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Trends in hospitalised injury, Australia

2007–08 to 2016–17

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Trends in hospitalised injury, Australia

2007–08 to 2016–17

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Contents

Summary

This report describes trends in the occurrence of injuries requiring hospitalisation in Australia, for the 10-year period from 1 July 2007 to 30 June 2017. The annual number of cases rose from about 400,000 to 530,000 during this period.

Injuries in 2016–17

Overall, injuries were more common among males (293,130 cases) than females (240,553 cases). Case numbers and population-based rates were higher for males than for females for all age groups to 65–69, with the largest difference occurring for those aged 20–24. For those aged 65 and older, rates were higher for females than for males. The highest rates occurred for those aged 95 or over.

There were an estimated 28,032 cases due to injury and poisoning for Aboriginal and Torres Strait Islander people during 2016–17. More males than females were hospitalised (1.3:1). Rates of injury among Indigenous Australians (4,162 cases per 100,000) were twice those of non-Indigenous Australians (2,007 cases per 100,000) in 2016–17.

The average length of stay in hospital as a result of an injury was 3 days (more than 1.8 million days for the 533,701 cases). About 1 in 6 injury cases were classified as 'high threat to life'. Two per cent of hospitalised injury cases involved time in an intensive care unit, at an average of 80 hours per case.

Two of the main causes of injury in 2016–17 were *Falls* (41%) and transport crashes (12%). Almost 220,000 people were hospitalised as a result of a fall in 2016–17. Females made up just over half (123,043) of all *Fall* cases. *Transport crash* injuries were more common in males (41,153 cases) than in females (21,374 cases). Rates of transport injury were highest in the 15–19 age group for males and the 20–24 age group for females.

Trends in injury cases

The age-standardised rate of injury hospitalisations increased from 2007–08 to 2016–17 by an average of 1.2% per year, rising from 1,849 cases per 100,000 population in 2007–08 to 2,051 per 100,000 in 2016–17 (modelled rates). During this 10-year period, the age-standardised rate for injuries varied as outlined in Table S1.

Table S1: Trends in age-standardised rates of injury cases, 2007–08 to 2016–17

Injury type	% change rate per year
Exposure to animate mechanical forces	4.0% increase
Drowning and submersion	2.2% increase
Falls	1.9% increase
Intentional self-harm	1.7% increase
Exposure to inanimate mechanical forces	1.0% increase
Transport	0.1% increase
Accidental poisoning	1.0% decrease
Thermal causes of injury	1.5% decrease
Assault	3.2% decrease

1 Introduction

This report describes trends in the occurrence of injuries requiring hospitalisation in Australia (in both public and private hospitals) during the 10-year period from 1 July 2007 to 30 June 2017. Injury is described according to major types of external causes of injury. The report covers injuries that occurred in community settings—such as car accidents; interpersonal violence; sporting and recreational activities; and work—but health-care-associated harm is not included.

Only a small proportion of all incident injury cases result in admission to a hospital. For each hospital admission, many more cases present to hospital emergency departments but are not admitted, or are seen by a general practitioner. A larger number of generally minor cases do not receive any 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. Although injury cases admitted to hospital comprise only a small proportion of the number of incident cases of injury, however, they account for a large proportion of estimated costs of injury.

The external-cause categories presented in this report differ slightly from those in previous editions of the *Trends in hospitalised injury* series. The following changes have been made:

- Previous reports have included 2 categories of poisoning (*Poisoning, pharmaceuticals* and *Poisoning, non-pharmaceutical substances*), while the present report covers both types of poisoning within 1 broad category of *Accidental poisoning*.
- The large general category *Other unintentional injury* has been split into 3 separate sections covering injury due to *Exposure to inanimate mechanical forces*, injury due to *Exposure to animate mechanical forces* and all other remaining unintentional external causes of injury.

Structure of this report

The broad topics in this report are:

- an overview of hospitalised injury cases in 2016–17
- trends in injury (the number and rate of separations and estimated cases over time, by age and sex)
- trends in the severity of injury (high threat to life and length-of-stay indicators)
- trends in external causes of injury (number and rate of estimated cases over time, by age and sex, for each major external cause).

Chapter 2 presents an overview of injury in Australia including time series information.

Chapter 3 presents information on measures of the severity of injury using proportions of high threat to life, length of stay, and time spent in intensive care.

Chapters 4 to 13 present analyses, including time series, for each major external cause of injury.

Appendix A: Data issues provides summary information on the National Hospital Morbidity Database (NHMD); notes on the presentation of data; the population estimates used to calculate population rates; and analysis methods.

Chapter structure

In this report, chapters 3–13 each begin by answering the following 2 questions:

- What data are reported? (Describes the data presented in the chapter)
- What methods were used? (Outlines issues such as inclusions and exclusions of records, and calculation methods)

The data presentations that follow answer, where possible, the following questions:

- How many hospitalised cases for injury were there in 2016–17?
- How have hospitalised cases for injury changed over time?
- How have hospitalised cases for injury varied by age and by sex?
- How have hospitalised cases for injury varied by remoteness of usual residence?
- How have hospitalised cases for injury among Indigenous Australians changed over time? How does this compare with trends for non-Indigenous Australians?

Generally, summary tables and figures are placed immediately below the discussion in related text. Where appropriate, tables and figures within the chapter are accompanied by notes referring readers to additional statistical tables (including summary information for states and territories) available for download from the AIHW website. Further information about the methods used in this report can be found in 'Appendix A: Data issues'.

Methods

This report uses data from the National Hospital Morbidity Database (NHMD) covering the 10-year period 1 July 2007 to 30 June 2017, to provide information on recent trends in injury in Australia. Previous editions of this series have reported trends from 1 July 1999; as a result of the difference in time periods examined, direct comparisons with previous trends reports are now not possible.

Analysis of trends in injury among Aboriginal and Torres Strait Islander people is presented for the period 2010–11 to 2016–17. The year 2010–11 was chosen as the starting period for the analysis, in order to maximise the inclusion of jurisdictions assessed by the AIHW as having adequate identification of Indigenous hospitalised cases. Further information about the selection of hospital separations for Indigenous and non-Indigenous Australians, and other methodological issues, can be found in Box 1.2 and in 'Appendix A: Data issues'. (For a definition of the term 'separation', see Box 1.1 and the Glossary.)

Diagnosis and external-cause information for the hospital separations reported here were coded according to 7 editions of the International Statistical Classification of Diseases and Related Health Problems, tenth revision, Australian modification (ICD-10-AM) that were current during parts of the period 2007 to 2017.

Injuries are often categorised as being Intentional (that is, self–inflicted), Unintentional (that is, accidental), Undetermined (difficult to determine intent), and Other. Other includes injuries due to legal intervention (for example, incurred by law–enforcing agents), war operations, and terrorism. This report describes Unintentional and Intentional injury hospitalisations. Some summary information for Undetermined and Other injury hospitalisations is included. Throughout the report the term 'Accidental' is used to describe unintentional injuries due to poisoning and drowning and submersion to reflect the category names in the ICD-10-AM.

What data are reported?

The data are presented by:

- age
- sex
- external cause of injury
- diagnosis
- remoteness of the patient's area of usual residence
- Indigenous status.

Selection criteria for records, and data terms and definitions

Records that met all of the following criteria were included in this report:

- hospital separations occurring in Australia 1 July 2007 to 30 June 2017
- principal diagnosis in the ICD-10-AM range S00–T75 or T79 using Chapter XIX *Injury, poisoning and certain other consequences of external causes* codes—but excluding any with 'Z50 Care involving use of rehabilitation procedures' appearing in any additional diagnosis field (see 'Appendix A: Data issues' for information on Z50)
- mode of admission was not a transfer from another acute hospital (see 'Appendix A: Data issues' for details).

Important terms relating to the data used in this report are summarised in boxes 1.1 to 1.3, and further information on data and methods is provided in 'Appendix A: Data issues'. Other information boxes are included within relevant areas in various chapters in the report.

In tables and charts, unless stated otherwise:

- the patient's age is calculated at the date of admission
- in tables presenting data by age group and by sex, separations for which age and/or sex were not reported were included in totals
- rates were age-standardised as detailed in 'Appendix A: Data issues'
- trends were analysed using the negative binomial distribution regression technique, as described in Berry and Harrison (2006). See also 'Appendix A: Data issues'
- the use of the terms 'significant' or 'significantly' throughout this report indicates an outcome that was statistically significant ($p = 0.05$ or less).

All chapters on specific external causes have used this methodology, supplemented by additional selection criteria for the specific external cause.

Changes in separation rates due to changes in underlying population data

All populations, except those used for analyses by Indigenous status (see 'Appendix A: Data issues'), are based on 2011 Census data. The age-standardised rates (per 100,000 population) presented in this report for the years 2007–08 to 2016–17 in time series have been calculated using 'rebased' 2011 estimated resident populations. Therefore, the rates in this report are not directly comparable to the rates presented in earlier injury reports.

Box 1.1: Summary of terms relating to hospitalised injury

Statistics on admitted patients are compiled when an **admitted patient** (a patient who undergoes a hospital's formal admission process) completes an episode of admitted-patient care and 'separates' from the hospital. This is because most of the data on the use of hospitals by admitted patients are based on information provided at the end of the patients' episodes of care, rather than at the beginning. The length of stay and the procedures carried out are then known and the diagnostic information is more accurate.

Separation is therefore the term used to refer to the episode of admitted-patient care, which can be a total hospital stay (from admission to discharge, transfer or death) or a portion of a hospital stay beginning or ending in a change of type of care (for example, from acute care to rehabilitation). 'Separation' also means the process by which an admitted patient completes an episode of care by being discharged, dying, transferring to another hospital or changing type of care.

The **principal diagnosis** is the diagnosis established, after study, to be chiefly responsible for occasioning the patient's episode of admitted-patient care.

An **external cause** is defined as the environmental event, circumstance or condition that was the cause of injury or poisoning. Whenever a patient has a principal or additional diagnosis of an injury or poisoning, an external-cause code should be recorded.

The **injury separation records** included in this report are those that have a principal diagnosis code in the ICD-10-AM range S00–T75 or T79. Whenever a patient has a principal or additional diagnosis of an injury or poisoning, an external-cause code should be recorded. This includes records where the main reason for the episode in hospital was a recent injury, such as a fracture, laceration or burn to any part of the body, or poisoning. It also includes a small number of episodes mainly due to complications of surgical and medical care; to sequelae present a year or more after injury; or to other late effects.

Records are included whether the injury was caused unintentionally ('accidents') or intentionally (*Intentional self-harm* or *Assault*). Records where intent was not determined are also included. Throughout this report, records with a principal diagnosis of S00–T75 or T79 are included in the totals of tables unless otherwise indicated, even if they lack an external cause or have a first-reported external-cause code of complications of surgical and medical care, or codes describing the sequelae of external causes. These records meet the principal diagnosis definition of 'community injury', but lack a meaningful external cause.

Injury cases are estimated as the number of injury separations, less those records where the mode of admission was 'Admitted patient transferred from another hospital'. These transfers are omitted to reduce over-counting. The criteria for injury cases retain a small number of records with a first external-cause code that is invalid or refers to a sequelae (late effect) or complication of care. These cases are reported as 'other or missing' in tables of external causes.

The **mean length of stay (MLOS)** is the average number of days each patient stayed in hospital. This is calculated by dividing the total number of patient days for **injury separations** by the number of **injury cases**, estimated as above. Patients who were admitted and discharged from hospital on the same day are counted as staying for 1 day.

Injuries can be classified according to the likelihood that a patient with that injury will die in hospital. The method used refers to cases with a predicted mortality risk of about 6% or higher as having a **high threat to life (HTTL)** (Stephenson et al. 2003). Injuries of this severity are likely to have a large impact on the patient, often with persisting problems and ongoing need for health-care services.

Box 1.2: Indigenous reporting

In this report, the terms ‘Indigenous’ and ‘non-Indigenous’ are used to refer to persons identified as such in Australian hospital separations data and population data collections. Separations for which Indigenous status was ‘not stated’ have been excluded in the counts for non-Indigenous Australians. There were 7,294 cases in 2016–17 with Indigenous status recorded as *Not stated*.

From 2010–11 onwards, Indigenous status information within hospital separations data from all jurisdictions were of sufficient quality for statistical reporting purposes (AIHW 2013). An AIHW study found that an estimated 88% of Indigenous patients were correctly identified in Australian public hospital admission records in 2011–12.

The report recommends that the data from 2010–11 onwards for all jurisdictions be used in analysis of Indigenous hospitalisation rates, for hospitalisations in total in national analyses of Indigenous admitted-patient care.

Injury rates were age-standardised to 85 and over by the direct method, while whole-of-population injury rates were age-standardised to 95 and over.

Further information is available in ‘Appendix A: Data issues’.

2 Overview of hospitalised injury

This chapter presents information on patients who were admitted to hospital as a result of an injury. Information in this chapter includes:

- age group and sex of the patient
- cause of the injury
- trends over time.

Key findings

About 530,000 cases of hospitalised injury occurred in Australia in 2016–17.

Sex of patient

In 2016–17, 55% of cases were men and boys.

Age of patient

In 2016–17, people aged 65 or over accounted for 31% of cases; among females it was 42%.

Indigenous status

Age-standardised rates of injury were much higher overall among Indigenous Australians (4,162 per 100,000 population), compared with the rates among non-Indigenous Australians (2,007 per 100,000 population).

Cause of injury

Falls constituted the largest proportion of injury cases overall in 2016–17 (41%).

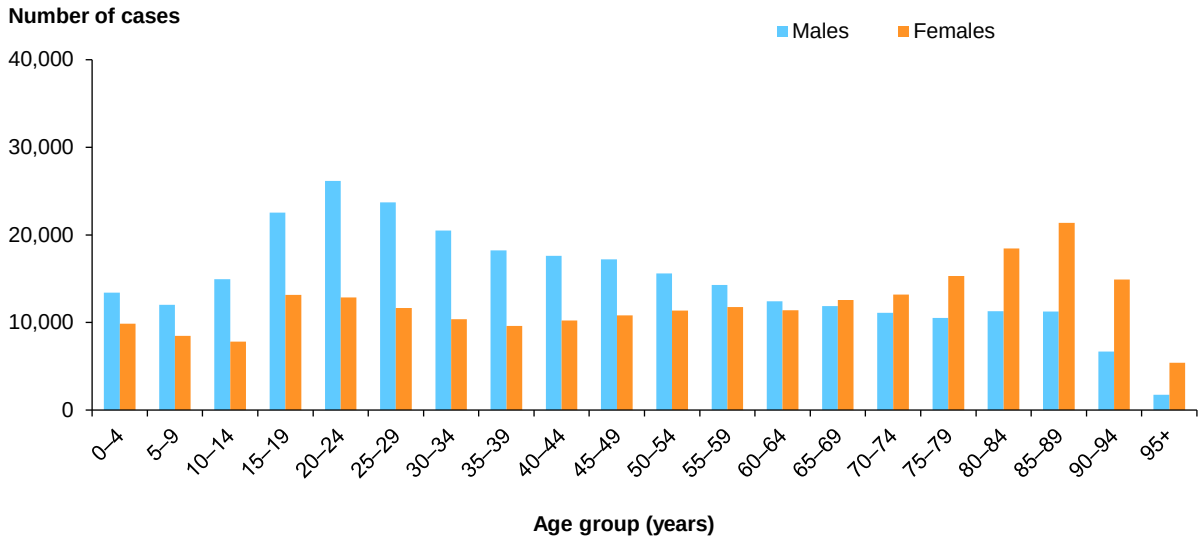
Trends in injury

Injury hospitalisations rose over the period, with an average annual increase of 1.1% per year.

Age group and sex

There were 533,701 cases of hospitalised injury in Australia in 2016–17. More males (293,130) than females (240,553) were hospitalised as a result of an injury. An analysis of injury cases by age and sex shows a greater number of injury cases for males than for females in each age category up to 60–64 (Figure 2.1). Among older females, the greatest number of injury cases (21,389 cases) occurred in the age range 85–89. Among males, the largest number of injury cases (26,176) was seen in the 20–24 age range.

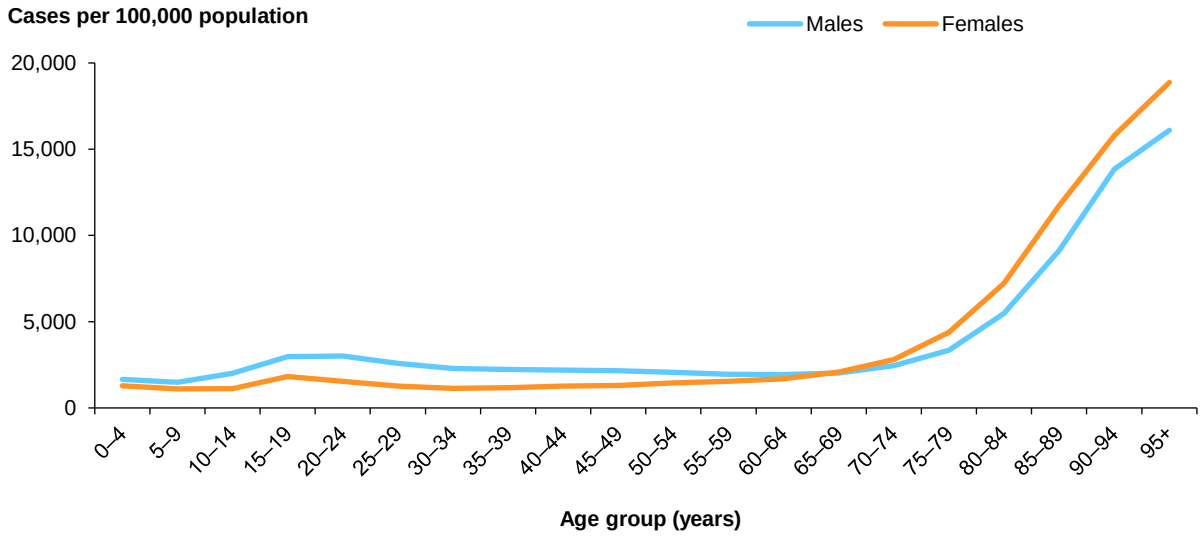
Figure 2.1: Number of cases of injury, by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

In 2016–17, age-specific rates of injury were also much higher for those in older age groups (those above age 75) (Figure 2.2). Males had a higher rate of injury across all age groups, up to about 60–64; thereafter females had much higher rates. The highest rate of injury for females occurred for those aged 95 or over, with 18,872 cases per 100,000 compared with 16,096 for males at the same age.

Figure 2.2: Age-specific rates of injury, by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Nature of injury

Hospitalised injuries resulted in damage to various body regions, the most common being the head and neck (22%) and hip and lower limb (20%) (Table 2.1). Females had a larger proportion of injuries to the hip and lower limb, reflective of the much higher rates of fall injury cases in older women. By contrast, males had larger proportions of wrist and hand injuries.

Table 2.1: Injury cases, by body region injured, by sex, 2016–17

	Males		Females		Persons	
Type of injury	**Number**	**%**	**Number**	**%**	**Number**	**%**
Head and neck	65,394	22.3	49,948	20.8	115,344	21.6
Trunk (thorax, abdomen, lower back, lumbar spine and pelvis)	31,195	10.6	29,919	12.4	61,115	11.5
Shoulder and upper limb (excluding wrist and hand)	47,138	16.1	42,380	17.6	89,525	16.8
Wrist and hand	51,717	17.6	18,959	7.9	70,677	13.2
Hip and lower limb (excluding ankle and foot)	51,555	17.6	54,918	22.8	106,475	20.0
Ankle and foot	12,729	4.3	8,785	3.7	21,514	4.0
Other, multiple and incompletely specified body regions	11,125	3.8	7,178	3.0	18,304	3.4
Injuries not described in terms of body region	22,277	7.6	28,466	11.8	50,747	9.5
Total	**293,130**	**100.0**	**240,553**	**100.0**	**533,701**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

Fractures were the most common type of injury sustained, accounting for almost 200,000 (38%) of cases in 2016–17 (Table 2.2). Males and females had a similar pattern of type of injury, with fractures, followed by open wounds, common for both.

Table 2.2: Injury cases, by type of injury, by sex, 2016–17

	Males		Females		Persons	
Type of injury	**Number**	**%**	**Number**	**%**	**Number**	**%**
Fracture	103,959	35.5	96,151	40.0	200,114	37.5
Dislocation	6,466	2.2	4,643	1.9	11,109	2.1
Soft-tissue injury	34,097	11.6	18,346	7.6	52,443	9.8
Open wound	47,624	16.2	29,684	12.3	77,313	14.5
Intracranial injury	14,443	4.9	9,062	3.8	23,506	4.4
Internal organ or vessel of trunk	4,224	1.4	1,604	0.7	5,828	1.1
Burn	4,952	1.7	2,630	1.1	7,582	1.4
Superficial injury	15,692	5.4	17,512	7.3	33,204	6.2
Poisoning or toxic effect	18,562	6.3	25,988	10.8	44,554	8.3
Other and unspecified injuries	43,111	14.7	34,933	14.5	78,048	14.6
Total	**293,130**	**100.0**	**240,553**	**100.0**	**533,701**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

Remoteness of usual residence

The age-standardised rate of injury in 2016–17 increased as the degree of remoteness of usual residence increased (Table 2.3): the rate of injury in *Very remote* regions (4,337 per 100,000 population) was more than double the rate in *Major cities* (1,964 per 100,000 population).

Table 2.3: Injury cases, by remoteness of usual residence, 2016–17

	Remoteness of usual residence				
Indicators	**Major cities**	**Inner regional**	**Outer regional**	**Remote**	**Very remote**
Injury cases	356,770	100,724	52,077	9,482	8,241
Age-standardised rate (cases per 100,000 population)	1,964	2,192	2,478	3,296	4,337

Aboriginal and Torres Strait Islander people

There were 28,032 cases of hospitalised injury among Indigenous Australians in 2016–17 (Table 2.4). More Indigenous males than females were hospitalised as a result of an injury. Age-standardised rates of injury were much higher overall among Indigenous Australians (4,162 per 100,000 population), compared with non-Indigenous Australians (2,007 per 100,000 population). Rates of injury among Indigenous females were twice those of non-Indigenous females.

Table 2.4: Injury cases, by Indigenous status, by sex, 2016–17

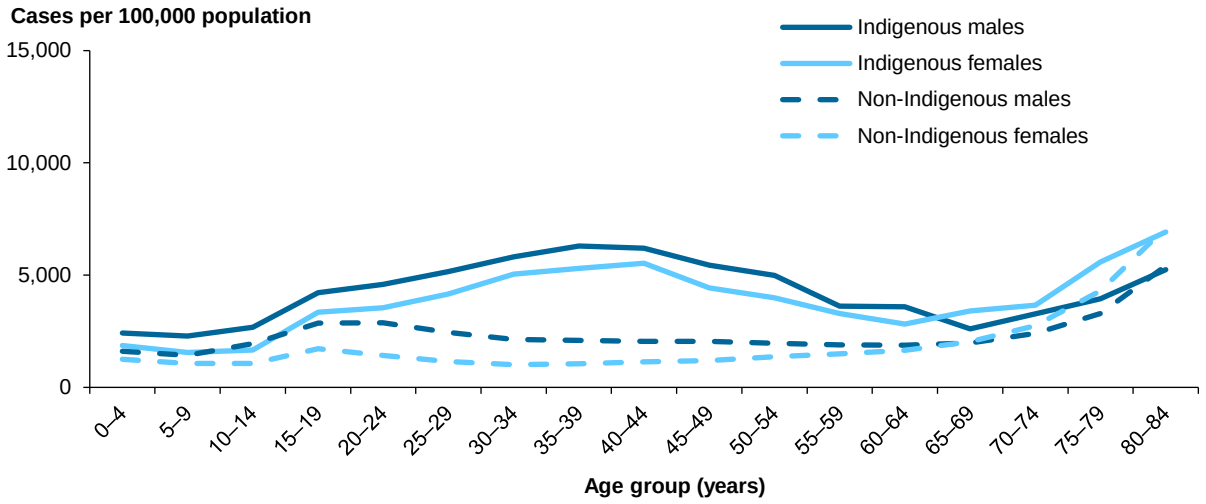
	Indigenous			Non-Indigenous		
Indicators	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Injury cases	15,385	12,647	28,032	273,559	224,799	498,375
Age-standardised rate (cases per 100,000 population)	4,452	3,856	4,162	2,317	1,678	2,007

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Non-Indigenous Australians excludes cases where Indigenous status is not reported.

An analysis of the rate of hospitalised injury, by age and sex, shows that—up to the 75–79 age group—age-specific injury rates were higher in each age group for Indigenous males and females than for their non-Indigenous counterparts (Figure 2.3). Indigenous males and females had higher rates of hospitalised injury throughout adulthood, whereas the initial rise in rates seen among non-Indigenous males and females in their late teens dissipated during middle age. From about the age of 65, the rate of injury among Indigenous females overtook that of males, remaining higher in each successive age group.

Figure 2.3: Age-specific rates of injury cases, by Indigenous status, by age group, by sex, 2016–17



Notes

1. 'Non-Indigenous' includes cases where Indigenous status was not stated.
2. Due to the small case numbers of injury among Indigenous Australians over the age of 85, results for the 85 plus group were suppressed.
3. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Causes of injury

Falls constituted the largest proportion of injury cases overall in 2016–17 (41%), followed by *Exposure to inanimate mechanical forces* (14%) and *Transport crash* (12%) (Table 2.5).

Exposure to inanimate mechanical forces includes cases of being struck, or having contact with, objects such as sporting equipment; sharp objects such as glass or knives; or tools and machinery of various types. The *Exposure to inanimate mechanical forces* category is described more fully in Chapter 9.

For males, the leading external cause of injury was *Falls* (33%), followed by *Transport crash* (14%).

For females, the rankings were *Falls* (41%), followed by *Exposure to inanimate mechanical forces* (14%) and *Transport crash* (12%).

Table 2.5: Major external cause groups for injury cases, by sex, 2016–17

	Males		Females		Persons	
External cause description	**Number**	**%**	**Number**	**%**	**Number**	**%**
Transport crash	41,153	14.0	21,374	8.9	62,528	11.7
Accidental drowning and submersion	385	0.1	226	0.1	611	0.1
Accidental poisoning	6,047	2.1	5,214	2.2	11,261	2.1
Falls	96,580	32.9	123,043	51.2	219,625	41.2
Thermal causes	3,795	1.3	2,257	0.9	6,052	1.1
Exposure to inanimate mechanical forces	53,665	18.3	19,619	8.2	73,284	13.7
Exposure to animate mechanical forces	14,130	4.8	8,380	3.5	22,510	4.2

(continued)

Table 2.5 (continued): Major external cause groups for injury cases, by sex, 2016–17

	Males		Females		Persons	
External cause description	**Number**	**%**	**Number**	**%**	**Number**	**%**
Other external causes of unintentional injury						
Other accidental threats to breathing	469	1.2	351	1.4	820	1.3
Exposure to electric current, radiation and extreme ambient air temperature and pressure	599	1.5	215	0.9	814	1.3
Contact with venomous animals and plants	2,142	5.5	1,200	4.9	3,342	5.3
Exposure to forces of nature	585	1.5	275	1.1	860	1.4
Overexertion, travel and privation	8,456	21.6	6,558	27.0	15,014	23.7
Accidental exposure to other and unspecified factors	26,888	68.7	15,683	64.6	42,573	67.1
Subtotal	*39,139*	*13.4*	*24,282*	*10.1*	*63,423*	*11.9*
Intentional self-harm	12,056	4.1	21,065	8.8	33,131	6.2
Assault	14,454	4.9	7,629	3.2	22,086	4.1
Undetermined intent	2,847	1.00	2,124	0.9	4,971	0.9
Other or missing	8,879	3.00	5,340	2.2	14,219	2.7
Total	**293,130**	**100.0**	**240,553**	**100.0**	**533,701**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

Socioeconomic status

This section presents information on cases by the average socioeconomic status (SES) of the patient's area of usual residence. The information is presented by SES quintiles (fifths). The lowest SES group represents the areas containing the 20% of the population with the most disadvantage and the highest SES group represents the areas containing the 20% of the population with the least disadvantage (See Appendix A: Data issues for more information on SES).

The proportion of injury cases in each SES group ranged between 17% and 22% (Table 2.6). For males and females, people living in areas with the lowest (most disadvantaged) SES classification had the highest proportion of injury cases.

Table 2.6: Injury cases, by SEIFA quintile, by sex, 2016–17

	Males		Females		Persons	
SEIFA	**Number**	**%**	**Number**	**%**	**Number**	**%**
1–Lowest	65,844	22.5	53,474	22.2	119,324	22.4
2	60,993	20.8	49,554	20.6	110,554	20.7
3	58,037	19.8	47,051	19.6	105,090	19.7
4	54,000	18.4	45,180	18.8	99,180	18.6
5–Highest	50,182	17.1	42,838	17.8	93,023	17.4
Total	**293,130**	**100**	**240,553**	**100**	**533,701**	**100**

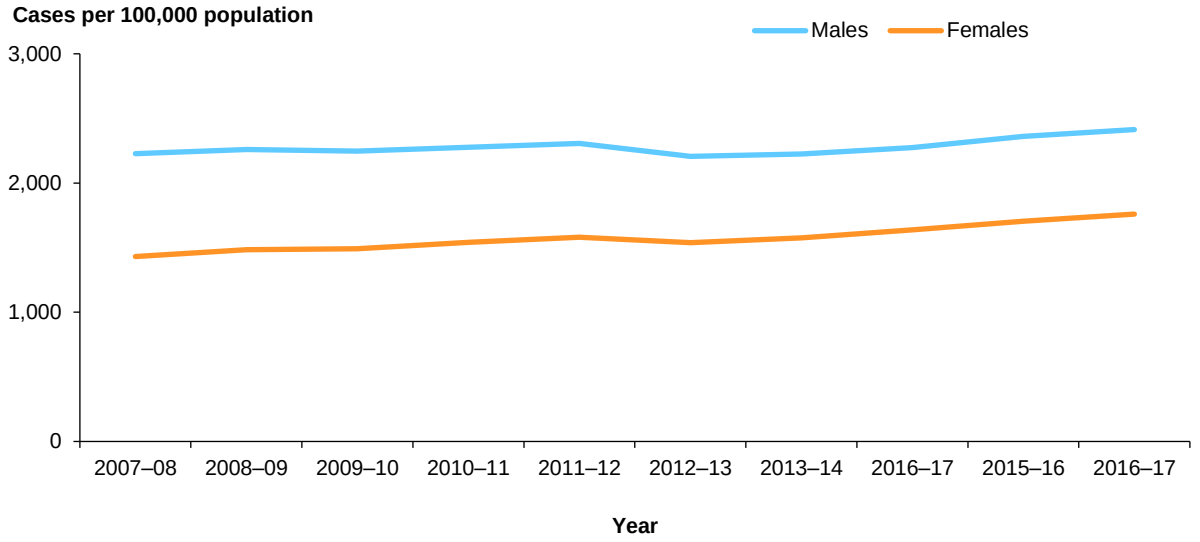
Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.
3. Total includes cases for which the SES group was not able to be determined.

How have injury cases changed over time?

Age-standardised rates of injury for males and females showed a small increase over the period, particularly from about 2012–13 onwards (Figure 2.4). For the entire period, the rate of injury for males has remained consistently higher than the rate for females.

Figure 2.4: Age-standardised rates of injury cases, by sex, 2007–08 to 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

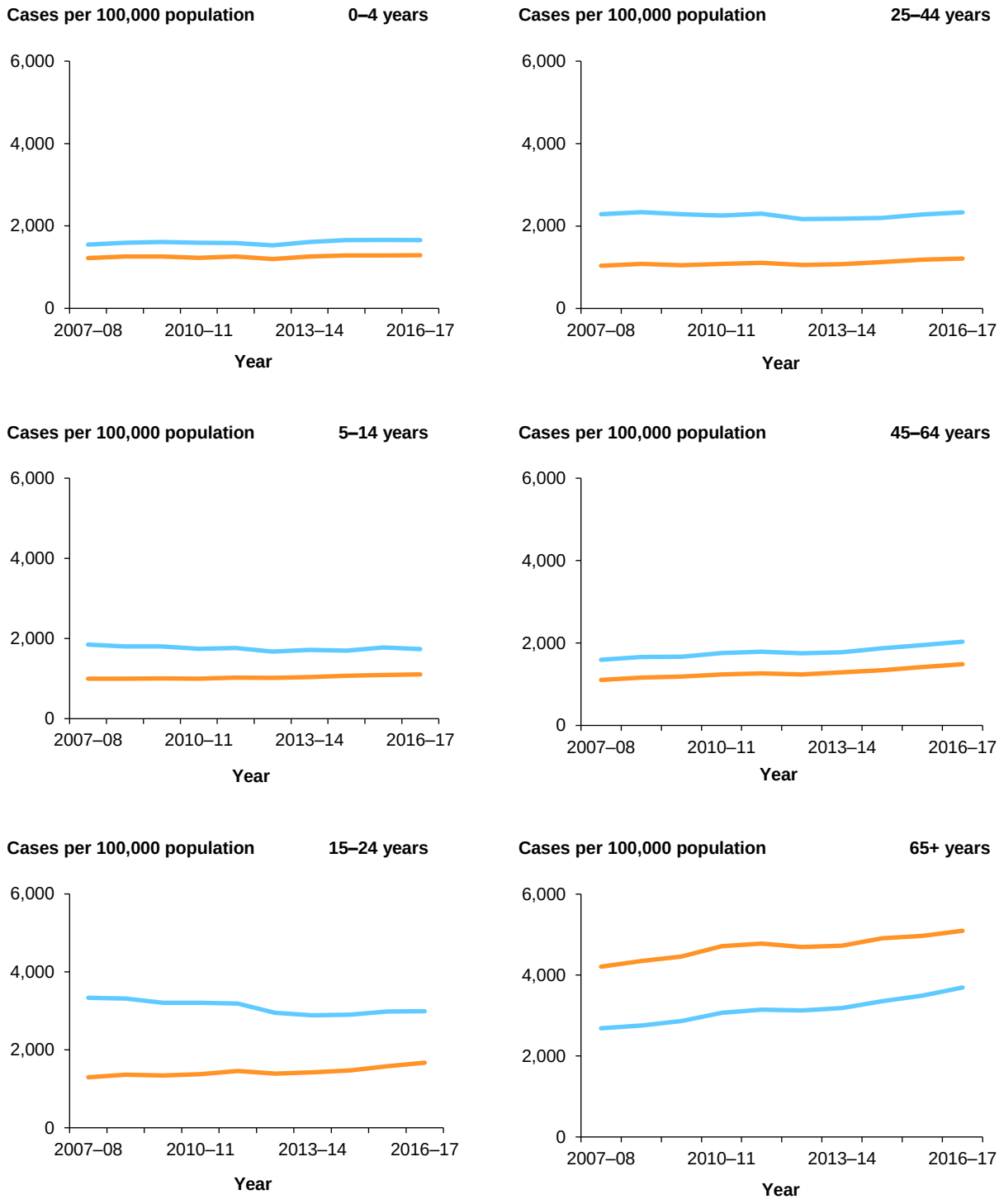
Changes in rates of injury over time, by broad age groups as well as by sex, are shown in Figure 2.5. The figures show an additional 2 years of data since the publication of the previous *Trends in hospitalised injury, Australia 1999–00 to 2014–15* report (AIHW: Pointer 2018a). Rates of injury among males were higher than among females in each age group, other than for those aged 65 or over. The greatest difference between males and females occurred in the 15–24 year age group, where rates were much higher among males—although the gap has narrowed in the most recent year. For injury cases aged 65 or over, rates of injury were higher among females than among males.

