 per 100,000 in 2003–04 (Figure 2.8.4). Male rates declined from 18.6 per 100,000 in 1999–00 to 16.6 per 100,000 in 2003–04. Male rates were consistently higher than female rates, which showed less change over time; 11.4 per 100,000 in 1999–00 and 10.4 per 100,000 in 2003–04.

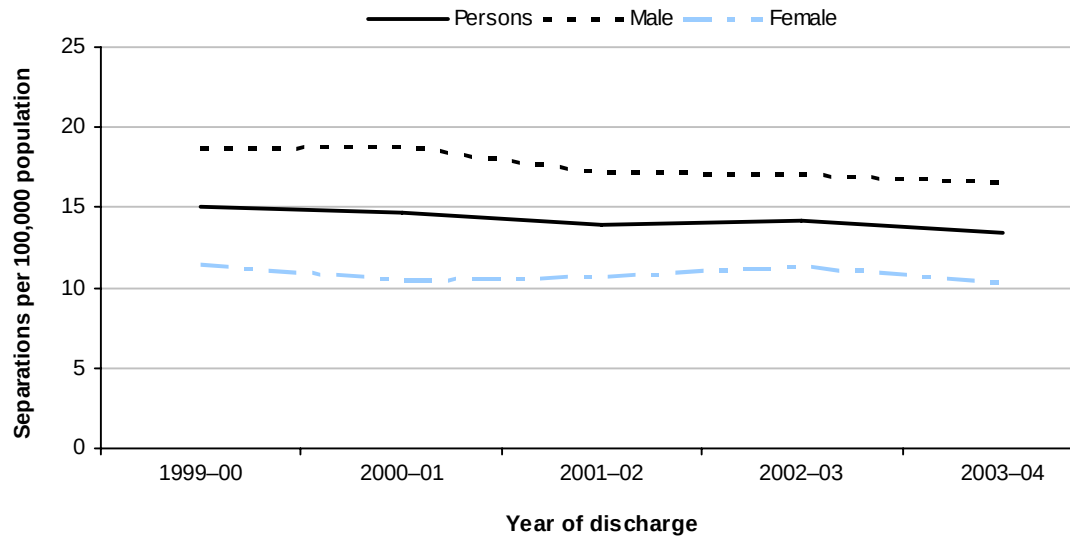


Figure 2.8.4: Age-standardised rates for poisoning by other substances, Australia, 1999–00 to 2003–04

Place of occurrence

Location was not specified or reported for 42% of cases (unspecified; *n*=1,112, not reported/not applicable; *n*=10). The following observations are restricted to those cases in which the place of occurrence was specified. Sixty-one per cent of injuries from poisoning by other substances occurred in the home (*n*=948) (Table 2.8.6).

Of the 197 cases that occurred in a trade and service area, 131 (66%) occurred in a café, hotel or restaurant; of which 35 were alcohol poisoning (29 were ethanol) and 80 were poisoning by other and unspecified chemicals and noxious substances (56 were the toxic effects of noxious substances eaten as seafood or food). Of the 165 cases that occurred in an industrial or construction area, 70 occurred in a factory or plant, 34 occurred in a mine or quarry and 16 occurred in a construction area. Of the 30 cases that occurred on a farm, 16 were poisoning by pesticides (10 of which were poisoning by organophosphates and carbamate insecticides). Of the 16 cases that occurred in a residential institution, 13 occurred in aged care facilities.

For children aged 0–4 years for whom a place of occurrence was specified (*n*=419), almost all poisoning by other substances occurred in the home (95%; *n*=398).

Table 2.8.6: Place of occurrence for cases of poisoning by other substances, Australia, 2003–04

Place	Persons	Per cent
Home	948	61.2
Residential institution	16	1.0
School	31	2.0
Health service area	19	1.2
Other specified institution and public administrative area	10	0.7
Sports and athletics area	7	0.5
Street and highway	39	2.5
Trade and service area	197	12.7
Industrial and construction area	165	10.7
Farm	30	1.9
Other specified places	88	5.7
Total	**1,550**	**100.0**

2.9 Fires, burns and scalds

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79 and

First reported external cause: X00–X19

Table 2.9.1: Key indicators for fires burns and scalds cases, Australia, 2003–04

Indicator	Males	Females	Persons
Separations from hospital due to fires, burns and scalds	3,863	1,956	5,819
Percentage of all injury separations	1.8	1.2	1.6
Estimated cases*	3,390	1,727	5,117
Crude rate/100,000 population	34.1	17.2	25.6
Age-standardised rate/100,000 population	34.2	17.6	26.0
Mean length of stay (days)	5.3	5.5	5.4
Total patient days	17,805	9,578	27,383

* Omits inward transfers from acute hospitals.

This chapter includes *Community injury* cases in which the first reported external cause is unintentional *exposure to smoke, fire and flames* (ICD-10-AM X00–X09) or *contact with heat and hot substances* (X10–X19). These include most, but not all, injuries due to thermal and related external causes. Fire, burns and scalds injury accounted for 2% of all injury hospitalisations in the financial year 2003–04 (Table 2.9.1).

This chapter does not include injuries due to explosion and rupture of boilers (*n*=6), explosion and rupture of gas cylinder (*n*=81), discharge of fireworks (*n*=53), explosion of other materials (e.g. munitions, blasting material) (*n*=199), exposure to electric current (*n*=517), exposure to extreme heat of man-made origin, natural heat or volcanic eruption (*n*=526), sunlight (*n*=29), or lightening (*n*=29), all of which are covered by Chapter 2.11. Injuries attributable to intentional self-harm by explosive material (*n*=5), smoke, fire and flames (*n*=72) or steam, hot vapours and hot objects (*n*=11) are covered by Chapter 2.2. Injuries resulting from assault by means of explosive material (*n*=4), smoke, fire and flames (*n*=24) or steam, hot vapours and hot objects (*n*=32) are covered by Chapter 2.3 as are injuries from legal interventions involving explosives (*n*=0), war operations involving explosions and fragments (*n*=0), or fires, conflagrations and hot substances (*n*=0). Events of undetermined intent—contact with explosive material or smoke, fire and flames (*n*=26) or steam, hot vapours and hot objects (*n*=5) are included in Chapter 2.4.

Age and sex distribution

More males than females were injured by fires, burns and scalds (based on age-standardised rates) by 1.9:1 (Figure 2.9.1). Rates were highest for young children aged 0–4 years (males: 133.4 per 100,000, females: 89.3 per 100,000).

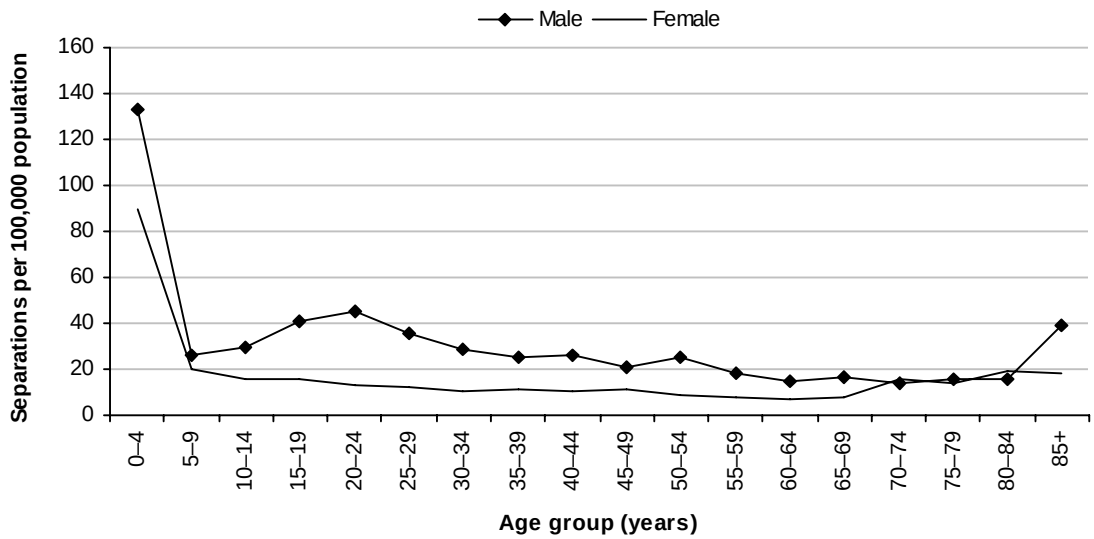


Figure 2.9.1: Age-specific hospital separation rates for fire, burns and scalds injury by sex, Australia, 2003–04

Nearly 40% of those injured were children aged 0–14 years; young children aged 0–4 years comprised over a quarter of injury cases due to fires, burns and scalds. Over a fifth of hospital cases were adults aged 25–44 years, whereas only 8% of those injured were older people aged 65+ years (Table 2.9.2). Sixty-six per cent of those injured were male.

Table 2.9.2: Fires, burns and scalds cases by age group, Australia, 2003–04

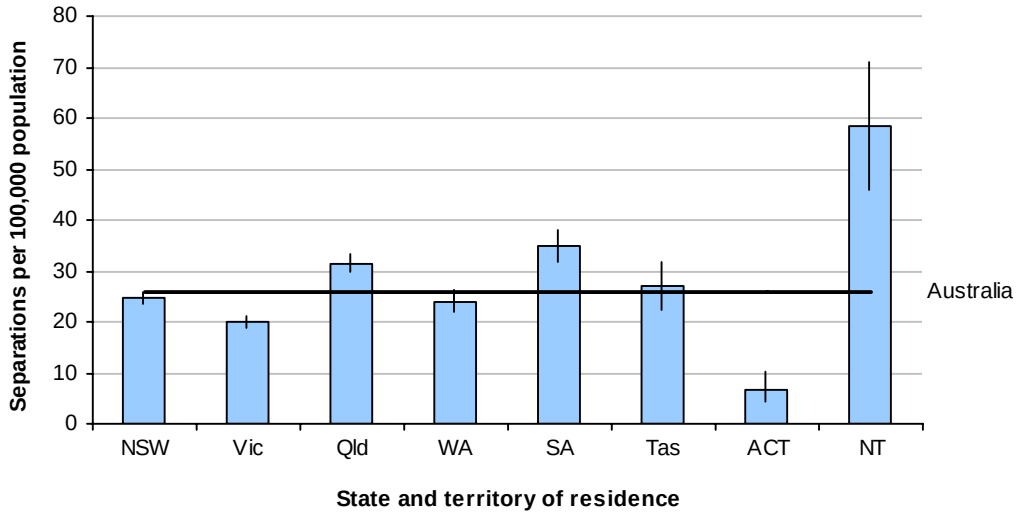
	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–4 years	865	25.5	550	31.9	1,415	27.7
5–14 years	383	11.3	235	13.6	618	12.1
15–24 years	602	17.8	193	11.2	795	15.5
25–44 years	850	25.1	330	19.1	1,180	23.1
45–64 years	488	14.4	215	12.5	703	13.7
65+ years	202	6.0	204	11.8	406	7.9
Total	**3,390**	**100.0**	**1,727**	**100.0**	**5,117**	**100.0**

State and territory differences

Victoria and the Australian Capital Territory had rates of injury from fires, burns and scalds that were below the national rate (Table 2.9.3 and Figure 2.9.2). New South Wales, Western Australia and Tasmania had rates that were similar to the national rate. Rates that were above the national rate were found in Queensland, South Australia and the Northern Territory. Of the 113 hospital cases of residents in the Northern Territory, over half (*n*=59) were recorded as being Aboriginal and Torres Strait Islander persons.

Table 2.9.3: Age-standardised rates of fires, burns and scalds, states and territories, 2003–04

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI
NSW	24.9	23.7–26.1
Vic	20.1	18.8–21.3
Qld	31.4	29.7–33.2
WA	24.0	21.8–26.2
SA	34.9	31.9–38.0
Tas	27.1	22.4–31.8
ACT	6.8	4.3–10.3
NT	58.4	45.9–70.8
Australia	**26.0**	**25.2–26.7**



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

Figure 2.9.2: Age-standardised rates of fire, burns and scalds injury, states and territories, 2003–04

Body part

Six specific body areas accounted for 91% (*n*=4,647) of all fires, burns and scalds injuries (*n*=5,117) (Table 2.9.4). Fires, burns and scalds involved all major body regions with similar frequency—the top two being *burn of wrist and hand* (19%) and *burn of head and neck* (18%). *Burn of head and neck* was most common for males (20%) and *burn of trunk* was most common for females (21%).