Age-specific rates of injury over the period have increased among both males and females in the 0–4, 25–44, 45–64 and 65 and over age groups, while changes in rates at other ages were influenced by gender. In the case of those aged 5–14 and 15–24, rates of injury among females increased while rates among males decreased. (For example, the rate of injury for males aged 5–14 in 2007–08 was 1,848 cases per 100,000 population, decreasing to 1,734 in 2016–17 and for males 15–24 years the rate of injury in 2007–08 was 3,335 cases per 100,000 population, decreasing to 2,990 in 2016–17.)

Among those aged 45–64, rates of injury for males were higher than for females, with rates for both increasing over the period. The rate of injury for males aged 45–64 in 2007–08 was 1,594 cases per 100,000 population, rising to 2,032 in 2016–17. For females, the rate was 1,104 in 2007–08, rising to 1,486 in 2016–17.

The rate of injury for males aged 65 or over in 2007–08 was 2,686 cases per 100,000 population, rising to 3,693 in 2016–17. For females, the rate was 4,207 in 2007–08, rising to 5,095 in 2016–17.

Figure 2.5: Age-specific rates of injury cases, by age group, by sex, 2007–08 to 2016–17



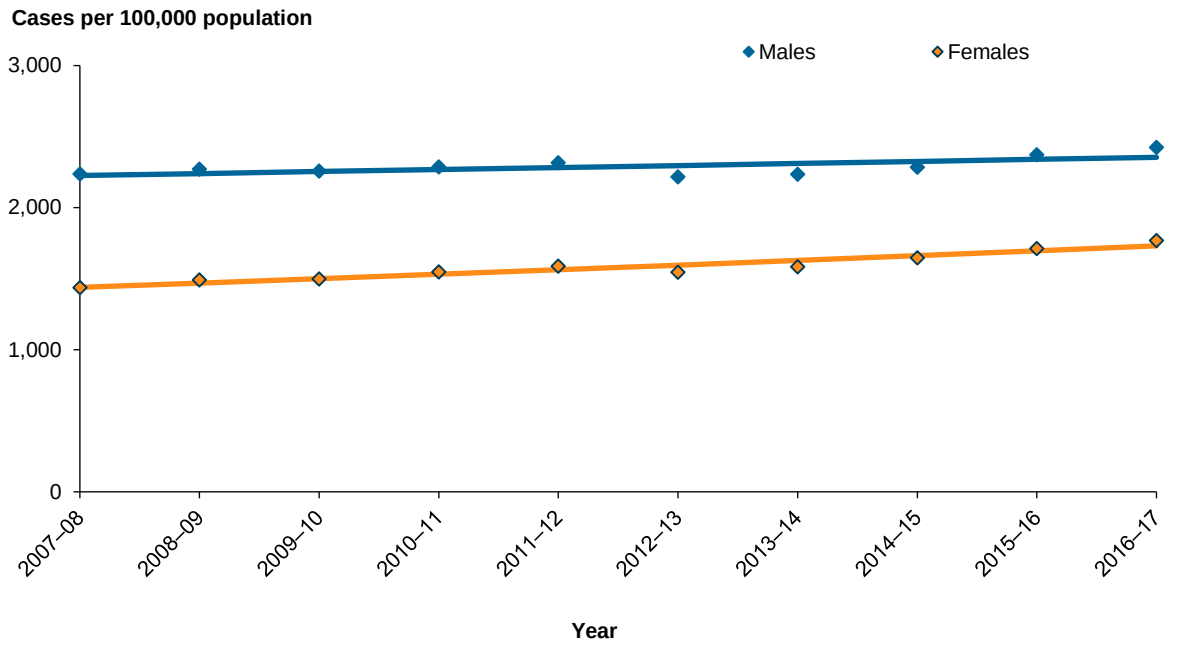
Notes

1. Rates for males are indicated by the blue line and rates for females by the orange line in all charts.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

The population-based age-standardised rate of cases of hospitalised injury tended to rise during the 10 years to 2016–17. The rate was 1,849 per 100,000 population in 2007–08 and 2,051 in 2016–17. The rise in the modelled rate averaged 1.2% per year and was statistically significant (95% CI: 1.1%, 1.2%).

A rise in the rate of injury was seen for both males and females (Figure 2.6). For males, the rate was 2,226 per 100,000 population in 2007–08 and 2,354 in 2016–17. The rise in the modelled rate for males averaged 0.6% per year and was statistically significant (95% CI: 0.6%, 0.7%). For females, the rate was 1,439 per 100,000 population in 2007–08 and 1,731 in 2016–17. The rise in the modelled rate was steeper for females compared with males, averaging 2.1% per year, and was statistically significant (95% CI: 2.0%, 2.1%).

Figure 2.6: Modelled age-standardised rates of injury cases, by sex, 2007–08 to 2016–17



Notes

1. The solid line represents the modelled rate from 2007–08 to 2016–17. The filled symbols represent the observed age-standardised rate value for each year.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

How have the causes of injury cases varied over time?

Changes in age-standardised rates of injury for various causes over the period 2007–08 to 2016–17 are summarised in Table 2.7. More information on trends for each of the causes of injury listed in the table is available in subsequent chapters of this report.

Seven categories of external causes of injury showed statistically significant increases in age-standardised rates: *Transport crashes* (a 0.1% increase per year from 2007–08); *Accidental drowning and submersion* (a 2.2% increase per year from 2007–08); *Falls* (a 1.9% increase per year from 2002–03), *Exposure to inanimate mechanical forces* (a 0.7% increase per year from 2007–08), *Exposure to animate mechanical forces* (a 4.0% increase per year from 2007–08), *Intentional self-harm* (a 1.7% increase per year from 2007–08) and other external causes of unintentional injury (a 1.3% increase per year from 2007–08).

Significant downward trends were seen in the rate of hospitalised cases due to *Accidental poisoning* (a 1.0% decrease per year from 2007–08); thermal causes of injury (a 1.5% decrease per year from 2007–08) and *Assault* (a 3.2% decrease per year from 2007–08).

Table 2.7: Trends in age-standardised rates of injury cases, by major external cause group, 2007–08 to 2016–17

External cause	Trend	% change per year
Transport crash	↑	0.1
Accidental drowning and submersion	↑	2.2
Accidental poisoning	↓	1.0
Falls	↑	1.9
Thermal causes of injury	↓	1.5
Exposure to inanimate mechanical forces	↑	1.0
Exposure to animate mechanical forces	↑	4.0
Other external causes of unintentional injury	↑	1.3
Intentional self-harm	↑	1.7
Assault	↓	3.2

Note: For all external causes, the average percentage change per year differed from zero to a statistically significant extent (p<0.05).

Differences in trends over time by sex for external causes are shown in figures 2.7 and 2.8 below. More information on trends by sex for each of the causes of injury listed in Table 2.7 is available in subsequent chapters of this report.

Figure 2.7: Percentage change per year in age-adjusted rates of injury hospitalisation cases, by external cause, by sex, 2007–08 to 2016–17

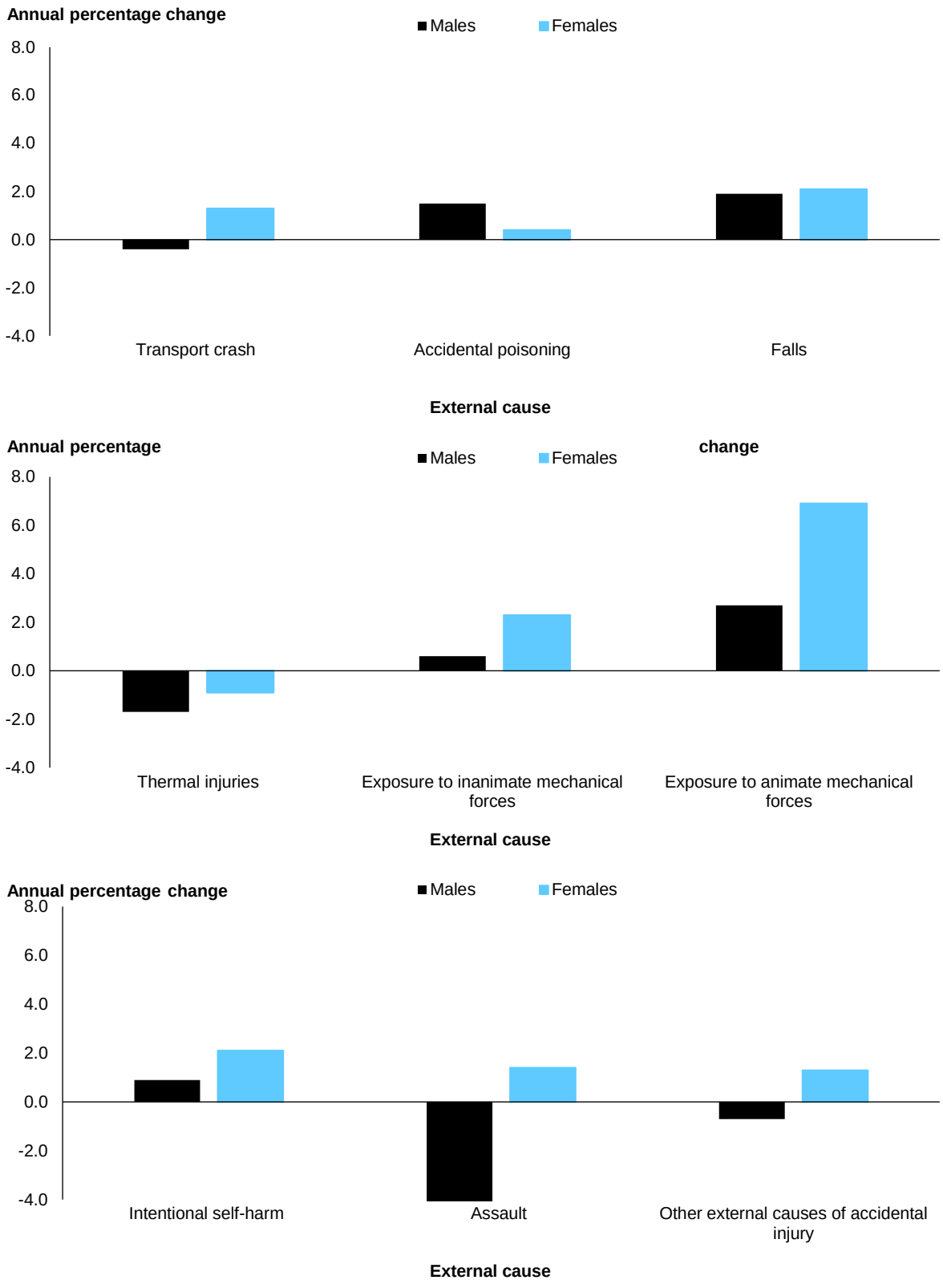
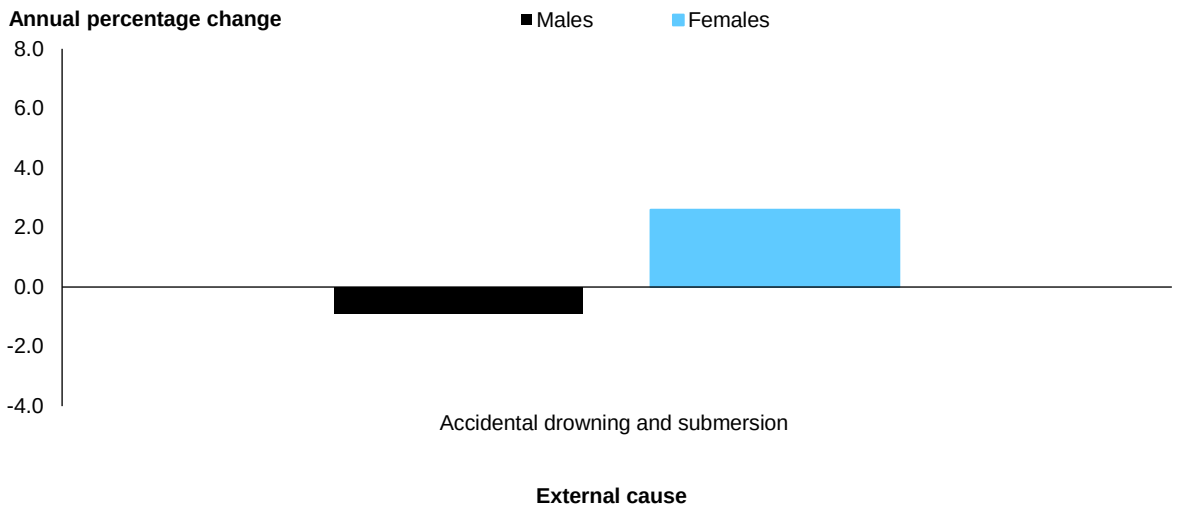


Figure 2.8: Percentage change per year in age-adjusted rates of injury cases due to accidental drowning and submersion, 0–4 year olds, by sex, 2007–08 to 2016–17



3 Severity of injury

Three measures of severity for hospitalised injury cases are length of stay; time spent in intensive care and on ventilator support; and the proportion of high-threat-to-life (HTTL) cases (see Box 3.2).

'Length of stay' provides an approximate indication of case severity, because severe injuries are more likely to result in long episodes of care than minor injuries. However, some severe cases have relatively short lengths of stay because the injured person dies in hospital. Estimates of length of stay are likely to be underestimates of the total amount of time an individual spends in hospital as a result of their injury. Length-of-stay information presented here is based on cases of hospitalisation, including those with *Transfer in* as the mode of admission (see 'Appendix A: Data issues' and Box 3.1). Some of the cases 'transferred in' may have already spent time in hospital (for example, for rehabilitation) but that earlier episode is not included in the length-of-stay data analysed for this report.

This chapter also presents information on the number of hours that patients stayed in an intensive care unit (ICU) and the number of hours of continuous ventilator support (CVS) received (see 'Appendix A: Data issues').

Box 3.1: Calculating length of stay

The 'mean length of stay' (MLOS) is the average number of days each patient stays in hospital in acute care. This was calculated by dividing the total number of patient days for a reporting period (including inward transfers) by the estimated number of cases for the same period. 'Patient days' are the number of full and partial days a patient spends in hospital. One patient day is counted for same-day patients (admitted and discharged from hospital on the same day).

Box 3.2: High threat to life injuries

Injuries can be classified according to the likelihood that a patient with that injury will die in hospital. Cases with a predicted mortality risk of about 6% or higher is identified as having a 'high threat to life' (Stephenson et al. 2003). Injuries of this severity may well have a large impact on the patient, often with persisting problems and ongoing need for health-care services.

Length of stay

In 2016–17, the overall MLOS for injury was 3.4 days (more than 1.8 million days for 533,701 cases) (Table 3.1). MLOS was shorter for males, overall, than for females (3.0 days compared with 3.4). However, age-specific MLOS was very similar for both sexes. Hence, the overall difference is due to the different age distribution of male and female cases. Discharge occurred on the same day as admission for one-third of all injury cases (207,675 separations, or 36%). More males (122,479 separations, or 39%) were discharged on the same day, compared with females (85,191 separations, or 33%).

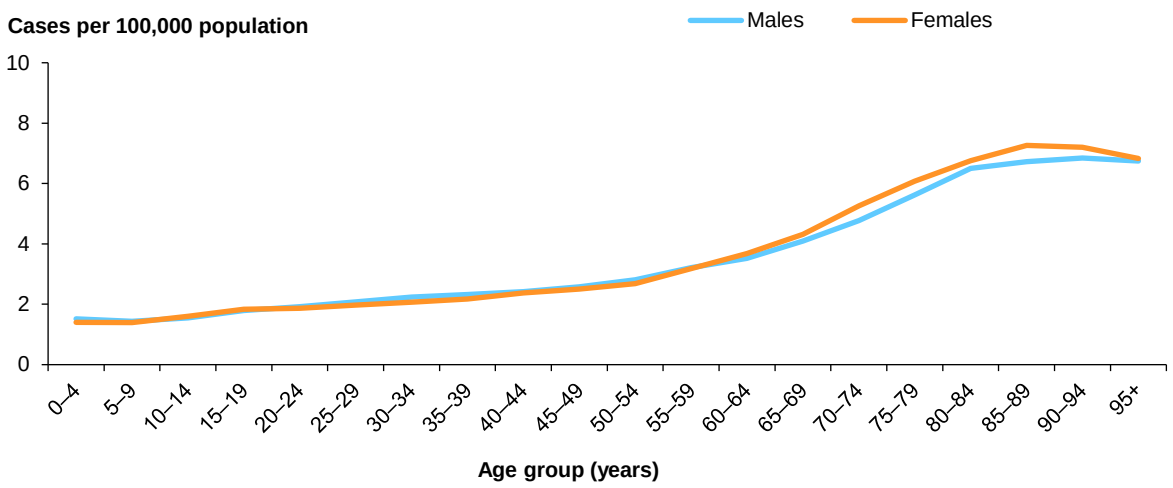
Table 3.1: Length of stay for injury: case counts, total patient days and mean length of stay, by age group, by sex, 2016–17

	Males			Females			Persons		
Age group	Cases	Total patient days	MLOS	Cases	Total patient days	MLOS	Cases	Total patient days	MLOS
0–4	13,407	20,322	1.5	9,873	13,811	1.4	23,280	34,133	1.5
5–14	26,974	40,383	1.5	16,285	24,323	1.5	43,261	64,708	1.5
15–24	48,732	90,822	1.9	25,989	48,138	1.9	74,732	138,982	1.9
25–44	80,044	180,061	2.2	41,882	89,727	2.1	121,928	269,790	2.2
45–64	59,524	177,813	3.0	45,310	136,900	3.0	104,837	314,749	3.0
65+	64,446	367,213	5.7	101,214	640,811	6.3	165,660	1,008,024	6.1
Total	**293,130**	**876,617**	**3.0**	**240,553**	**953,710**	**3.4**	**533,701**	**1,830,389**	**3.4**

Note: Persons total includes cases for which sex was not reported.

MLOS was much higher for those aged 65 or over in 2016–17 (Figure 3.1). The average stay for people aged 95 or over (6.8 days) was almost twice that for the overall population (3.4 days). There was very little difference between males and females.

Figure 3.1: Mean length of stay for injury cases, by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Aboriginal and Torres Strait Islander people

Table 3.2 presents information on length of stay for Indigenous and non-Indigenous people. In 2016–17, the overall MLOS for injury among Indigenous Australians was 2.6 days (more than 70,000 days for 28,032 cases). Discharge occurred on the day of admission for just over one-third of all injury cases among Indigenous Australians (11,155 separations, or 37%), similar to the proportion for non-Indigenous Australians (193,731 separations or 36%). A larger proportion of Indigenous females (38%) was discharged on the same day, compared with the proportion of non-Indigenous females (33%).

Table 3.2: Length of stay for injury: case counts, total patient days and mean length of stay, by Indigenous status, by age group, 2016–17

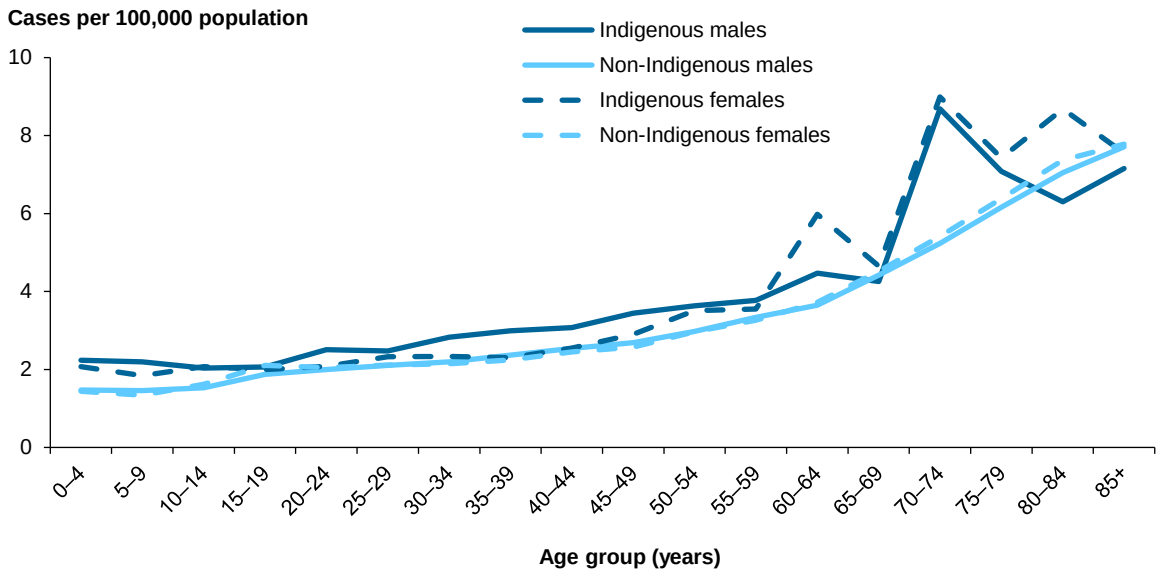
	Indigenous			Non-Indigenous		
Age group	**Cases**	**Total patient days**	**MLOS**	**Cases**	**Total patient days**	**MLOS**
0–4	1,922	3,913	2.0	21,216	29,895	1.4
5–14	3,341	6,650	2.0	39,558	57,550	1.5
15–24	5,964	11,909	2.0	67,724	124,787	1.8
25–44	10,383	26,130	2.5	109,741	239,334	2.2
45–64	5,126	16,329	3.2	98,087	293,199	3.0
65+	1,296	7,177	5.5	162,048	985,587	6.1
Total	**28,032**	**72,108**	**2.6**	**498,375**	**1,730,352**	**3.5**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Non-Indigenous Australians excludes cases where Indigenous status is not reported.

MLOS for Indigenous males and females generally increased with age (Figure 3.2). The highest lengths of stay were recorded for Indigenous males and females in the 70–74 age group (9 days each); by comparison, the highest lengths of stay for non-Indigenous males and females occurred for those aged 85 and over (8 days each).

Figure 3.2: Mean length of stay for injury cases, by Indigenous status, by age group, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Length of stay by cause of injury

The MLOS varied by the external cause of the injury (Table 3.3). The longest average lengths of stay occurred for those injured as a result of a *Fall* (4.7 days), *Thermal causes* (4.7 days), *Transport crashes* (3.4 days) and *Intentional self-harm* (3.0 days). The shortest lengths of stay were associated with *Contact with venomous animals and plants* (1.5 days) and *Exposure to inanimate mechanical forces* (1.8 days).

Table 3.3: Length-of-stay statistics for major external cause groups for injury cases, 2016–17

External cause description	Cases	Total patient days	MLOS
Transport crash	62,528	212,182	3.4
Accidental drowning and submersion	611	1,432	2.3
Accidental poisoning	11,261	26,607	2.4
Falls	219,625	1,037,289	4.7
Thermal causes	6,052	28,332	4.7
Exposure to inanimate mechanical forces	73,284	134,044	1.8
Exposure to animate mechanical forces	22,510	44,680	2.0
Other external causes of unintentional injury			
Other accidental threats to breathing	820	1,747	2.1
Exposure to electric current, radiation and extreme ambient air temperature and pressure	814	1,477	1.8
Contact with venomous animals and plants	3,342	4,970	1.5
Exposure to forces of nature	860	1,853	2.2
Overexertion, travel and privation	15,014	32,940	2.2
Accidental exposure to other and unspecified factors	42,573	87,136	2.0
Subtotal	*63,423*	*130,123*	*2.1*
Intentional self-harm	33,131	99,867	3.0
Assault	22,086	45,664	2.1
Undetermined intent	4,971	11,723	2.4
Other or missing	14,219	8,457	0.6
Total	**533,701**	**1,780,400**	**3.3**

High threat to life

About 1 in 6 injury cases (79,224, or 15%) were classified as *High threat to life* (HTTL) in 2016–17 (Table 3.4). There were 39,839 HTTL cases reported for males; however, as more males were hospitalised for injury overall, this represented a smaller proportion of male injury cases (14%), compared with 16% of HTTL cases for females. The majority of HTTL cases in both males and females occurred in the 65 and over age group.

Table 3.4: High threat to life injury cases, by age group, by sex, 2016–17

	Males		Females		Persons	
Age group	Number	% HTTL	Number	% HTTL	Number	% HTTL
0–4	873	6.5	629	6.4	1,502	6.5
5–14	1,229	4.5	553	3.4	1,782	4.1
15–24	4,135	8.4	1,525	5.9	5,660	7.5
25–44	7,706	9.7	2,811	6.7	10,518	8.7
45–64	8,252	9.5	4,326	9.5	12,578	12.1
65+	17,642	40.4	29,540	40.7	47,182	40.8
Total	**39,839**	**13.6**	**39,384**	**16.4**	**79,224**	**14.8**

Aboriginal and Torres Strait Islander people

The pattern of HTTL cases is somewhat similar between Indigenous and non-Indigenous Australians, with greater proportions of HTTL cases among people aged 65 or over in both groups (Table 3.5).

Table 3.5: High threat to life injury cases, by Indigenous status, by age group, by sex, 2016–17

	Males		Females		Persons	
	Number	% HTTL	Number	% HTTL	Number	% HTTL
Indigenous						
0–4	83	7.5	68	8.4	151	7.9
5–14	132	6.4	64	5.0	196	5.9
15–24	324	9.5	199	7.8	523	8.8
25–44	658	11.8	431	9.0	1,089	10.5
45–64	409	15.1	285	11.8	694	13.5
65+	121	23.7	180	22.9	301	23.2
Total	**1,727**	**11.2**	**1,227**	**9.7**	**2,954**	**10.5**
Non-Indigenous						
0–4	776	6.4	557	6.2	1,333	6.3
5–14	1,084	4.4	486	3.3	1,570	4.0
15–24	3,737	8.4	1,302	5.6	5,039	7.4
25–44	6,886	9.4	2,344	6.4	9,230	8.4
45–64	7,669	13.7	3,977	9.4	11,646	11.9
65+	17,287	27.4	28,935	29.2	46,222	28.5
Total	**37,439**	**13.7**	**37,601**	**16.7**	**75,040**	**15.1**

HTTL by cause of injury

Causes of injury that resulted in high proportions of HTTL cases include *Accidental* d*rowning and submersion* (76%), *Other accidental threats to breathing* (46%), *Transport crashes* and *Falls* (24% each) (Table 3.6). Injury cases due to *Accidental* d*rowning and submersion* and *Threat to breathing* both had the highest proportion of HTTL cases for males and females.

Table 3.6: High threat to life injury cases, by major external cause groups, by sex, 2016–17

	Males		Females		Persons	
External cause description	**Number**	**% HTTL**	**Number**	**% HTTL**	**Number**	**% HTTL**
Transport crash	41,153	24.8	21,374	20.9	62,528	23.5
Accidental drowning and submersion	385	76.2	226	76.5	611	76.3
Accidental poisoning	6,047	2.4	5,214	1.7	11,261	2.1
Falls	96,580	21.1	123,043	25.6	219,625	23.6
Thermal causes	3,795	14.3	2,257	13.3	6,052	14.0
Exposure to inanimate mechanical forces	53,665	2.7	19,619	2.8	73,284	2.7
Exposure to animate mechanical forces	14,130	5.4	8,380	3.7	22,510	4.8

(continued)

Table 3.6 (continued): High threat to life injury cases, by major external cause groups, by sex, 2016–17

	Males		Females		Persons	
External cause description	**Number**	**% HTTL**	**Number**	**% HTTL**	**Number**	**% HTTL**
Other external causes of unintentional injury						
Other accidental threats to breathing	469	40.9	351	51.6	820	45.8
Exposure to electric current, radiation and extreme ambient air temperature and pressure	599	6.9	215	2.9	814	5.9
Contact with venomous animals and plants	2,142	0.2	1,200	0.1	3,342	0.1
Exposure to forces of nature	585	16.6	275	23.5	860	18.8
Overexertion, travel and privation	8,456	1.8	6,558	3.3	15,014	2.4
Accidental exposure to other and unspecified factors	26,888	2.7	15,683	6.0	42,573	3.8
Subtotal	*39,139*	*2.9*	*24,282*	*5.8*	*63,423*	*4.0*
Intentional self-harm	12,056	8.8	21,065	2.9	33,131	5.0
Assault	14,454	20.1	7,629	13.8	22,086	18.0
Undetermined intent	2,847	4.2	2,124	3.0	4,971	3.6
Other or missing	8,879	8.2	5,340	12.2	14,219	10.0
Total	**293,130**	**13.4**	**240,553**	**17.1**	**533,701**	**15.1**

Intensive care

This section presents information on the number of hours that patients stayed in an ICU and the number of hours of CVS received (not all admitted patients receive CVS in an ICU). It is likely that the numbers reported here are underestimates, as they are based on the initial episode of care and do not include any additional time an individual may have spent in an ICU. In 2016–17, almost a million hours in ICU care were reported for about 12,500 cases (Table 3.7). About 2% of hospitalised injury cases involved time in an ICU, which was the same for males and females. The average period in ICU care was 80 hours and males spent a greater amount of time (88 hours) in an ICU compared with females (69 hours).

Table 3.7: Cases involving time in an intensive care unit, by sex, 2016–17

	Males	Females	Persons
Cases involving time in an ICU	7,396	5,191	12,587
Hours in ICU	650,316	359,296	1,009,612
Average duration in ICU (hours)	88	69	80

Almost half a million hours of CVS were reported for about 6,700 cases in 2016–17 (Table 3.8). About 1% of hospitalised injury cases involved CVS, which was the same for males and for females. The average period of CVS was 72 hours; males had longer periods (78 hours) of CVS compared with females (61 hours).

Table 3.8: Cases involving continuous ventilatory support, by sex, 2016–17

	Males	Females	Persons
Cases involving CVS	4,229	2,477	6,707
Hours received CVS	329,609	151,307	480,917
Average duration CVS (hours)	78	61	72

Aboriginal and Torres Strait Islander people

There was little difference between Indigenous and non-Indigenous Australians in the time spent in ICU care in 2016–17 (Table 3.9) Indigenous females (74 hours) spent a higher number of average hours in ICU compared with non-Indigenous females (69 hours).

Table 3.9: Cases involving time in an intensive care unit, by Indigenous status, by sex, 2016–17

	Males	Females	Persons
Indigenous Australians			
Cases involving time in an ICU	422	271	693
% of cases involving time in an ICU	2.7	2.1	2.5
Hours in ICU	33,861	19,926	53,787
Average duration in ICU (hours)	80	74	78
Non-Indigenous Australians			
Cases involving time in an ICU	6,743	4,806	11,549
% of cases involving time in an ICU	2.5	2.1	2.3
Hours in ICU	601,832	331,100	932,932
Average duration in ICU (hours)	89	69	81

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Non-Indigenous Australians excludes cases where Indigenous status is not reported.

With respect to CVS, Indigenous Australians had fewer hours of CVS (at 59 hours), compared with their non-Indigenous counterparts (73 hours) (Table 3.10). Indigenous males (60 hours) had a shorter average duration of CVS compared with non-Indigenous males (80 hours). In contrast, the average duration of CVS was similar for Indigenous and non-Indigenous females (58 and 61 hours, respectively).

Table 3.10: Cases involving continuous ventilatory support, by Indigenous status, by sex, Australia, 2016–17

	Males	Females	Persons
Indigenous Australians			
Cases involving CVS	294	158	452
% of cases involving CVS	1.9	1.2	1.6
Hours received CVS	17,616	9,176	26,792
Average duration CVS (hours)	60	58	59
Non-Indigenous Australians			
Cases involving CVS	3,779	2,257	6,036
% of cases involving CVS	1.4	1.0	1.2
Hours received CVS	303,740	137,216	440,956
Average duration CVS (hours)	80	61	73

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Non-Indigenous Australians excludes cases where Indigenous status is not reported.

Intensive care by cause of injury

The proportion of cases involving a stay in an ICU varied by cause of injury (Table 3.11). The largest proportion of cases involving a stay in an ICU were caused by *Accidental* d*rowning and submersion* (11%); *Intentional self-harm* (10%); and *Other accidental threats to breathing* (5%). However, the length of stay in ICU was higher for different causes of injury. For example, the longest lengths of stay in ICU occurred in cases caused by *Transport crashes* (131 hours) and thermal causes (160 hours).

Table 3.11: Cases involving time in an intensive care unit, by major external cause group, 2016–17

External cause	Cases involving time in an ICU	% of cases involving time in an ICU	Total hours in ICU	Average duration in ICU (hours)
Transport crash	2,515	4.0	329,921	131
Accidental drowning and submersion	68	11.1	7,026	103
Accidental poisoning	806	7.2	36,919	46
Falls	3,505	1.6	276,321	79
Thermal causes	172	2.8	27,539	160
Exposure to inanimate mechanical forces	373	0.5	27,011	72
Exposure to animate mechanical forces	121	0.5	6,781	56
Other external causes of unintentional injury				
Other accidental threats to breathing	42	5.1	3,168	75
Exposure to electric current, radiation and extreme ambient air temperature and pressure	14	1.7	966	69
Contact with venomous animals and plants	66	2.0	1,777	27
Exposure to forces of nature	16	1.9	1,238	77
Overexertion, travel and privation	51	0.3	2,650	52
Accidental exposure to other and unspecified factors	227	0.5	13,798	61
Subtotal	*416*	*0.7*	*23,597*	*57*
Intentional self-harm	3,429	10.3	201,536	59
Assault	531	2.4	41,613	78
Undetermined intent	442	8.9	20,778	47
Other or missing	209	1.5	10,570	51
Total	**12,587**	**2.4**	**1,009,612**	**80**

The largest proportion of cases involving CVS were caused by *Accidental drowning and submersion* (9%) and *Intentional self-harm* (8%) (Table 3.12). The highest average number of hours receiving CVS was seen for *Transport crashes* (127 hours) and thermal causes (149 hours).

Table 3.12: Cases involving continuous ventilatory support, by major external cause group, 2016–17

External cause description	Cases involving CVS	% of cases involving CVS	Hours received CVS	Average duration CVS (hours)
Transport crash	1,433	2.3	182,382	127
Accidental drowning and submersion	54	8.8	5,519	102
Accidental poisoning	516	4.6	16,980	33
Falls	1,009	0.5	93,753	93
Thermal causes	120	2.0	17,857	149
Exposure to inanimate mechanical forces	177	0.2	12,684	72
Exposure to animate mechanical forces	30	0.1	2,358	79
Other external causes of unintentional injury				
Other accidental threats to breathing	33	4.0	1,887.0	57
Exposure to electric current, radiation and extreme ambient air temperature and pressure	10	1.2	723.0	72
Contact with venomous animals and plants	12	0.4	494.0	41
Exposure to forces of nature	8	0.9	492.0	62
Overexertion, travel and privation	5	0.0	153.0	31
Accidental exposure to other and unspecified factors	77	0.2	4,633.0	60
Subtotal	*145*	*0.2*	*8,382*	*58*
Intentional self-harm	2,501	7.5	108,049	43
Assault	342	1.5	20,954	61
Undetermined intent	353	7.1	10,117	29
Other or missing	27	0.2	1,882.0	70
Total	**6,707**	**1.3**	**480,917**	**72**

4 Transport crash injury

This chapter presents information on patients who were admitted to hospital as a result of an unintentional transport crash injury. Information in this chapter includes:

- age group and sex of the patient
- cause of the injury
- trends over time.

More detailed information on transport crash injuries, including trend information, can be found in publications available on the AIHW website: for example, *Trends in serious injury due to road vehicle traffic crashes, Australia: 2001 to 2010* (AIHW: Henley & Harrison 2016).

Key findings

Just over 60,000 cases of hospitalised injury were due to a transport crash in 2016–17.

Sex of patient

In 2016–17, twice as many males (41,153) as females (21,374) were hospitalised due to a transport crash.

Age of patient

The highest rate of transport crash injury occurred in males aged 15–19 (562 per 100,000 population) and the equivalent rate for females in this age group was 264 per 100,000.

Cause of transport injury

Thirty-five per cent of people hospitalised due to a land transport crash were car occupants (21,305); 25% (14,996) were motorcyclists; 20% (11,978) were pedal cyclists; and 7% (4,152) were pedestrians.

Trends in injury

Overall, cases of transport crash injury remained steady over the period 2007–08 to 2016–17. For male cases, transport crash injury hospitalisations trended downward (a 0.4% decrease per year) but increased for female cases by 1.3% per year.

What methods were used?

This chapter includes injury cases meeting the criteria set out in Chapter 1, provided that the first-reported external-cause code was in the ICD-10-AM range V00–V99 (*Transport accidents*) in 'Chapter XX External causes of morbidity and mortality'.

Relevant terms and information applying to the data used in this chapter are summarised in boxes 1.1, 1.2 and 4.1. Further information on methods is provided in 'Appendix A: Data issues'.

Box 4.1: External causes of transport crash injury

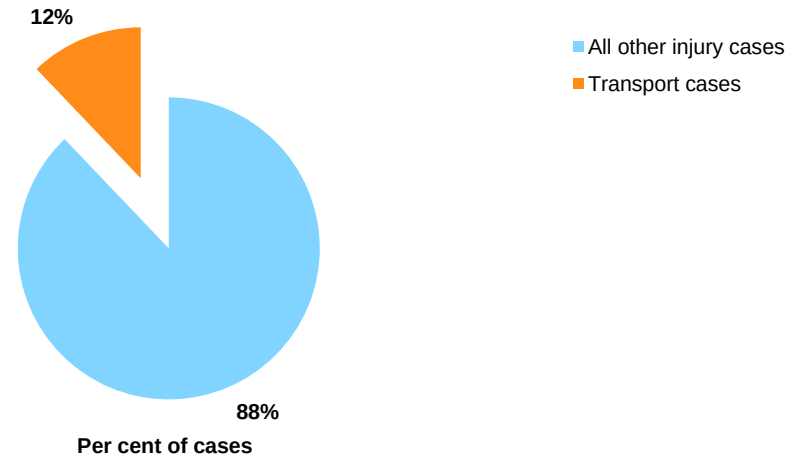
This chapter focuses on the **Transport accidents (V00–V99)** section of ICD-10-AM 'Chapter XX External causes of morbidity and mortality', which contains the following 12 groups:

- Pedestrian injured in transport accident (V00–V09)
- Pedal cyclist injured in transport accident (V10–V19)
- Motorcycle rider injured in transport accident (V20–V29)
- Occupant of three-wheeled motor vehicle injured in transport accident (V30–V39)
- Car occupant injured in transport accident (V40–V49)
- Occupant of pick-up truck or van injured in transport accident (V50–V59)
- Occupant of heavy transport vehicle injured in transport accident (V60–V69)
- Bus occupant injured in transport accident (V70–V79)
- Other land transport accident (V80–V89)
- Water transport accident (V90–V94)
- Air and space transport accident (V95–V97)
- Other and unspecified transport accident (V98–V99).

How many transport crash injury cases were there in 2016–17?

There were an estimated 62,528 transport crash injury cases during 2016–17 (Figure 4.1). Transport crash injury cases made up 12% of all hospitalised injury cases.

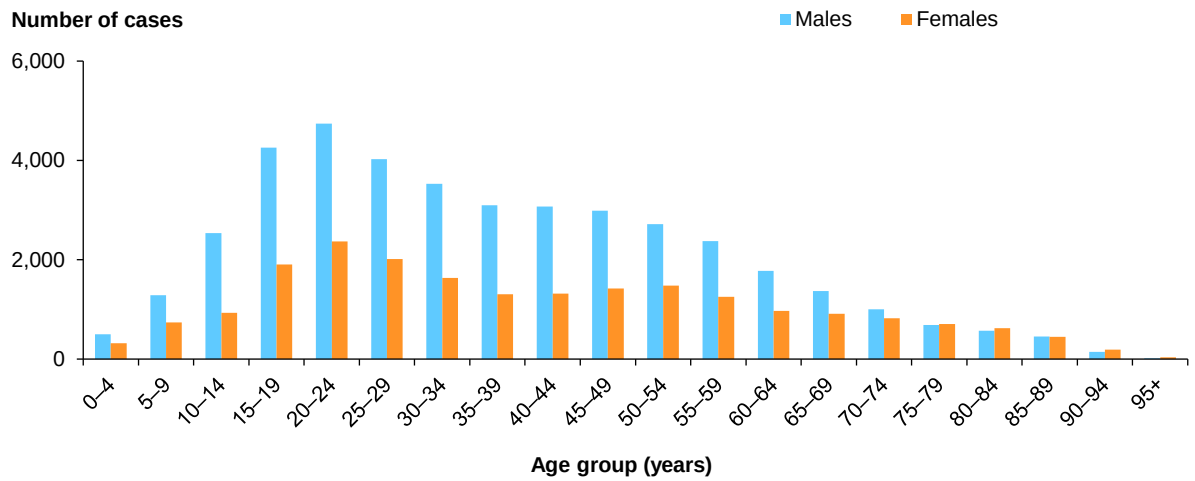
Figure 4.1: Proportion of hospitalised injury cases due to transport crash injury, 2016–17



Age group and sex, 2016–17

Of the 62,528 cases of transport crash injury in Australia in 2016–17, more males (41,153) than females (21,374) were hospitalised. An analysis of transport crash injury cases by age and sex shows a greater number of males in each age category, up to and including the 70–74 age group (Figure 4.2). Among females, the largest number of transport crash injury cases (2,367) was seen in the 20–24 age group. By comparison, the largest number of transport crash injury cases among males (4,738) occurred in the 20–24 age group.

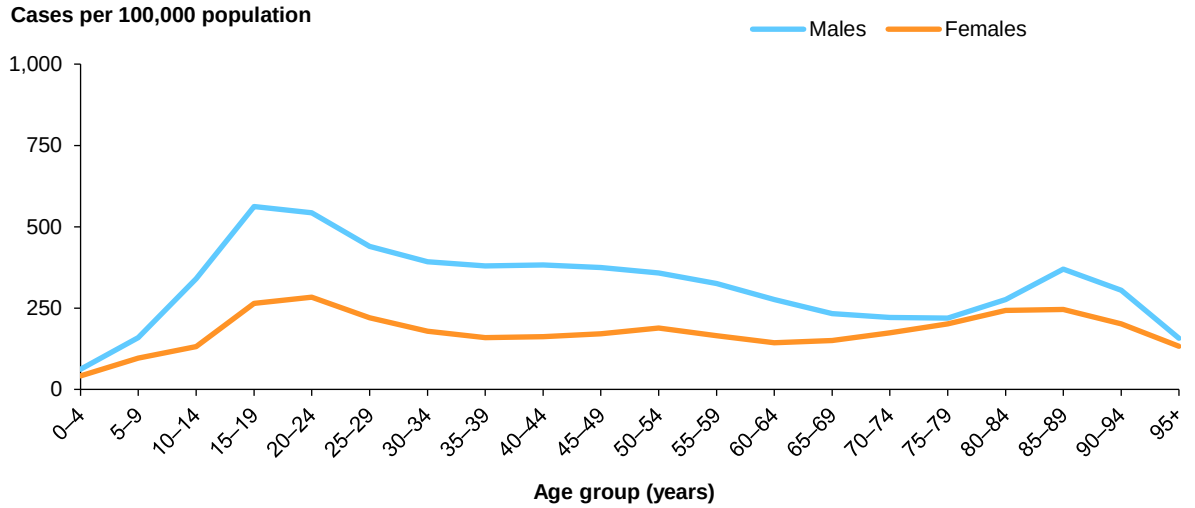
Figure 4.2: Number of cases of transport crash injury, by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Males had a higher rate of transport crash injury across all age groups (Figure 4.3). The rate for males and for females was highest in the 15–19 and 20–24 age groups (562 per 100,000 population for males aged 15–19 and 264 per 100,000 for females in this age group.) A slight rise in rates with age was seen for both sexes in later years, but declined for women aged 85 and over, and for men aged 85 and over.

Figure 4.3: Age-specific rates of transport crash injury cases, by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Nature of injury

Hospitalised transport crash injuries resulted in damage to various body regions, with the most common being the head and neck (27%), trunk (24%), and shoulder and upper limb (21%) (Table 4.1). Males and females had similar distributions of body regions injured, although females had higher proportions of upper-body (head and neck and trunk) injuries as a result of a transport crash, compared with males (61% compared with 47%, respectively).

Table 4.1: Transport crash injury cases, by body region injured, by sex, 2016–17

	Males		Females		Persons	
Body region injured	**Number**	**%**	**Number**	**%**	**Number**	**%**
Head and neck	10,149	24.7	6,776	31.7	16,925	27.1
Trunk (thorax, abdomen, lower back, lumbar spine and pelvis)	9,002	21.9	6,158	28.8	15,160	24.2
Shoulder and upper limb (excluding wrist and hand)	9,399	22.8	3,724	17.4	13,124	21.0
Wrist and hand	2,840	6.9	813	3.8	3,653	5.8
Hip and lower limb (excluding ankle and foot)	7,544	18.3	3,095	14.5	10,639	17
Ankle and foot	1,713	4.2	617	2.9	2,330	3.7
Other, multiple and incompletely specified body regions	373	0.9	132	0.6	505	0.8
Injuries not described in terms of body region	133	0.3	59	0.3	192	0.3
Total	**41,153**	**100.0**	**21,374**	**100.0**	**62,528**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

Fractures were the most common type of injury sustained, with 28,139 (45%) of cases in 2016–17 (Table 4.2). Males and females had a similar pattern of type of injury, with fractures, followed by open wounds and superficial injuries, common for both.

Table 4.2: Transport crash injury cases, by type of injury, by sex, 2016–17

	Males		Females		Persons	
Type of injury	**Number**	**%**	**Number**	**%**	**Number**	**%**
Fracture	19,872	48.3	8,266	38.7	28,139	45.0
Dislocation	1,042	2.5	254	1.2	1,296	2.1
Soft-tissue injury	2,311	5.6	1,634	7.6	3,945	6.3
Open wound	4,110	10.0	1,530	7.2	5,640	9.0
Intracranial injury	2,910	7.1	1,462	6.8	4,372	7.0
Internal organ or vessel of trunk	1,625	3.9	556	2.6	2,181	3.5
Burn	266	0.6	61	0.3	327	0.5
Superficial injury	3,453	8.4	2,747	12.9	6,200	9.9
Poisoning or toxic effect	12	0.0	2	0.0	14	0.0
Other and unspecified injuries	5,552	13.5	4,862	22.7	10,414	16.6
Total	**41,153**	**100.0**	**21,374**	**100.0**	**62,528**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

Remoteness of usual residence

The age-standardised rate of transport crash injury in 2016–17 was increased as the remoteness of usual residence increased (Table 4.3): the rate of injury in *Very remote* regions (527 cases per 100,000 population) was more than double the rate in *Major cities* (221 per 100,000).

Table 4.3: Transport crash injury cases, by remoteness of usual residence, 2016–17

	Remoteness of usual residence				
Indicators	**Major cities**	**Inner regional**	**Outer regional**	**Remote**	**Very remote**
Injury cases	38,738	13,265	7,036	1,317	1,021
Age-standardised rate (cases per 100,000 population)	221	320	361	464	527

Aboriginal and Torres Strait Islander people

There were an estimated 2,699 cases of Indigenous Australians hospitalised as a result of a transport crash injury in 2016–17 (Table 4.4). More than twice as many males were hospitalised, compared with females. The age-standardised rates of transport crash injury were higher for both Indigenous males and females, compared with non-Indigenous Australians males and females. Further information on transport crash injury among Aboriginal and Torres Strait Islander people can be found in *Injury of Aboriginal and Torres Strait Islander people due to transport, 2010–11 to 2014–15* (AIHW: Henley & Harrison 2019).

Table 4.4: Transport crash injury cases, by Indigenous status, by sex, 2016–17

	Indigenous			Non-Indigenous		
Indicators	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Injury cases	1,813	886	2,699	38,691	20,190	58,882
Age-standardised rate (cases per 100,000 population)	470	235	351	333	168	251

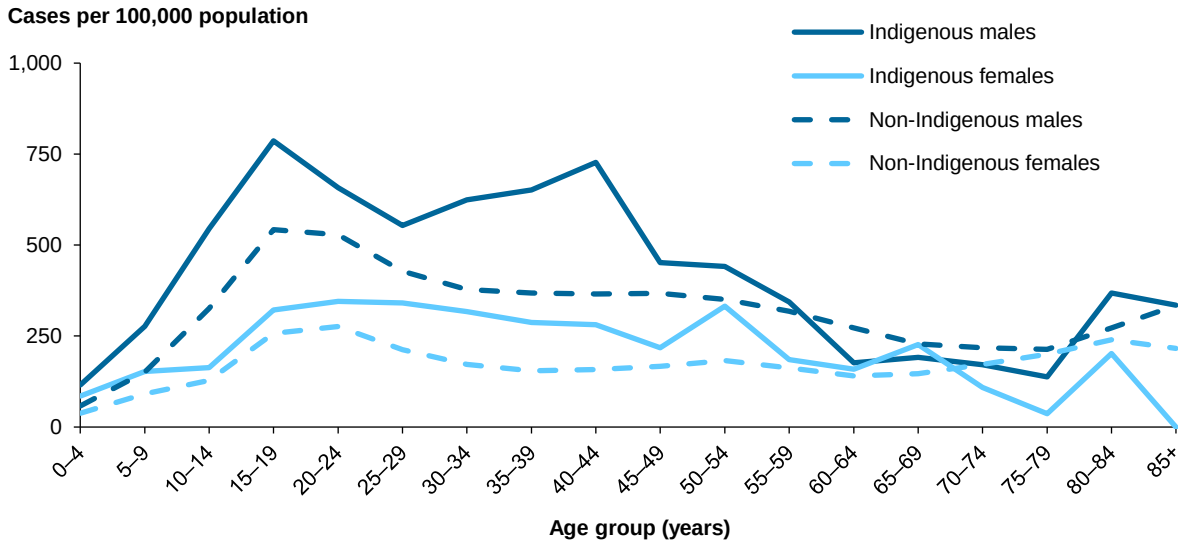
Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Non-Indigenous Australians excludes cases where Indigenous status is not reported.

The pattern of transport crash injury rates, by age, was similar for Indigenous males and females, with higher rates of injury for Indigenous males in each age group other than the 65–69 age group (Figure 4.4). While rates for Indigenous males were higher than for non-Indigenous males at nearly all ages, the excess was greatest for those in the 25–44 to 40–44 age groups. A similar differential was also seen between Indigenous and non-Indigenous females in the 15–19 to 20–24 age groups.

Transport crash injury rates for Indigenous males were highest at the 2 age groups 15–19 and 40–47 (786 and 727 cases per 100,000 population, respectively). A similar second peak at 40–47 years was not seen for non-Indigenous males. For Indigenous females, the highest rate of transport crash injury occurred for the 20–24 age group (345 per 100,000); this was also the age group in which the highest rate of injury occurred for non-Indigenous females (276 per 100,000).

Figure 4.4: Age-specific rates of transport crash injury cases, by Indigenous status, by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Socioeconomic status

The proportion of transport crash injury cases in each SES group ranged between 16% and 22% (Table 4.5). The highest proportions, for both males and females, were for those living in areas with the lowest (most disadvantaged) SES classification.

Table 4.5: Transport crash injury cases, by SEIFA quintile, by sex, 2016–17

	Males		Females		Persons	
SEIFA	**Number**	**%**	**Number**	**%**	**Number**	**%**
1–Lowest	9,047	22.0	4,725	22.1	13,772	22.0
2	8,819	21.4	4,495	21.0	13,314	21.3
3	8,523	20.7	4,330	20.3	12,854	20.6
4	7,432	18.1	4,039	18.9	11,471	18.3
5–Highest	6,644	16.1	3,304	15.5	9,948	15.9
Total	**41,153**	**100.0**	**21,374**	**100.0**	**62,528**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.
3. Total includes cases for which the SES group was not able to be determined.

Cause of transport crash injury

Land transport crash injury includes cases due to crashes occurring on a public road (‘traffic’) and cases due to vehicle crashes that occur entirely in any place other than a public road (‘non-traffic’) (restricted to external-cause codes V00–V89). Of all people hospitalised due to land transport crash, 65% of cases occurred in ‘traffic’.

Land transport crash injury resulted in 60,745 hospitalised cases in 2016–17. Thirty-five per cent of people hospitalised due to a Land transport crash were car occupants (21,305); 25% (14,996) were motorcyclists; 20% (11,978) were pedal cyclists; and 7% (4,152) were pedestrians (Table 4.6).

For ‘traffic’ injuries (39,444 cases), the most frequent mode of transport of the injured person was a car (19,304 cases, or 49%). For non-traffic injury (14,559 cases), the most frequent mode of transport was a motorcycle (6,095, or 40%) followed by a pedal cycle (4,949, or 33%). Almost 6,000 (10%) of cases were unspecified as to whether they occurred (traffic or non-traffic), and the majority of these (3,715 cases) involved an animal rider or occupant of an animal-drawn vehicle.

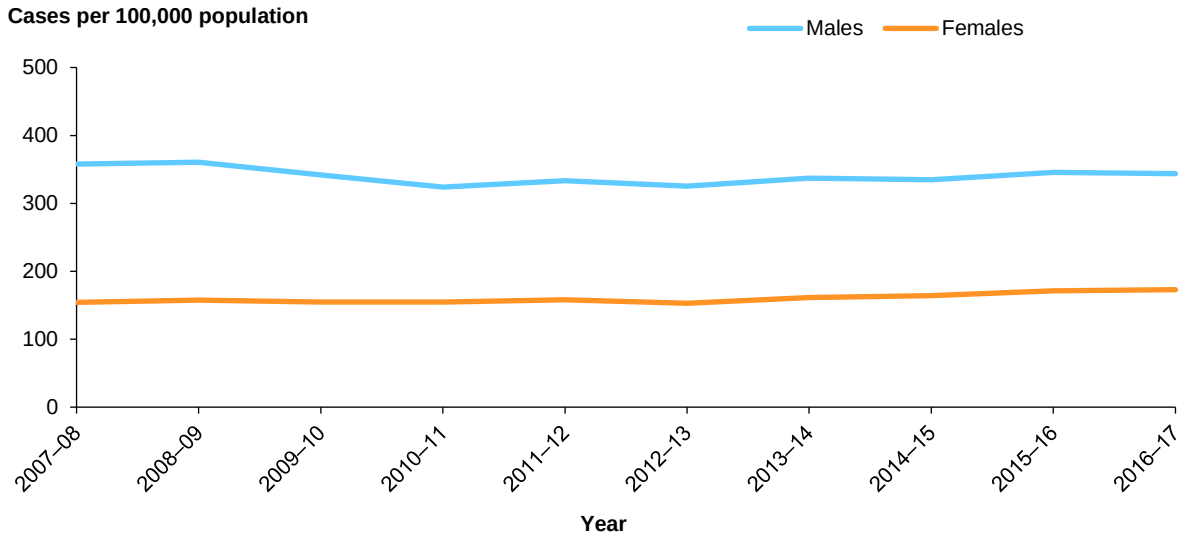
Table 4.6: Mode of transport for land transport crash injury cases, 2016–17

Injured person’s mode of transport	Non-traffic	Traffic	Unspecified	Total
Car	1,197	19,304	804	21,305
Motorcycle	6,095	8,713	188	14,996
Pedal cycle	4,949	6,872	157	11,978
Pedestrian	878	2,820	454	4,152
Animal or animal-drawn vehicle	0	0	3,715	3,715
Heavy transport vehicle	119	535	98	752
Pick-up truck or van	72	293	39	404
Special all-terrain or off-road vehicle	1,225	29	18	1,272
Bus	61	282	294	637
Special agricultural vehicle	246	7	20	273
Train	0	7	143	150
Special industrial vehicle	150	6	8	164
Three-wheeled motor vehicle	14	19	0	33
Tram	0	16	85	101
Special construction vehicle	48	3	3	54
Unknown	177	538	44	759
Total	**15,231**	**39,444**	**6,070**	**60,745**

How have cases of transport crash injury changed over time?

Age-standardised rates for males were consistently higher than for females throughout the period (Figure 4.5). Rates varied more for males than for females, but there is no evidence of any substantial change in transport crash injury rates for either sex over the period.

Figure 4.5: Age-standardised rates of transport crash injury cases, by sex, 2007–08 to 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

The changes in rates of injury over time, by age group as well as by sex, is shown in Figure 4.6. The figures show an additional 2 years of data since the publication of the previous *Trends in hospitalised injury, Australia 1999–00 to 2014–15* report (AIHW: Pointer 2018a).

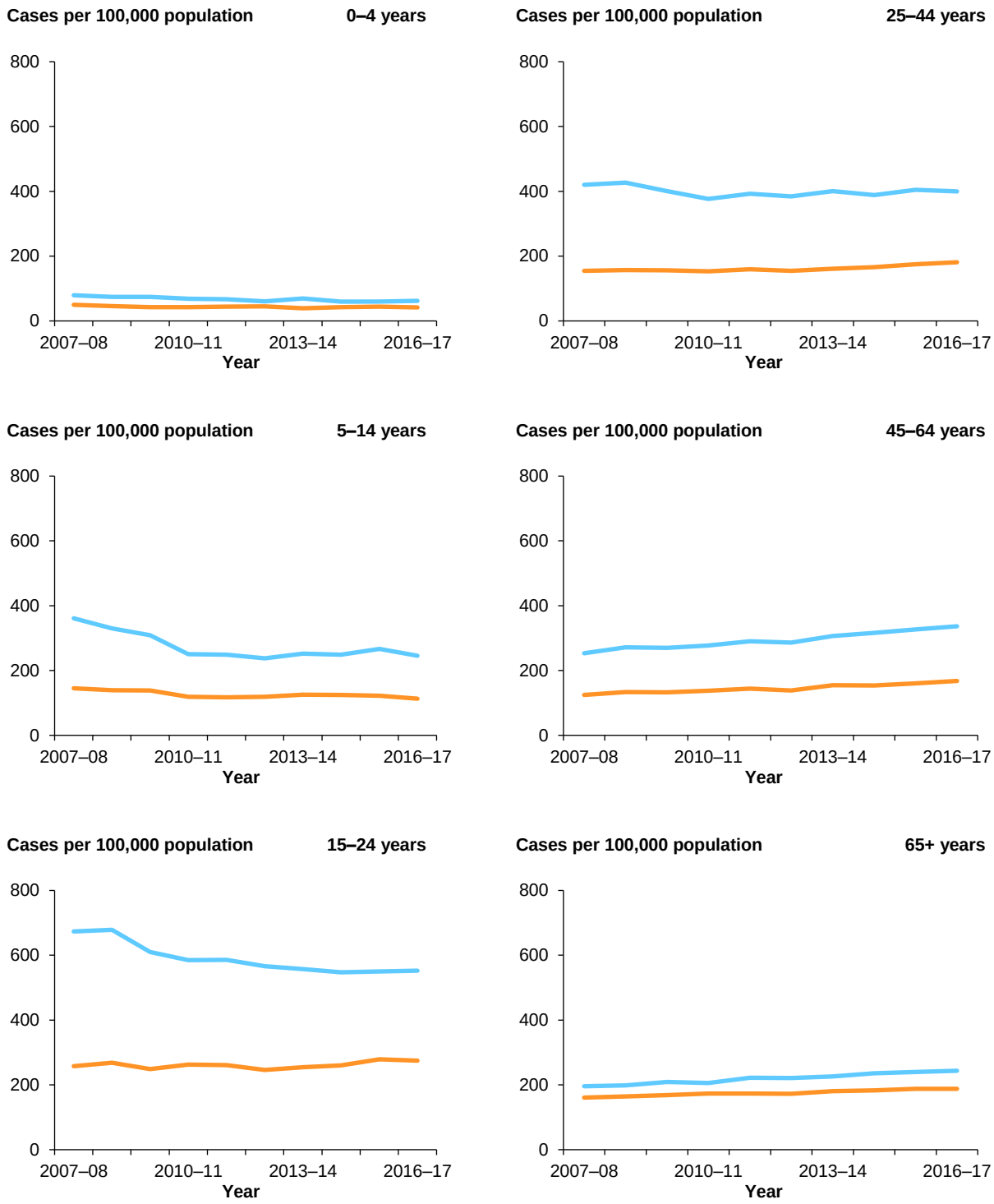
Rates of transport crash injury among males were higher than among females in each age group. The greatest difference between male and female rates occurred in the 15–24 year age group, where rates were much higher among males, although the gap has narrowed in 2016–17.

Rates of transport crash injury were low, and slowly declining, in the youngest age group for both boys and girls (0–4). Rates for males aged 5–14 and 15–24 showed a steeper decline at the beginning of the period. From about 2009–10, rates of transport crash injury for both males and females aged 5–14 and 15–24 remained steady.

For cases 25–44 years, rates of transport crash injury for males declined slightly over the 10-year period. In contrast, female rates of Transport crash injury in the same age group increased.

In contrast to the declines shown in younger age groups, rates of transport crash injury increased steadily for both males and females aged 45–64 and over during this period.

Figure 4.6: Age-specific rates of transport crash injury cases, by age group, by sex, 2007–08 to 2016–17



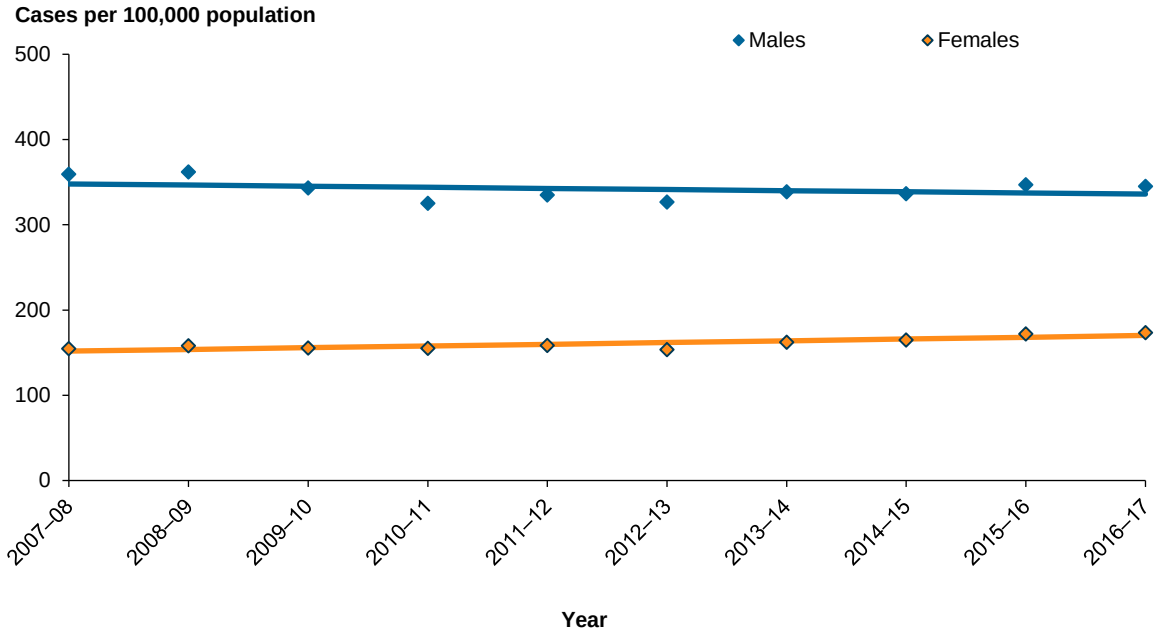
Notes

1. Rates for males are indicated by the blue line and rates for females by the orange line in all charts.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

The population-based age-standardised rate of transport crash injury rose very slowly during the 10 years to 2016–17. The rate was 251 per 100,000 population in 2007–08 and 253 in 2016–17. The rise in the modelled rate averaged 0.1% per year and was statistically significant (95% CI: 0.0%, 0.2%).

An analysis by sex showed differences between males and females in the rate of transport crash injury over the period (Figure 4.7). For males, the rate decreased from 348 per 100,000 population in 2007–08 to 336 in 2016–17. The decrease in the modelled rate for males averaged 0.4% per year and was statistically significant (95% CI: –0.5%, –0.3%). For females, the rate increased from 152 per 100,000 population in 2007–08 to 170 in 2016–17. The rise in the modelled rate for females averaged 1.3% per year and was statistically significant (95% CI: 1.1%, 1.4%).

Figure 4.7: Modelled age-standardised rates of transport crash injury cases, by sex, 2007–08 to 2016–17



Notes

1. The solid line represents the modelled rate from 2007–08 to 2016–17. The filled symbols represent the observed age-standardised rate value for each year.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

5 Drowning and submersion

This chapter presents information on patients who were admitted to hospital as a result of unintentional drowning and submersion. Information in this chapter includes:

- age group and sex of the patient
- location of the injury
- trends over time.

Key findings

About 600 cases of hospitalised injury were due to *Accidental drowning and submersion* in 2016–17.

Sex of patient

In 2016–17, more males (385) than females (226) were hospitalised due to *Accidental drowning and submersion* injuries.

Age of patient

The largest proportion (40%) of *Accidental drowning and submersion* injuries occurred in children aged 0–4.

Location of drowning

Just over one-third of all drowning-related cases occurred in a swimming pool (196 cases, or 32%). Children under 15 accounted for 74% of all swimming pool drowning-related cases.

Trends in injury

Over the 10-year period 2007–08 to 2016–17, *Accidental drowning and submersion* injury hospitalisations increased on average by 2.2% per year. Among children 0–4, cases of girls decreased by 2.6% per year while there was no change for cases of boys 0–4 years.

What methods were used?

This chapter includes injury cases meeting the criteria set out in Section 1.3, provided that the first-reported external-cause code was in the ICD-10-AM range W65–W74 (*Accidental drowning and submersion*) in 'Chapter XX External causes of morbidity and mortality'.

Relevant terms and information applying to the data used in this chapter are summarised in boxes 1.1, 1.2, 5.1 and 5.2. Further information on methods is provided in 'Appendix A: Data issues'.