Table 2.9.4: Top 6 specific injuries for fires, burns and scalds, Australia, 2003–04

	Males		Females		Persons	
Principal Diagnosis	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Burn of wrist and hand	663	19.6	316	18.3	979	19.1
Burn of head and neck	688	20.3	223	12.9	911	17.8
Burn of trunk	472	13.9	360	20.8	832	16.3
Burn of hip and lower limb, except ankle and foot	489	14.4	300	17.4	789	15.4
Burn of shoulder and upper limb, except wrist and hand	392	11.6	201	11.6	593	11.6
Burn of ankle and foot	389	11.5	154	8.9	543	10.6
Sub-total of top 6 diagnoses	**3,093**	**91.2**	**1,554**	**90.0**	**4,647**	**90.8**

For all ages, the most common fire, burns and scalds injuries presenting to hospital were from *contact with hot drinks, foods, fats and cooking oils* (22%), followed by *contact with other hot fluids* e.g. water heated on a stove (15%) (Table 2.9.5). There were some differences by gender; although the most common cause of hospitalisation for both sexes was *contact with hot drinks, food, fats and cooking oils* (18% for males and 28% for females), the second most common cause of hospitalisation for males was *exposure to ignition of highly flammable materials* such as gasoline, kerosene, petrol etc (18%) whereas for females it was *contact with other hot fluids* e.g. hot water heated on a stove.

In the context of the broader age groups identified in the National Injury Prevention and Promotion Plan: 2004–2014 (Strategic Injury Prevention Partnership 2005; Pointer, et al. 2003) the leading causes of fires, burns and scald hospitalisations were *contact with hot drinks, food, fats and cooking oils* for children aged 0–14 years (*n*=649, 12.7% of all cases), *contact with other hot fluids* such as water heated on a stove for children aged 0–14 years (*n*=383; 7.5% of all cases), *exposure to ignition of highly flammable material* in adults aged 25–44 years (*n*=225; 4.4% of all cases) and youth and young adults aged 15–24 years (*n*=205; 4.0% of all cases) and *contact with hot tap-water* in children aged 0–14 years (*n*=185; 3.6% of all cases).

Admissions to hospital due to house fires e.g. *exposure to uncontrolled fire in building or structure* constituted only 3.8% of all fires, burns and scalds cases in 2003–04 (*n*=195). Young children aged 0–14 years comprised only 0.4% of all *exposure to uncontrolled fire in building or structure* (*n*=21), 0.5% were youth and young people aged 15–24 years (*n*=27), 1.5% were adults aged 25–44 years (*n*=75), 0.8% were adults aged 45–64 years (*n*=41) and 0.6% were older people aged 65+ years (*n*=31).

The main causes of fires, burns and scalds injury in older people aged 65+ years were *contact with other hot fluids* such as water heated on a stove (*n*=64; 1.3% of all fires, burns and scalds cases), *contact with hot drinks, food, fats and cooking oils* (*n*=57; 1.1 % of cases) and *contact with hot tap-water* (*n*=49; 1% of all cases).

Table 2.9.5: External causes of fire, burns and scalds injury by sex, Australia, 2003–04

ICD-10-AM Code	External cause	Males		Females		Persons	
		Count	Per cent	Count	Per cent	Count	Per cent
X00	Exposure to uncontrolled fire in building or structure	120	3.5	75	4.3	195	3.8
X01	Exposure to uncontrolled fire, not in building or structure (e.g. forest fire)	55	1.6	6	0.4	61	1.2
X02	Exposure to controlled fire in building or structure (e.g. fireplace, stove)	78	2.3	38	2.2	116	2.3
X03	Exposure to controlled fire, not in building or structure (e.g. camp-fire)	162	4.8	48	2.8	210	4.1
X04	Exposure to ignition of highly flammable material (e.g. gasoline, kerosene, petrol)	593	17.5	93	5.4	686	13.4
X05	Exposure to ignition or melting of nightwear	8	0.2	12	0.7	20	0.4
X06	Exposure to ignition or melting of other clothing and apparel	47	1.4	18	1.0	65	1.3
X08	Exposure to other specified smoke, fire and flames	101	3.0	49	2.8	150	2.9
X09	Exposure to unspecified smoke, fire and flames	317	9.4	116	6.7	433	8.5
X10	Contact with hot drinks, food, fats and cooking oils	625	18.4	479	27.7	1,104	21.6
X11	Contact with hot tap-water	161	4.8	162	9.4	323	6.3
X12	Contact with other hot fluids (e.g. water heated on stove)	429	12.7	313	18.1	742	14.5
X13	Contact with steam and hot vapours	101	3.0	44	2.6	145	2.8
X14	Contact with hot air and gases	12	0.4	4	0.2	16	0.3
X15	Contact with hot household appliances	112	3.3	76	4.4	188	3.7
X16	Contact with hot heating appliances, radiators and pipes	175	5.2	81	4.7	256	5.0
X17	Contact with hot engines, machinery and tools	84	2.5	14	0.8	98	1.9
X18	Contact with other hot metals	54	1.6	5	0.3	59	1.2
X19	Contact with other and unspecified heat and hot substances	156	4.6	94	5.4	250	4.9
Total		**3,390**	**100.0**	**1,727**	**100.0**	**5,117**	**100.0**

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

Young children aged 0–4 years

The greatest proportion of fires, burns and scalds injury occurred in young children aged 0–4 years (27.7%; *n*=1,415), and most of these (81%) occurred before the third birthday (Table 2.9.6). Over a third of injuries were from *contact with hot drinks, foods, fats and cooking oils*, and almost a third were from *contact with hot tap-water* and *contact with other hot fluids* (e.g. water heated on a stove). The number of injuries was highest at one year and declined after two years of age. This is the age range during which children become mobile and manipulate objects, yet lack awareness of the hazardous nature of hot liquids and hot objects. The other leading causes of fire, burns and scalds injury for young children were *contact with hot*

household appliances such as hotplates, stoves and toasters (10%), *contact with hot heating appliances* such as radiators and pipes (7%). There were 7 cases of *exposure to ignition or melting of nightwear* (3 cases in young children aged 0–4 years, and 4 cases in 5–14 years). Data for 2001–02 (Berry & Harrison 2006) and 2003–04 show that a small number of cases of burns from nightwear are still occurring in children despite regulations being introduced in 1993 banning nightwear garments from being sold if they do not meet safety standards (Consumer Affairs Division 2005).

Table 2.9.6: Top 6 mechanisms of fires, burns and scalds for young children aged 0–4 years, Australia, 2003–04

ICD-10-AM Code	Accidental poisoning by and exposure to:	Age at admission						
		0–11 months	1 year	2 years	3 years	4 years	Total	Per cent
X10	• Contact with hot drinks, food, fats and cooking oils	50	307	72	38	33	500	35.3
X12	• Contact with other hot fluids (e.g. water heated on stove)	59	103	55	43	21	281	19.9
X11	• Contact with hot tap-water	41	69	16	7	5	138	9.8
X15	• Contact with hot household appliances	44	54	20	8	7	133	9.4
X16	• Contact with hot heating appliances, radiators and pipes	24	38	16	9	6	93	6.6
X19	• Contact with other and unspecified heat and hot substances	9	26	18	7	13	73	5.2
X03	• Exposure to controlled fire, not in building or structure (e.g. camp-fire)	0	19	9	12	7	47	3.3
	Sub-total	**227**	**616**	**206**	**124**	**92**	**1,265**	**89.4**
X00–X02, X04–X06, X08–X09, X13, X17–X18	• Other	24	44	26	30	26	150	10.6
Total		**251**	**660**	**232**	**154**	**118**	**1,415**	**100.0**

Length of stay

Of *Community injury* chapters in this report, only unintentional falls has a longer all ages mean length of stay than this chapter. The mean length of stay for fires, burns, and scalds injury increased with age (Figure 2.9.3). The mean length of stay was 3.5 days for children aged 0–14 years, 4.1 days for young people aged 15–24 years, 5.8 days for adults aged 25–44 years, 7.0 days for adults aged 45–64 years and 12.8 days for older people aged 65+ years.

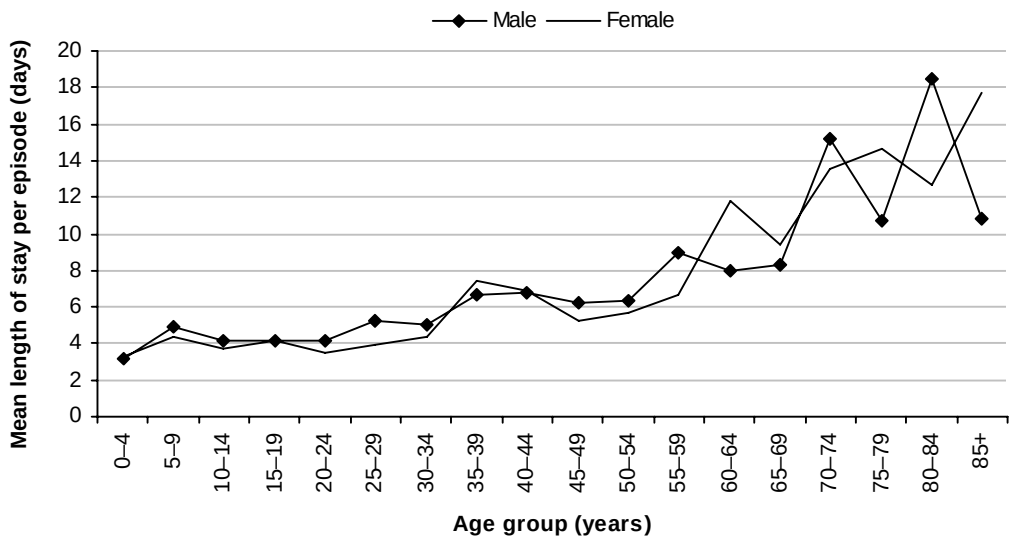


Figure 2.9.3: Length of stay per episode for fire, burns and scalds injury by age and sex, Australia, 2003–04

Time trends

A decline in age-standardised rates for fires, burns and scalds appears to have occurred in recent years from 27.6 per 100,000 population in 1999–00 to 26.0 per 100,000 in 2003–04 (Figure 2.9.4). Male rates declined from 37.5 per 100,000 in 1999–00 to 34.2 per 100,000 in 2003–04. Male rates were consistently higher than female rates, which showed little change over time; 17.5 per 100,000 in 1999–00 and 17.6 per 100,000 in 2003–04.

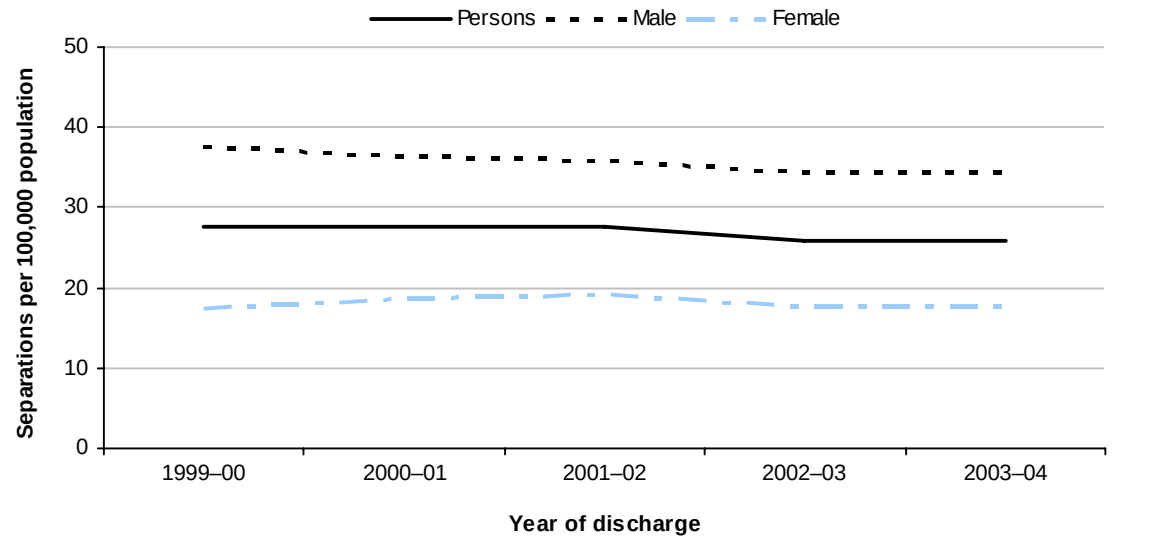


Figure 2.9.4: Age-standardised rates for fire, burns and scalds injury, Australia, 1999–00 to 2003–04

Place of occurrence

Location was not specified or reported for 32% of cases (unspecified; *n*=1,653, not reported/not applicable; *n*=8). The following observations are restricted to those cases in which the place of occurrence was specified. Over three-quarters of hospital cases resulted from injuries that occurred in the home (79%; *n*=2,742) (Table 2.9.7).