Box 5.1: External causes of drowning and submersion injury

This chapter focuses on the **Accidental drowning and submersion (W65–W74)** section of 'Chapter XX External causes of morbidity and mortality' (ICD-10-AM), which contains the following groups:

- Drowning and submersion while in bathtub (W65)
- Drowning and submersion following fall into bathtub (W66)
- Drowning and submersion while in swimming pool (W67)
- Drowning and submersion following fall into swimming pool (W68)
- Drowning and submersion while in natural water (W69)
- Drowning and submersion following fall into natural water (W70)
- Other specified drowning and submersion (W73)
- Unspecified drowning and submersion (W74).

Understanding 'drowning'

The cases included in this chapter are those involving unintentional drowning and submersion in the circumstances covered by the categories listed above. Note that this chapter does not include unintentional drowning and submersion related to water transportation, or related to other transportation crashes, or due to cataclysms such as storms and floods—unless the first-mentioned external-cause code is one of those listed above (see Box 5.2 below). *Accidental drowning and submersion* (W65–W74) is not defined in the ICD-10-AM. A discussion of terms such as 'drowning' and 'submersion' can be found in WHO 2014.

Submersion: Brief submersion (or immersion) in water or other non-toxic liquid is usually harmless. However, injuries can occur while a person is submerged, particularly following a fall or dive into water, and these account for about 30% of the 2016–17 cases included in this chapter. A submerged person may experience respiratory impairment (see 'drowning', below). Harm can also result from submersion to a great depth (nitrogen narcosis), or from rising rapidly from a deep dive ('the bends'). Such cases are out of scope for this chapter.

Drowning: Prolonged submersion (or brief submersion in some circumstances—for example, if a person is unconscious when entering the water), puts a person at immediate risk of death by drowning. The drowning process typically involves breath-holding; attempted inhalation triggering spasm of the larynx; depletion of oxygen and build-up of carbon dioxide; loss of consciousness; and, eventually, inhalation of water into the lungs.

Sometimes the process is interrupted before death (for example, by rescue), in which case the person may survive with harm, such as brain damage due to lack of oxygen. That situation is variously referred to as 'drowning with a non-fatal outcome' (the term currently recommended by the WHO), or 'near-drowning'. If the process ends at an early stage of respiratory distress, then the person is likely to survive with no physical ill-effects.

In 2016–17, 67.9% of the cases included in this chapter had *Accidental* d*rowning and non-fatal submersion* as the principal diagnosis code, while the remainder were coded to other injury conditions, most commonly fractures.

Box 5.2: Additional *Accidental drowning and submersion* cases

Each year there are additional drowning and submersion 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 non-fatal submersion*.

In 2016–17 there were an additional 126 cases of drowning and submersion that fell outside the definition used in this chapter. All of these cases are included in other chapters of this report. The cases were as follows:

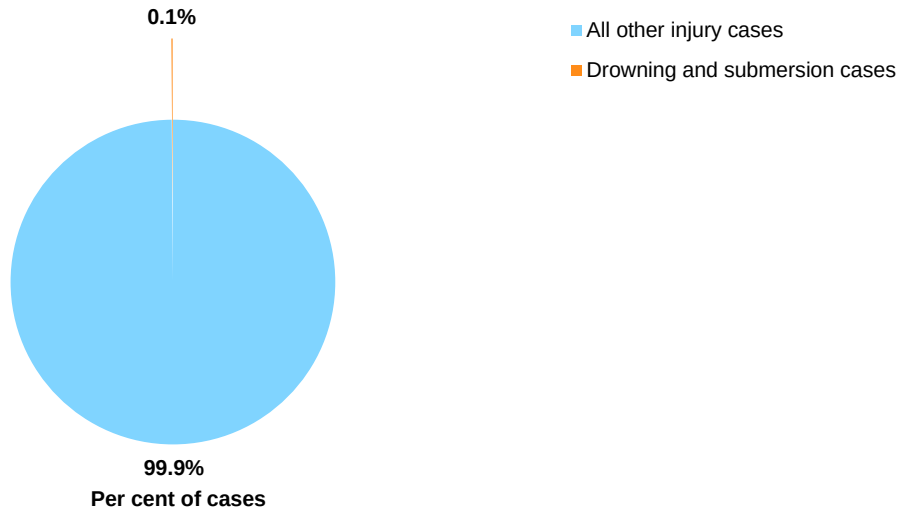
- 20 cases of *Water transport-related drowning and submersion without accident to water craft* (V92)
- 22 cases of *Intentional self-harm by drowning and submersion* (X71)
- 13 cases of *Drowning and submersion, undetermined intent* (Y21).

There were also 71 cases with various external-cause codes that do not refer to drowning (for example, *Fall*) but still had a principal diagnosis of T75.1 *Drowning and non-fatal submersion*.

How many drowning and submersion injury cases were there in 2016–17?

There were an estimated 611 Accidental d*rowning and submersion* injury cases during 2016–17. *Accidental drowning and submersion* injury made up 0.1% of all hospitalised injury cases (Figure 5.1).

Figure 5.1: Proportion of injury cases due to *Accidental drowning and submersion*, 2016–17



Age group and sex, 2016–17

The largest proportion of *Accidental drowning and submersion* injuries occurred in children aged 0–4 (40%) (Table 5.1). Within the 0–4 age group, a greater proportion of hospitalised cases for drowning were for girls than for boys (49% and 34%, respectively). Drowning and near-drowning injuries were more common in men aged 15–44 than in women.

Table 5.1: *Accidental drowning and submersion* injury cases, by age group, by sex, 2016–17

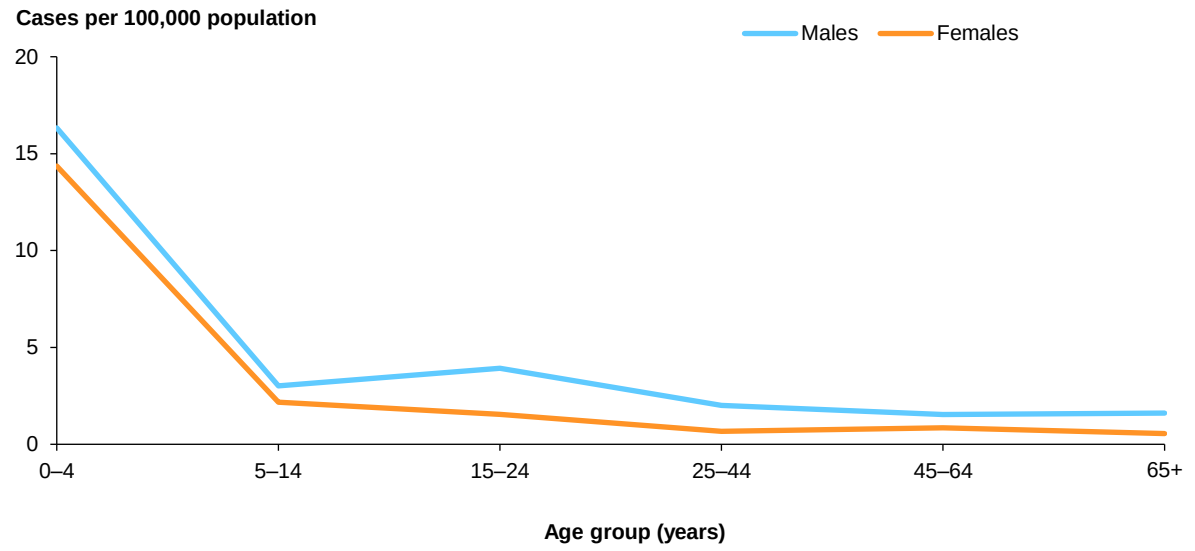
	Males		Females		Persons	
Age group	**Number**	**%**	**Number**	**%**	**Number**	**%**
0–4	132	34.3	110	48.7	242	39.6
5–14	47	12.2	32	14.2	79	12.9
15–24	64	16.6	24	10.6	88	14.4
25–44	69	17.9	23	10.2	92	15.1
45–64	45	11.7	26	11.5	71	11.6
65+	28	7.3	11	4.9	39	6.4
Total	**385**	**100.0**	**226**	**100.0**	**611**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

In 2016–17, the age-specific rates of *Accidental drowning and submersion* injury were much higher in the 0–4 age group (Figure 5.2). Males had a higher rate of injury across all age groups. The rate for males was highest in the 0–4 age group (16 per 100,000), and similar for females (14 per 100,000).

Figure 5.2: Age-specific rates of *Accidental drowning and submersion* injury cases, by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Location of drowning incident

Location of occurrence information is contained within the *Accidental drowning and submersion* external-cause categories—for example, W65 *Drowning and submersion while in bathtub*. Just over one-third of all drowning-related cases in Australia in 2016–17 occurred in a swimming pool (196 cases, or 32%) (Table 5.2). Children under 15 accounted for 74% of all swimming pool drowning-related cases; those aged 0–4 contributed 58% of these alone. Almost all (98%) of cases of bathtub drowning-related injuries occurred in young children aged 0–4. The second most common specified setting for *Accidental drowning and*

submersion cases overall was a body of natural water (including rivers, lakes and the ocean) (26%); natural water was also the principal setting for adult drowning and submersion cases.

Table 5.2: *Accidental drowning and submersion* injury cases, by location, by age group, 2016–17

	Swimming pool		Natural water		Bathtub		Other or unspecified		Total	
Age group	Number	%	Number	%	Number	%	Number	%	Number	%
0–4	114	58.2	13	8.2	42	97.7	73	34.1	242	39.6
5–14	32	16.3	19	12.0	0	0.0	28	13.1	79	12.9
15–24	13	6.6	47	29.7	1	2.3	27	12.6	88	14.4
25–44	10	5.1	46	29.1	0	0.0	36	16.8	92	15.1
45–64	17	8.7	22	13.9	0	0.0	32	15.0	71	11.6
65+	10	5.1	11	7.0	0	0.0	18	8.4	39	6.4
Total	**196**	**100.0**	**158**	**100.0**	**43**	**100.0**	**214**	**100.0**	**611**	**100.0**

Remoteness of usual residence

The age-standardised rates of *Accidental drowning and submersion* injury, by remoteness of place of usual residence, are shown in Table 5.3. The highest rate occurred in *Remote* areas (5 cases per 100,000 population). Caution should be exercised in interpreting these results because of low numbers of cases in regions outside *Major cities* (on average fewer than 20 cases per 5-year age band, other than for the 0–4 age group).

Table 5.3: *Accidental drowning and submersion* injury cases, by remoteness of usual residence, Australia, 2016–17

	Remoteness of usual residence				
Indicators	Major cities	Inner regional	Outer regional	Remote	Very remote
Accidental drowning and submersion cases	382	97	74	17	3
Age-standardised rate (cases per 100,000 population)	2.2	2.4	3.8	5.4	1.5

Aboriginal and Torres Strait Islander people

There were an estimated 45 cases of Indigenous Australians hospitalised as a result of *Accidental drowning and submersion* in 2016–17 (Table 5.4). More males than females were hospitalised. Age-specific rates of *Accidental drowning and submersion* for Indigenous Australians were unable to be presented, due to the lack of case numbers in age groups other than those aged 0–4. (Caution should be exercised in interpreting all drowning results, however, because of low case numbers in all but the youngest (0–4) age group and among Indigenous Australians in particular.)

Table 5.4: Key indicators for *Accidental drowning and submersion* injury cases, by Indigenous status, by sex, 2016–17

	Indigenous			Non-Indigenous		
Indicators	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Accidental drowning and submersion cases	25	20	45	354	204	558
Age-standardised rate (cases per 100,000 population)	5.2	4.2	4.7	3.1	1.8	2.4

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Non-Indigenous Australians excludes cases where Indigenous status is not reported.

As can be seen in Table 5.5, relatively few Indigenous children aged 0–4 were hospitalised because of *Accidental drowning and submersion* injury, compared with their non-Indigenous counterparts. Just under half of all cases occurred among Indigenous children aged 0–4, compared with around a third of all cases for non-Indigenous children. The age-specific rates of *Accidental drowning and submersion* among Indigenous children were similar to those of non-Indigenous children.

Table 5.5: Key indicators for *Accidental drowning and submersion* injury cases in 0–4 year olds, by Indigenous status, by sex, 2016–17

	Indigenous			Non-Indigenous		
Indicators	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Accidental drowning and submersion cases	10	11	21	120	98	218
Age-specific rate (cases per 100,000 population)	16.3	14.4	15.4	15.7	13.6	14.7

Socioeconomic status

The proportion of injury cases in each SES group ranged between 16% and 22% (Table 5.6). The highest proportions, for males and females, were for people living in areas with the first, second and third lowest (most disadvantaged) SES classification.

Table 5.6: *Accidental drowning and submersion* injury cases, by SEIFA quintile, by sex, 2016–17

	Males		Females		Persons	
SEIFA	**Number**	**%**	**Number**	**%**	**Number**	**%**
1–Lowest	74	19.2	43	19.0	117	19.1
2	87	22.6	43	19.0	130	21.3
3	69	17.9	50	22.1	119	19.5
4	62	16.1	36	15.9	98	16.0
5–Highest	69	17.9	40	17.7	109	17.8
Total	**385**	**100.0**	**226**	**100.0**	**611**	**100.0**

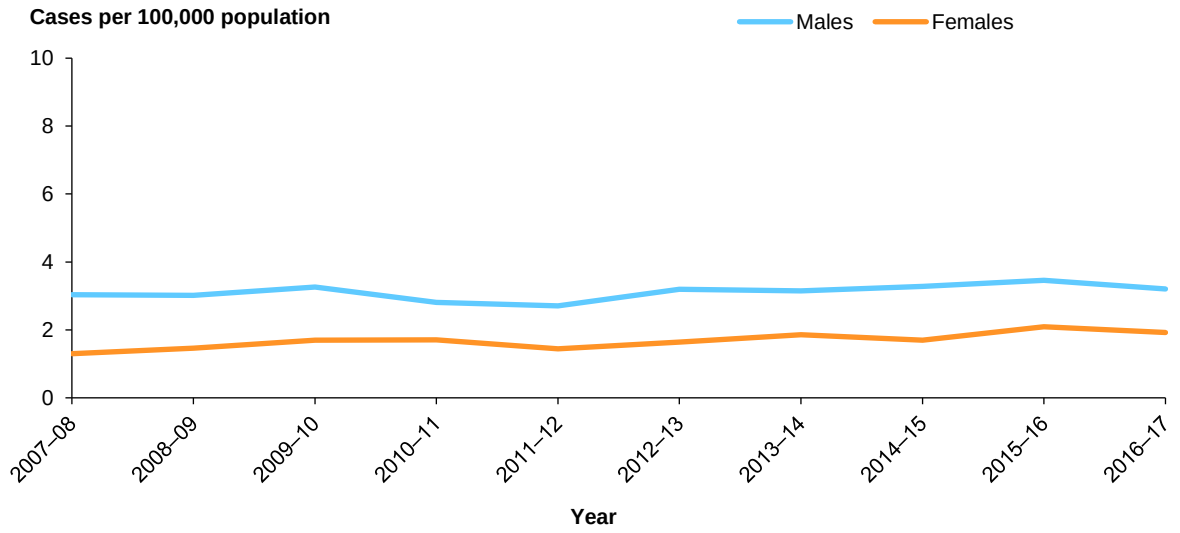
Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.
3. Total includes cases for which the SES group was not able to be determined.

How have cases of Accidental drowning and submersion injury changed over time?

The age-standardised rate of *Accidental drowning and submersion* fluctuated over the period, primarily due to small case numbers (Figure 5.3). Age-standardised rates for males were consistently higher than for females at all times.

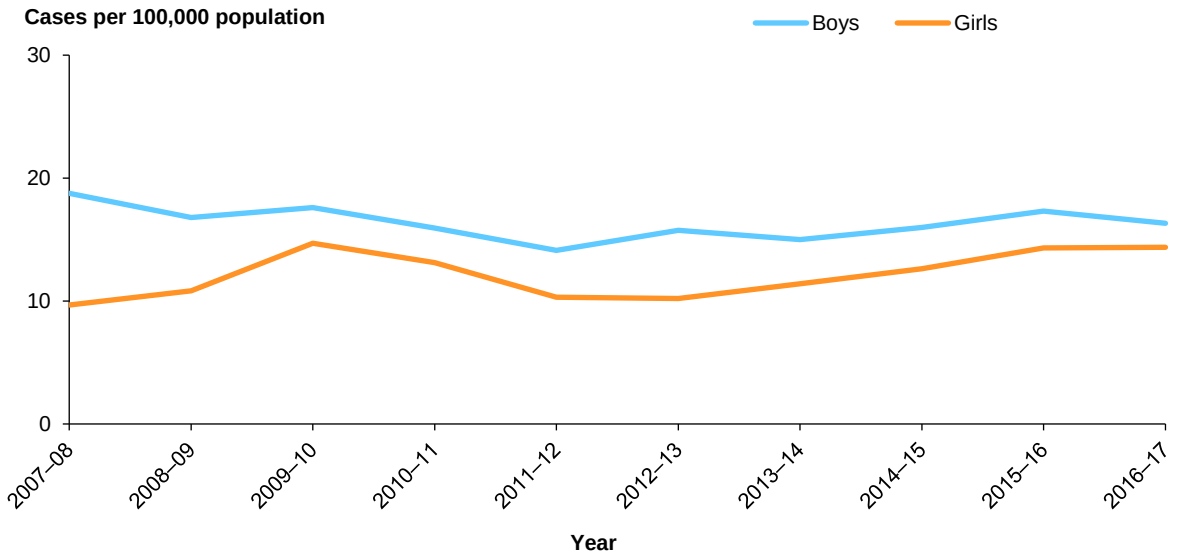
Figure 5.3: Age-standardised rates of *Accidental drowning and submersion* injury cases, by age group, by sex, 2007–08 to 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

As the great majority of *Accidental drowning and submersion* cases occur in the 0–4 age group, a separate analysis was undertaken for this age group (Figure 5.4). A decrease in age-specific rates of *Accidental drowning and submersion* in those aged 0–4 can be seen for both boys and girls to about 2011–12. Since then, rates of drowning injury for both boys and girls in this age group have increased.

Figure 5.4: Age-specific rates of *Accidental drowning and submersion* injury cases, by sex, 0–4 year olds, 2007–08 to 2016–17

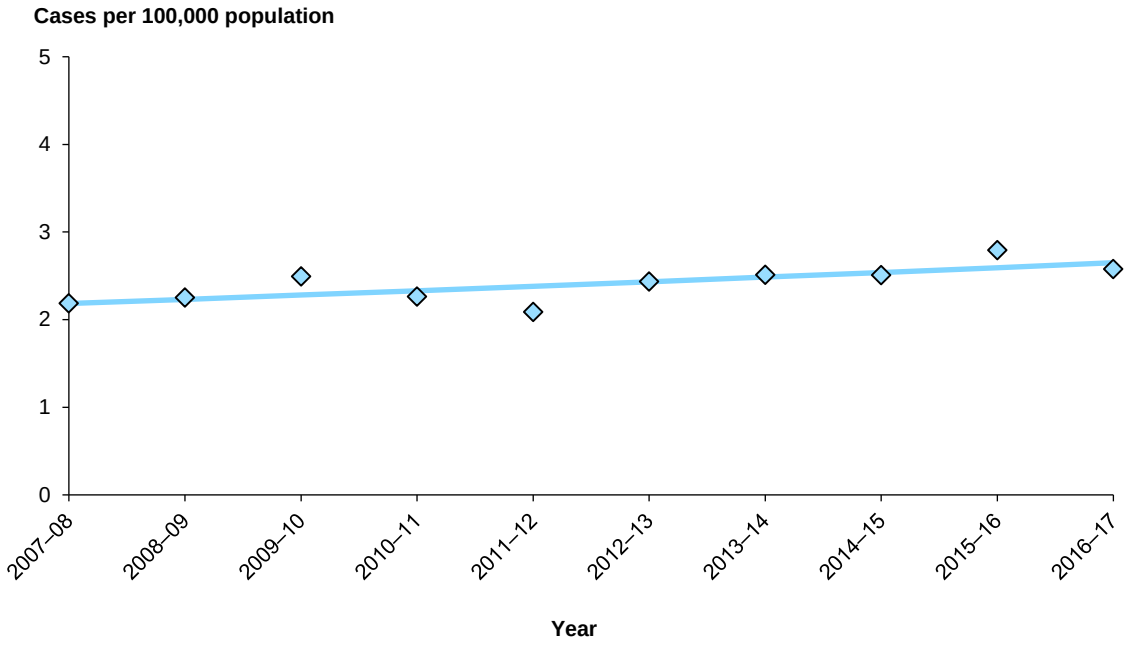


Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Due to the small number of cases each year in all age groups (other than for those aged 0–4), no further analysis is presented by age.

Age-standardised annual rates of *Accidental drowning and submersion* cases showed a small increase from the beginning of the period: in 2007–08, the rate was 2.2 cases per 100,000 population and in 2016–17 it was 2.6 (Figure 5.5). The increase in modelled rates from 2007–08 to 2016–17 averaged 2.2% per year and was statistically significant (95% CI: 1.2%, 3.1%).

Figure 5.5: Modelled age-standardised rates of *Accidental drowning and submersion* injury cases, 2007–08 to 2016–17

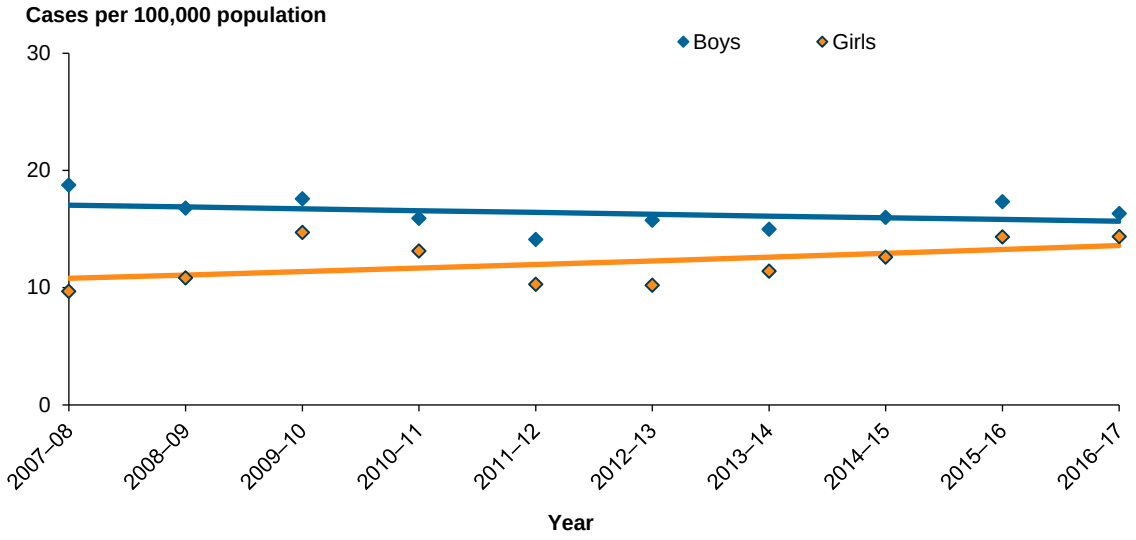


Notes

1. The solid line represents the modelled rate from 2007–08 to 2016–17. The filled symbols represent the observed age-standardised rate value for each year.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

As the great majority of *Accidental drowning and submersion* cases occur in the 0–4 age group, a separate trend analysis was undertaken for this age group (Figure 5.6). The increase in *Accidental drowning and submersion* rates across the full range of age groups was also evident among girls 0–4 years. For girls, the increase in rate averaged 2.6% per year and was statistically significant (95% CI: 0.2%, 5.0%). In contrast, there was no significant change in the rates of *Accidental drowning and submersion* among boys in this age group over the period. The change in rate averaged 0.9% per year and was not statistically significant (95% CI: -2.8%, 1.0%).

Figure 5.6: Modelled age-standardised rates of *Accidental drowning and submersion* injury cases, 0–4 year olds, by sex, 2007–08 to 2016–17



Notes

1. The solid line represents the modelled rate from 2007–08 to 2016–17. The filled symbols represent the observed age-standardised rate value for each year.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

6 Poisoning

This chapter presents information on patients who were admitted to hospital as a result of an unintentional poisoning injury. Information in this chapter includes:

- age group and sex of the patient
- cause of the injury
- trends over time.

More detailed information on *Accidental poisoning* injuries, including trend information, can be found in publications available on the AIHW website. For example, *Poisoning in children and young people 2012–13* (AIHW: Pointer 2016).

Key findings

Just over 11,000 cases of hospitalised injury were due to *Accidental poisoning* in 2016–17.

Sex of patient

In 2016–17, 2% of injury cases (10,092) were due to *Accidental poisoning*. There were similar numbers of males (6,047) and females (5,214).

Age of patient

The greatest number of cases of *Accidental poisoning* (1,620) occurred among those aged 0–4. While rates of *Accidental poisoning* injury were high among those aged 0–4 (103 cases per 100,000), the highest rate of *Accidental poisoning* injury occurred in people aged 95 or over (114).

Cause of accidental poisoning

The most common type of *Accidental poisoning* was caused by *Antiepileptic, sedative-hypnotic, anti-parkinsonism and psychotropic drugs, not elsewhere classified* (27%). Among these cases, 946 were caused by benzodiazepines.

Trends in injury

Overall, *Accidental poisoning* hospitalisations increased over the period 2007–08 to 2016–17, averaging an increase of 1.0% per year. The increase was seen more strongly among male cases (1.5% per year) compared with female cases (0.4% per year).

What methods were used?

This chapter includes injury cases meeting the criteria set out in Section 1.3, provided that the first-reported external-cause code was in the ICD-10-AM range X40–X49 (*Accidental poisoning by and exposure to noxious substances*) in 'Chapter XX External causes of morbidity and mortality'.

Relevant terms and information applying to the data used in this chapter are summarised in boxes 1.1, 1.2 and 6.1. Further information on methods is provided in 'Appendix A: Data issues'.

Box 6.1: External causes of poisoning

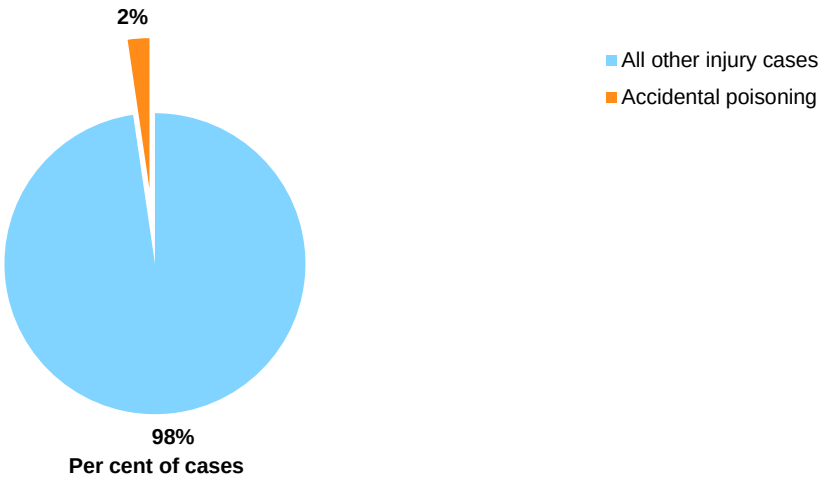
This chapter focuses on the **Accidental poisoning by and exposure to noxious substances (X40–X49)** section of ICD-10-AM 'Chapter XX External causes of morbidity and mortality', which contains the following groups:

- Accidental poisoning by and exposure to non-opioid analgesics, antipyretics and anti-rheumatics (X40)
- Accidental poisoning by and exposure to anti-epileptic, sedative-hypnotic, anti-parkinsonism and psychotropic drugs, not elsewhere classified (X41)
- Accidental poisoning by and exposure to narcotics and psychodysleptics (hallucinogens), not elsewhere classified (X42) (includes opioids)
- Accidental poisoning by and exposure to other drugs acting on the autonomic nervous system (X43)
- Accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances (X44)
- Accidental poisoning by and exposure to alcohol (X45)
- Accidental poisoning by and exposure to organic solvents and halogenated hydrocarbons and their vapours (X46)
- Accidental poisoning by and exposure to other gases and vapours (X47)
- Accidental poisoning by and exposure to pesticides (X48)
- Accidental poisoning by and exposure to other and unspecified chemicals and noxious substances (X49).

How many accidental poisoning cases were there in 2016–17?

There were an estimated 11,261 *Accidental poisoning* cases during 2016–17. Accidental poisoning cases made up 2% of all hospitalised injury cases (Figure 6.1).

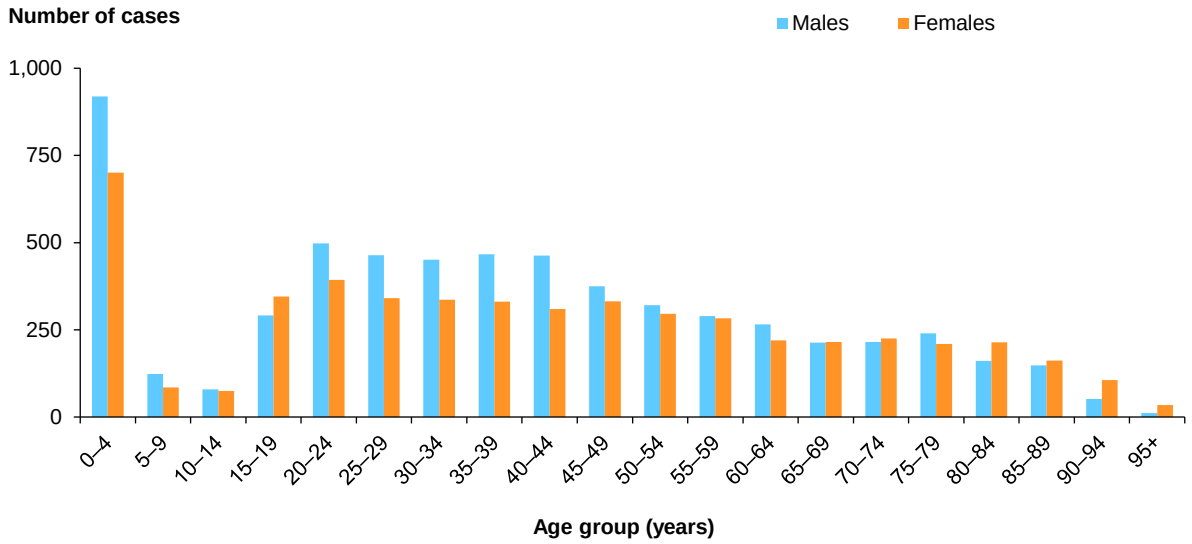
Figure 6.1: Proportion of injury cases due to *Accidental poisoning,* 2016–17



Age group and sex, 2016–17

Of the 11,261 cases of *Accidental poisoning* injury in Australia in 2016–17, slightly more males (6,047) than females (5,214) were hospitalised. Overall, the greatest number of *Accidental poisoning* cases, about 1,600 (or 14%), were seen in the 0–4 age group (Figure 6.2). An analysis of *Accidental poisoning* cases by age and sex shows differences between males and females by age group. Higher numbers of cases appeared for females (compared with males) in the 15–19 age group and in all age groups 65 and over—except for those aged 75–79. Males had higher numbers of cases in the other age groups. For both groups, the highest rates were seen in the 0–4 age group, falling sharply in the 5–9 and 10–14 age groups.

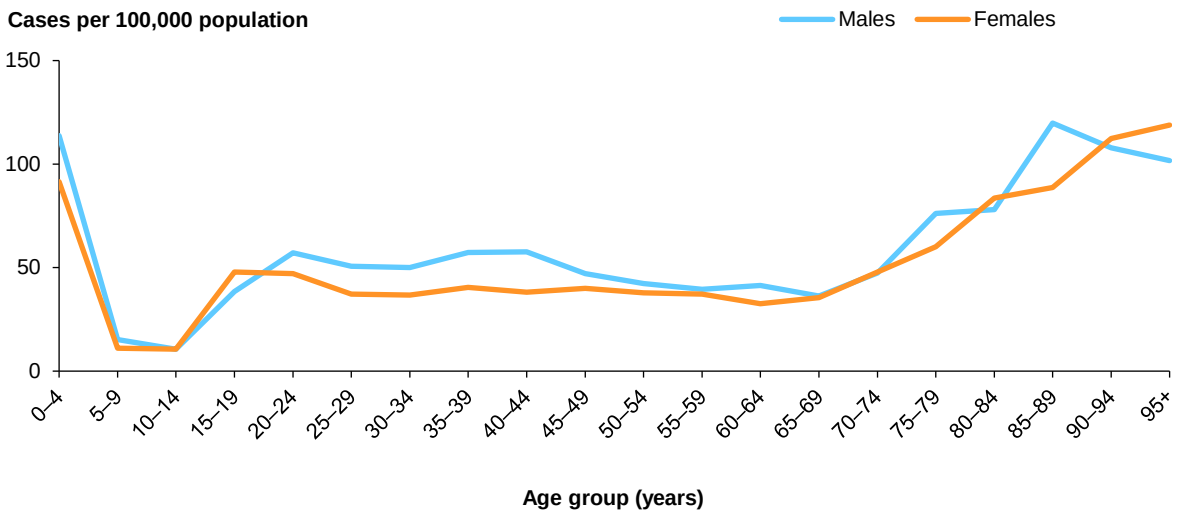
Figure 6.2: Number of cases of *Accidental poisoning,* by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Males and females had a similar pattern of rates of *Accidental poisoning,* by age, with the highest rates in the youngest and oldest age groups for both males and females (Figure 6.3). In the younger age groups, children 0–4 had the highest rates of accidental poisoning: 114 and 92 cases per 100,000 population for boys and girls, respectively. In the middle age groups, males had higher rates of *Accidental poisoning* than females, from about 20–24 to 65–69 years. Young women aged 15–19 had higher rates of accidental poisoning than males (48 cases per 100,000 and 38 cases per 100,000, respectively).

Figure 6.3: Age-specific rates of *Accidental poisoning* injury cases, by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the supplementary table spreadsheet for Chapter 6.

Cause of accidental poisoning

Four of the 10 types of *Accidental poisoning* accounted for almost 80% of all hospitalised *Accidental poisoning* cases (8,897 cases) (Table 6.1). The 2 most common types of *Accidental poisoning* in 2016–17 were poisoning due to *Anti-epileptic, sedative-hypnotic, anti-parkinsonism and psychotropic drugs, not elsewhere classified* (27%) and poisoning due to *Other and unspecified drugs, medicaments and biological substances* (24%). Overall, differences between males and females were slight, with similar proportions of types of poisoning cases for both sexes. For poisoning due to *Nonopioid analgesics, antipyretics and antirheumatics,* a larger proportion of females than males was hospitalised (14% and 9%, respectively).

Table 6.1: *Accidental poisoning* injury cases, by type of poisoning, by sex, 2016–17

	Males		Females		Persons	
Type of *Accidental poisoning*	**Number**	**%**	**Number**	**%**	**Number**	**%**
Nonopioid analgesics, antipyretics and antirheumatics (X40)	523	8.6	718	13.8	1,241	11.0
Antiepileptic, sedative-hypnotic, anti-parkinsonism and psychotropic drugs, not elsewhere classified (X41)	1,602	26.5	1,425	27.3	3,027	26.9
Narcotics and psychodysleptics [hallucinogens], not elsewhere classified (X42)	1,082	17.9	843	16.2	1,925	17.1
Other drugs acting on the autonomic nervous system (X43)	158	2.6	202	3.9	360	3.2
Other and unspecified drugs, medicaments and biological substances (X44)	1,404	23.2	1,300	24.9	2,704	24.0

(continued)

Table 6.1 (continued): *Accidental poisoning* injury cases, by type of poisoning, by sex, 2016–17

	Males		Females		Persons	
Type of *Accidental poisoning*	**Number**	**%**	**Number**	**%**	**Number**	**%**
Alcohol (X45)	106	1.8	86	1.6	192	1.7
Organic solvents and halogenated hydrocarbons and their vapours (X46)	121	2.0	57	1.1	178	1.6
Other gases and vapours (X47)	185	3.1	63	1.2	248	2.2
Pesticides (X48)	64	1.1	35	0.7	99	0.9
Other and unspecified chemicals and noxious substances (X49)	802	13.3	485	9.3	1,287	11.4
Total	**6,047**	**100.0**	**5,214**	**100.0**	**11,261**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

In this chapter, external causes were tabulated to describe the groups of drugs responsible for poisoning cases (see Box 6.1). However, principal diagnoses can offer a more detailed description of the substances involved for each case. In Table 6.2 and accompanying text, the top 5 principal diagnosis categories associated with *Accidental poisoning* have been presented. In total there were 9,263 cases identified with a principal diagnosis of *Accidental poisoning*.

Table 6.2: Cases of *Accidental poisoning*, by principal diagnosis drug type, 2016–17

Accidental poisoning by:	**Number**	**%**
Narcotics and psychodysleptics (hallucinogens)	1,920	17.0
T40.2 Other opioids: Codeine, Morphine	771	
T40.1 Heroin	366	
Psychotropic drugs, not elsewhere classified	1,593	14.1
T43.6 Psychostimulants with potential for use disorder	584	
T43.5 Other and unspecified antipsychotics and neuroleptics	452	
Anti-epileptic, sedative-hypnotic, and anti-parkinsonism	1,454	12.9
T42.4 Benzodiazepines	946	
T42.7 Antiepileptic and sedative-hypnotic drugs, unspecified (Sleeping)	173	
Non-opioid analgesics, antipyretics and anti-rheumatics	1,242	11.0
T39.1 4-Aminophenol derivatives	1,015	
T39.3 Other nonsteroidal anti-inflammatory drugs	169	
Hormones and their synthetic substitutes and antagonists, not elsewhere classified	798	11.4
T38.3 Insulin and oral hypoglycaemic [antidiabetic] drugs	715	
T38.0 Glucocorticoids and synthetic analogues	26	
Total	**7,370**	**81.6**

Note: The principal diagnosis groups are presented in bold. Information about the specific drugs types taken from the principal diagnosis codes are presented in italics.

From Table 6.2 we can see that:

- 17% (1,920 cases) were poisoning by *Narcotics and psychodysleptics (hallucinogens)*, of which 771 or 40% were 'other' opioids such as codeine and morphine and 19% were heroin
- 14% (1,593 cases) were poisoning by *Psychotropic drugs, not elsewhere classified*, of which 584 or 37% were *Psychostimulants with potential for use disorder*. Among the cases of poisoning by *Psychostimulants with potential for use disorder* 198 were due to *Methylamphetamin*
- 13% (1,454 cases) were poisoning by *Anti-epileptic, sedative-hypnotic, anti-parkinsonism and psychotropic drugs*. Benzodiazepines (946 cases) were the largest category of drugs under this category
- 11% of cases (1,242 cases) were poisoning by, and exposure to, *Non-opioid analgesics, antipyretics and anti-rheumatics*. Most of these (82%) involved *4-aminophenol derivatives* such as paracetamol
- 11.4% (798 cases) were poisoning by *Hormones and their synthetic substitutes and antagonists, not elsewhere classified*. Most of these (62%) involved Insulin and oral hypoglycaemic [antidiabetic] drugs.

Remoteness of usual residence

The age-standardised rate of *Accidental poisoning* in 2016–17 increased as the degree of remoteness of usual residence increased (Table 6.3). The highest rate of *Accidental poisoning* occurred in *Very remote* regions (68 cases per 100,000 population), followed by *Outer regional* areas (56 per 100,000).

Table 6.3: *Accidental poisoning* injury cases, by remoteness of usual residence, 2016–17

	Remoteness of usual residence				
Indicators	**Major cities**	**Inner regional**	**Outer regional**	**Remote**	**Very remote**
Accidental poisoning cases	7,781	1,834	1,113	171	126
Age-standardised rate (cases per 100,000 population)	43.8	42.1	54.1	56.4	68.4

Aboriginal and Torres Strait Islander people

There were an estimated 813 cases of Indigenous Australians hospitalised as a result of an *Accidental poisoning* in 2016–17 (Table 6.4). More Indigenous males were hospitalised than females. The age-standardised rates of *Accidental poisoning* were more than twice as high for Indigenous males and females, compared with their *non-Indigenous* counterparts.

Table 6.4: *Accidental poisoning* injury cases, by Indigenous status, by sex, 2016–17

	Indigenous			Non-Indigenous		
Indicators	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Accidental poisoning cases	423	390	813	5,524	4,761	10,285
Age-standardised rate (cases per 100,000 population)	118	109	114	47	39	43

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Non-Indigenous Australians excludes cases where Indigenous status is not reported.

Age-specific rates of *Accidental poisoning* were unable to be presented for Indigenous Australians, due to the low case numbers in age groups older than 0–4. As can be seen in Table 6.5, relatively few Indigenous children aged 0–4 were hospitalised because of *Accidental poisoning,* compared with their non-Indigenous counterparts. Almost a quarter (23%) of all cases occurred among Indigenous children aged 0–4, compared with 14% of all cases for non-Indigenous children. The age-specific rate of *Accidental poisoning* among Indigenous children overall was higher than for non-Indigenous children, both boys and girls.

Table 6.5: Key indicators for A*ccidental poisoning* injury cases in 0–4 year olds, by Indigenous status, by sex, 2016–17

	Indigenous			Non-Indigenous		
Indicators	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Accidental poisoning cases	111	85	196	804	613	1,417
Age-specific rate (cases per 100,000 population)	242	195	219	105	85	95

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Non-Indigenous Australians excludes cases where Indigenous status is not reported.

Socioeconomic status

The proportion of *Accidental poisoning* cases in each SES group ranged between 13% and 24% (Table 6.6). The highest proportions, for males and females, were for people living in areas with the lowest (most disadvantaged) SES classification.

Table 6.6: *Accidental poisoning* injury cases, by SEIFA quintile, by sex, 2016–17

	Males		Females		Persons	
SEIFA	**Number**	**%**	**Number**	**%**	**Number**	**%**
1–Lowest	1,467	24.3	1,276	24.5	2,743	24.4
2	1,289	21.3	1,182	22.7	2,471	21.9
3	1,218	20.1	1,042	20.0	2,260	20.1
4	1,113	18.4	905	17.4	2,018	17.9
5–Highest	807	13.3	723	13.9	1,530	13.6
Total	**6,047**	**100.0**	**5,214**	**100.0**	**11,261**	**100.0**

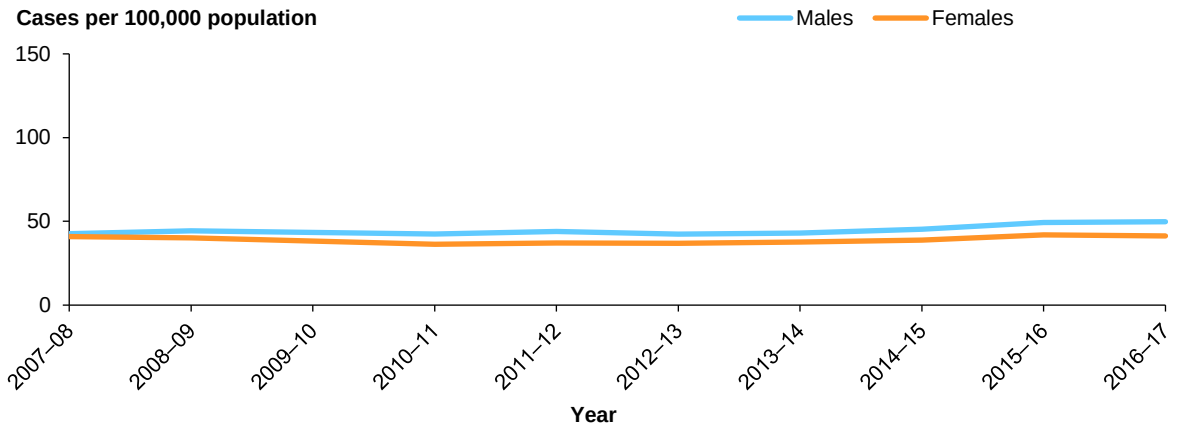
Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.
3. Total includes cases for which the SES group was not able to be determined.

How have cases of accidental poisoning injury changed over time?

Age-standardised rates of *Accidental poisoning* for males and females were similar throughout the period, although males have had slightly higher rates since about 2007–08 (Figure 6.4).

Figure 6.4: Age-standardised rates of *Accidental poisoning* injury cases, by sex, Australia, 2007–08 to 2016–17



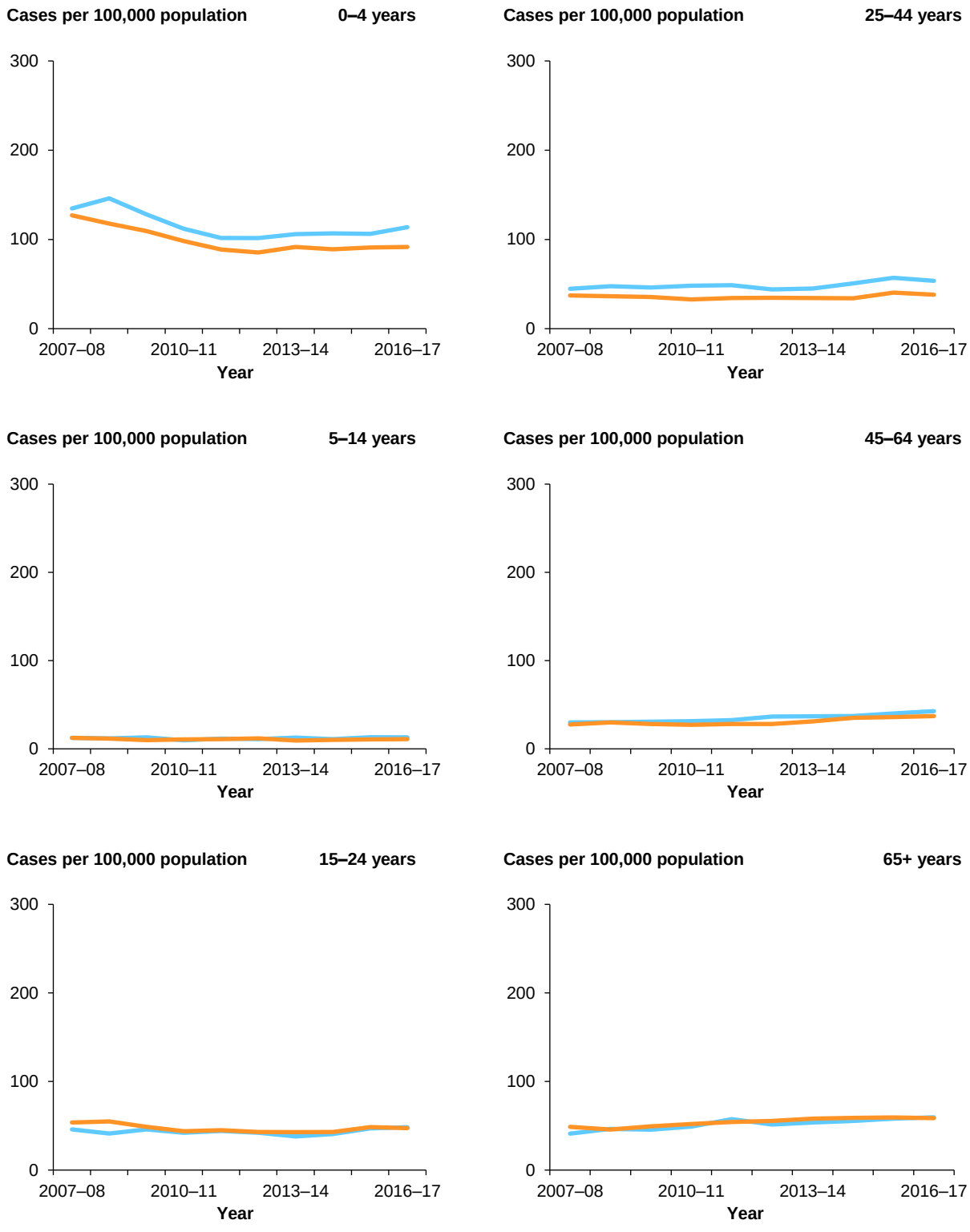
Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

The changes in rates of *Accidental poisoning* injury over time, by broad age group as well as by sex, is shown in Figure 6.5. The figures show an additional 2 years of data since the publication of the previous *Trends in hospitalised injury, Australia 1999–00 to 2014–15* report (AIHW: Pointer 2018a).

As can be seen in Figure 6.5, the plateauing of rates in children aged 0–4 appears to have commenced in 2011–12, with rates of *Accidental poisoning* averaging 106 cases per 100,000 for boys and 90 for girls since that time.

In contrast to all other age groups, rates of *Accidental poisoning* among those aged 45–64 and 65 or over have increased over the period. For males aged 45–64, the age-specific rate of poisoning in 2007–08 was 30 cases per 100,000, and in 2016–17 it was 43. Similarly, the rate for females was 28 per 100,000 in 2007–08 and 38 per 100,000 in 2016–17. The rise in rates for males and females aged 65 or over was of a similar magnitude.

Figure 6.5: Age-specific rates of *Accidental poisoning* injury cases, by age group, by sex, 2007–08 to 2016–17



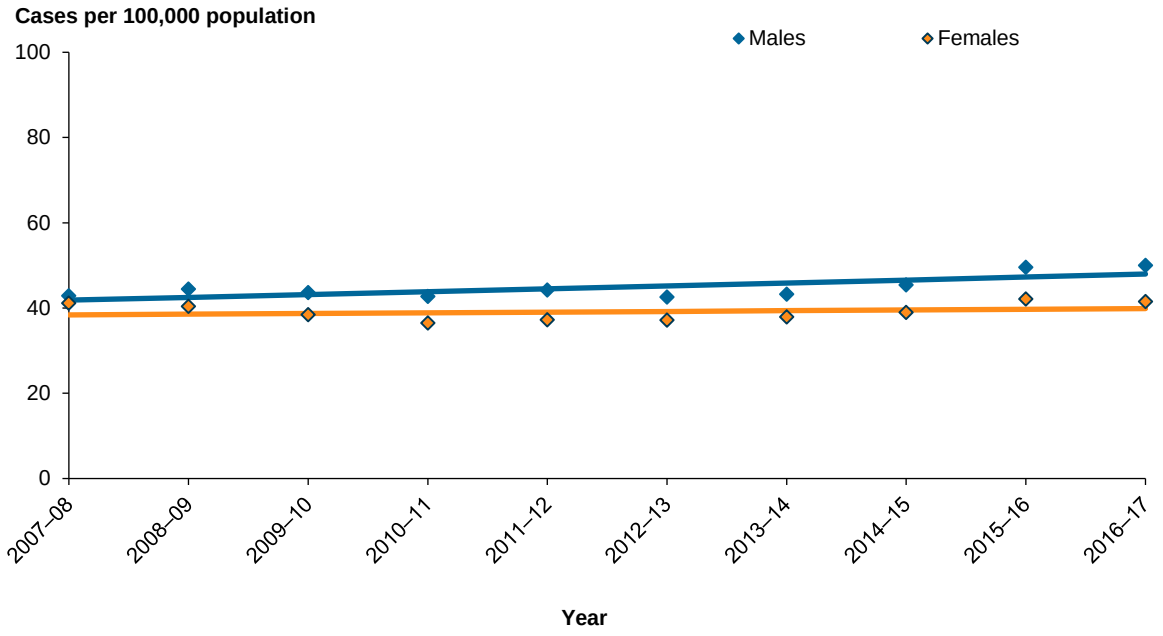
Notes

1. Rates for males are indicated by the blue line and rates for females by the orange line in all charts.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Age-standardised annual rates of *Accidental poisoning* injury cases showed a small increase from the beginning of the period. In 2007–08, the rate was 40 cases per 100,000 population and in 2016–17 it was 44. The increase in modelled rates from 2007–08 to 2016–17 averaged 1.0% per year and was statistically significant (95% CI: 0.8%, 1.2%).

An analysis by sex showed increases in the rate of *Accidental poisoning* injury over the period for both males and females (Figure 6.6). For males, the rate increased from 41.9 per 100,000 population in 2007–08 to 48.0 in 2016–17. The increase in the modelled rate for males averaged 1.5% per year and was statistically significant (95% CI: 1.2%, 1.8%). For females, the rate increased from 38.4 per 100,000 population in 2007–08 to 39.9 in 2016–17. The rise in the modelled rate for females averaged 0.4% per year and was statistically significant (95% CI: 0.1%, 0.7%).

Figure 6.6: Modelled age-standardised rates of *Accidental poisoning* injury cases, by sex, 2007–08 to 2016–17



Notes

1. The solid line represents the modelled rate from 2007–08 to 2016–17. The filled symbols represent the observed age-standardised rate value for each year.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

7 Falls

This chapter presents information on patients who were admitted to hospital as a result of an unintentional fall. Information in this chapter includes:

- age group and sex of the patient
- cause of the injury
- trends over time.

More detailed information on fall injuries, including trend information, can be found in publications available on the AIHW website. For example, *Trends in hospitalised injury due to falls in older people, 2002–03 to 2014–15* (AIHW: Pointer 2018b).

Key findings

Almost 220,000 cases of hospitalised injury were due to a fall in 2016–17.

Sex of patient

In 2016–17, females (123,043) made up just over half of all cases of hospitalised *Falls*.

Age of patient

In 2016–17, people aged 65 or over accounted for 57% of cases; among females it was 66%.

Indigenous status

Falls among Indigenous Australians made up a lower proportion of all injury (23%) compared with non-Indigenous Australians (42%), but rates of injury were higher.

Cause of injury

Fall on the same level from slipping, tripping and stumbling accounted for more than one-quarter of all fall injuries (29%) in 2016–17.

Trends in injury

Overall, fall injury hospitalisations rose over the period 2007–08 to 2016–17, increasing on average by 1.9% per year. Similar rises were seen for males (1.9% per year) and females (2.1% per year).

What methods were used?

This chapter includes injury cases meeting the criteria set out in Section 1.3, providing that the first-reported external-cause code is in the ICD-10-AM range W00–W19 (*Falls*) in 'Chapter XX External causes of morbidity and mortality'.

Relevant terms and information applying to the data used in this chapter are summarised in boxes 1.1, 1.2 and 7.1. Further information on methods is provided in 'Appendix A: Data issues'.

Box 7.1: External causes of falls

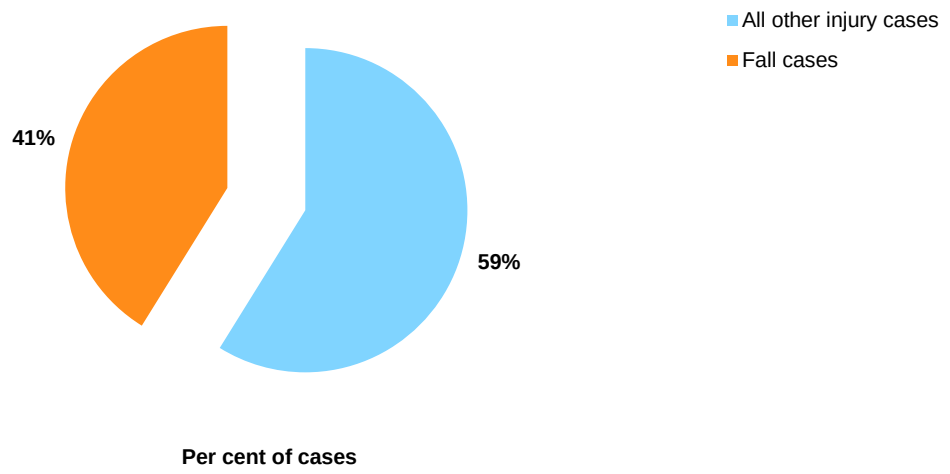
This chapter focuses on the **Other external causes of unintentional injury (W00–X59)** section of ICD-10-AM 'Chapter XX External causes of morbidity and mortality', but is restricted to *Falls* (W00–W19), as follows:

- Fall on same level involving ice and snow (W00)
- Fall on same level from slipping, tripping and stumbling (W01)
- Fall involving ice-skates, skis, roller-skates or skateboards (W02)
- Other fall on same level due to collision with, or pushing by, another person (W03)
- Fall while being carried or supported by other persons (W04)
- Fall involving wheelchair (W05)
- Fall involving bed (W06)
- Fall involving chair (W07)
- Fall involving other furniture (W08)
- Fall involving playground equipment (W09)
- Fall on and from stairs and steps (W10)
- Fall on and from ladder (W11)
- Fall on and from scaffolding (W12)
- Fall from, out of or through building or structure (W13)
- Fall from tree (W14)
- Fall from cliff (W15)
- Diving or jumping into water causing injury other than drowning or submersion (W16)
- Other fall from 1 level to another (W17)
- Other fall on same level (W18)
- Unspecified fall (W19).

How many fall injury cases were there in 2016–17?

There were an estimated 219,625 fall injury cases during 2016–17, an increase of about 20,000 cases since the last trends report was published in 2014–15. Fall cases made up 41% of all hospitalised injury cases (Figure 7.1).

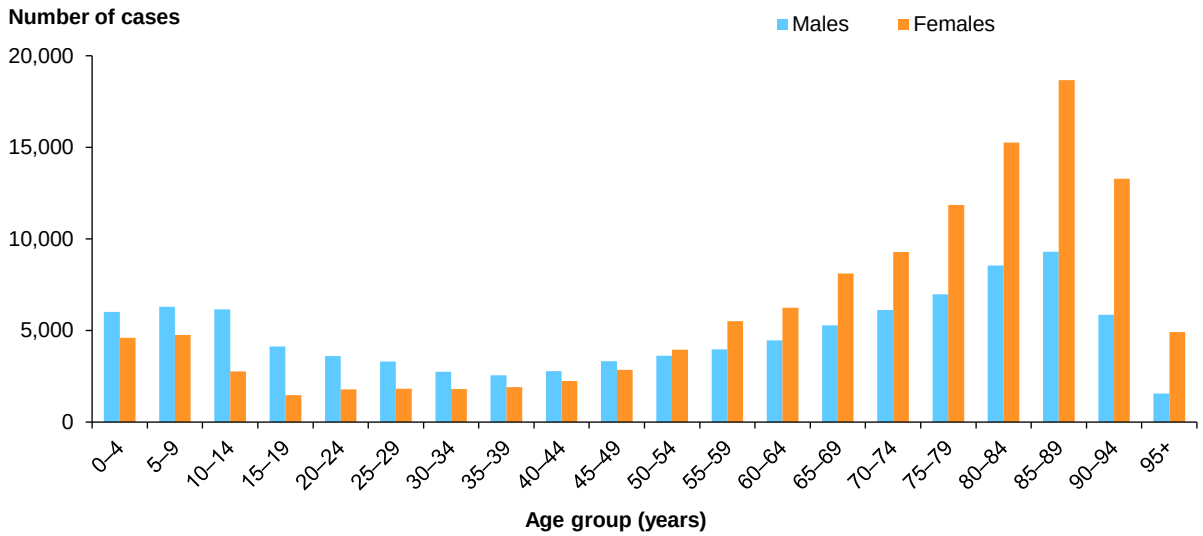
Figure 7.1: Proportion of injury cases due to falls, 2016–17



Age group and sex, 2016–17

Of the 219,625 fall injury cases in Australia in 2016–17, just over half were female (123,043) and 57% occurred in people aged 65 or over. Among females, the proportion of fall injury cases occurring at ages 65 or over was 66%. An analysis of fall injury cases by age and sex shows a greater number of males in each age category, up to the 45–49 age group (Figure 7.2). The greatest number of fall injury cases for both males and females occurred in the 85–89 age group, at 9,301 and 18,671 cases, respectively.

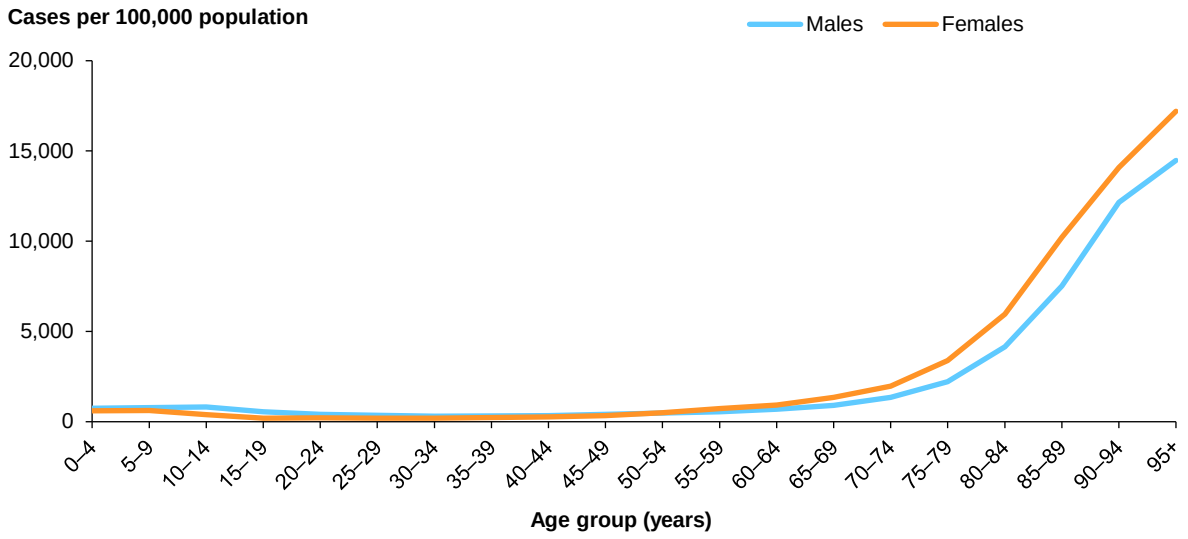
Figure 7.2: Number of fall injury cases, by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

For both sexes, age-specific rates of falls were higher in each successive age group from about age 65 onwards (Figure 7.3). Rates for females were consistently higher than for males from the 55–59 age group.

Figure 7.3: Age-specific rates of fall injury cases, by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Nature of injury

Fall injuries resulted in damage to various body regions, with the most common being the head and neck (28%) and hip and lower limb (27%) (Table 7.1). Females had a larger proportion of injuries to the hip and lower limb (30%), while males had larger proportions of head and neck injuries (31%).

Table 7.1: Fall injury cases, by body region injured, by sex, 2016–17

	Males		Females		Persons	
Type of injury	**Number**	**%**	**Number**	**%**	**Number**	**%**
Head and neck	30,350	31.4	30,889	25.1	61,240	27.9
Trunk (thorax, abdomen, lower back, lumbar spine and pelvis)	13,731	14.2	17,388	14.1	31,120	14.2
Shoulder and upper limb (excluding wrist and hand)	21,774	22.5	30,463	24.8	52,237	23.8
Wrist and hand	4,751	4.9	3,253	2.6	8,004	3.6
Hip and lower limb (excluding ankle and foot)	22,514	23.3	37,370	30.4	59,884	27.3
Ankle and foot	2,646	2.7	2,780	2.3	5,426	2.5
Other, multiple and incompletely specified body regions	203	0.2	241	0.2	444	0.2
Injuries not described in terms of body region	611	0.6	659	0.5	1,270	0.6
Total	**96,580**	**100.0**	**123,043**	**100.0**	**219,625**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

Fractures were the most common type of injury sustained, with over 100,000 cases in 2016–17 (Table 7.2). Males and females had a similar pattern of type of injury, with fractures, followed by open wounds, being common for both.

Table 7.2: Fall injury cases, by type of injury, by sex, 2016–17

	Males		Females		Persons	
Type of injury	**Number**	**%**	**Number**	**%**	**Number**	**%**
Fracture	47,620	49.3	70,742	57.5	118,362	53.9
Dislocation	2,353	2.4	2,314	1.9	4,667	2.1
Soft-tissue injury	4,932	5.1	4,624	3.8	9,556	4.4
Open wound	13,119	13.6	12,192	9.9	25,311	11.5
Intracranial injury	7,575	7.8	6,151	5.0	13,727	6.3
Internal organ or vessel of trunk	1,034	1.1	449	0.4	1,483	0.7
Burn	8	0.0	7	0.0	15	0.0
Superficial injury	6,526	6.8	9,868	8.0	16,394	7.5
Poisoning or toxic effect	1	0.0	1	0.0	2	0.0
Other and unspecified injuries	13,412	13.9	16,695	13.5	30,108	13.7
Total	**96,580**	**100.0**	**123,043**	**100.0**	**219,625**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

Remoteness of usual residence

The age-standardised rate of falls in 2016–17 varied somewhat according to remoteness of usual residence (Table 7.3). The highest rates were in *Remote* and *Very remote* areas (893 and 1,050 per 100,000 population, respectively).

Table 7.3: Fall injury cases, by remoteness of usual residence, 2016–17

	Remoteness of usual residence				
Indicators	**Major cities**	**Inner regional**	**Outer regional**	**Remote**	**Very remote**
Fall cases	153,828	40,267	19,404	2,601	1,740
Age-standardised rate (cases per 100,000 population)	807	745	808	893	1,050

Aboriginal and Torres Strait Islander people

There were an estimated 6,526 cases of Indigenous Australians hospitalised as a result of a fall in 2016–17 (Table 7.4). Falls among Indigenous Australians made up a lower proportion of all injury (23%) compared with non-Indigenous Australians (42%). The age-standardised rate of fall injury cases among Indigenous Australians was higher than that of non-Indigenous Australians, for males as well as for females.

Table 7.4: Fall injury cases, by Indigenous status, by sex, 2016–17

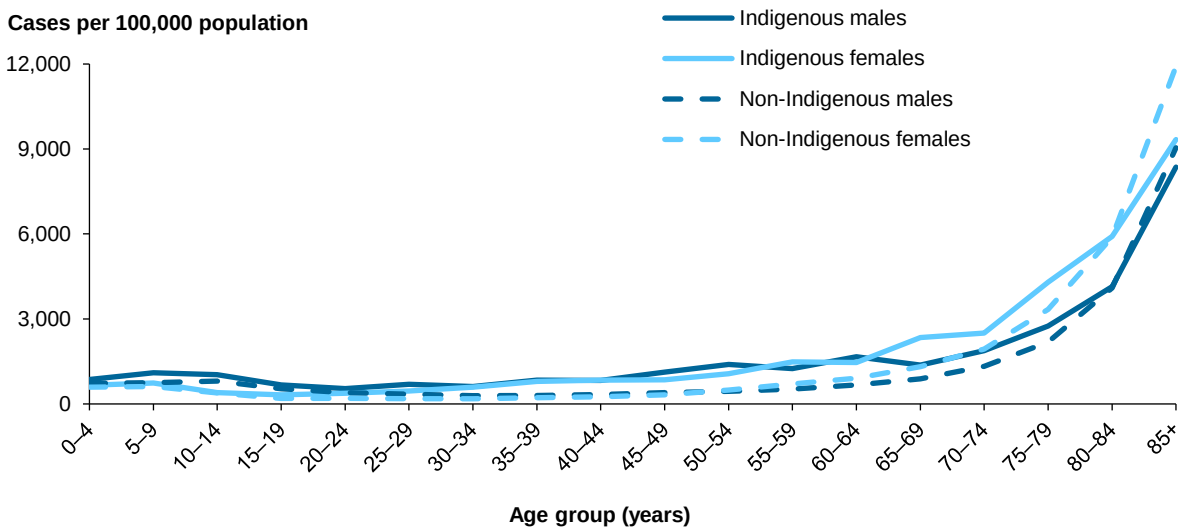
	Indigenous			Non-Indigenous		
Indicators	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Fall cases	3,569	2,957	6,526	91,962	118,661	210,624
Age-standardised rate (cases per 100,000 population)	1,190	1,152	1,179	756	792	783

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Non-Indigenous Australians excludes cases where Indigenous status is not reported.