Of the 140 cases that occurred in a trade and service area, 73 (52%) occurred in a café, hotel or restaurant; of which 37 were *contact with hot drinks, food, fats and cooking oil* and 11 were *contact with other hot fluids* (e.g. hot water on a stove). Of the 115 cases that occurred in an industrial or construction area, 66 occurred in a factory or plant; of which 15 were *contact with other hot fluids*, 12 were *exposure to ignition of highly flammable material*, 9 were *exposure to an uncontrolled* or *controlled fire in building or structure*, 8 were *contact with hot engines, machinery and tools*, 8 were *contact with other hot metals*. Of the 62 cases that occurred on a farm, 24 were *exposure to ignition of highly flammable material*, 19 were *exposure to uncontrolled* or *controlled fire, not in building or structure*, 5 were *exposure to an uncontrolled* or *controlled fire in building or structure* and 5 were *contact with other hot fluids*. Of the 54 cases that occurred on a street or highway, 14 were *contact with steam or hot vapours* and 7 were *exposure to ignition of highly flammable material*. Of the 42 cases that occurred in a residential institution, 17 occurred in aged care facilities and 15 in prisons.

For children aged 0–4 years for whom a place of occurrence was specified (*n*=1,129), almost all fire, burns and scalds injuries occurred in the home (94%; *n*=1,056).

Table 2.9.7: Place of occurrence for cases of fires, burns and scalds, Australia, 2003–04

Place	Persons	Per cent
Home	2,742	79.3
Residential institution	42	1.2
School	19	0.6
Health service area	26	0.8
Other specified institution and public administrative area	10	0.3
Sports and athletics area	11	0.3
Street and highway	54	1.6
Trade and service area	140	4.1
Industrial and construction area	115	3.3
Farm	62	1.8
Other specified places	235	6.8
Total	**3,456**	**100.0**

2.10 Drowning and near-drowning

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79 and

First reported external cause: W65–W74

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

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

Table 2.10.1: Key indicators for drowning and near-drowning cases, Australia, 2003–04

Indicator	Males	Females	Persons
Separations from hospital due to drowning and near-drowning	345	201	546
Percentage of all injury separations	0.2	0.1	0.1
Estimated cases*	312	182	494
Crude rate/100,000 population	3.1	1.8	2.5
Age-standardised rate/100,000 population	3.2	1.9	2.5
Mean length of stay (days)	2.7	1.8	2.3
Total patient days	834	324	1,158

* Omits inward transfers from acute hospitals.

Drowning and near-drowning accounted for 0.1% of all injury hospitalisations in the financial year 2003–04 (Table 2.10.1). This chapter predominantly focuses on estimated cases of *Accidental drowning and submersion* that have an external cause in the ICD-10-AM range W65–W74 (*n*=494). There are 38 additional hospital cases that have an external cause code outside the range of *Accidental Drowning and submersion* (ICD-10-AM W65–W74) but have a Principal Diagnosis of T75.1 *Drowning and nonfatal submersion*. Section 2.10.1 provides an overview of all drowning and near-drowning cases (*n*=532) (Table 2.10.2).

2.10.1 Overview of all drowning and near-drowning cases

All identifiable hospitalised drowning and near-drowning cases in Australia in 2003–04 are summarised in Tables 2.10.2 and 2.10.3. Note that the total of 532 cases includes 38 cases that are also in the data for other chapters, since they involved both (near) drowning and another external cause.

Table 2.10.2: All identifiable drowning and near-drowning cases, Australia, 2003–04

No in 2003–04	Percentage of all drowning cases in 2003–04	ICD-10-AM Code	ICD Category	Coverage in this report	Terminology in this report
494	92.9	W65–W74	Accidental drowning and submersion	Drowning	Accidental drowning
11	2.1	V90, V92, V94	Water transport accident	Other transport	
12	2.3	X71	Suicide and self inflicted injury by drowning	Intentional, self-harm	Other drowning identified by external cause codes
*	*	X92	Assault by drowning and submersion	Assault	
*	*	Y21	Drowning and submersion	Undetermined intent	
10	1.9	Various	Various external cause codes that do not mention drowning (e.g. fall)	Various	Hidden drowning
532	**100%**				**Total drowning with an external cause code**

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

* Small counts are omitted.

Most hospitalised drowning and near-drowning (44%) occurred in the 0–4 year age group (Table 2.10.3). Swimming pools were the most common setting of drowning and near-drowning for children aged 0–4 years (63%) and children aged 5–14 years (66%). Natural water (e.g. rivers, lakes, the ocean) was the most common setting of drowning and near-drowning for those aged 15 years and over (percentages ranging from 63% in young adults aged 25–44 years to 38% in older people aged 65+ years). Swimming pool-related cases in adults were less frequent (percentages ranging from 8% in young adults aged 25–44 years to 30% in older people aged 65+ years). A greater proportion of older people aged 65+ years drowned or nearly drowned in swimming pools (30%) compared with other adults. Bathtub-related cases most commonly occurred in young children aged 0–4 years (16%). Overall, swimming pools were the most common setting for drowning-related cases (44%), followed by natural water (27%) and other or unspecified settings (18%). Bathtubs (9%) and watercraft (2%) related cases occurred less frequently.

Table 2.10.3: Circumstances of all identifiable drowning and near-drowning cases by age, Australia, 2003–04

	Age group (years)													
	0–4		5–14		15–24		25–44		45–64		65+		All ages	
Circumstances of drowning†	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**	**Total**	**Per cent**
Swimming pool	147	62.6	43	66.2	13	22.0	5	7.8	14	20.3	12	30.0	234	44.0
Natural water	*	*	14	21.5	27	45.8	40	62.5	36	52.2	15	37.5	145	27.3
Bathtub	38	16.2	*	*	*	*	*	*	0	0.0	*	*	47	8.8
Watercraft	*	*	0	0.0	*	*	*	*	*	*	*	*	10	1.9
Other or unspecified	36	15.3	6	9.2	16	27.1	15	23.4	16	23.2	7	17.5	96	18.1
Group Total	**235**	**100.0**	**65**	**100.0**	**59**	**100.0**	**64**	**100.0**	**69**	**100.0**	**40**	**100.0**	**532**	**100.0**

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

Age and sex distribution

The following sections focus on the *Accidental drowning and submersion* (ICD-10-AM W65–W74) category (*n*=494). The highest rates were in children aged 0–4 years (males: 19.3 per 100,000, females: 16.6 per 100,000) (Figure 2.10.1) and rates were much lower thereafter.

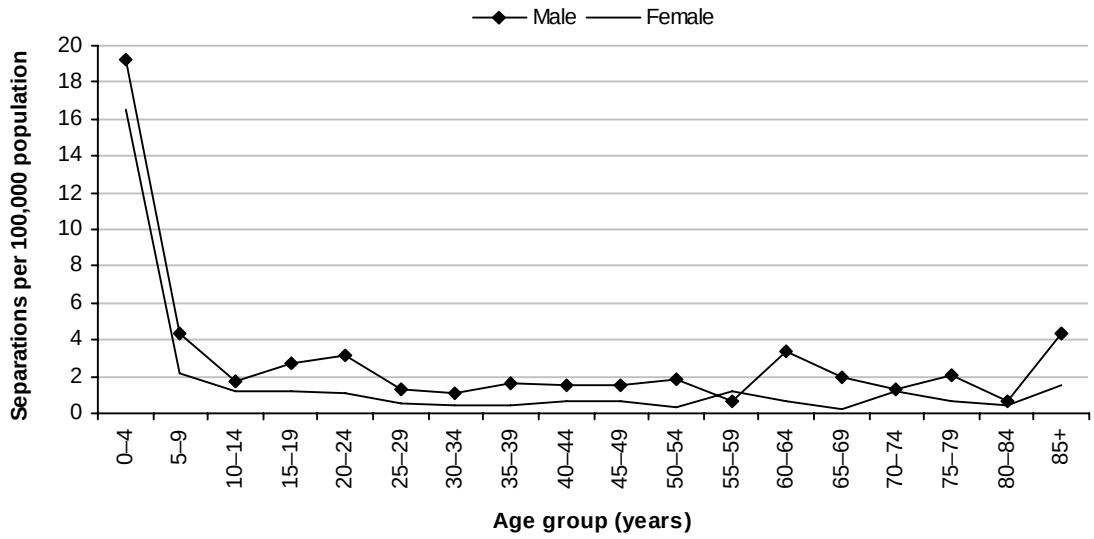


Figure 2.10.1: Age-specific hospital separation rates for drowning and near-drowning by sex, Australia, 2003–04

More males than females were hospitalised for drowning and near-drowning (based on age-standardised rates), by 1.7:1.0. Close to half of the drowning and near-drowning injury cases occurred in young children aged 0–4 years (Table 2.10.4).

Table 2.10.4: Drowning and near-drowning cases by age group, Australia, 2003–04

	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–4 years	125	40.1	102	56.0	227	46.0
5–14 years	42	13.5	22	12.1	64	13.0
15–24 years	41	13.1	15	8.2	56	11.3
25–44 years	41	13.1	15	8.2	56	11.3
45–64 years	42	13.5	17	9.3	59	11.9
65+ years	21	6.7	11	6.0	32	6.5
Total	**312**	**100.0**	**182**	**100.0**	**494**	**100.0**

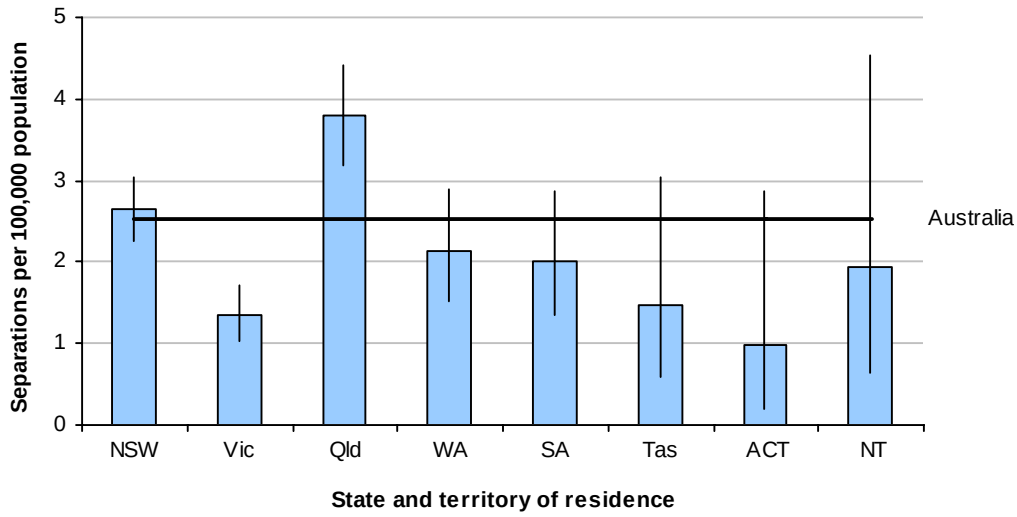
Note: Shaded areas indicate the highest figure for a column.

State and territory differences

Victoria had a rate of drowning and near-drowning that was below the national rate (Table 2.10.5 and Figure 2.10.2). New South Wales, Western Australia, South Australia, Tasmania, the Australian Capital Territory and the Northern Territory had rates that were similar to the national rate. The rate for Queensland was 50% above the national rate.

Table 2.10.5: Age-standardised rates of drowning and near-drowning, states and territories, 2003–04

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI
NSW	2.6	2.2–3.0
Vic	1.3	1.0–1.7
Qld	3.8	3.2–4.4
WA	2.1	1.5–2.9
SA	2.0	1.4–2.9
Tas	1.5	0.6–3.0
ACT	1.0	0.2–2.9
NT	1.9	0.6–4.5
Australia	**2.5**	**2.3–2.7**



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

Figure 2.10.2: Age-standardised rates of drowning and near-drowning, states and territories, 2003–04

Mechanism

The majority (86.8%; *n*=429) of admitted injury cases did not specify a particular body part that was injured due to the mechanism being drowning.

Overall, swimming pools were the most common setting for drowning-related hospital cases (47% of all drowning cases) and especially for young children aged 0–4 years (30% of all drowning cases and 63% of all drownings that occurred in swimming pools), followed by natural water (27% of all drowning cases) and other or unspecified settings (17%). Drowning and near-drowning in bathtubs (9%) occurred less frequently (Table 2.10.6).