Generally speaking, the pattern of fall, by age, for Indigenous males and females was similar to that for non-Indigenous males and females (Figure 7.4). Fall rates were low until about the 65–69 age group, and after that, fall rates increased substantially for both Indigenous and non-Indigenous Australians, regardless of sex. Caution should be exercised in interpreting rates in the older age categories, due to the small numbers of Indigenous cases.

Figure 7.4: Age-specific rates of fall injury cases, by Indigenous status, by age group, by sex, 2016–17



Notes

1. 'Non-Indigenous' includes cases where Indigenous status was not stated.
2. Data underpinning this figure can be found in the supplementary table spreadsheet for Chapter 7.

Socioeconomic status

The proportion of fall injury cases in each SES group ranged between 18% and 22% (Table 7.5). The highest proportion, for males and females, were for people living in areas with the lowest (most disadvantaged) SES classification.

Table 7.5: Fall injury cases, by SEIFA quintile, by sex, 2016–17

	Males		Females		Persons	
SEIFA	**Number**	**%**	**Number**	**%**	**Number**	**%**
1–Lowest	21,403	22.2	26,446	21.5	47,849	21.8
2	19,912	20.6	25,469	20.7	45,382	20.7
3	18,749	19.4	23,975	19.5	42,725	19.5
4	18,032	18.7	23,219	18.9	41,251	18.8
5–Highest	17,561	18.2	23,037	18.7	40,598	18.5
Total	**96,580**	**100.0**	**123,043**	**100.0**	**219,625**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.
3. Total includes cases for which the SES group was not able to be determined.

Cause of fall

Fall on the same level from slipping, tripping and stumbling accounted for more than one-quarter of all fall injuries (29%) in 2016–17 (Table 7.6). The next 2 most commonly reported types of specified fall were *Other fall on same level* and *Fall on and from stairs and steps*, accounting for 21% and 7% of cases, respectively.

The kinds of fall injuries where males outnumbered females by more than 3:1 were *Other fall on same level due to collision with*, *or pushing by*, *another person; Fall on and from ladder; Fall on and from scaffolding*; and *Fall from*, *out of or through building or structure*.

Table 7.6: External causes of fall injury cases, by sex, 2016–17

	Males		Females		Persons	
External cause	**Number**	**%**	**Number**	**%**	**Number**	**%**
Fall on same level from slipping, tripping and stumbling	21,924	22.7	40,769	33.1	62,694	28.5
Other fall on same level	18,523	19.2	27,285	22.2	45,808	20.9
Unspecified fall	15,300	15.8	23,724	19.3	39,024	17.8
Fall on and from stairs and steps	6,018	6.2	9,251	7.5	15,270	7.0
Other fall from one level to another	5,001	5.2	2,972	2.4	7,973	3.6
Fall involving bed	3,166	3.3	4,452	3.6	7,618	3.5
Fall involving playground equipment	3,940	4.1	3,382	2.7	7,322	3.3
Fall involving chair	2,777	2.9	3,988	3.2	6,765	3.1
Fall involving ice-skates, skis, roller-skates or skateboards	4,227	4.4	1,735	1.4	5,962	2.7
Fall on and from ladder	4,610	4.8	1,154	0.9	5,764	2.6
Other fall on same level due to collision with, or pushing by, another person	4,338	4.5	1,113	0.9	5,451	2.5
Fall from, out of or through building or structure	3,444	3.6	1,010	0.8	4,454	2.0
Fall involving wheelchair	628	0.7	662	0.5	1,290	0.6
Fall from tree	741	0.8	291	0.2	1,032	0.5

(continued)

Table 7.6 (continued): External causes of fall injury cases, by sex, 2016–17

	Males		Females		Persons	
External cause	**Number**	**%**	**Number**	**%**	**Number**	**%**
Fall involving other furniture	415	0.4	372	0.3	787	0.4
Fall while being carried or supported by other persons	358	0.4	409	0.3	767	0.3
Diving or jumping into water causing injury other than drowning or submersion	520	0.5	201	0.2	721	0.3
Fall from cliff	336	0.3	221	0.2	557	0.3
Fall on and from scaffolding	288	0.3	10	0.0	298	0.1
Fall on same level involving ice and snow	26	0.0	42	0.0	68	0.0
Total	**96,580**	**100.0**	**123,043**	**100.0**	**219,625**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

Cases lacking specific information about the type of fall (*Unspecified fall*, 18% or 39,024 cases) may have occurred for a number of reasons, including patients arriving unconscious to the hospital; information not being reported by or on behalf of the patient; or information not being recorded in the patient's hospital record. Unspecified falls were greater among people aged 65 or over (22% or 27,754 cases).

The external cause of fall injury varied by age. For young children (0–4), falls from furniture were common (Table 7.7). Older children (5–14) were frequently hospitalised as a result of a fall from playground equipment and trampolines. For people aged 65 or over, falls resulting from slips, trips and stumbles or falls on the same level accounted for about a third of all cases.

Table 7.7: Selected external causes of fall injury cases, by selected age groups, 2016–17

	Number	%
0–4 year olds		
Fall on same level from tripping	802	7.6
Fall involving other specified chair	759	7.2
Fall involving unspecified bed	664	6.3
Unspecified fall on same level	629	5.9
All other fall types	7,747	73.1
Total falls 0–4	**10,601**	**100.0**
5–14 year olds		
Fall involving playground climbing apparatus	1,955	9.8
Fall on same level from tripping	1,730	8.7
Fall involving trampoline	1,673	8.4
Unspecified fall on same level	1,566	7.8
All other fall types	13,046	65.3
Total falls 5–14	**19,970**	**100.0**

(continued)

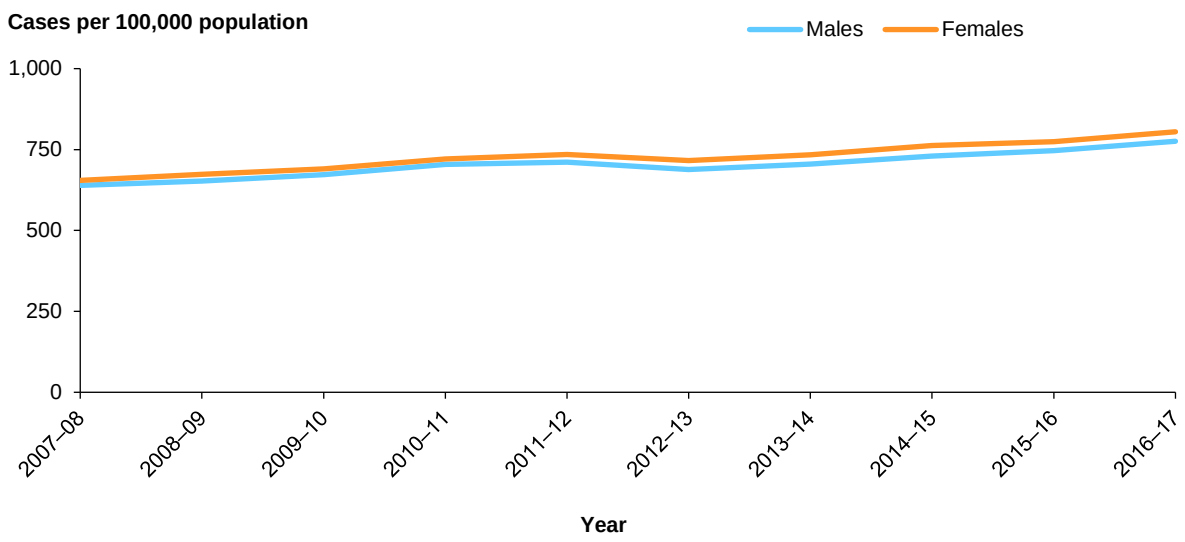
Table 7.7 (continued): Selected external causes of fall injury cases, by selected age groups, 2016–17

	Number	%
65+ year olds		
Fall on same level from tripping	25,890	20.7
Unspecified fall on same level	19,791	15.8
Fall on same level from slipping	11,107	8.9
Other specified fall on same level	10,137	8.1
All other fall types	58,096	46.5
Total falls 65+	**125,021**	**100.0**

How have fall injury cases changed over time?

The age-standardised rate for fall injury continued to increase over the period for both males and females (Figure 7.5). Rates were slightly higher for females, compared with males.

Figure 7.5: Age-standardised rates of fall injury cases, by sex, 2007–08 to 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

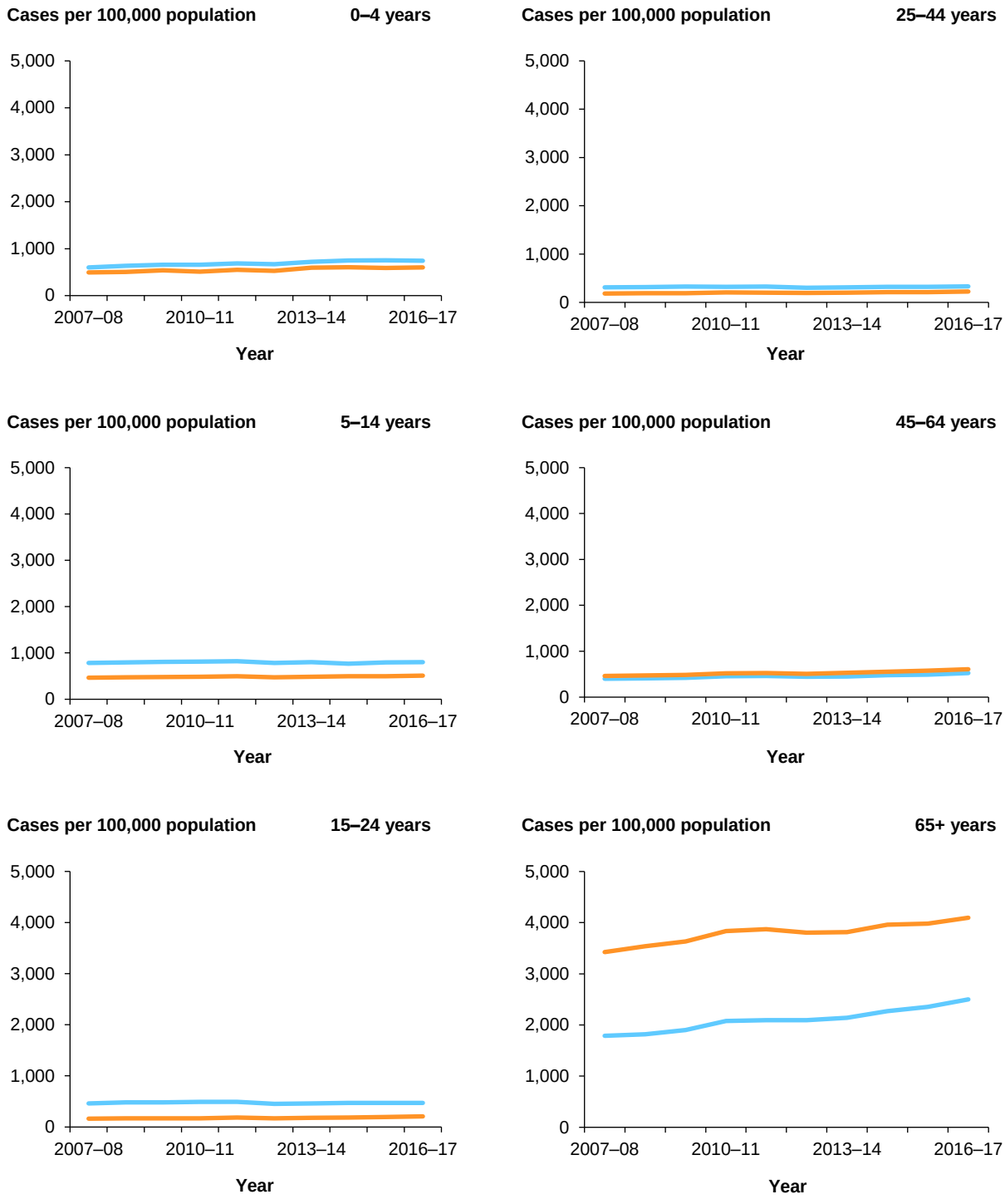
The changes in rates of fall injury over time, by broad age group as well as by sex, is shown in Figure 7.6. The figures show an additional 2 years of data since the publication of the previous *Trends in hospitalised injury, Australia 1999–00 to 2014–15* report (AIHW: Pointer 2018a).

As can be seen in Figure 7.6, age-specific rates of fall injury for females and males showed a continued increase over the period for those aged 65 or over. A small rise in age-specific rates among those aged 45–64 was noted, but a consistent rise was not seen in any other age group.

The rate of injury at the beginning of the period for females aged 45–64 was 461 per 100,000, and in 2016–17 it was 608 per 100,000. For males aged 45–64, the corresponding rates were 401 and 525 cases per 100,000 population.

The rate of injury at the beginning of the period for females aged 65 or over was 3,425 per 100,000, and in 2016–17 it was 4,097 per 100,000. For males aged 65 or over, the corresponding rates were 1,788 and 2,501 cases per 100,000 population.

Figure 7.6: Age-specific rates of fall injury cases, by age, by sex, 2007–08 to 2016–17



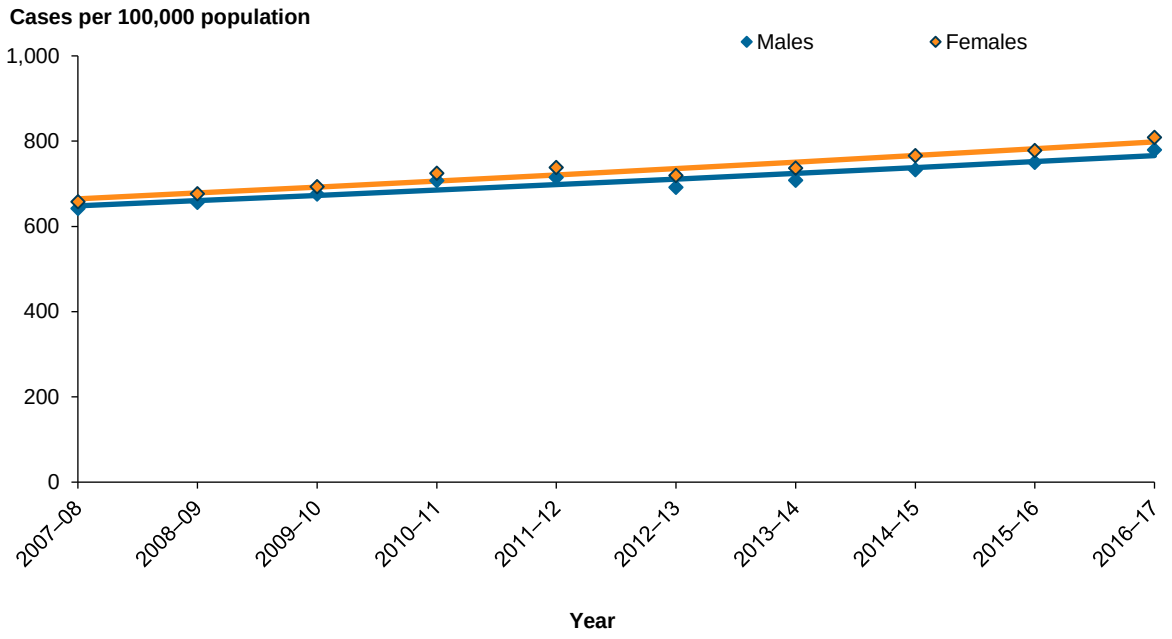
Notes

1. Rates for males are indicated by the blue line and rates for females by the orange line in all charts.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Modelled age-standardised annual rates of fall injury increased from 669 per 100,000 population in 2007–08 to 791 per 100,000 in 2016–17. The increase averaged 1.9% per year and was statistically significant (95% CI: 1.8%, 1.9%).

An analysis by sex showed increases in the rate of fall injury over the period for both males and females (Figure 7.7). For males, the rate increased from 648 per 100,000 population in 2007–08 to 766 in 2016–17. The increase in the modelled rate for males averaged 1.9% per year and was statistically significant (95% CI: 1.8%, 2.0%). For females, the rate increased from 665 per 100,000 population in 2007–08 to 798 in 2016–17. The rise in the modelled rate for females averaged 2.1% per year and was statistically significant (95% CI: 2.0%, 2.1%).

Figure 7.7: Modelled age-standardised rates of fall injury cases, by sex, 2007–08 to 2016–17



Notes

1. The solid line represents the modelled rate from 2007–08 to 2016–17. The filled symbols represent the observed age-standardised rate value for each year.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

8 Thermal causes of injury

This chapter presents information on patients who were admitted to hospital as a result of an unintentional thermal cause of injury. Information in this chapter includes:

- age group and sex of the patient
- cause of the injury
- trends over time.

More detailed information on thermal causes of injury can be found in publications available on the AIHW website; for example, *Hospitalised burn injuries, Australia, 2013–14* (AIHW: Pointer & Tovell 2016).

Key findings

About 6,000 cases of hospitalised injury were due to thermal causes of injury in 2016–17.

Sex of patient

In 2016–17, males (3,795) made up more than half of all cases due to thermal causes of injury.

Age of patient

In 2016–17, the largest proportion (32%) of all thermal causes of injury cases occurred in very young children (0–4).

Indigenous status

Rates of injury due to thermal causes of injury among Indigenous Australians (64 cases per 100,000) were more than twice those of non-Indigenous Australians (23 per 100,000).

Cause of injury

Contact with hot drinks, food, fats and cooking oils was the leading cause of thermal hospitalised injury cases (20%), at each age group and for males and females.

Trends in injury

Thermal causes of injury hospitalisations declined over the period 2007–08 to 2016–17 decreasing on average by 1.5% per year. The decrease among male cases was 1.7% per year and 0.9% per year for female cases.

What methods were used?

This chapter includes injury cases meeting the criteria set out in Section 1.3, providing that the first-reported external-cause code is in the ICD-10-AM range X00–X19 in 'Chapter XX External causes of morbidity and mortality'. This includes cases of *Exposure to smoke, fire and flames* (ICD 10 AM X00–X09) or *Contact with heat and hot substance*s (X10–X19)—collectively these are referred to as 'thermal causes'. Burns are the injury that usually (although not always) results from thermal causes.

Relevant terms and information applying to the data used in this chapter are summarised in boxes 1.1, 1.2 and 8.1. Further information on methods is provided in 'Appendix A: Data issues'.

Box 8.1: External causes of exposure to smoke, fire, heat and hot substances injury

This chapter focuses on the **Other external causes of unintentional injury (W00–X59)** section of ICD-10-AM 'Chapter XX External causes of morbidity and mortality' and is restricted to *Exposure to smoke, fire and flames* (X00–X09) and *Contact with heat and hot substances* (X10–X19), as follows:

Exposure to smoke, fire and flames (X00–X09)

- Exposure to uncontrolled fire in building or structure (X00)
- Exposure to uncontrolled fire, not in building or structure (X01)
- Exposure to controlled fire in building or structure (X02)
- Exposure to controlled fire, not in building or structure (X03)
- Exposure to ignition of highly flammable material (X04)
- Exposure to ignition or melting of nightwear (X05)
- Exposure to ignition or melting of other clothing and apparel (X06)
- Exposure to other specified smoke, fire and flames (X07)
- Exposure to unspecified smoke, fire and flames (X09).

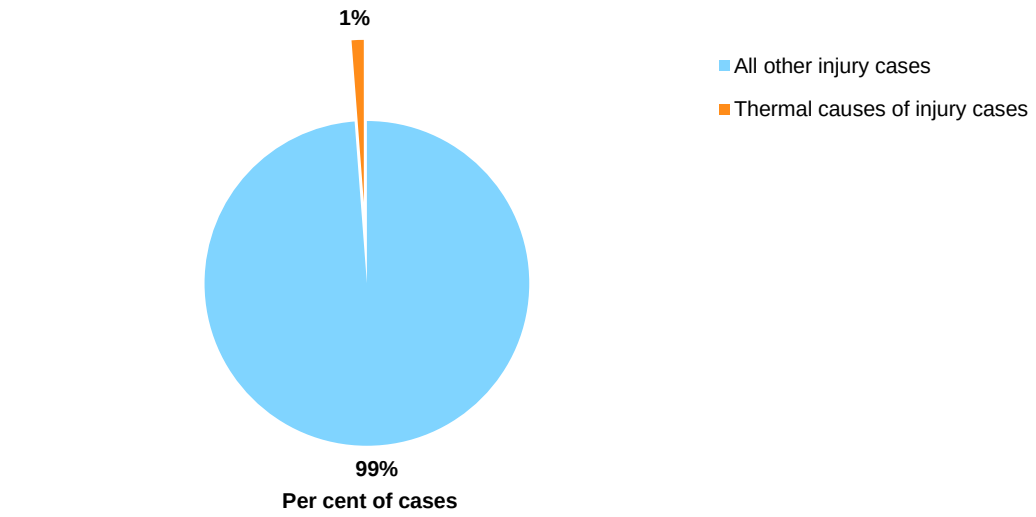
Contact with heat and hot substances (X10–X19)

- Contact with hot drinks, food, fats and cooking oils (X10)
- Contact with hot tap-water (X11)
- Contact with other hot fluids (X12)
- Contact with steam and hot vapours (X13)
- Contact with hot air and gases (X14)
- Contact with hot household appliances (X15)
- Contact with hot heating appliances, radiators and pipes (X16)
- Contact with hot engines, machinery and tools (X17)
- Contact with other hot metals (X18)
- Contact with other and unspecified heat and hot substances (X19).

How many thermal causes of injury cases were there in 2016–17?

There were an estimated 6,052 thermal causes of injury cases during 2016–17. Injury cases due to thermal causes made up 1% of all hospitalised injury cases (Figure 8.1).

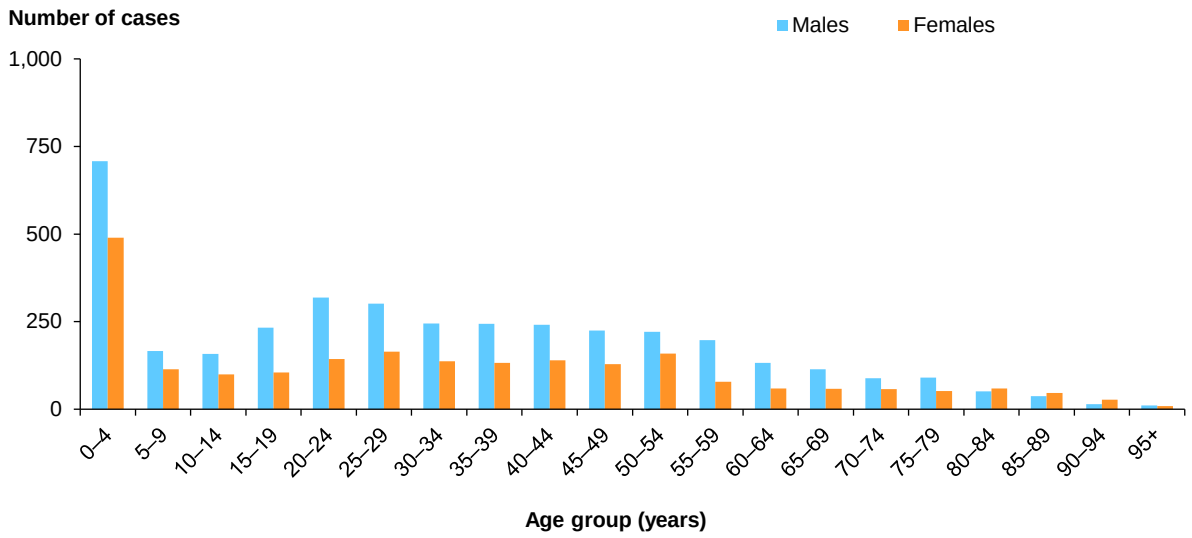
Figure 8.1: Proportion of injury cases due to thermal causes, 2016–17



Age group and sex, 2016–17

Of the 6,052 thermal causes of injury cases in Australia in 2016–17, more males (3,795) than females (2,257) were hospitalised. A large proportion of all thermal causes of injury cases occurred in children aged 0–4: 708 and 490 cases for boys and girls, respectively (Figure 8.2). Overall, an analysis of cases by age and sex shows a greater number of males in each age category, up to the 80–84 age group.

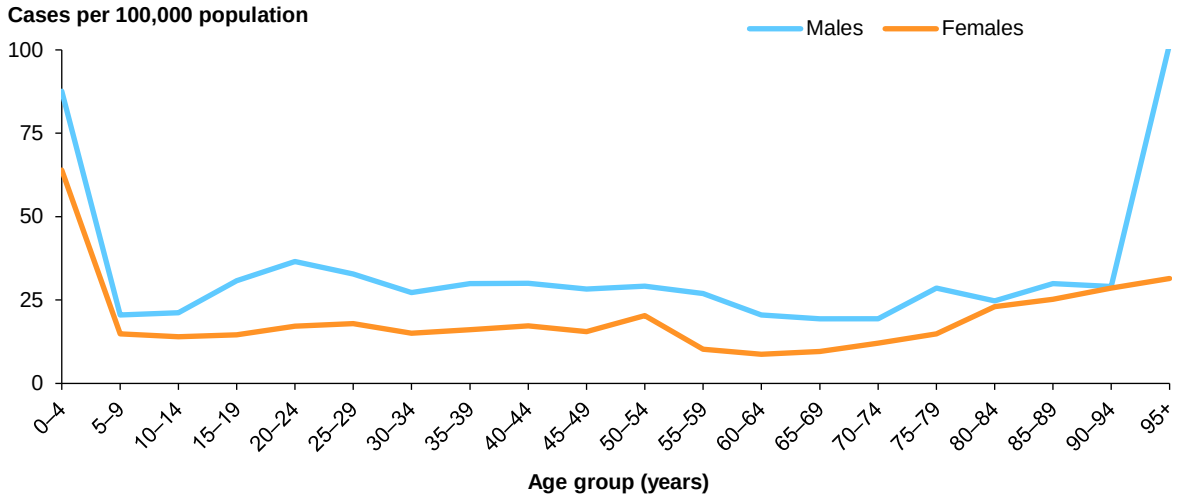
Figure 8.2: Number of thermal causes of injury cases, by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Rates of injury due to thermal causes were highest for young children aged 0–4. The incidence rate for boys aged 0–4 was 88 per 100,000 population, compared with 64 per 100,000 for girls of the same age (Figure 8.3). Caution should be exercised in interpreting rates in the older age categories, due to the small numbers of cases.

Figure 8.3: Age-specific rates of thermal causes of injury cases, by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Remoteness of usual residence

The age-standardised rates of thermal causes of injury in 2016–17 increased with increases in the remoteness of usual residence (Table 8.1). The highest rates were in *Remote* and *Very remote* areas (61 and 94 per 100,000 population, respectively).

Table 8.1: Thermal causes of injury cases, by remoteness of usual residence, Australia, 2016–17

	Remoteness of usual residence				
Indicators	**Major cities**	**Inner regional**	**Outer regional**	**Remote**	**Very remote**
Thermal causes of injury cases	3,452	1,245	870	184	196
Age-standardised rate (cases per 100,000 population)	20	30	45	61	94

Aboriginal and Torres Strait Islander people

There were an estimated 538 cases of Indigenous Australians hospitalised due to thermal causes of injury in 2016–17 (Table 8.2). Rates of thermal causes of injury were more than twice as high for Indigenous Australians, compared with non-Indigenous Australians, both for Indigenous males and Indigenous females.

Table 8.2: Key indicators for thermal causes of injury cases, by Indigenous status, by sex, 2016–17

	Indigenous			Non-Indigenous		
Indicators	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Thermal causes of injury cases	322	216	538	3,435	2,014	5,449
Age-standardised rate (cases per 100,000 population)	75	53	64	29	17	23

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Non-Indigenous Australians excludes cases where Indigenous status is not reported.

Age-specific rates of thermal causes of injury cases are only presented for Indigenous children in the 0–4 age group, due to the low case numbers in the older age groups. As can be seen in Table 8.3, relatively few Indigenous children aged 0–4 were hospitalised as a result of thermal causes of injury, compared with their *non-Indigenous* counterparts. However, one-third (34%) of all thermal causes of injury cases occurred among Indigenous children aged 0–4, compared with 19% of all cases for non-Indigenous children. The age-specific rates of thermal causes of injury cases among Indigenous children were much higher than for non-Indigenous children, for both boys and girls.

Table 8.3: Key indicators for thermal causes of injury cases in 0–4 year olds, by Indigenous status, by sex, 2016–17

	Indigenous			Non-Indigenous		
Indicators	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Thermal causes of injury cases	104	77	181	599	411	1,010
Age-specific rate (cases per 100,000 population)	226	177	202	79	57	68

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Non-Indigenous Australians excludes cases where Indigenous status is not reported.

Socioeconomic status

The proportion of thermal causes of injury cases in each SES group ranged between 12% and 28% (Table 8.4). The highest proportions, for both males and females, were for people living in areas with the lowest (most disadvantaged) SES classification. For males, the proportion of thermal causes of injury cases occurring in the lowest SES group was more than twice that of the highest SES group.

Table 8.4: Thermal causes of injury cases, by SEIFA quintile, by sex, 2016–17

	Males		Females		Persons	
SEIFA	**Number**	**%**	**Number**	**%**	**Number**	**%**
1–Lowest	1,069	28.2	599	26.5	1,668	27.6
2	862	22.7	521	23.1	1,383	22.9
3	758	20.0	383	17.0	1,141	18.9
4	599	15.8	385	17.1	984	16.3
5–Highest	447	11.8	322	14.3	769	12.7
Total	**3,795**	**100.0**	**2,257**	**100.0**	**6,052**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.
3. Total includes cases for which the SES group was not able to be determined.

Cause of thermal injury

Contact with hot drinks, food, fats and cooking oils was the leading cause of thermal hospitalised injury cases (20%), followed by *Contact with other hot fluid* (for example, water heated on a stove) (14%); and by *Exposure to ignition of highly flammable material* (for example, gasoline, kerosene, petrol) and *Exposure to controlled fire, not in building or structure* (for example, camp fire) (8% for both causes) (Table 8.5).

There were some notable differences between the sexes: 27% of female cases of thermal injury experienced an injury from *Contact with hot drinks, food, fats and cooking oils,* compared with 15% of males. Similarly, females were more likely to experience a scald from *Contact with other hot fluids,* compared with males (18% versus 11%). Males had higher proportions of burn injuries from *Exposure to ignition of highly flammable material* (for example, gasoline, kerosene, petrol) and *Exposure to controlled fire, not in building or structure* (for example, a camp-fire) (11% versus 3%, and 10% versus 5%, respectively).

Table 8.5: Types of thermal causes of injury cases, by sex, 2016–17

	Males		Females		Persons	
External cause	**Count**	**%**	**Count**	**%**	**Count**	**%**
Exposure to uncontrolled fire in building or structure	86	2.3	58	2.6	144	2.4
Exposure to uncontrolled fire, not in building or structure	54	1.4	11	0.5	65	1.1
Exposure to controlled fire in building or structure	138	3.6	71	3.1	209	3.5
Exposure to controlled fire, not in building or structure	377	9.9	110	4.9	487	8.0
Exposure to ignition of highly flammable material	416	11.0	68	3.0	484	8.0
Exposure to ignition or melting of nightwear	0	0.0	54	2.4	54	0.9
Exposure to ignition or melting of other clothing and apparel	44	1.2	17	0.8	61	1.0
Exposure to other specified smoke, fire and flames	328	8.6	111	4.9	439	7.3
Exposure to unspecified smoke, fire and flames	285	7.5	142	6.3	427	7.1
Contact with hot drinks, food, fats and cooking oils	583	15.4	604	26.8	1,187	19.6
Contact with hot tap-water	208	5.5	163	7.2	371	6.1
Contact with other hot fluids	407	10.7	407	18.0	814	13.5
Contact with steam and hot vapours	61	1.6	29	1.3	90	1.5
Contact with hot air and gases	15	0.4	5	0.2	20	0.3
Contact with hot household appliances	170	4.5	131	5.8	301	5.0
Contact with hot heating appliances, radiators and pipes	193	5.1	89	3.9	282	4.7
Contact with hot engines, machinery and tools	142	3.7	45	2.0	187	3.1
Contact with other hot metals	61	1.6	10	0.4	71	1.2
Contact with other and unspecified heat and hot substances	227	6.0	132	5.8	359	5.9
Total	**3,795**	**100.0**	**2,257**	**100.0**	**6,052**	**100.0**

Notes

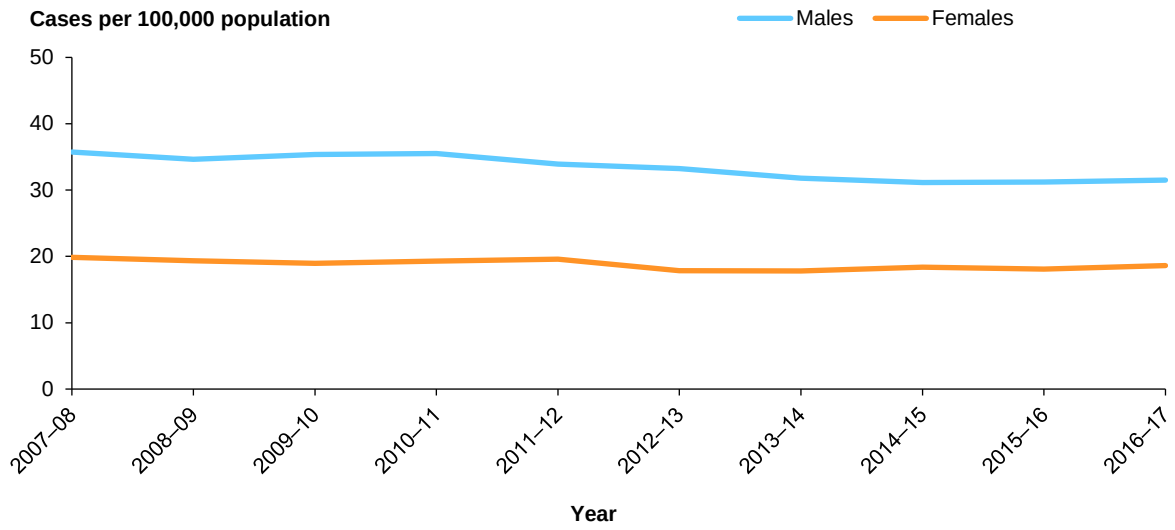
1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

The leading cause of thermal injury did not vary by age group: *Contact with hot drinks, food, fats and cooking oils* was the primary cause of thermal injury cases in every age group. The proportion of thermal injuries due to *Contact with hot drinks, food, fats and cooking oils* was highest in the youngest age group (33%) and averaged around 15% in other age groups (data not shown).