Table 2.10.6: Circumstances of drowning and near-drowning by age group, Australia, 2003–04

	Age group (years)						All ages	
Circumstances of drowning	**0–4**	**5–14**	**15-24**	**25-44**	**45-64**	**65+**	**Total**	**Per cent**
Swimming pool	146	43	13	5	14	12	233	47.2
Natural water	13	13	27	37	34	11	135	27.3
Bathtub	37	*	*	*	0	*	43	8.7
Other or unspecified	31	*	*	*	11	*	83	16.8
Total	**227**	**64**	**56**	**56**	**59**	**32**	**494**	**100.0**

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

Length of stay

The mean length of stay due to drowning and near-drowning showed no strong trend with age; large fluctuations for both sexes at older ages reflecting small case numbers (Figure 2.10.3). The mean length of stay was 2.1 days for children aged 0–14 years, 2.0 days for young people aged 15–24 years, 2.2 days for adults aged 25–44 years, 3.2 days for adults aged 45–64 years and 4.0 days for older people aged 65+ years.

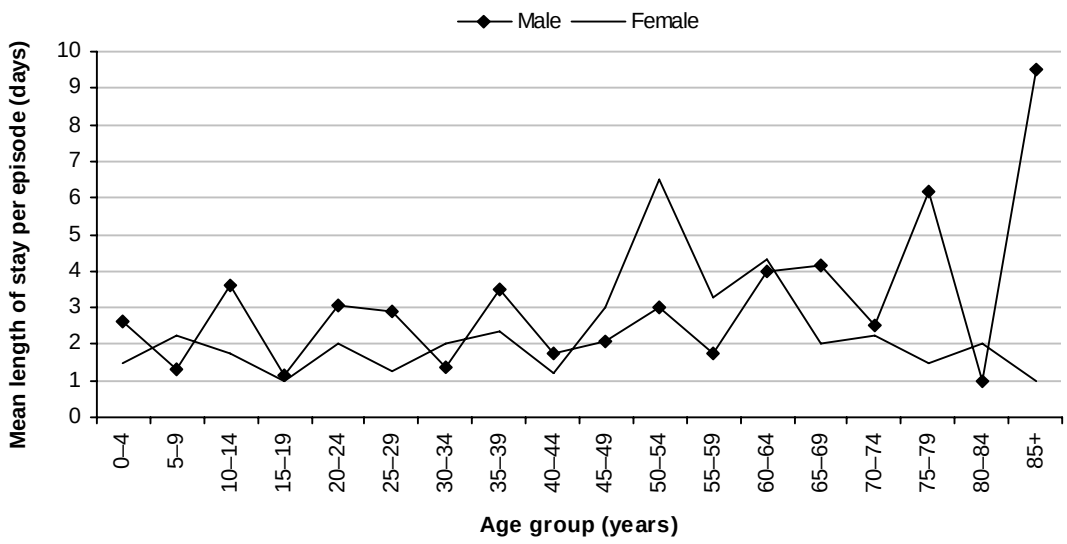


Figure 2.10.3: Length of stay per episode for drowning and near-drowning by age and sex, Australia, 2003–04

Time trends

Age-standardised rates for hospitalised drowning and near-drowning were 2.6 per 100,000 of the population in 1999–00 and 2.5 per 100,000 in 2003–04, with a decrease in intervening years (Figure 2.10.4). For each year, age-standardised rates for males were higher than for females (male rates were 3.4 per 100,000 in 1999–00 to 3.2 per 100,000 in 2003–04; female rates were 1.8 per 100,000 in 1999–00 and 1.9 per 100,000 in 2003–04).

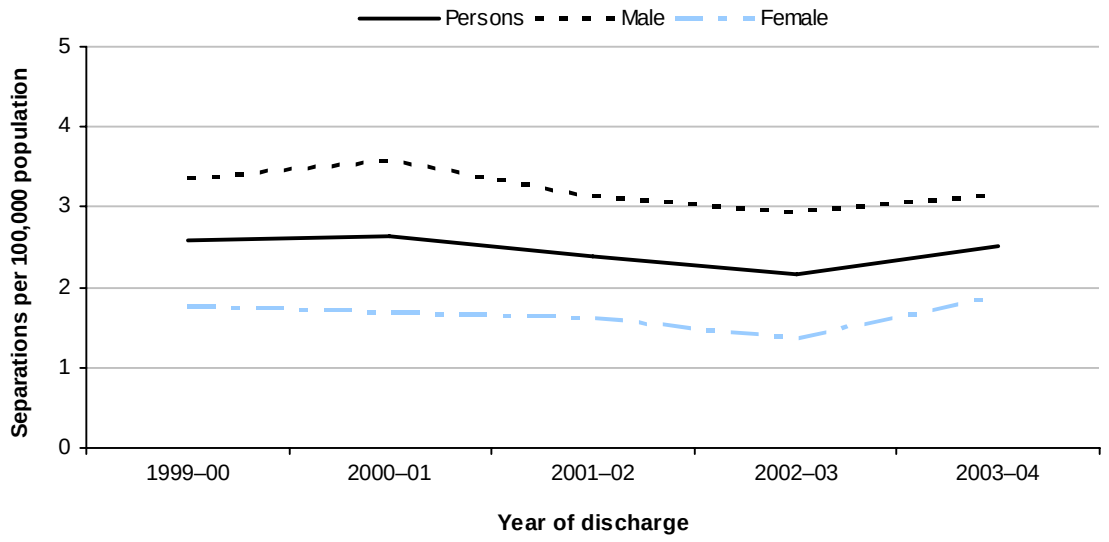


Figure 2.10.4: Age-standardised rates for drowning and near-drowning, Australia, 1999–00 to 2003–04

Place of occurrence

Location was not specified or reported for 6.9% of cases (unspecified; *n*=34). The following observations are restricted to those cases in which the place of occurrence was specified. (Table 2.10.7). Fourty-three per cent (*n*=196) of drowning and near-drowning cases occurred in the home and the majority (*n*=139) occurred in a home swimming pool. Fourty-two per cent (*n*=193) of drowning and near-drowning cases occurred in other specified places, most of these occurred in natural water (*n*=129) which includes the beach (*n*=40), a large area of water such as a bay, lake or ocean (*n*=67), a stream of water e.g. river, creek, canal etc. (*n*=14) and an area of still water e.g. dam, pond etc. (*n*=7). Eleven per cent (*n*=50) of drowning and near-drowning cases occurred in a sports and athletics area and the majority of these (*n*=41) were in a swimming pool.

Table 2.10.7: Place of occurrence for cases of drowning and near-drowning, Australia, 2003–04

Place	Swimming pool	Natural water	Bathtub	Other or unspecified	Total	Per cent
Home	139	0	40	17	196	42.6
Residential institution	0	0	*	*	*	*
School	*	0	0	0	*	*
Health service area	0	0	0	0	0	0.0
Other specified institution and public administrative area	*	0	0	*	*	*
Sports and athletics area	41	5	*	*	50	10.9
Street and highway	*	0	0	0	*	*
Trade and service area	10	0	0	0	10	2.2
Industrial and construction area	*	0	0	0	*	*
Farm	0	0	0	*	*	*
Other specified places	15	129	0	49	193	42.0
Total	**210**	**134**	**42**	**74**	**460**	**100.0**

* Small counts are omitted.

2.11 Other unintentional injuries

ICD-10-AM case inclusion

Principal Diagnosis: S00–T75, T79 and

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

Table 2.11.1: Key indicators for other unintentional injury cases, Australia, 2003–04

Indicator	Males	Females	Persons
Separations from hospital due to other unintentional injuries	82,881	33,443	116,325[(a)]
Percentage of all injury separations	38.4	21.3	31.2
Estimated cases*	78,156	31,648	109,805[(a)]
Crude rate/100,000 population	786.9	314.9	549.5
Age-standardised rate/100,000 population	785.5	310.7	550.6
Mean length of stay (days)	2.0	2.8	2.2
Total patient days	153,309	87,726	241,036[(b)]

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

* Omits inward transfers from acute hospitals.

This category includes all injury hospitalisation recorded as unintentional and not included in chapters 2.5 to 2.10. It covers many types of injury and is a heterogenous category. It accounted for 31% of all injury hospitalisations in the financial year 2003–04 (Table 2.11.1). A summary of some key components is provided in Table 2.11.2 and a complete listing of the first reported external cause codes for other unintentional injuries is provided in Table 2.11.6.

Table 2.11.2: Summary of key components of other unintentional injury cases, Australia, 2003–04

External cause of morbidity and mortality	Persons	Per cent
Struck by or crushed by an object	17,984	16
Foreign body	10,968	10
Overexertion and strenuous or repetitive movements	8,494	8
Bitten by an animal, insect, reptile or invenomated (including plants)	8,438	8
Contact with powered hand tools, lawnmowers and household, agricultural and other machinery	8,422	8
Struck by another person or a crowd or a human stampede	5,924	5
Contact with sharp glass	5,383	5
Sub-total of top 7 specific external causes	**65,613**	**60**

The other unintentional injuries category includes about two-thirds of hospitalised injury cases identified as work-related and 43% of sports-related injury cases (cases identified as occurring during these activities constituted about one-quarter of other unintentional injuries). Therefore, separating the other unintentional injuries category into its component injury groups would create more problems than it solves. It is retained as a chapter which is composed of many different types of injuries (see Table 2.11.6) and includes sections on injuries sustained at work and during sport.

Age and sex distribution

More males than females were injured by other unintentional injuries (based on age-standardised rates) by 2.5:1 (Figure 2.11.1). Male rates were lower in childhood and then peaked in youth and young men aged 15–24 years and then steadily declined with age.

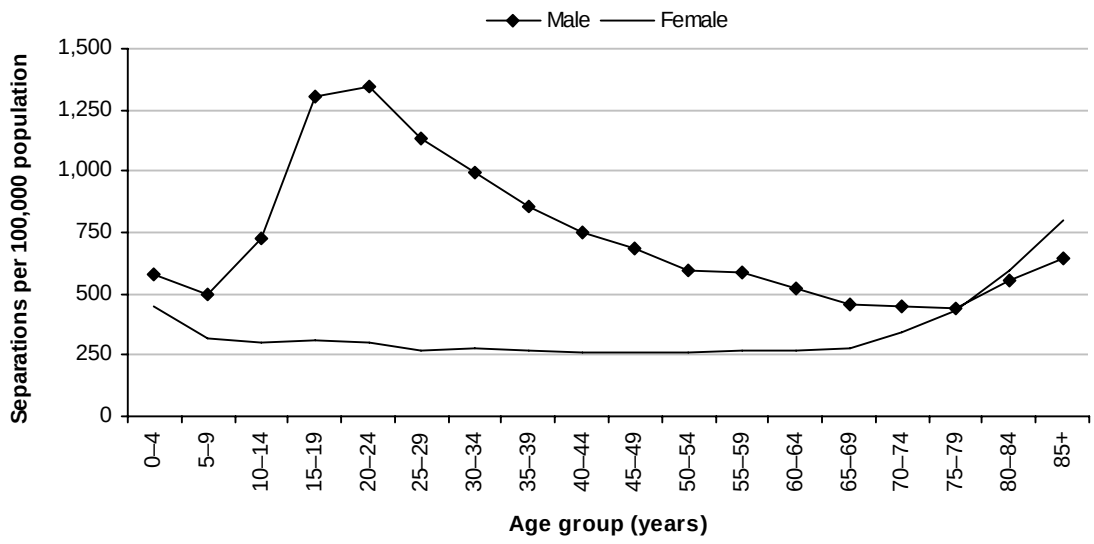


Figure 2.11.1: Age-specific hospital separation rates for other unintentional injury by sex, Australia, 2003–04

Seventy-one per cent of those injured were male (Table 2.11.3).

Table 2.11.3: Other unintentional injury cases by age group, Australia, 2003–04

	Males		Females		Persons	
Age group	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
0–14 years	12,248	15.7	6,827	21.6	19,075	17.4
15–24 years	18,599	23.8	4,116	13.0	22,715	20.7
25–44 years	27,244	34.9	7,967	25.2	35,212[(a)]	32.1
45–64 years	14,540	18.6	6,351	20.1	20,891	19.0
65+ years	5525	7.1	6387	20.2	11912	10.9
Total	**78,156**	**100.0**	**31,648**	**100.0**	**109,805[(a)]**	**100.0**

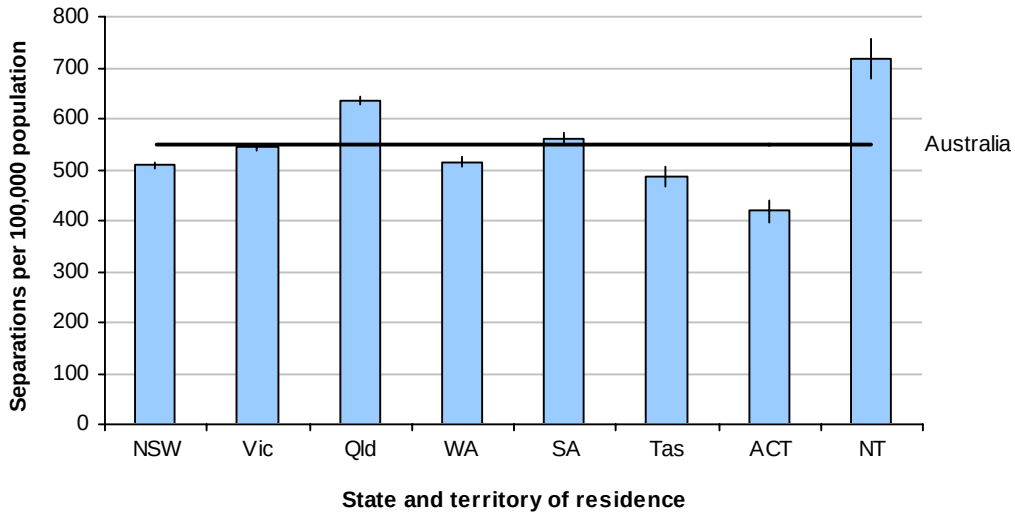
(a) Includes 1 separation for which sex was not reported.

State and territory differences

New South Wales, Western Australia, Tasmania and the Australian Capital Territory had rates of other unintentional injury that were below the national rate (Table 2.11.4 and Figure 2.11.2). Victoria and South Australia had rates that were similar to the national rate. Rates that were above the national rate were found in Queensland and the Northern Territory.

Table 2.11.4: Age-standardised rates of other unintentional injury, states and territories, 2003–04

Jurisdiction	Age-standardised rate (per 100,000 population)	95% CI
NSW	509	504–515
Vic	544	537–550
Qld	634	626–642
WA	515	505–525
SA	561	549–573
Tas	486	466–506
ACT	418	396–440
NT	719	680–758
Australia	**551**	**547–554**



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

Figure 2.11.2: Age-standardised rates of other unintentional injury, states and territories, 2003–04

Body part

Other unintentional injuries occurred most commonly to either the shoulder and upper limb (43%) or the hip and lower limb (25%) (Figure 2.11.5).

Table 2.11.5: Principal Diagnosis by body region for other unintentional injury, Australia, 2003–04

	Males		Females		Persons	
Principal Diagnosis by body region	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Head	10,933	14.0	4,039	12.8	14,972	13.6
Trunk (neck, thorax, abdomen, lower back, lumbar spine and pelvis)	3,975	5.1	2,242	7.1	6,217	5.7
Shoulder and upper limb	36,845	47.1	10,628	33.6	47,474[(a)]	43.2
Hip and lower limb	17772	22.7	9816	31.0	27588	25.1
Other injuries not specified by body region	8,631	11.0	4,923	15.6	13,554	12.3
All body regions	**78,156**	**100.0**	**31,648**	**100.0**	**109,805[(a)]**	**100.0**

Length of stay

Mean length of stay for other unintentional injuries rose with age (Figure 2.11.3). The mean length of stay was 1.5 days for children aged 0–14 years, 1.6 days for young people aged 15–24 years, 1.8 days for adults aged 25–44 years, 2.3 days for adults aged 45–64 years and 5.5 days for older people aged 65+ years.

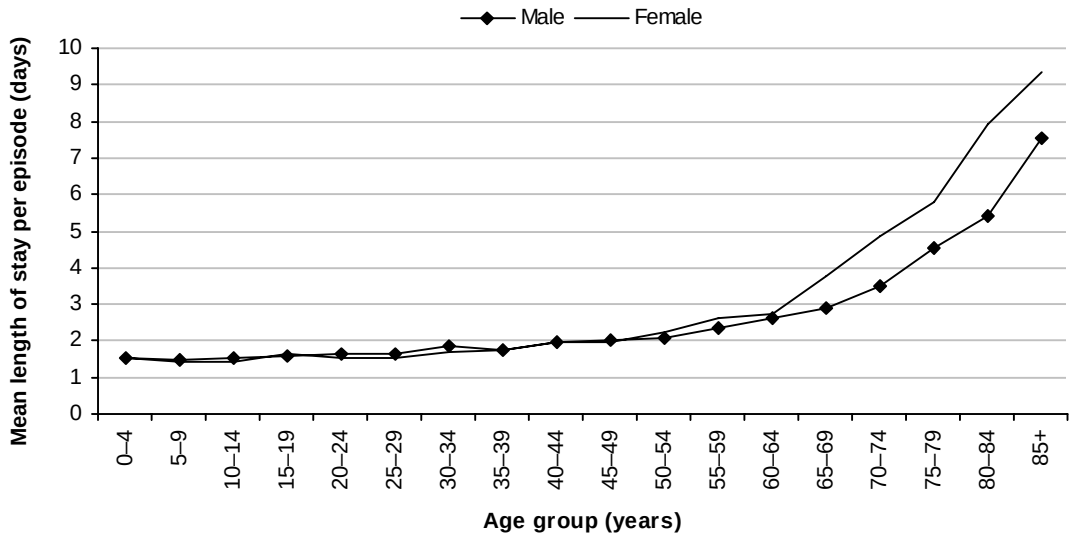


Figure 2.11.3: Length of stay per episode for other unintentional injury by age and sex, Australia, 2003–04

Time trends

There was an increase in age-standardised rates for other unintentional injuries in recent years from 544 per 100,000 of the population in 1999–00 to 551 per 100,000 in 2003–04 (Figure 2.11.4). Male rates increased from 778 per 100,000 in 1999–00 to 786 per 100,000 in 2003–04. Male rates were consistently higher than female rates, which also showed an increase; 305 per 100,000 in 1999–00 to 311 per 100,000 in 2003–04.

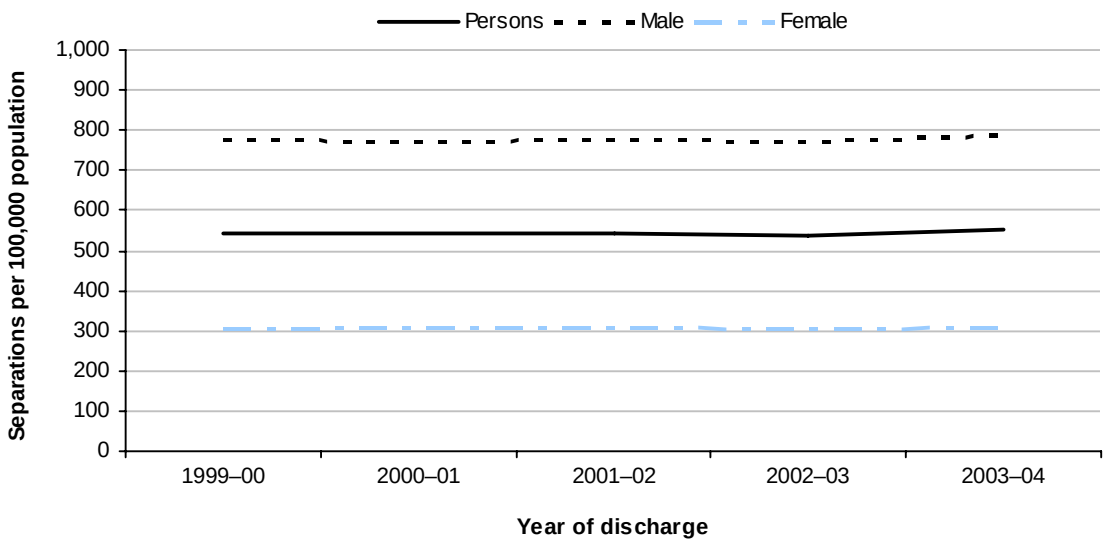


Figure 2.11.4: Age-standardised rates for other unintentional injury, Australia, 1999–00 to 2003–04

Table 2.11.6: External causes of other unintentional injury cases, Australia, 2003–04

ICD-10-AM Code	External cause of morbidity and mortality	Frequency	Per cent
W20	Struck by thrown, projected or falling object	4,473	4
W21	Striking against or struck by sports equipment	2,360	2
W22	Striking against or struck by other objects	6,175	6
W23	Caught, crushed, jammed or pinched in or between objects	4,976	5
W24	Contact with lifting and transmission devices, not elsewhere classified	582	1
W25	Contact with sharp glass	5,383	5
W26	Contact with knife, sword or dagger	3,173	3
W27	Contact with nonpowered hand tool	1,772	2
W28	Contact with powered lawnmower	541	0
W29	Contact with other powered hand tools and household machinery	3,161	3
W30	Contact with agricultural machinery	383	0
W31	Contact with other and unspecified machinery	4,337	4
W32	Handgun discharge	16	0
W34	Discharge from other and unspecified firearms	124	0
W35	Explosion and rupture of boiler	6	0
W36	Explosion and rupture of gas cylinder	81	0
W37	Explosion and rupture of pressurised tyre, pipe or hose	25	0
W38	Explosion and rupture of other specified pressurised devices	30	0
W39	Discharge of firework	53	0
W40	Explosion of other materials	199	0
W41	Exposure to high-pressure jet	36	0
W42	Exposure to noise	0	0
W43	Exposure to vibration	0	0
W44	Foreign body entering into or through eye or natural orifice	6,127	6
W45	Foreign body or object entering through skin	4,841	4
W49	Exposure to other and unspecified inanimate mechanical forces	2,285	2
W50	Hit, struck, kicked, twisted, bitten or scratched by another person	3,337	3
W51	Striking against or bumped into by another person	2,508	2
W52	Crushed, pushed or stepped on by crowd or human stampede	79	0
W53	Bitten by a rat	5	0
W54	Bitten or struck by dog	1,889	2
W55	Bitten or struck by other mammals	1,715	2
W56	Contact with marine animal	110	0
W57	Bitten or stung by nonvenomous insect and other nonvenomous arthropods	519	0
W58	Bitten or struck by crocodile or alligator	7	0
W59	Bitten or crushed by other reptiles	851	1
W60	Contact with plant thorns and spines and sharp leaves	204	0
W64	Exposure to other and unspecified animate mechanical forces	167	0
W75	Accidental suffocation and strangulation in bed	5	0
W76	Other accidental hanging and strangulation	15	0
W77	Threat to breathing due to cave-in, falling earth and other substances	*	*
W78	Inhalation of gastric contents	44	0
W79	Inhalation and ingestion of food causing obstruction of respiratory tract	377	0
W80	Inhalation and ingestion of other objects causing obstruction of respiratory tract	159	0
W81	Confined to or trapped in a low-oxygen environment	4	0
W83	Other specified threats to breathing	13	0
W84	Unspecified threat to breathing	41	0
W85	Exposure to electric transmission lines	29	0
W86	Exposure to other specified electric current	291	0
W87	Exposure to unspecified electric current	197	0
W88	Exposure to ionising radiation	0	0
W89	Exposure to man-made visible and ultraviolet light	6	0
W90	Exposure to other non-ionising radiation	0	0

(continued)

Table 2.11.6 (continued): External causes of other unintentional injury cases, Australia, 2003–04

ICD-10-AM Code	External cause of morbidity and mortality	Frequency	Per cent
W91	Exposure to unspecified type of radiation	*	*
W92	Exposure to excessive heat of man-made origin	*	*
W93	Exposure to excessive cold of man-made origin	27	0
W94	Exposure to high and low air pressure and changes in air pressure	560	1
W99	Exposure to other and unspecified man-made environmental factors	*	*
X20	Contact with venomous snakes and lizards	586	1
X21	Contact with venomous spiders	1,110	1
X22	Contact with scorpions	8	0
X23	Contact with hornets, wasps and bees	842	1
X24	Contact with centipedes and venomous millipedes (tropical)	14	0
X25	Contact with other specified venomous arthropods	237	0
X26	Contact with venomous marine animals and plants	295	0
X27	Contact with other specified venomous animals	5	0
X28	Contact with other specified venomous plants	5	0
X29	Contact with unspecified venomous animal or plant	36	0
X30	Exposure to excessive natural heat	523	0
X31	Exposure to excessive natural cold	238	0
X32	Exposure to sunlight	29	0
X33	Victim of lightning	29	0
X35	Victim of volcanic eruption	*	*
X36	Victim of avalanche, landslide and other earth movements	11	0
X37	Victim of cataclysmic storm	*	*
X38	Victim of flood	*	*
X39	Exposure to other and unspecified forces of nature	28	0
X50	Overexertion and strenuous or repetitive movements	8,494	8
X51	Travel and motion	36	0
X53	Lack of food	7	0
X54	Lack of water	4	0
X57	Unspecified privation	19	0
X58	Exposure to other specified factors	1,703	2
X59	Exposure to unspecified factor	30,931	28
Y85	Sequelae of transport accidents	64	0
Y86	Sequelae of other accidents	204	0
Y899	Sequelae of unspecified external cause	38	0
Total		**109,805**	**100**

* Small counts are omitted.