How have thermal causes of injury cases changed over time?

The age-standardised rate for thermal causes of injury was consistently higher for males than for females (Figure 8.4). There was little change in rate over the period for males or females.

Figure 8.4: Age-standardised rates of thermal causes of injury cases, by sex, 2007–08 to 2016–17

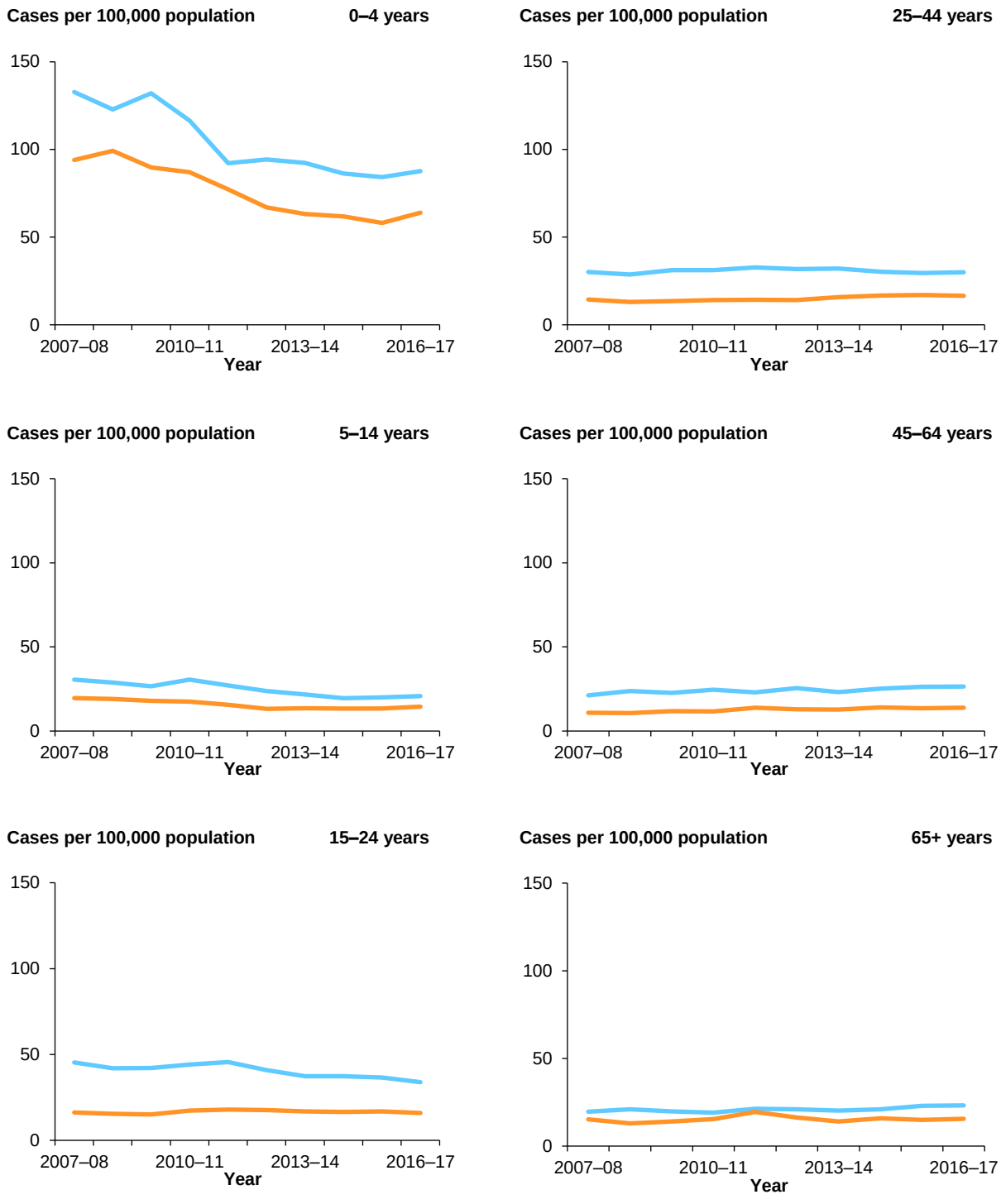


Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

The changes in rates of thermal injury over time, by broad age group as well as by sex, is shown in Figure 8.5. The figures show an additional 2 years of data since the publication of the previous *Trends in hospitalised injury, Australia 1999–00 to 2014–15* report (AIHW: Pointer 2018a).

As can be seen in Figure 8.5, rates for thermal causes of injury were higher in each age group among males than among females. The greatest difference between males and females occurred in the 0–4 age group, where rates were much higher among males. Age-specific rates were highest over time in young children aged 0–4, and were marked by a continuing decline from 2007–08. A decline in rates of thermal causes of injury was also seen in 5–14 year olds. Rates did not change much for most of the other age groups. Caution should be exercised in interpreting rates in people aged 65 or over, due to small numbers of cases.

Figure 8.5: Age-specific rates of thermal causes of injury cases, by age, by sex, 2007–08 to 2016–17



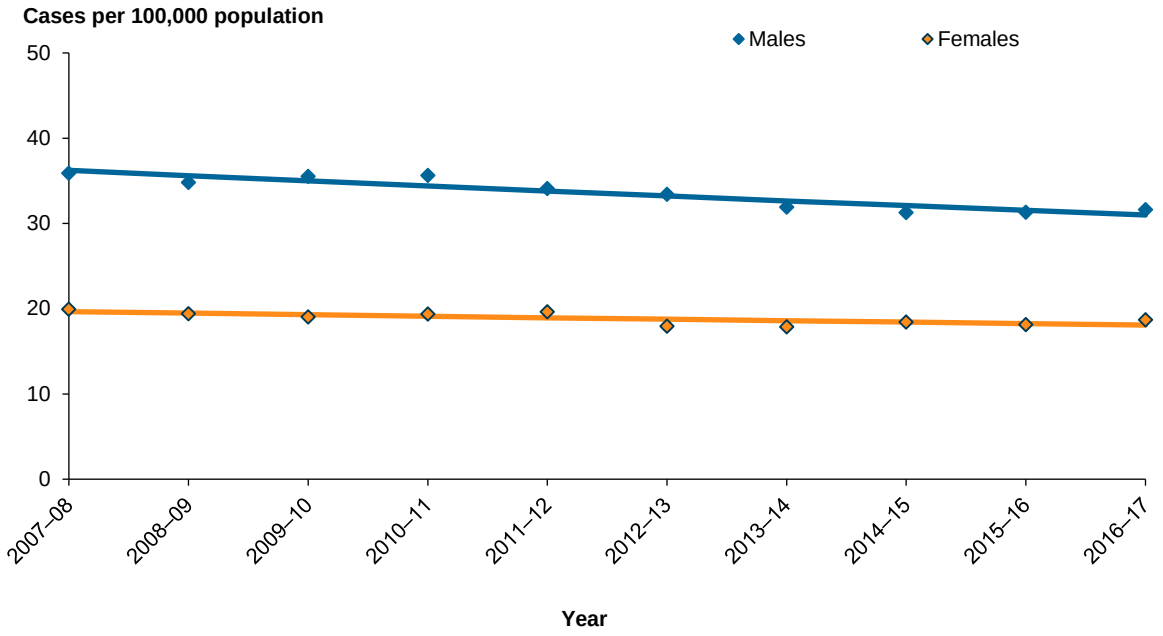
Notes

1. Rates for males are indicated by the blue line and rates for females by the orange line in all charts.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Modelled age-standardised annual rates of thermal causes of injury decreased from 28.0 per 100,000 population in 2007–08 to 24.5 per 100,000 in 2016–17. The decrease averaged 1.5% per year and was statistically significant (95% CI: –1.7%, –1.2%).

An analysis by sex showed decreases in the rate of thermal causes of injury over the period for both males and females (Figure 8.6). For males, the rate decreased from 36.2 per 100,000 population in 2007–08 to 31.0 in 2016–17. The decrease in the modelled rate for males averaged 1.7% per year and was statistically significant (95% CI: –2.1%, –1.4%). For females, the rate decreased from 19.7 per 100,000 population in 2007–08 to 18.1 in 2016–17. The decrease in the modelled rate for females averaged 0.9% per year and was statistically significant (95% CI: –1.4%, –0.5%).

Figure 8.6: Modelled age-standardised rates of thermal causes of injury cases, by sex, 2007–08 to 2016–17



Notes

1. The solid line represents the modelled rate from 2007–08 to 2016–17. The filled symbols represent the observed age-standardised rate value for each year.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

9 Injury due to *Exposure to inanimate mechanical forces*

This chapter presents information on patients who were admitted to hospital as a result of an unintentional injury due to *Exposure to inanimate mechanical forces*. Information in this chapter includes:

- age group and sex of the patient
- cause of the injury
- trends over time.

The specific causes of inanimate mechanical force injury are listed in Box 9.1 and include events such as being unintentionally struck, crushed and contacted by objects.

Key findings

Just over 70,000 cases of hospitalised injury were due to inanimate mechanical forces in 2016–17.

Sex of patient

In 2016–17, almost three-quarters (73% or 53,665 cases) of cases of injury due to *Exposure to inanimate mechanical forces* were male.

Age of patient

In 2016–17, the largest number of cases of injury due to *Exposure to inanimate mechanical forces* occurred among 20–24 year olds (6,969).

Indigenous status

Injury cases due to inanimate mechanical forces among Indigenous Australians made up 13% of all hospitalised injury among Indigenous Australians, and rates of injury were twice as high among Indigenous females (331 cases per 100,000), compared with non-Indigenous females (152 cases per 100,000).

Cause of injury

Contact with knife, sword or dagger and *Striking against or struck by other objects* accounted for 16% of injuries each due to inanimate mechanical forces in 2016–17 followed by *Foreign body entering into or through eye or natural orifice* (11%).

Trends in injury

Injury hospitalisations due to inanimate mechanical forces rose over the period 2007–08 to 2016–17, increasing on average by 1% per year. The increase among male cases was 0.6% per year and 2.3% per year for female cases.

What methods were used?

This chapter includes injury cases meeting the criteria set out in Section 1.3, providing that the first-reported external-cause code is in the ICD-10-AM range W20–W49 (*Exposure to inanimate mechanical forces*) in ‘Chapter XX External causes of morbidity and mortality’.

Relevant terms and information applying to the data used in this chapter are summarised in boxes 1.1, 1.2 and 9.1. Further information on methods is provided in ‘Appendix A: Data issues’.

Box 9.1: External causes of *Exposure to inanimate mechanical forces*

This chapter focuses on the injury due to **Exposure to inanimate mechanical forces (W20–X49)** section of ICD-10-AM 'Chapter XX External causes of morbidity and mortality', which contains the following groups:

- Struck by thrown, projected or falling object (W20)
- Striking against or struck by sports equipment (W21)
- Striking against or struck by other objects (W22)
- Caught, crushed, jammed or pinched in or between objects (W23)
- Contact with lifting and transmission devices, not elsewhere classified (W24)
- Contact with sharp glass (W25)
- Contact with other sharp object(s) (W26)
- Contact with nonpowered hand tool (W27)
- Contact with powered lawnmower (W28)
- Contact with other powered hand tools and household machinery (W29)
- Contact with agricultural machinery (W30)
- Contact with other and unspecified machinery (W31)
- Handgun discharge (W32)
- Discharge from other and unspecified firearms (W34)
- Explosion and rupture of boiler (W35)
- Explosion and rupture of gas cylinder (W36)
- Explosion and rupture of pressurised tyre, pipe or hose (W37)
- Explosion and rupture of other specified pressurised devices (W38)
- Discharge of firework (W39)
- Explosion of other materials (W40)
- Exposure to high-pressure jet (W41)
- Exposure to noise (W42)
- Exposure to vibration (W43)
- Foreign body entering into or through eye or natural orifice (W44)
- Foreign body or object entering through skin (W45)
- Contact with hypodermic needle (W46)
- Exposure to other and unspecified inanimate mechanical forces (W49).

(continued)

Box 9.1 (continued): External causes of exposure to inanimate mechanical forces

A change in coding of 'W26 Contact with knife, sword or dagger' occurred between the eighth and ninth editions of ICD-10-AM. 'W26 Contact with knife, sword or dagger' was renamed 'W26 Contact with other sharp object(s)' and 'Contact with knife, sword or dagger' became a subcategory. The subcategories in W26 now include:

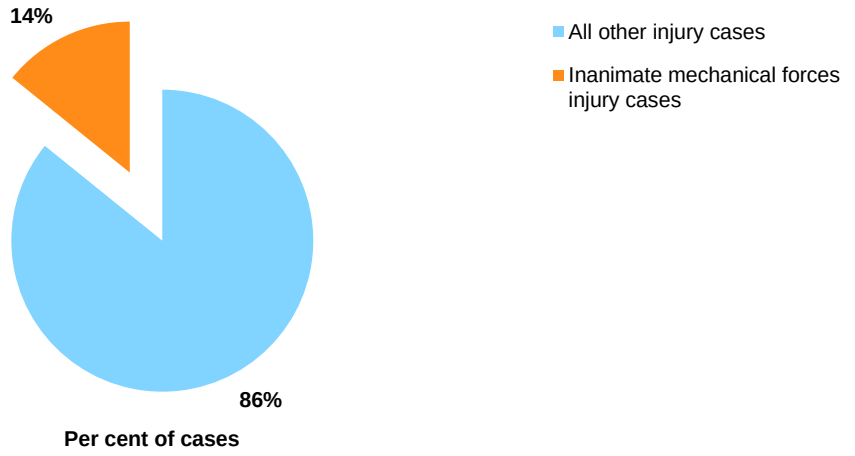
- W26.0 Contact with knife, sword or dagger
- W26.8 Contact with other sharp object(s), not elsewhere classified (including Edge of stiff paper and Tin can lid)
- W26.9 Contact with unspecified sharp object(s).

In addition, the specific exclusion of 'Knife, sword or dagger' in 'W45 Foreign body or object entering through skin' was removed.

How many cases of injury due to inanimate mechanical forces were there in 2016–17?

There were an estimated 73,284 cases of injury due to *Exposure to inanimate mechanical forces* during 2016–17. Cases due to inanimate mechanical forces made up 14% of all hospitalised injury cases, the second largest contributor to hospitalised injury in 2016–17 (Figure 9.1).

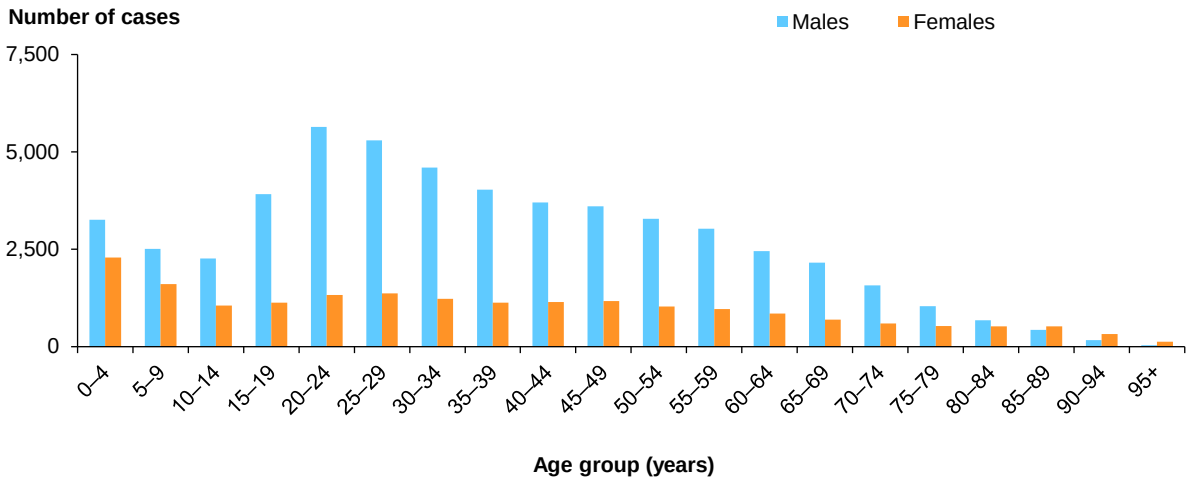
Figure 9.1: Proportion of injury cases due to *Exposure to inanimate mechanical forces*, 2016–17



Age group and sex, 2016–17

Of the 73,284 cases of injury due to *Exposure to inanimate mechanical forces* in Australia in 2016–17, almost three-quarters were male (53,665). Gender differences, by age, were apparent—with higher numbers of cases occurring for females at very young ages, while cases due to *Exposure to inanimate mechanical forces* among males were higher in successive age groups from early adulthood onwards (Figure 9.2). Among males, the largest number of cases due to *Exposure to inanimate mechanical forces* occurred in the 20–24 age group (5,638).

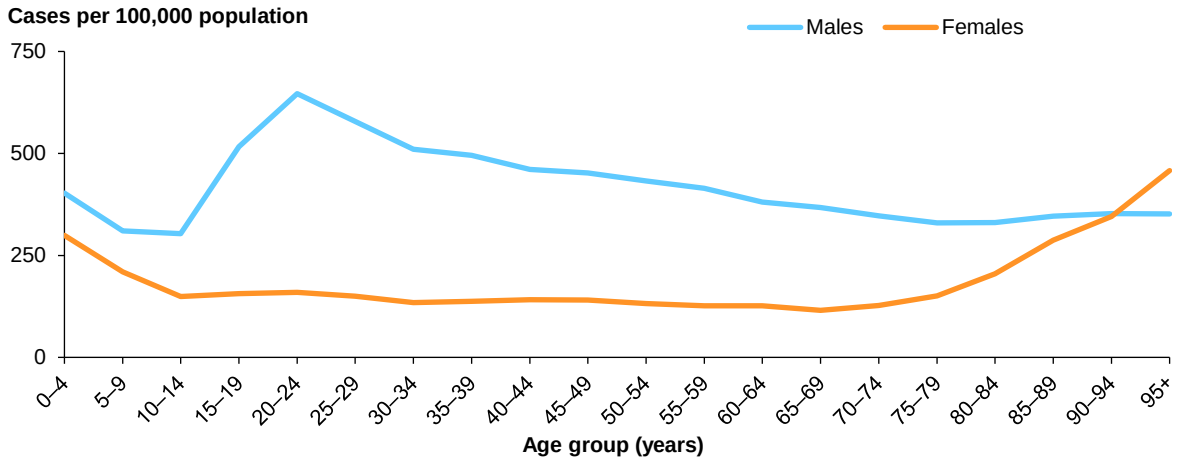
Figure 9.2: Number of injury cases due to *Exposure to inanimate mechanical forces*, by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Age-specific rates of injury due to *Exposure to inanimate mechanical forces* were higher for males than for females, except in the 2 oldest age groups (Figure 9.3). For young children, rates were lower in successive age groups, from an initial high of 403 and 299 cases per 100,000 population for those aged 0–4, to 303 and 149 for those aged 10–14, for boys and girls, respectively. For males, rates of injury due to *Exposure to inanimate mechanical forces* were much higher than those for females from the 15–19 age group onwards, and remained so until the 70–74 age group. By contrast, the rates of injury among females remained low, rising from about the 75–79 age group.

Figure 9.3: Age-specific rates of injury cases due to *Exposure to inanimate mechanical forces*, by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Nature of injury

Injury due to *Exposure to inanimate mechanical forces* resulted in damage to various body regions, with the most common being the wrist and hand (49%) (Table 9.1). Males had a larger proportion of injuries to the wrist and hand (53%), while females also had a high proportion of wrist and hand injuries (39%). The second most common type of injury among females was injuries to *Other, multiple and incompletely specified body regions* (17%), but for males the proportion in this category was much lower (9%).

Table 9.1: Cases due to *Exposure to inanimate mechanical forces*, by body region injured, by sex, 2016–17

	Males		Females		Persons	
Type of injury	**Number**	**%**	**Number**	**%**	**Number**	**%**
Head and neck	5,764	10.7	2,876	14.7	8,640	11.8
Trunk (thorax, abdomen, lower back, lumbar spine and pelvis)	1,626	3.0	701	3.6	2,327	3.2
Shoulder and upper limb (excluding wrist and hand)	3,841	7.2	1,025	5.2	4,866	6.6
Wrist and hand	28,528	53.2	7,665	39.1	36,193	49.4
Hip and lower limb (excluding ankle and foot)	4,054	7.6	1,663	8.5	5,717	7.8
Ankle and foot	4,495	8.4	2,267	11.6	6,762	9.2
Other, multiple and incompletely specified body regions	5,035	9.4	3,305	16.8	8,340	11.4
Injuries not described in terms of body region	322	0.6	117	0.6	439	0.6
Total	**53,665**	**100.0**	**19,619**	**100.0**	**73,284**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

Open wounds were the most common type of injury due to *Exposure to inanimate mechanical forces*, with 23,085 cases in 2016–17 (Table 9.2). Males and females had a similar pattern of type of injury, with open wounds, followed by fractures, common for both.

Table 9.2: Cases due to *Exposure to inanimate mechanical forces*, by type of injury, by sex, Australia, 2016–17

	Males		Females		Persons	
Type of injury	**Number**	**%**	**Number**	**%**	**Number**	**%**
Fracture	11,360	21.2	3,348	17.1	14,708	20.1
Dislocation	438	0.8	137	0.7	575	0.8
Soft-tissue injury	7,616	14.2	1,864	9.5	9,480	12.9
Open wound	16,993	31.7	6,092	31.1	23,085	31.5
Intracranial injury	844	1.6	387	2.0	1,231	1.7
Internal organ or vessel of trunk	297	0.6	103	0.5	400	0.5
Burn	273	0.5	50	0.3	323	0.4
Superficial injury	2,011	3.7	1,282	6.5	3,293	4.5
Poisoning or toxic effect	13	0.0	2	0.0	15	0.0
Other and unspecified injuries	13,820	25.7	6,354	32.4	20,174	27.5
Total	**53,665**	**100.0**	**19,619**	**100.0**	**73,284**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

Remoteness of usual residence

The age-standardised rate of injury due to *Exposure to inanimate mechanical forces* in 2016–17 varied according to remoteness of usual residence (Table 9.3). The highest rates were in *Remote* and *Very remote* areas (447 and 510 per 100,000 population, respectively).

Table 9.3: Cases due to *Exposure to inanimate mechanical forces*, by remoteness of usual residence, 2016–17

	Remoteness of usual residence				
Indicators	**Major cities**	**Inner regional**	**Outer regional**	**Remote**	**Very remote**
Cases due to inanimate mechanical forces	48,196	14,670	7,199	1,314	1,011
Age-standardised rate (cases per 100,000 population)	275	345	357	447	510

Aboriginal and Torres Strait Islander people

There were an estimated 3,790 cases of Indigenous Australians hospitalised as a result of injury due to *Exposure to inanimate mechanical forces* in 2016–17 (Table 9.4). *Injury due to inanimate mechanical forces* among Indigenous Australians comprised the same proportion of all injury cases as for non-Indigenous people (14%).

The age-standardised rate of injury due to *Exposure to inanimate mechanical forces* among Indigenous Australians was higher than that for non-Indigenous Australians, for males as well as for females. For Indigenous females, the rate was almost twice that of their non-Indigenous counterparts.

Table 9.4: Cases due to *Exposure to inanimate mechanical forces*, by Indigenous status, by sex, 2016–17

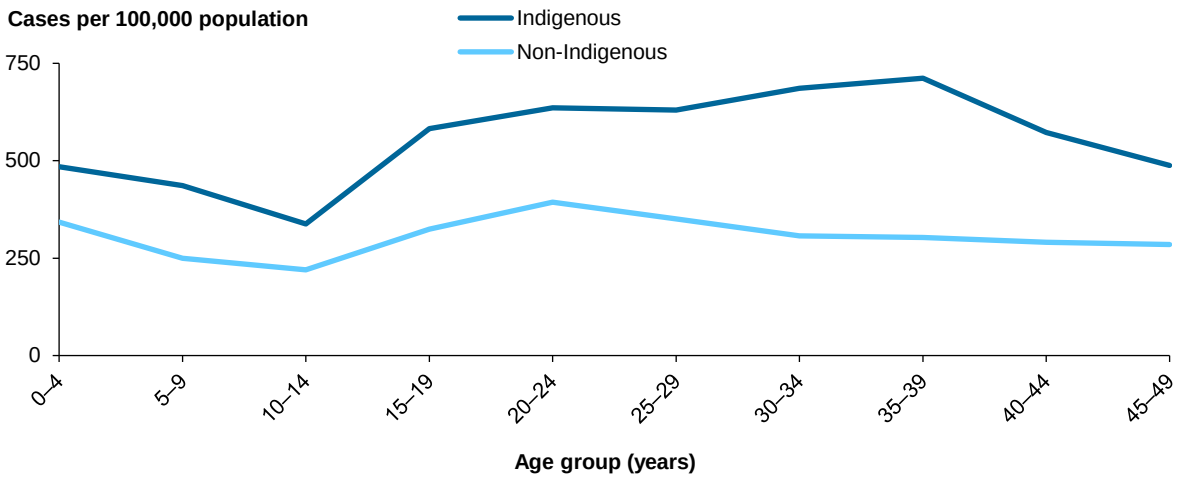
	Indigenous			Non-Indigenous		
Indicators	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Cases due to inanimate mechanical forces	2,499	1,291	3,790	50,630	18,164	68,794
Age-standardised rate (cases per 100,000 population)	631	331	481	432	152	292

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Non-Indigenous Australians excludes cases where Indigenous status is not reported.

Due to the small case numbers of injury due to *Exposure to inanimate mechanical forces* among Indigenous Australians over the age of 50, analyses were restricted by age and limited to all Indigenous Australians. Age-specific rates of injury due to *Exposure to inanimate mechanical forces* were higher at all age groups for Indigenous Australians, compared with non-Indigenous Australians (Figure 9.4). The greatest difference in rates between Indigenous and non-Indigenous Australians occurred at 35–39 years, at 712 and 303 cases per 100,000 people, respectively.

Figure 9.4: Age-specific rates of injury cases due to *Exposure to inanimate mechanical forces*, by Indigenous status, by age group, 2016–17



Notes

1. 'Non-Indigenous' includes cases where Indigenous status was not stated.
2. Data underpinning this figure can be found in the supplementary table spreadsheet for Chapter 9.

Socioeconomic status

The proportion of cases of injury due to *Exposure to inanimate mechanical forces* in each SES group ranged between 16% and 24% (Table 9.5). The highest proportions, for both males and females, were for people living in areas with the lowest (most disadvantaged) SES classification.

Table 9.5: Cases due to *Exposure to inanimate mechanical forces*, by SEIFA quintile, by sex, 2016–17

	Males		Females		Persons	
SEIFA	**Number**	**%**	**Number**	**%**	**Number**	**%**
1–Lowest	12,617	23.5	4,484	22.9	17,101	23.3
2	11,182	20.8	3,847	19.6	15,029	20.5
3	10,914	20.3	3,748	19.1	14,662	20.0
4	9,810	18.3	3,726	19.0	13,536	18.5
5–Highest	8,445	15.7	3,595	18.3	12,040	16.4
Total	**53,665**	**100.0**	**19,619**	**100.0**	**73,284**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.
3. Total includes cases for which the SES group was not able to be determined.

Cause of injury due to *Exposure to inanimate mechanical forces*

Contact with other sharp object(s) and *Striking against or struck by other objects* accounted for 16% of *Injuries due to inanimate mechanical forces* in 2016–17 (Table 9.6). Within the category *Contact with other sharp object(s),* 4,675 cases were due to *Contact with knife, sword or dagger*. The next 2 most commonly reported causes were *Foreign body or object*

entering through skin and *Caught, crushed, jammed or pinched in or between objects*, accounting for 11% and 10% of cases, respectively.

Notable differences between males and females with respect to the causes of injury due to inanimate mechanical forces include *Foreign body entering into or through eye or natural orifice* (males 9%, females 17%) and *Contact with other powered hand tools and household machinery* (males 11%, females 3%).

Table 9.6: External causes of injury cases due to *Exposure to inanimate mechanical forces*, by sex, 2016–17

	Males		Females		Persons	
External cause	**Count**	**%**	**Count**	**%**	**Count**	**%**
Contact with other sharp object(s)	8,291	15.4	3,180	16.2	11,471	15.7
Striking against or struck by other objects	7,666	14.3	3,717	18.9	11,383	15.5
Foreign body entering into or through eye or natural orifice	4,965	9.3	3,361	17.1	8,326	11.4
Caught, crushed, jammed or pinched in or between objects	4,752	8.9	2,286	11.7	7,038	9.6
Contact with other powered hand tools and household machinery	6,437	12.0	534	2.7	6,971	9.5
Contact with sharp glass	4,276	8.0	1,954	10.0	6,230	8.5
Struck by thrown, projected or falling object	4,251	7.9	1,474	7.5	5,725	7.8
Contact with other and unspecified machinery	3,772	7.0	360	1.8	4,132	5.6
Striking against or struck by sports equipment	2,892	5.4	957	4.9	3,849	5.3
Foreign body or object entering through skin	2,381	4.4	950	4.8	3,331	4.5
Contact with nonpowered hand tool	1,924	3.6	444	2.3	2,368	3.2
Contact with powered lawnmower	577	1.1	162	0.8	739	1.0
Contact with lifting and transmission devices, not elsewhere classified	555	1.0	67	0.3	622	0.8
Contact with agricultural machinery	264	0.5	31	0.2	295	0.4
Contact with hypodermic needle	145	0.3	67	0.3	212	0.3
Explosion of other materials	166	0.3	32	0.2	198	0.3
Discharge from other and unspecified firearms	118	0.2	5	0.0	123	0.2
Explosion and rupture of gas cylinder	85	0.2	16	0.1	101	0.1
Discharge of firework	44	0.1	5	0.0	49	0.1
Explosion and rupture of pressurised tyre, pipe or hose	38	0.1	0	0.0	38	0.1
Explosion and rupture of other specified pressurised devices	28	0.1	6	0.0	34	0.0
Exposure to high-pressure jet	19	0.0	2	0.0	21	0.0
Exposure to other and unspecified inanimate mechanical forces	11	0.0	8	0.0	19	0.0
Handgun discharge	5	0.0	1	0.0	6	0.0
Explosion and rupture of boiler	3	0.0	0	0.0	3	0.0
Total	**53,665**	**100.0**	**19,619**	**100.0**	**73,284**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.
3. Direct comparison of all categories in this table to the equivalent table in Trends in hospitalised injury (AIHW: Pointer 2018a) is not possible, due to coding changes described in Box 9.1 above

External causes of injury due to *Exposure to inanimate mechanical forces* varied by age. The rate of injuries was highest among males aged 20–24 and the top 10 causes of male injury are shown in Table 9.7. As for the group as a whole, the most common cause of injury due to *Exposure to inanimate mechanical forces* among males aged 20–24 was *Contact with other sharp objects* (19%). Within this category, 44% (477 cases) were due to *Contact with knife, sword or dagger*. The second most common cause was *Striking against or struck by other objects* (16%), and unfortunately, the ICD-10-AM offers no further detail on *Striking against or struck by other objects* cases—other than providing the example of 'walked into wall'. The third most common cause was *Contact with sharp glass* (14%): 36% of these cases were coded to *Contact with glass window* (281 cases) and a further 22% were caused by *Contact with drinking glass and glass containers* (170 cases).

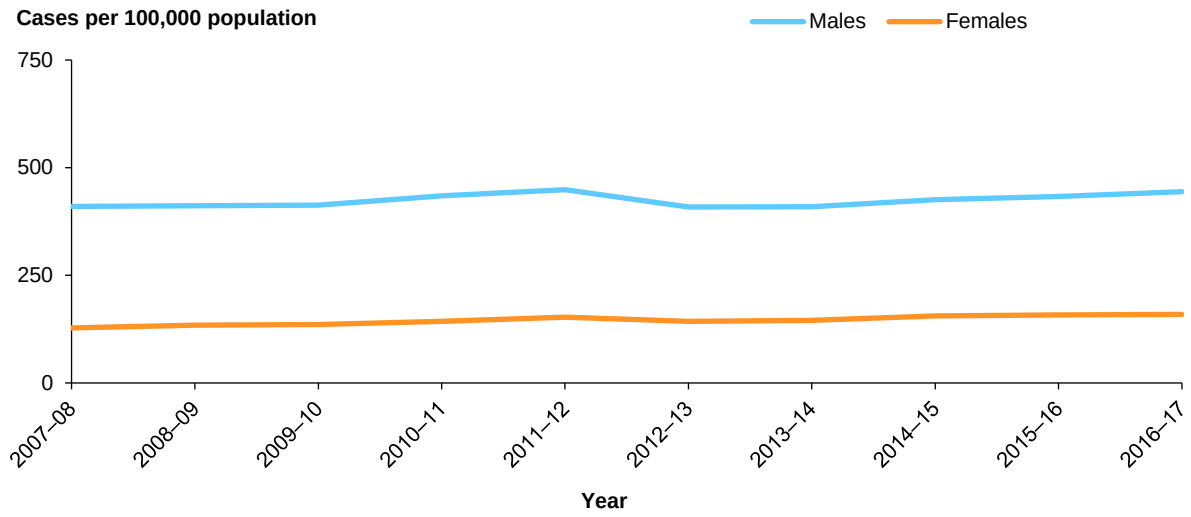
Table 9.7: Top 10 external causes of injury cases due to *Exposure to inanimate mechanical forces*, 20–24 year old males, 2016–17

External cause	Number	%
Contact with other sharp objects	1,081	19.2
Striking against or struck by other objects	901	16.0
Contact with sharp glass	779	13.8
Contact with other powered hand tools and household machinery	548	9.7
Contact with other and unspecified machinery	414	7.3
Caught, crushed, jammed or pinched in or between objects	409	7.3
Struck by thrown, projected or falling object	348	6.2
Striking against or struck by sports equipment	335	5.9
Foreign body or object entering through skin	224	4.0
Contact with nonpowered hand tool	220	3.9
All other causes	379	6.8
Total	**5,638**	**100.0**

How have cases due to *Exposure to inanimate mechanical forces* changed over time?