Work-related injury

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

Sixty-eight per cent of all injury cases where activity was recorded as *while working for income* were within the scope of the other unintentional injuries category (Table 2.11.7).

Most work-related injury cases are male (87%; *n*=18,909) (Table 2.11.7).

Thirteen per cent (*n*=14,744) of other unintentional injuries (*n*=109,805) were work-related. There were 6,934 hospital cases that have an external cause code outside this range that were work-related (Table 2.11.7).

For other unintentional injuries the top 5 causes of work-related injury were W31, *contact with other and unspecified machinery* (males *n*=2,301, females *n*=169), X59, *exposure to unspecified factor* (males *n*=1,716, females *n*=260), W20, *struck by thrown, projected or falling object* (males *n*=1,224, females *n*=74), W23, *caught, crushed, jammed or pinched in or between objects* (males *n*=1,208, females *n*=82), and X50, *overexertion and strenuous or repetitive movement* (males *n*=800, females *n*=253).

For falls injuries the most common causes of work-related injury were W01, *fall on the same level from slipping, tripping and stumbling* (males *n*=450, females *n*=354), W11, *fall on and from ladder* (males *n*=572, females *n*=23), and W17, *other fall from one level to another* e.g. fall from or into a cavity, pit, shaft or tank etc. (males *n*=548, females *n*=36).

For transportation injuries the most common cause of work-related injuries were V80, *animal-rider or occupant of animal-driven vehicle injured in transport accident* (males *n*=186, females *n*=85), V68, *occupant of heavy transport vehicle injured in noncollision transport accident* (males *n*=240, females *n*=4) and V43, *car occupant injured in collision with car, pick-up, truck or van* (males *n*=92, females *n*=53).

Table 2.11.7: Case counts and proportions by sex for work-related injury cases, Australia, 2003–04

	Males		Females		Persons	
Major group of injury	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Coverage in this report						
Intentional self-harm	8	0.0	17	0.6	25	0.1
Assault	314	1.7	50	1.8	364	1.7
Undetermined intent / drowning and near-drowning	17	0.1	5	0.2	22	0.1
Falls	2,751	14.6	814	29.1	3,565	16.4
Transportation	1,849	9.8	313	11.2	2,162	10.0
Poisoning, pharmaceuticals	21	0.1	7	0.3	28	0.1
Poisoning, other substances	311	1.6	55	2.0	366	1.7
Fires, burns, scalds	344	1.8	58	2.1	402	1.9
Other unintentional	13,294	70.3	1,480	52.9	14,774	68.1
Total	**18,909**	**100.0**	**2,799**	**100.0**	**21,708**	**100.0**

Note: Shaded areas indicate the highest figure for a column.
This table excludes 30 cases for which an activity code is not applicable (ICD-10-AM range was outside V01-Y34).
* Small counts are omitted.

Sports-related injury

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

Fourty-three per cent of all injury cases where activity was recorded as *while engaged in sports* were within the scope of the other unintentional injuries category (Table 2.11.8).

Most sports-related injury hospitalisations were male (77%; *n*=27,580) (Table 2.11.8).

Fourteen per cent (*n*=15,361) of other unintentional injuries (*n*=109,805) were sports-related injury. There were 20,324 hospital cases that had an external cause code outside this range that were sport-related (Table 2.11.8).

For other unintentional injuries the top 5 causes of sports-related injury were X59, *exposure to unspecified factor* (males *n*=3,231; females *n*=831), X50, *overexertion and strenuous or repetitive movement* (males *n*=2,022; females *n*=787), W50, *hit, struck, kicked, twisted, bitten or scratched by another person* (males *n*=1,919; females *n*=172), W21, *striking against or struck by sports equipment* (males *n*=1,513; females *n*=405) and W51, *striking against or bumped into by another person* (males *n*=1,569; females *n*=140).

For falls injuries the most common causes of sport-related injury were W03, *other fall on same level due to collision with, or pushing by, another person* (males *n*=3,634; females *n*=365), W02, *fall involving ice-skates, skis, roller-skates or skateboards* (males *n*=1,590; females *n*=529), W18, *other fall on same level* (males *n*=1,428; females *n*=644) and W01, *fall on the same level from slipping, tripping and stumbling* (males *n*=870; females *n*=702).

For transportation injuries the most common causes of sport-related injuries were V18, *Pedal cyclist injured in non-collision transport accident* (males *n*=1,362; females *n*=303), V80, *animal-rider or occupant of animal-drawn vehicle injured in transport accident* (males *n*=460; females *n*=1,012), and V28, *Motorcycle rider injured in noncollision transport accident* (males *n*=1,383; females *n*=51).

Table 2.11.8: Case counts and proportions by sex for sports injury cases, Australia, 2003–04

	Males		Females		Persons	
Major group of injury	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Coverage in this report						
Intentional self-harm	7	0.0	*	*	*	*
Assault	84	0.3	6	0.1	90	0.3
Undetermined intent	17	0.1	*	*	*	*
Falls	9,235	33.5	3,224	39.8	12,459	34.9
Transportation	5,742	20.8	1,796	22.2	7,538	21.1
Poisoning, pharmaceuticals	7	0.0	4	0.1	11	0.0
Poisoning, other substances	*	*	*	*	5	0.0
Fires, burns, scalds	21	0.1	*	*	*	*
Drowning and near-drowning	118	0.4	50	0.6	168	0.5
Other unintentional	12,347	44.8	3,014	37.2	15,361	43.1
Total	**27,580**	**100.0**	**8,105**	**100.0**	**35,685**	**100.0**

Note: Shaded areas indicate the highest figure for a column.
This table excludes 62 cases for which an activity code is not applicable (ICD-10-AM range was outside V01-Y34).
* Small counts are omitted.

3 Complications of surgical and medical care, Australia

ICD-10-AM case inclusion

Principal Diagnosis: T80–T88

Table 3.1: Key indicators for cases due to *Complications of surgical and medical care*, Australia, 2003–04

Indicator	Males	Females	Persons
All hospital separations	3,194,681	3,646,434	6,841,192[(a)]
Separations from hospital due to complications of surgical and medical care	36,942	35,607	72,549
Percentage of all separations	1.2%	1.0%	1.1%
Estimated cases*	34,287	33,231	67,518
Crude rate/100,000 population	345.2	330.6	337.9
Age-standardised rate/100,000 population	354.8	315.6	331.3
Mean length of stay (days)	6.4	6.6	6.5
Total patient days	218,199	219,213	437,492

Includes (a) 77 separations for which sex was not reported.

* Omits inward transfers from acute hospitals.

Overview

Hospital separations with a Principal Diagnosis of T80–T88 *Complications of surgical and medical care, not elsewhere classified* can provide a rudimentary measure of the frequency of occurrence of adverse events related to medical care. However, other ICD-10-AM codes outside the Principal Diagnosis range of T80–T80 may also indicate that an adverse event has occurred. Hence, the method used in this chapter uses different specifications to those used in the Australian Hospital Statistics 2003–04, which results in lower estimates here than in that publication (Australian Institute of Health and Welfare 2005). The wide diversity of estimates of the incidence of adverse events reported in the national and international literature is due to divergence in definitions, methods and conceptual focus (Thomas et al. 2000; Vincent et al. 2001; Wilson et al. 1995).

Caution is needed when interpreting the data in this chapter due to uncertainty about the completeness of coding, difficulties in identifying some complications as well as limitations of the classification and data systems. The limitations of these data are elsewhere described (Berry & Harrison 2006). The method used here is slightly different from the previous report in this series (Berry & Harrison 2006) in that cases with a Principal Diagnosis of T80–T88 are included in Table 3.1, even if they lack an external cause or have a first reported external cause code of *Community injury* (Table 1.1). Cases so defined were excluded from analyses in the previous report (*n*=1,191 in 2001–02) but are included in this report (*n*=457 in 2003–04). These cases constitute only a small proportion of complications of surgical and medical care (2% in 2001–02 and 0.7% in 2003–04). There is some difficulty in determining how to treat these cases as they meet the Principal Diagnosis definition of *Complications of surgical and medical care, not elsewhere classified* but lack a meaningful external cause which necessitates coding of these cases as 'other/missing' for analyses which examine external cause.

In 2003–04, *Complications of surgical and medical care, not elsewhere classified* was the Principal Diagnosis assigned to 72,549 episodes of hospital inpatient care, 1.1% of all hospital separations from public, private and psychiatric hospitals in Australia (Table 3.1). An estimated 67,518 separations were incident injury cases in 2003–04. About as many again had an Additional Diagnosis in the range T80–T88 *Complications of surgical and medical care, not elsewhere classified* (see Table A1). The male to female rate ratio (M:F rate ratio), based on age-standardised rates was 1.1:1.0, indicating slightly more males than females were hospitalised for complications of surgical and medical care.

Major types of injury

Table 3.2: Major types of injury for *Complications of surgical and medical care*, Australia, 2003–04

	Males		Females		Persons	
Principal Diagnosis	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Complications following infusion, transfusion and therapeutic injection	319	0.9	288	0.9	607	0.9
Complications of procedures, not elsewhere classified	14,000	40.8	13,994	42.1	27,994	41.5
Complications of cardiac and vascular prosthetic devices, implants and grafts	4,726	13.8	3,447	10.4	8,173	12.1
Complications of genitourinary prosthetic devices, implants and grafts	2,102	6.1	1,226	3.7	3,328	4.9
Complications of internal orthopaedic prosthetic devices, implants and grafts	6,463	18.9	6,556	19.7	13,019	19.3
Complications of other internal prosthetic devices, implants and grafts	3,617	10.6	5,659	17.0	9,276	13.7
Failure and rejection of transplanted organs and tissues	1,610	4.7	770	2.3	2,380	3.5
Complications peculiar to reattachment and amputation	794	2.3	253	0.8	1,047	1.6
Other complications of surgical and medical care, not elsewhere classified	656	1.9	1,038	3.1	1,694	2.5
Total	**34,287**	**100.0**	**33,231**	**100.0**	**67,518**	**100.0**

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

All (100%; *n*=67,518) of admitted injury cases did not specify a particular body part that was injured.

The ICD-10-AM Principal Diagnoses T81, *Complications of procedures, not elsewhere classified* (*n*=27,994), T84, *Complications of internal orthopaedic prosthetic devices, implants and grafts* (*n*=13,019) and T85, *Complications of other internal prosthetic devices, implants and grafts* (*n*=9,276) accounted for three-quarters of all *Complications of surgical and medical care*.

The most commonly recorded specific adverse event was T81.4, *Infection following a procedure, not elsewhere classified* (*n*=13,304; 20% of all adverse events). The second most common adverse event was T81.0, *Haemorrhage and haematoma complicating a procedure, not elsewhere classified* (*n*=8,400; 12% of all adverse events). The third most common adverse event was T84.0, *Mechanical complication of internal joint prosthesis* (*n*=5,180; 8% of all adverse events).

Most of these common adverse events were given an external cause code of Y83; indicating a surgical operation and other surgical procedure was the cause of the abnormal reaction of

the patient, or of later complication, without mention of misadventure at the time of the procedure. Specifically, surgery was the cause of 12,526 infections following a procedure (19% of all adverse events), 7,487 haemorrhages or haematomas (11% of all adverse events) and 5,065 complications of an implant of artificial devices (8% of all adverse events).

Age and sex distribution

Rates of hospitalised injury were similar for males and females at ages under 30 years (Figure 7). Female rates exceeded male rates at ages 30–59 years. At ages 60 years and older, male rates exceeded those for females (Figure 3.1).

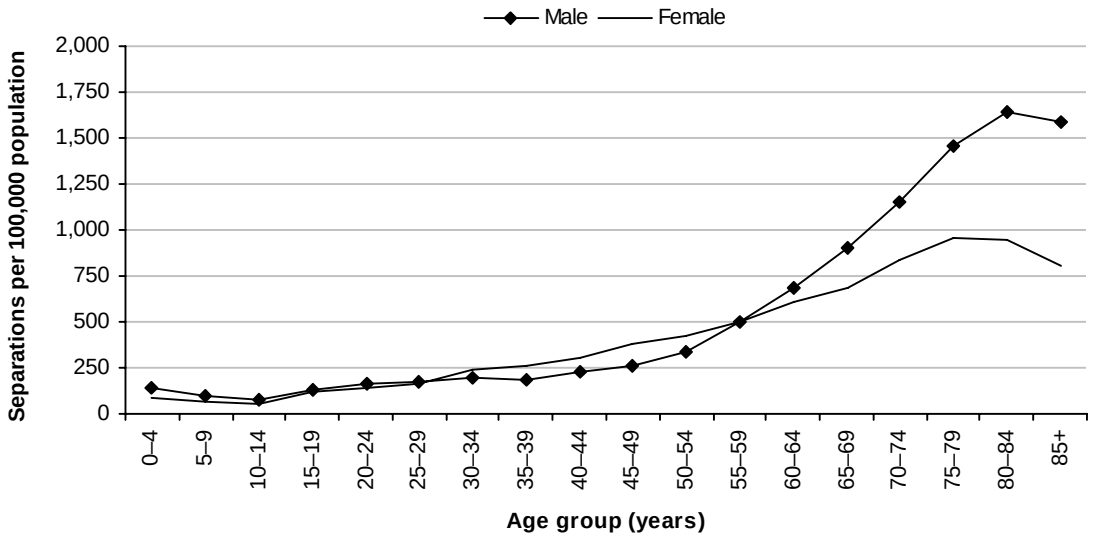


Figure 3.1: Age-specific hospital separation rates for *Complications of surgical and medical care* by sex, Australia, 2003–04

Length of stay

Mean length of stay due to *Complications of surgical and medical care* increased with age (Figure 3.2).

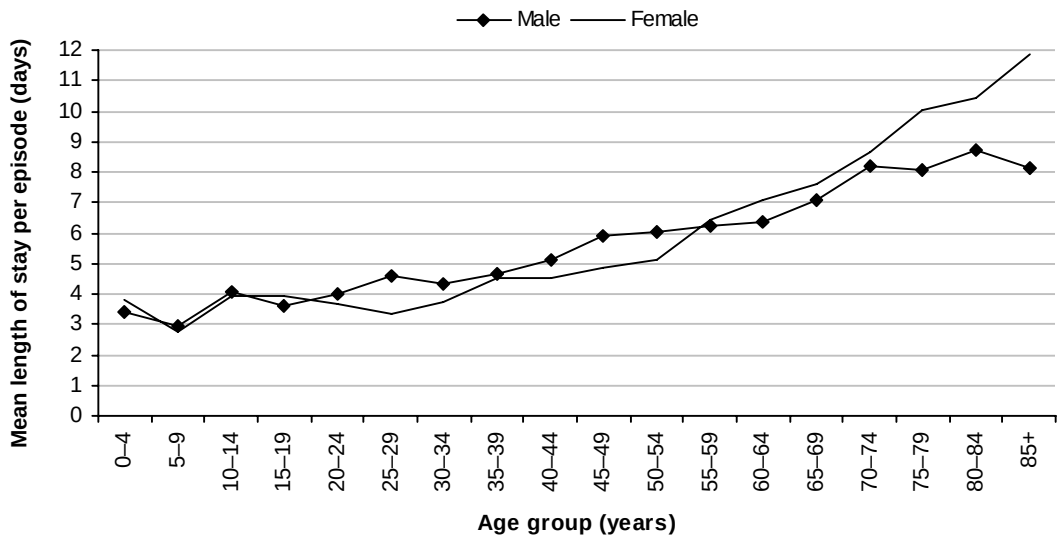


Figure 3.2: Length of stay per episode for *Complications of surgical and medical care* by age and sex, Australia, 2003–04

Time trends

Age-standardised rates for *Complications of surgical and medical care* appear to be consistent over time; 329 per 100,000 of the population in 1999–00 and 331 per 100,000 in 2003–04. Age-standardised rates are higher for males than females (Figure 3.3).

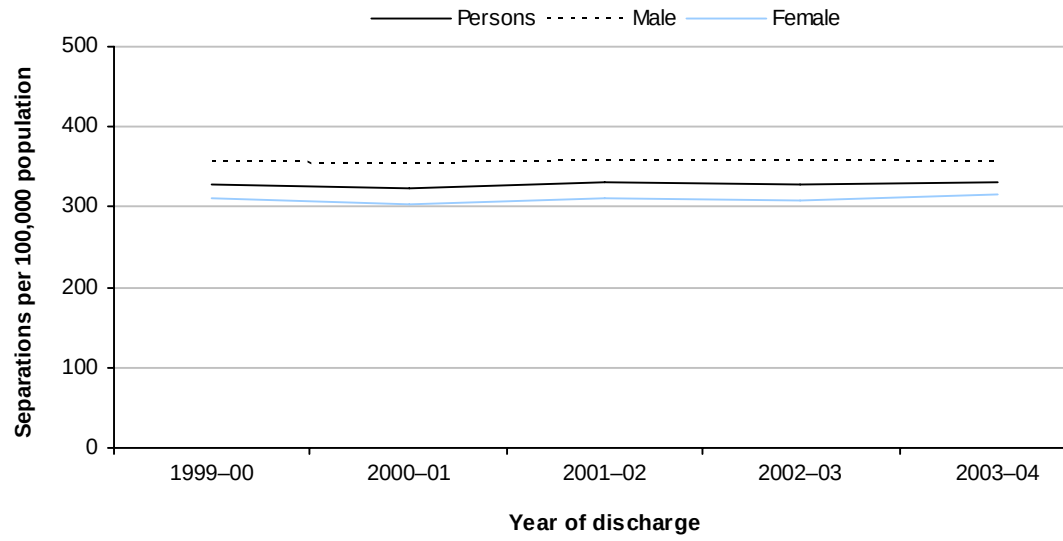


Figure 3.3: Age-standardised rates of *Complications of surgical and medical care*, Australia, 1999–00 to 2003–04

Place of occurrence

As expected, where a place of occurrence was recorded (*n*=65,411), the great majority of cases occurred in a health service area (98.3%; *n*=64,320). The remaining 1.7% occurred in the home or in another location, but these are difficult to interpret due to the limited information available. It may be that these cases refer to the place of occurrence of the original condition or disease, to the place where the complication became apparent, or to complications of care delivered at home.

4 Residual groups

This chapter includes hospital separations where the Principal Diagnosis was in ICD-10-AM Chapter XIX *Injury, poisoning and certain other consequences of external causes* but was not classified as *Community injury* or *Complications of surgical and medical care* (*n*=4,525) and estimated cases (*n*=4,441) were derived by omitting separations which were inward transfer from another acute care hospital. Most of these 4,441 estimated cases were coded as ICD-10-AM Principal Diagnosis T78 *Adverse effects, not elsewhere classified* (*n*=4,177) (Table 4.1). The remainder were T89, *Other specified complications of trauma* (*n*=245) or T90–T98, *Sequelae of injuries, of poisoning and of other consequences of external causes* (*n*=19).

Table 4.1: Case counts for ICD-10-AM Principal Diagnosis T78, *Adverse effects, not elsewhere classified*, Australia, 2003–04

	Males		Females		Persons	
Principal Diagnosis	**Count**	**Per cent**	**Count**	**Per cent**	**Count**	**Per cent**
Anaphylactic shock due to adverse food reaction	389	19.8	364	16.5	753	18.0
Other adverse food reactions, not elsewhere classified	252	12.8	293	13.3	545	13.0
Anaphylactic shock, unspecified	291	14.8	340	15.4	631	15.1
Angioneurotic oedema	492	25.0	679	30.7	1,171	28.0
Allergy, unspecified	528	26.9	498	22.5	1,026	24.6
Other adverse effects, not elsewhere classified or unspecified	14	0.7	37	1.7	51	1.2
Total	**1,966**	**100.0**	**2,211**	**100.0**	**4,177**	**100.0**

Appendix 1: Data issues

Data sources

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

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

Selection criteria

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

Period

This report is restricted to inpatient episodes that ended in the period 1 July 2003 to 30 June 2004.

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

Most hospital episodes due to injury are brief (mean duration of 4.1 days for *Community injury*) and hospital admission (if it occurs at all) usually follows soon after occurrence of an injury. Hence injury data reported—as here—in terms of date of separation should not, overall, differ greatly from reporting in terms of date of occurrence, though caution should be taken in making this assumption for some types of case (e.g. spinal cord injuries, for which mean length of stay is several months (Cripps R 2006)).

Scope

We included data from all hospitals that contributed to the NHMD in 2003–04. This includes nearly all public and private hospitals in Australia that provide acute care services. Further information on inclusion scope can be found in Australian Hospital Statistics 2003–04 (Australian Institute of Health and Welfare 2005).

Injury

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

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

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

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

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

A small proportion of records were ambiguous as to whether they should be treated as *Community injury* or *Complications of surgical and medical care*. These records have a Principal Diagnosis in the *Community injury* range and a first reported external cause code meaning *Complications of surgical and medical care* (*n*=1,640) or a Principal Diagnosis in the *Complications of surgical and medical care* range and a first reported external cause code indicating *Community injury* (*n*=357). These records, shown in Table A1, were included in the analysis according to their Principal Diagnosis.

Injury solely as Additional Diagnosis (excluded)

Records in the NHMD for 2003–04 can report up to 50 Additional Diagnosis codes as well as a Principal Diagnosis code. Hence, records can occur that have a Principal Diagnosis code outside the range designating *Community injury*, but have one or more Additional Diagnosis codes within that range. The same is true for *Complications of surgical and medical care*. The numbers of records of these types are shown in Table A1.

Records in which injury codes appear only as Additional Diagnoses have not been used in the analysis presented in this report, mainly because injury was not recorded as being the main reason for these episodes in hospital. Principal Diagnosis means 'The diagnosis established after study to be chiefly responsible for occasioning an episode of admitted patient care…' (Australian Institute of Health and Welfare 2005). Hence, while many or all of the people represented by these records will, at some time, have sustained an injury as defined above, that injury was not recorded as being the main reason for their current episode in hospital.

Many of these records with an Additional Diagnosis of injury will have been counted in incidence estimates on the basis of a previous episode in hospital for acute care, the current episode being for rehabilitation. In some other instances, the Additional Diagnosis injury referred to in the record may have been incidental to the reason for admission and would not, on its own, have prompted admission.

External cause codes

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

Records that have a Principal Diagnosis within a specified injury range, but no accompanying external cause code, numbered 361 (0.1%) of the *Community injury* subset, and 100 (0.2%) of the *Complications of surgical and medical care* subset (see Table A1). Numbers of such cases in 2003–04 were much smaller than in 2001–02 [*n*=4,541 for the *Community injury* subset and *n*=732 for the *Complications of surgical and medical care* subset (Berry & Harrison

2006)]. Over half of the injury records without an external cause code are from NSW. These records do not differ greatly from records with external cause codes in terms of diagnoses, age or sex.

Estimating incident cases

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

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

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

Information in the NHMD enables this problem to be reduced, though not eliminated. The approach used for this report makes use of the Mode of Admission variable, which indicates whether the current episode commenced with inward transfer from another acute care hospital. Episodes of this type with injury as the Principal Diagnosis are likely to have been preceded by another episode, also meeting the case selection criteria for injury. Hence, these records (n=32,799) were omitted from our estimates of incident cases (Table A1).

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

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

Confidence intervals

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

Age adjustment

Most all-ages rates have been adjusted for age to allow comparison of injury risk free from the distortion introduced by one population having a different age distribution to another. Direct standardisation was employed, using the Australian population in 2001 as the

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

Table A1: Selection criteria for cases due to injury and poisoning, Australia, 2003–04

Selection criteria	Males	Females	Persons
Community injury (ICD-10-AM Principal Diagnosis range S00–T75, T79), and			
• lack any external cause code	218	143	361
• have a first reported external cause code of *Complications of surgical and medical care***	787	853	1,640
• have a first reported external cause code in the range V01–Y36, Y85–Y87, Y89	199,056	143,789	342,848[(a)]
Total case numbers for *Community injury*	**200,061**	**144,785**	**344,849[(a)]**
Do not have a Principal Diagnosis of *Community injury*, but Additional Diagnosis codes are in range (ICD-10-AM range S00–T75, T79)	30,433	35,622	66,057[(b)]
Total case numbers where there is a code for *Community injury* in the Principal or Additional Diagnosis fields	**230,494**	**180,407**	**410,906 [(c)]**
Complications of surgical and medical care (ICD-10-AM Principal Diagnosis range T80–T88), and			
• lack any external cause code	47	53	100
• have a first reported external cause code of *Community injury****	188	169	357
• have a first reported external cause in the range Y40–T84, Y88	34,052	33,009	67,061
Total case numbers for *Complications of surgical and medical care*	**34,287**	**33,231**	**67,518**
Do not have a Principal Diagnosis of *Complications of surgical and medical care*, but Additional Diagnosis codes are in range (ICD-10-AM range T80–T88)	37,343	34,983	72,327[(d)]
Total case numbers where there is a code for *Complications of surgical and medical care* in the Principal or Additional Diagnosis fields	**71,630**	**68,214**	**139,845[(d)]**
Case numbers where Principal Diagnosis is in ICD-10-AM Chapter XIX *Injury and poisoning* but is not classified as *Community injury* or *Complications of surgical and medical care*	**2,141**	**2,300**	**4,441**
• Adverse effects, not elsewhere classified (ICD-10-AM Principal Diagnosis T78)—includes adverse food reactions e.g. analphylactic shock.	1,966	2,211	4,177
• Other complications of trauma not elsewhere classified (ICD-10-AM Principal Diagnosis T89)	165	80	245
• Sequelae of injuries, of poisoning and of other consequences of external causes (ICD-10-AM Principal Diagnosis T90–T98)	10	9	19
All cases with Principal Diagnosis in the ICD-10-AM range S00–T98	**236,489**	**180,316**	**416,808[(e)]**

Includes (a) 3,(b) 2, (c) 5, (d) 1, and (e) 3 separations for which sex was not reported.

* To correct for double-counting, 32,799 separations were omitted from the estimate of incident cases as they were inward transfers from another acute care hospital. Without this exclusion, the separations from hospital according to Principal Diagnosis were 372,533 for Community injury, 72,549 for Complications of surgical and medical care and 4,525 for the remainder of separations in the Chapter XIX Injury and poisoning chapter.

** 62 (3.8%) of these cases have one or more external cause codes of *Community injury* (external cause of morbidity and mortality fields in the range V01–Y36).

*** 35 (9.8%) 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).

Suppression of small cell counts in data tables

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

Errors, inconsistencies and uncertainties

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

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

'Remoteness area classification of the patient's usual residence' was not missing for any records in 2003–04, and did not require substitution with the corresponding value for the remoteness area of the treating hospital as was done in the previous report in the series (Berry & Harrison 2006). The set of NHMD records with Principal Diagnosis codes in the range S00–T98 excluding transfers from another acute care hospital (*n*=416,808), contained few missing values for the variables used extensively in analysis: 'age' (*n*=0), 'sex' (*n*=3), and 'state of usual residence' (*n*=2,813—which is likely to include many non-residents of Australia).

Appendix 2: Population data table

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

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

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

Table A3.1: Age-specific rates and age-standardised rates of separations due to external causes in males, Australia, 2003–04

ICD-10-AM E-code	Age group (years)																	All ages (crude)	Age Std
	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+		
Major groups	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate
Intentional																				
Intentional self-harm	1.1	0.1	15.5	121.5	164.0	179.0	170.2	153.9	122.4	91.6	68.7	64.7	36.1	35.1	26.8	31.2	38.0	52.4	87.8	87.8
Assault	22.7	9.2	33.7	298.7	402.2	317.4	252.3	211.4	160.4	113.9	74.8	49.2	37.0	24.6	21.5	16.8	13.3	20.7	143.0	142.5
Undetermined intent	5.7	2.6	4.2	21.6	28.4	27.6	24.9	19.8	14.7	11.4	6.4	5.2	4.9	3.0	2.3	2.0	6.7	2.2	12.9	12.9
Unintentional																				
Falls	598.1	772.5	784.7	489.4	385.6	328.7	285.0	264.2	275.4	304.9	329.7	376.4	445.9	525.1	840.1	1,379.9	2606.7	5,531.2	550.0	579.4
Transportation	91.7	227.6	495.7	680.2	633.1	496.4	411.7	345.0	275.1	253.5	212.5	178.9	156.8	166.3	168.0	200.5	207.4	263.1	333.3	332.7
Poisoning, pharmaceuticals	133.7	13.2	6.6	29.3	56.9	58.1	39.7	35.0	28.6	24.7	19.5	16.0	19.4	13.8	26.5	35.7	52.7	56.8	36.4	36.8
Poisoning, other substances	50.3	7.3	8.6	17.7	22.6	21.6	16.6	16.9	14.9	13.9	14.9	12.3	10.5	8.8	8.0	10.7	8.7	4.4	16.6	16.6
Fires, burns and scalds	133.4	25.7	29.2	40.9	44.9	35.9	28.9	25.2	26.5	20.9	24.8	18.5	15.2	16.8	14.2	15.6	16.0	39.3	34.1	34.2
Drowning and near-drowning	19.3	4.4	1.7	2.7	3.1	1.3	1.1	1.7	1.6	1.6	1.8	0.7	3.3	1.9	1.3	2.0	0.7	4.4	3.1	3.2
Other unintentional injuries	578.8	493.3	721.7	1302.5	1347.3	1130.4	996.6	854.9	752.5	683.0	595.8	584.2	522.4	457.4	452.2	444.0	555.5	641.9	786.9	785.5
Community Injury*	**1,638.8**	**1,558.7**	**2,105.3**	**3,011.4**	**3,095.1**	**2,602.5**	**2,231.5**	**1934.1**	**1678.7**	**1,524.3**	**1,358.4**	**1,313.8**	**1,268.6**	**1,287.6**	**1,584.8**	**2,175.3**	**3,565.7**	**6,686.2**	**2,014.3**	**2,042.0**
Complications of surgical and medical care	136.5	98.5	77.6	130.8	162.0	169.8	196.4	187.5	228.2	264.9	341.2	500.9	679.5	907.0	1,152.5	1,456.6	1,643.1	1,585.0	345.2	354.8

Note: Rates per 100,000 population.

* In the 1990–00 report, *All external causes* included cases attributable to *complications of surgical and medical care*. In the 2001–02 and 2003–04 report, *complications of surgical and medical care* are considered separately from the total for the other external causes, described as *Community injury*.

Table A3.2: Age-specific rates and age-standardised rates of separations due to external causes in females, Australia, 2003–04

ICD-10-AM E-code	Age group (years)																	All ages (crude)	Age Std
	0–4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85+	
Major groups	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate	Rate
Intentional																				
Intentional self-harm	0.2	0.8	69.6	396.7	264.6	222.3	210.5	209.4	203.0	173.4	112.5	70.9	56.9	35.2	27.7	31.7	35.0	33.2	141.6	143.7
Assault	22.7	7.1	16.2	74.1	112.2	106.6	109.6	100.9	70.7	42.4	25.3	15.6	11.2	7.3	6.1	10.3	10.2	10.6	51.0	52.0
Undetermined intent	4.2	1.7	7.9	34.8	34.2	25.7	28.2	18.4	18.7	16.1	16.3	10.1	6.8	7.3	4.3	5.7	8.4	6.0	16.1	16.3
Unintentional																				
Falls	493.9	630.4	347.3	133.4	140.0	130.4	144.7	157.2	183.8	235.6	321.8	464.2	618.9	857.2	1,455.1	2,604.8	4,635.5	8,803.2	684.8	601.0
Transportation	56.0	141.5	186.5	298.8	242.3	183.1	142.5	129.3	124.2	121.9	117.4	116.8	112.0	128.0	145.0	158.6	210.1	151.6	153.3	153.4
Poisoning, pharmaceuticals	124.9	9.7	12.3	61.1	59.0	51.9	37.1	36.0	35.7	33.5	23.0	21.2	20.9	20.7	24.1	33.3	52.3	61.4	39.8	40.1
Poisoning, other substances	37.7	4.0	5.5	14.0	12.5	11.1	9.0	6.7	8.9	8.8	5.7	6.2	7.5	10.2	6.7	9.0	8.4	8.6	10.2	10.4
Fires, burns and scalds	89.3	19.7	15.9	16.1	12.8	12.1	10.8	11.4	10.5	11.1	8.8	8.2	6.8	8.1	15.5	14.3	19.1	18.6	17.2	17.6
Drowning and near-drowning	16.6	2.2	1.2	1.2	1.0	0.6	0.4	0.4	0.6	0.7	0.3	1.2	0.7	0.3	1.2	0.7	0.4	1.5	1.8	1.9
Other unintentional injuries	447.8	313.9	301.4	312.7	302.3	270.5	275.1	273.1	261.8	257.5	263.9	268.6	273.1	276.2	346.1	431.5	592.3	802.2	314.9	310.7
Community injury*	**1,295.4**	**1,132.9**	**968.0**	**1,347.2**	**1,185.6**	**1,017.6**	**971.4**	**949.7**	**923.4**	**907.3**	**902.3**	**993.4**	**1,128.7**	**1,363.4**	**2,057.7**	**3,333.2**	**5,627.3**	**9,981.6**	**1,440.6**	**1356.0**
Complications of surgical and medical care	88.3	63.2	56.8	123.3	139.4	165.8	239.1	255.8	303.3	379.5	420.9	497.3	605.1	685.9	836.0	960.2	943.9	805.2	330.6	315.6

Note: Rates per 100,000 population.

* In the 1990–00 report, *All external causes* included cases attributable to *complications of surgical and medical care*. In the 2001–02 and 2003–04 report, *complications of surgical and medical care* are considered separately from the total for the other external causes, described as *Community injury*.

Table A3.3: Age-specific rates and age-standardised rates of separations due to external causes in persons, Australia, 2003–04

ICD-10-AM E-code	Age group																	All ages (crude)	Age Std
Major groups	**0–4**	**5–9**	**10–14**	**15–19**	**20–24**	**25–29**	**30–34**	**35–39**	**40–44**	**45–49**	**50–54**	**55–59**	**60–64**	**65–69**	**70–74**	**75–79**	**80–84**	**85+**	**Rate**	**Rate**
	Rate	**Rate**	**Rate**	**Rate**	**Rate**	**Rate**	**Rate**	**Rate**	**Rate**	**Rate**	**Rate**	**Rate**	**Rate**	**Rate**	**Rate**	**Rate**	**Rate**	**Rate**		
Intentional																				
Intentional self-harm	0.6	0.4	41.9	255.7	213.1	200.5	190.5	181.8	162.8	132.8	90.7	67.8	46.4	35.2	27.3	31.4	36.2	39.3	114.9	115.4
Assault	22.7	8.2	25.2	189.1	260.6	212.6	180.4	155.8	115.4	77.9	49.9	32.6	24.2	15.8	13.5	13.2	11.5	13.8	96.7	97.5
Undetermined intent	5.0	2.2	6.0	28.1	31.2	26.7	26.6	19.1	16.7	13.7	11.4	7.6	5.9	5.2	3.3	4.0	7.7	4.8	14.5	14.6
Unintentional																				
Falls	547.4	703.3	571.6	315.8	265.6	230.1	214.4	210.4	229.4	270.1	325.7	419.9	531.6	693.3	1,160.5	2,055.7	3,825.4	7,770.3	617.8	605.1
Transportation	74.4	185.7	345.1	494.2	442.2	340.7	276.1	236.5	199.4	187.3	164.7	148.2	134.6	146.9	156.0	177.4	209.0	186.8	242.8	243.6
Poisoning, pharmaceuticals	129.4	11.5	9.4	44.8	57.9	55.0	38.4	35.5	32.2	29.1	21.3	18.6	20.2	17.3	25.2	34.4	52.5	60.0	38.1	38.4
Poisoning, other substances	44.1	5.7	7.1	15.9	17.6	16.4	12.8	11.8	11.9	11.4	10.3	9.2	9.0	9.5	7.3	9.7	8.5	7.2	13.4	13.5
Fires, burns and scalds	111.9	22.8	22.7	28.8	29.2	24.1	19.8	18.3	18.5	15.9	16.8	13.4	11.0	12.4	14.9	14.9	17.8	25.2	25.6	26.0
Drowning and near-drowning	18.0	3.3	1.4	2.0	2.1	1.0	0.7	1.0	1.1	1.1	1.1	0.9	2.0	1.1	1.3	1.3	0.5	2.4	2.5	2.5
Other unintentional injuries	515.0	406.0	516.9	819.8	836.8	703.1	633.2	562.2	506.2	468.8	429.2	427.9	399.0	365.6	396.9	437.1	577.6	751.6	549.5	550.6
Community injury*	**1,471.6**	**1,351.4**	**1,551.2**	**2,199.9**	**2,162.2**	**1,814.9**	**1,596.8**	**1,439.0**	**1,299.7**	**1,213.8**	**1,129.5**	**1,155.2**	**1,199.3**	**1,326.0**	**1,831.1**	**2,814.0**	**4,804.0**	**8,941.3**	**1,725.8**	**1,717.0**
Complications of surgical and medical care	113.0	81.3	67.5	127.2	151.0	167.8	217.9	221.8	265.9	322.6	381.2	499.1	642.6	795.0	987.6	1,182.8	1,223.1	1,051.4	337.9	331.3

Note: Rates per 100,000 population.

* In the 1990–00 report, *All external causes* included cases attributable to *complications of surgical and medical care*. In the 2001–02 and 2003–04 report, *complications of surgical and medical care* are considered separately from the total for the other external causes, described as *Community injury*.

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INJURY RESEARCH & STATISTICS

This report presents national statistics on injuries that resulted in admission to hospitals in Australia. It includes cases discharged during the year to 30 June 2004. The report has been designed to complement *Injury deaths, Australia 2003–04*.

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

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

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