Age-standardised rates for males were consistently higher than for females at all times throughout the period (Figure 9.5). There is no evidence of any substantial change in rates of cases due to inanimate mechanical forces for either sex over the period.

Figure 9.5: Age-standardised rates of injury cases due to *Exposure to inanimate mechanical forces*, by sex, 2007–08 to 2016–17



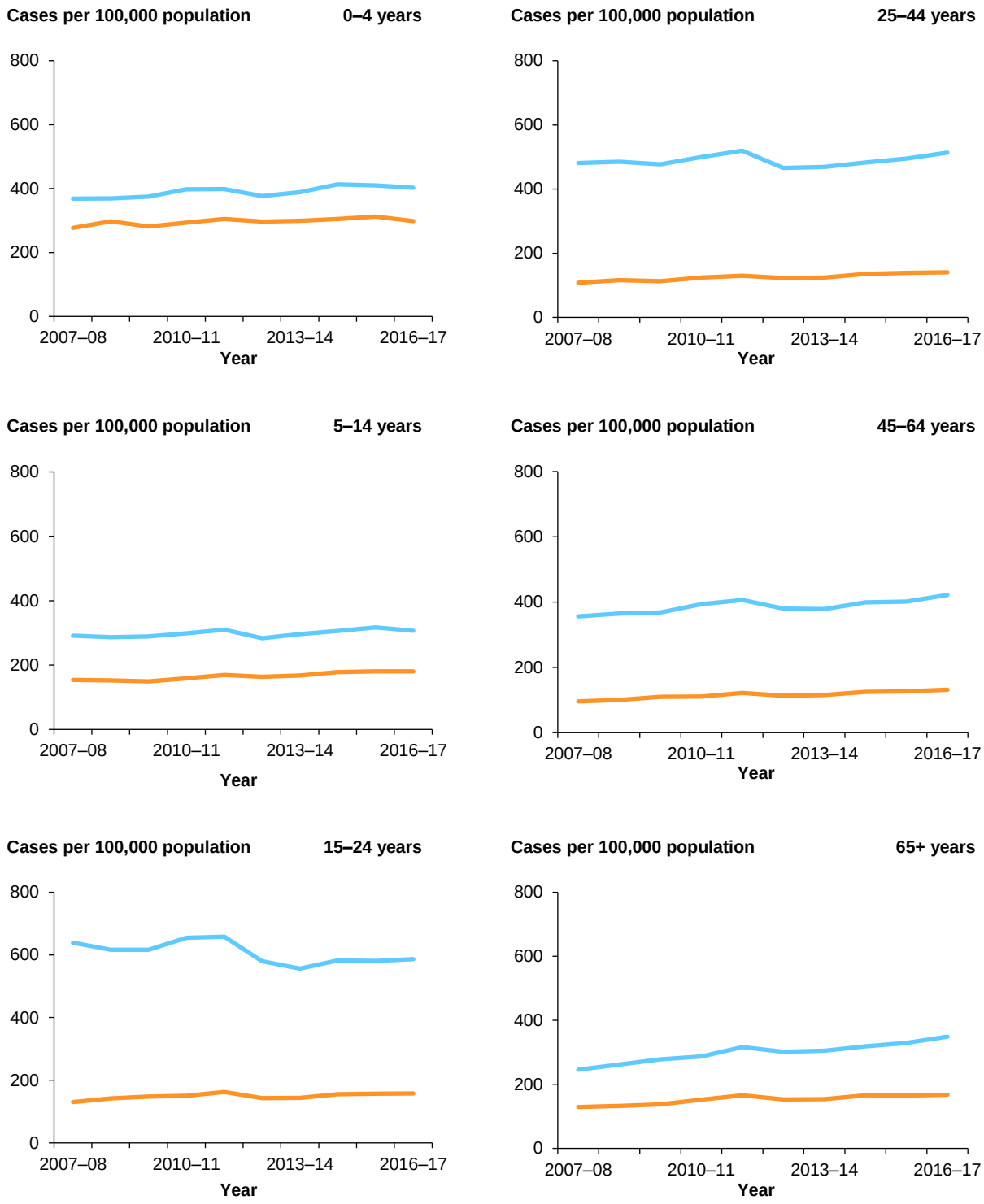
Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

The change in rates of injury over time, by broad age group as well as by sex, is shown in Figure 9.6. Age-specific rates were higher among males in every age group, compared with females, over the period. The greatest differences between the sexes occurred in the 15–24 and 25–44 year age groups. There appeared to be little change over time in the 2 youngest age groups (0–4 and 5–14), with rates of injury due to *Exposure to inanimate mechanical forces* remaining steady for boys and girls over the period.

In contrast to the steady rate of injury among younger children, rates of injury due to *Exposure to inanimate mechanical forces* appeared to increase among the 2 oldest age groups, particularly among males. For example, the rate of injury among males aged 65 or older in 2007–08 was 246 cases per 100,000 and in 2016–17 it had reached 349.

In the 2 intervening age groups, 15–24 and 25–44, there was more variability in rates over time among males—more so in the younger group.

Figure 9.6: Age-specific rates of injury cases due to *Exposure to inanimate mechanical forces*, by age group, by sex, 2007–08 to 2016–17



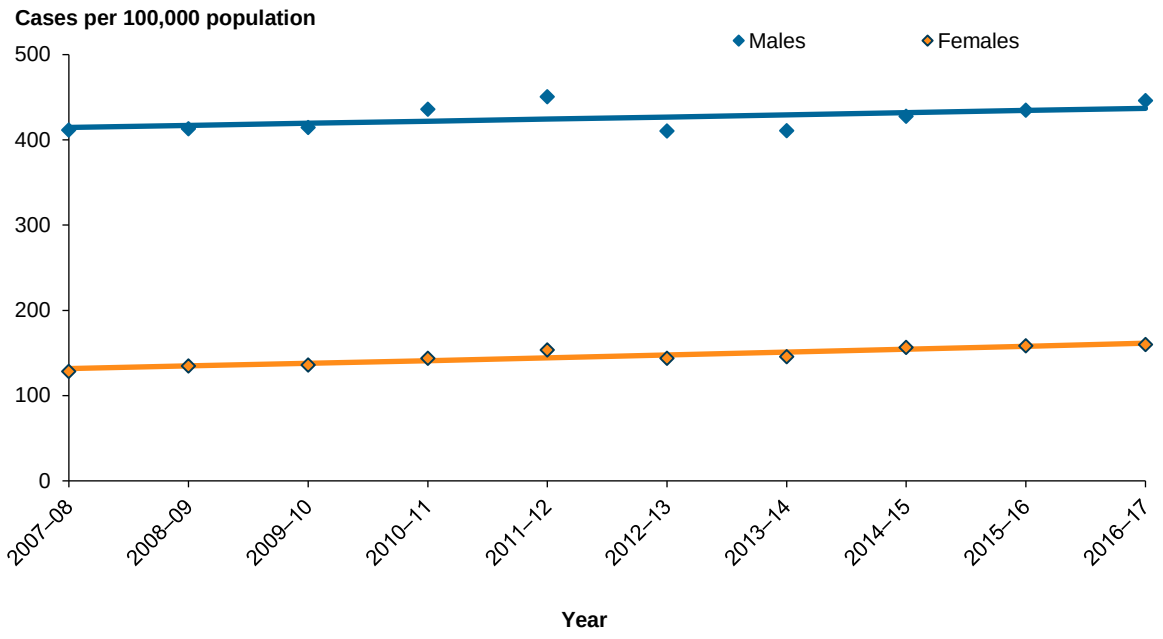
Notes

1. Rates for males are indicated by the blue line and rates for females by the orange line in all charts.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Modelled age-standardised annual rates injury due to *Exposure to inanimate mechanical forces* increased from 274 per 100,000 population in 2007–08 to 299 per 100,000 in 2016–17. The increase averaged 1.0% per year and was statistically significant (95% CI: 0.9%, 1.1%).

An analysis by sex showed increases in the rate of injury due to *Exposure to inanimate mechanical forces* over the period for both males and females (Figure 9.7). For males, the rate increased from 415 per 100,000 population in 2007–08 to 437 in 2016–17. The increase in the modelled rate for males averaged 0.6% per year and was statistically significant (95% CI: 0.5%, 0.7%). For females, the rate increased from 132 per 100,000 population in 2007–08 to 162 in 2016–17. The rise in the modelled rate for females averaged 2.3% per year and was statistically significant (95% CI: 2.1%, 2.5%).

Figure 9.7: Modelled age-standardised rates of injury cases due to *Exposure to inanimate mechanical forces*, by sex, 2007–08 to 2016–17



Notes

1. The solid line represents the modelled rate from 2007–08 to 2016–17. The filled symbols represent the observed age-standardised rate value for each year.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

10 Injury due to *Exposure to animate mechanical forces*

This chapter presents information on patients who were admitted to hospital as a result of an unintentional injury due to *Exposure to animate mechanical forces*. Information in this chapter includes:

- age group and sex of the patient
- cause of the injury
- trends over time.

The specific causes of *Exposure to animate mechanical forces* injury are listed in Box 10.1 and include events such as being unintentionally hit, crushed, contacted and bitten by people and animals.

Key findings

About 22,500 cases of hospitalised injury were due to *Exposure to animate mechanical forces* in 2016–17.

Sex of patient

In 2016–17, there were 22,510 cases of injury due to *Exposure to animate mechanical forces* and of these, about two-thirds (14,130) were male.

Age of patient

In 2016–17, the largest number of cases due to *Exposure to animate mechanical forces* occurred among males aged 15–19 (2,076).

Indigenous status

Age-standardised rates of injury due to *Exposure to animate mechanical forces* were more than twice as high among Indigenous people (207 cases per 100,000 population) compared with non-Indigenous people (90 cases per 100,000).

Cause of injury

Unintentionally being *Hit, struck, kicked, twisted, bitten or scratched by another person* accounted for 31% of injuries due to *Exposure to animate mechanical forces* in 2016–17.

Trends in injury

Injury hospitalisations due to *Exposure to animate mechanical forces* rose over the period 2007–08 to 2016–17, increasing by 4% per year on average. The increase among male cases was 2.7% per year and 6.9% per year for female cases.

What methods were used?

This chapter includes injury cases meeting the criteria set out in Section 1.3, providing that the first-reported external-cause code is in the ICD-10-AM range W50–W64 (*Exposure to animate mechanical forces*) in 'Chapter XX External causes of morbidity and mortality'.

Relevant terms and information applying to the data used in this chapter are summarised in boxes 1.1, 1.2 and 10.1. Further information on methods is provided in 'Appendix A: Data issues'.

Box 10.1: External causes of *Exposure to animate mechanical forces*

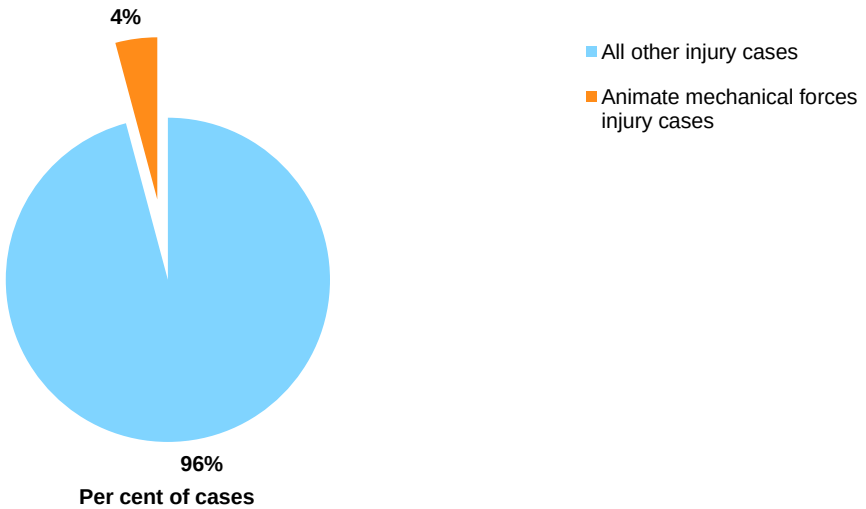
This chapter focuses on the injury due to the **Exposure to animate mechanical forces (W50–X64)** section of ICD-10-AM 'Chapter XX External causes of morbidity and mortality', which contains the following groups:

- Hit, struck, kicked, twisted, bitten or scratched by another person (W50)
- Striking against or bumped into by another person (W51)
- Crushed, pushed or stepped on by crowd or human stampede (W52)
- Bitten by rat (W53)
- Bitten or struck by dog (W54)
- Bitten or struck by other mammals (W55)
- Contact with marine animal (W56)
- Bitten or stung by nonvenomous insect and other nonvenomous arthropods (W57)
- Bitten or struck by crocodile or alligator (W58)
- Bitten or crushed by other reptiles (W59)
- Contact with plant thorns and spines and sharp leaves (W60)
- Contact with bird (W61)
- Exposure to other and unspecified animate mechanical forces (W64).

How many cases of injury due to *Exposure to animate mechanical forces* were there in 2016–17?

There were an estimated 22,510 cases due to *Exposure to animate mechanical forces* during 2016–17. Cases due to *Exposure to animate mechanical forces* made up 4% of all hospitalised injury cases in 2016–17 (Figure 10.1).

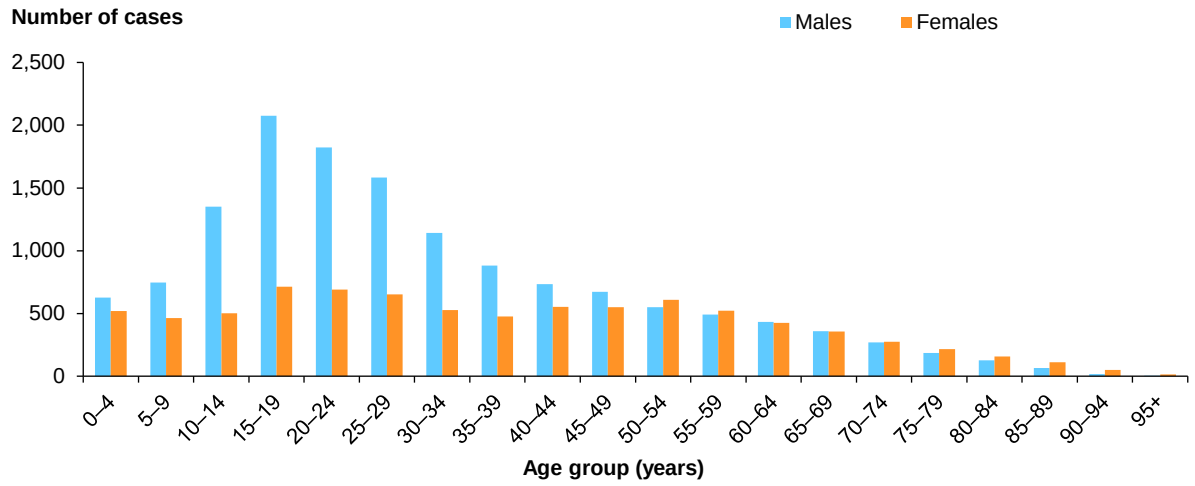
Figure 10.1: Proportion of injury cases due to *Exposure to animate mechanical forces*, 2016–17



Age group and sex, 2016–17

Of the 22,510 cases of injury due to *Exposure to animate mechanical forces* in Australia in 2016–17, just under two-thirds were male (14,130). Gender differences by age were apparent, particularly for males, where high numbers of cases were seen in age groups 15–29 (Figure 10.2). Cases among males were highest for the 15–19 age group (2,076); by contrast, for females in the same age group, there were only 714 cases. The number of cases in each age group for females varied.

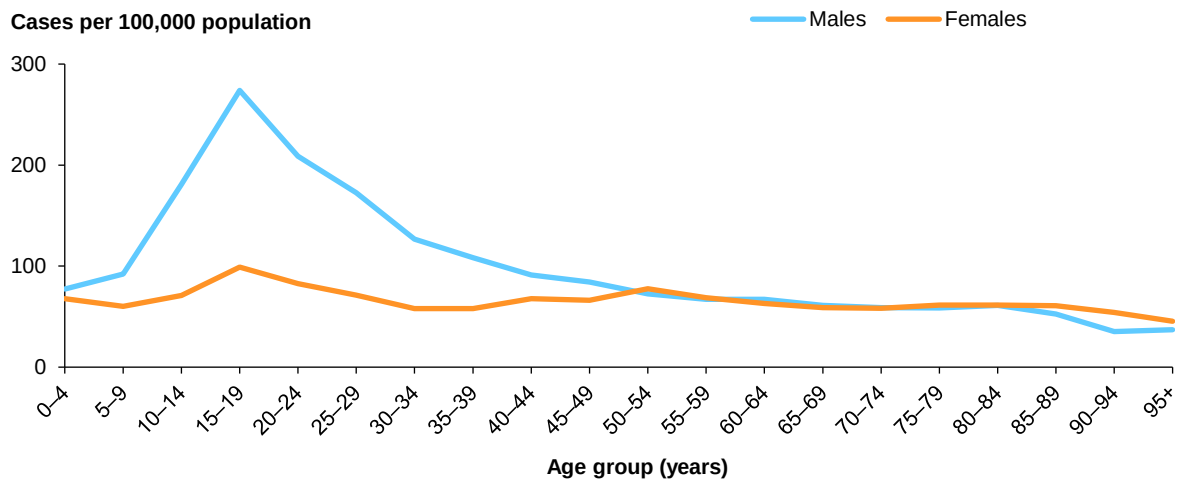
Figure 10.2: Number of injury cases due to *Exposure to animate mechanical forces*, by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Age-specific rates of injury due to *Exposure to animate mechanical forces* were higher for males than for females, up to the 50–54 age group (Figure 10.3). The greatest difference in rates between males and females occurred in the 15–19 age group, where the rate of injury due to *Exposure to animate mechanical forces* for males was 274 cases per 100,000.

Figure 10.3: Age-specific rates of injury cases due to *Exposure to animate mechanical forces*, by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Nature of injury

Injuries due to *Exposure to animate mechanical forces* resulted in damage to various body regions, with the most common being the head and neck (28%) and the wrist and hand (28%) (Table 10.1). Males had a larger proportion of injuries to the head and neck (31%). By contrast, females had a high proportion of wrist and hand injuries (31%). Injuries to the hip and lower limb and were also common for both males and females.

Table 10.1: Cases due to *Exposure to animate mechanical forces*, by body region injured, by sex, 2016–17

	Males		Females		Persons	
Type of injury	**Number**	**%**	**Number**	**%**	**Number**	**%**
Head and neck	4,324	30.6	1,898	22.6	6,222	27.6
Trunk (thorax, abdomen, lower back, lumbar spine and pelvis)	1,117	7.9	537	6.4	1,654	7.3
Shoulder and upper limb (excluding wrist and hand)	1,620	11.5	979	11.7	2,599	11.5
Wrist and hand	3,717	26.3	2,615	31.2	6,332	28.1
Hip and lower limb (excluding ankle and foot)	2,167	15.3	1,354	16.2	3,521	15.6
Ankle and foot	979	6.9	826	9.9	1,805	8.0
Other, multiple and incompletely specified body regions	85	0.6	65	0.8	150	0.7
Injuries not described in terms of body region	121	0.9	106	1.3	227	1.0
Total	**14,130**	**100.0**	**8,380**	**100.0**	**22,510**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

Open wounds were the most common type of injury due to *Exposure to animate mechanical forces*, accounting for 42% of cases in 2016–17 (Table 10.2). Open wounds were far more common among females, with half of all cases (52%) resulting in an open wound. Among males, open wounds (36%) and fractures (30%) were common.

Table 10.2: Cases due to *Exposure to animate mechanical forces*, by type of injury, by sex, 2016–17

	Males		Females		Persons	
Type of injury	**Number**	**%**	**Number**	**%**	**Number**	**%**
Fracture	4,272	30.2	1,620	19.3	5,892	26.2
Dislocation	274	1.9	85	1.0	359	1.6
Soft-tissue injury	824	5.8	446	5.3	1,270	5.6
Open wound	5,093	36.0	4,327	51.6	9,420	41.8
Intracranial injury	961	6.8	290	3.5	1,251	5.6
Internal organ or vessel of trunk	335	2.4	74	0.9	409	1.8
Superficial injury	990	7.0	715	8.5	1,705	7.6
Poisoning or toxic effect	11	0.1	14	0.2	25	0.1
Other and unspecified injuries	1,370	9.7	809	9.6	2,179	9.7
Total	**14,130**	**100.0**	**8,380**	**100.0**	**22,510**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

Remoteness of usual residence

The age-standardised rate of injury due to *Exposure to animate mechanical forces* in 2016–17 varied according to remoteness of usual residence (Table 10.3). The highest rate (268 per 100,000 population) was seen in *Very remote* areas and the lowest (77) in *Major cities*.

Table 10.3: Cases due to *Exposure animate mechanical forces*, by remoteness of usual residence, 2016–17

	Remoteness of usual residence				
Indicators	**Major cities**	**Inner regional**	**Outer regional**	**Remote**	**Very remote**
Cases due to animate mechanical forces	13,268	5,091	2,781	605	538
Age-standardised rate (cases per 100,000 population)	77	122	141	213	268

Aboriginal and Torres Strait Islander people

There were an estimated 1,630 cases of Indigenous Australians hospitalised as a result of injury due to *Exposure to animate mechanical forces* in 2016–17 (Table 10.4). The proportion of injury cases due to animate mechanical forces among Indigenous Australians was slightly higher (6%), compared with the proportion for non-Indigenous people (4%).

Age-standardised rates of injury due to *Exposure to animate mechanical forces* were twice as high among Indigenous Australians, compared with non-Indigenous Australians, both for Indigenous males and for Indigenous females.

Table 10.4: Cases due to *Exposure to animate mechanical forces*, by Indigenous status, by sex, 2016–17

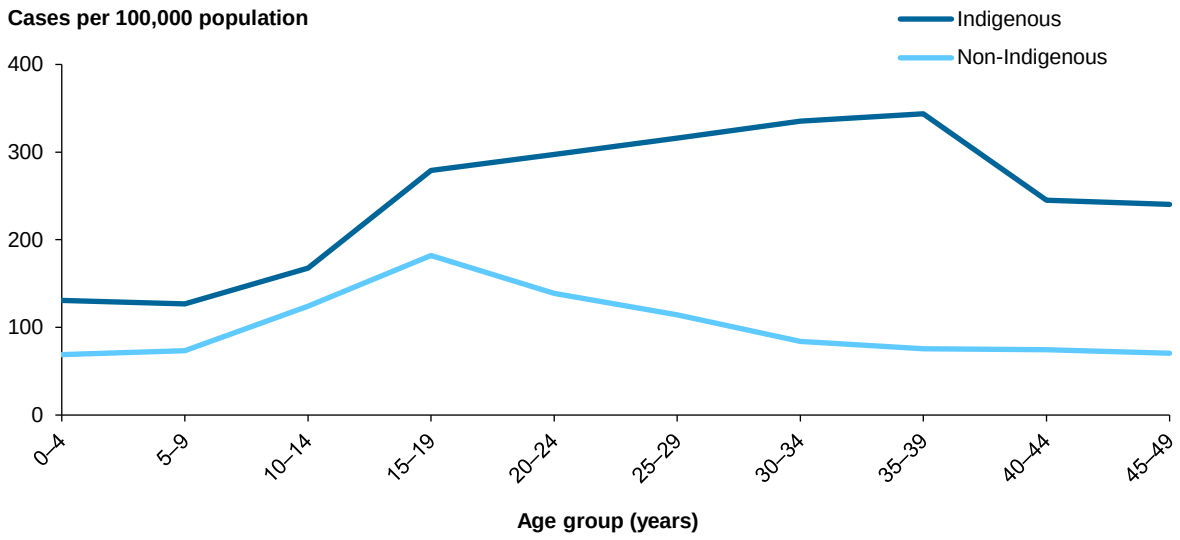
	Indigenous			Non-Indigenous		
Indicators	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Cases due to animate mechanical forces	1,071	559	1,630	12,933	7,759	20,692
Age-standardised rate (cases per 100,000 population)	268	146	207	113	66	90

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Non-Indigenous Australians excludes cases where Indigenous status is not reported.

Due to the small case numbers of injury due to *Exposure to animate mechanical forces* among Indigenous Australians over the age of 50, analyses were restricted by age and limited to *All Indigenous Australians*. Age-specific rates of injury due to *Exposure to animate mechanical forces* were higher for all age groups for Indigenous Australians, compared with non-Indigenous Australians (Figure 10.4). The gap in rates of injury due to *Exposure to animate mechanical forces* between Indigenous and non-Indigenous Australians widened from the 15–19 age group onwards. The rate ratio (4.5) between Indigenous and non-Indigenous Australians was greatest in the 35–39 age group.

Figure 10.4: Age-specific rates of injury cases due to *Exposure to animate mechanical forces*, by Indigenous status, by age group, 2016–17



Notes

1. 'Non-Indigenous' includes cases where Indigenous status was not stated.
2. Data underpinning this figure can be found in the supplementary table spreadsheet for Chapter 10.

Socioeconomic status

The proportion of cases of injury due to *Exposure to animate mechanical forces* in each SES group ranged between 16% and 22% (Table 10.5). The highest proportions, for both males and females, were for people living in areas with the lowest (most disadvantaged) SES classification.

Table 10.5: Cases due to *Exposure to animate mechanical forces*, by SEIFA quintile, by sex, 2016–17

	Males		Females		Persons	
SEIFA	**Number**	**%**	**Number**	**%**	**Number**	**%**
1–Lowest	3,109	22.0	1,825	21.8	4,934	21.9
2	3,010	21.3	1,776	21.2	4,786	21.3
3	2,918	20.7	1,809	21.6	4,727	21.0
4	2,622	18.6	1,587	18.9	4,209	18.7
5–Highest	2,314	16.4	1,308	15.6	3,622	16.1
Total	**14,130**	**100.0**	**8,380**	**100.0**	**22,510**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.
3. Total includes cases for which the SES group was not able to be determined.

Cause of injury due to exposure to animate mechanical forces

Hit, struck, kicked, twisted, bitten or scratched by another person accounted for 31% of injuries due to *Exposure to animate mechanical forces* in 2016–17 (Table 10.6). The next 2 most commonly reported causes were *Bitten or struck by dog* and *Bitten or struck by other mammals*, accounting for 26% and 15% of cases, respectively.

Notable differences between males and females with respect to the causes of injury due to *Exposure to animate mechanical forces* include *Hit, struck, kicked, twisted, bitten or scratched by another person* (males 39%, females 17%) and *Bitten or struck by dog* (males 21%, females 34%). Being bitten or struck by a dog or other mammals accounted for over half of all injuries due to *Exposure to animate mechanical forces* among females. By contrast, half of all males with injuries due to *Exposure to animate mechanical forces* were injured as a result of contact with other people.

Table 10.6: External causes of injury cases due to *Exposure to animate mechanical forces*, by sex, 2016–17

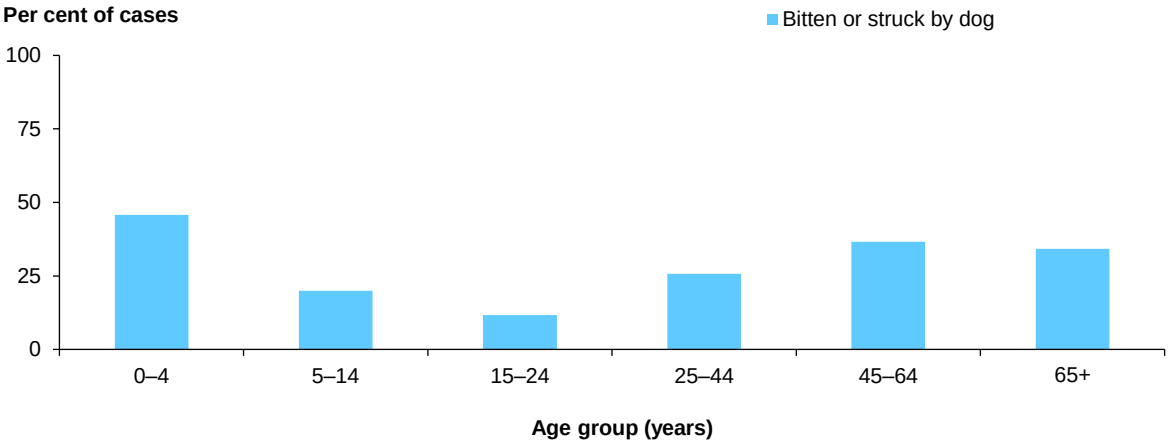
	Males		Females		Persons	
External cause	**Count**	**%**	**Count**	**%**	**Count**	**%**
Hit, struck, kicked, twisted, bitten or scratched by another person	5,503	38.9	1,444	17.2	6,947	30.9
Bitten or struck by dog	2,926	20.7	2,817	33.6	5,743	25.5
Bitten or struck by other mammals	1,500	10.6	1,974	23.6	3,474	15.4
Striking against or bumped into by another person	1,710	12.1	532	6.3	2,242	10.0
Bitten or crushed by other reptiles	1,225	8.7	800	9.5	2,025	9.0
Bitten or stung by nonvenomous insect and other nonvenomous arthropods	522	3.7	427	5.1	949	4.2
Contact with plant thorns and spines and sharp leaves	267	1.9	136	1.6	403	1.8
Contact with marine animal	205	1.5	42	0.5	247	1.1
Exposure to other and unspecified animate mechanical forces	96	0.7	127	1.5	223	1.0
Crushed, pushed or stepped on by crowd or human stampede	140	1.0	46	0.5	186	0.8
Contact with bird	20	0.1	20	0.2	40	0.2
Bitten by rat	4	0.0	13	0.2	17	0.1
Bitten or struck by crocodile or alligator	12	0.1	2	0.0	14	0.1
Total	**14,130**	**100.0**	**8,380**	**100.0**	**22,510**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

The pattern of external causes of human or of animal origin varied by age group. For example, the largest proportion of cases of being *Hit, struck, kicked, twisted, bitten or scratched by another person* occurred among 15–24 year olds (52%), while the smallest proportion was seen among 45–64 year olds (8%). Dog bite-related injuries also differed by age group, with larger proportions of hospitalised cases among the very young (46% for 0–4 year olds) (Figure 10.5).

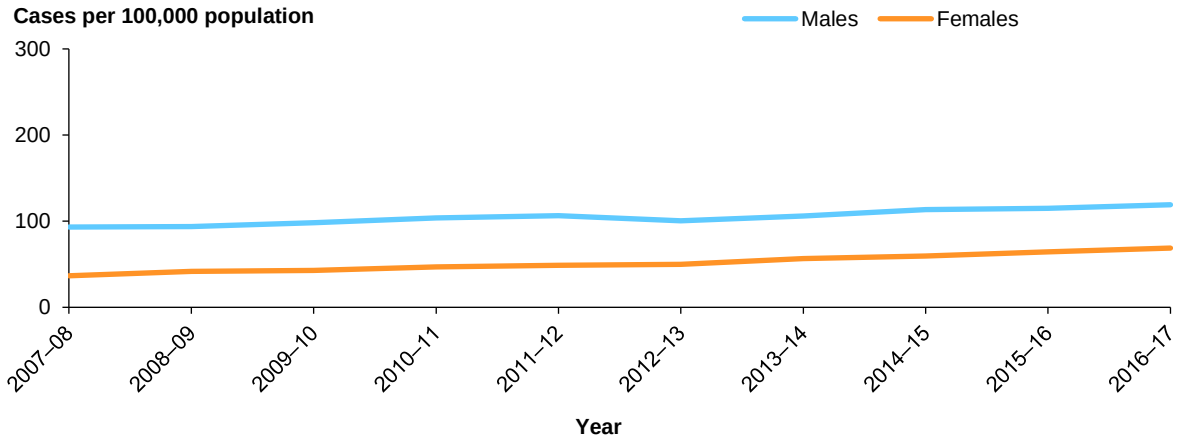
Figure 10.5: Proportion of injury cases 'Bitten or struck by dog', by age group, 2016–17



How have cases due to *Exposure to animate mechanical forces* changed over time?

Age-standardised rates for males were consistently higher than for females at all times throughout the period (Figure 10.6). Cases of injury due to *Exposure to animate mechanical forces* rates rose over the period for both males and females. For males, the rate of injury due to *Exposure to animate mechanical forces* increased from 93 cases per 100,000 in 2007–08 to 119 in 2016–17. For females, the rate of injury due to *Exposure to animate mechanical forces* increased from 37 cases per 100,000 in 2007–08 to 69 in 2016–17.

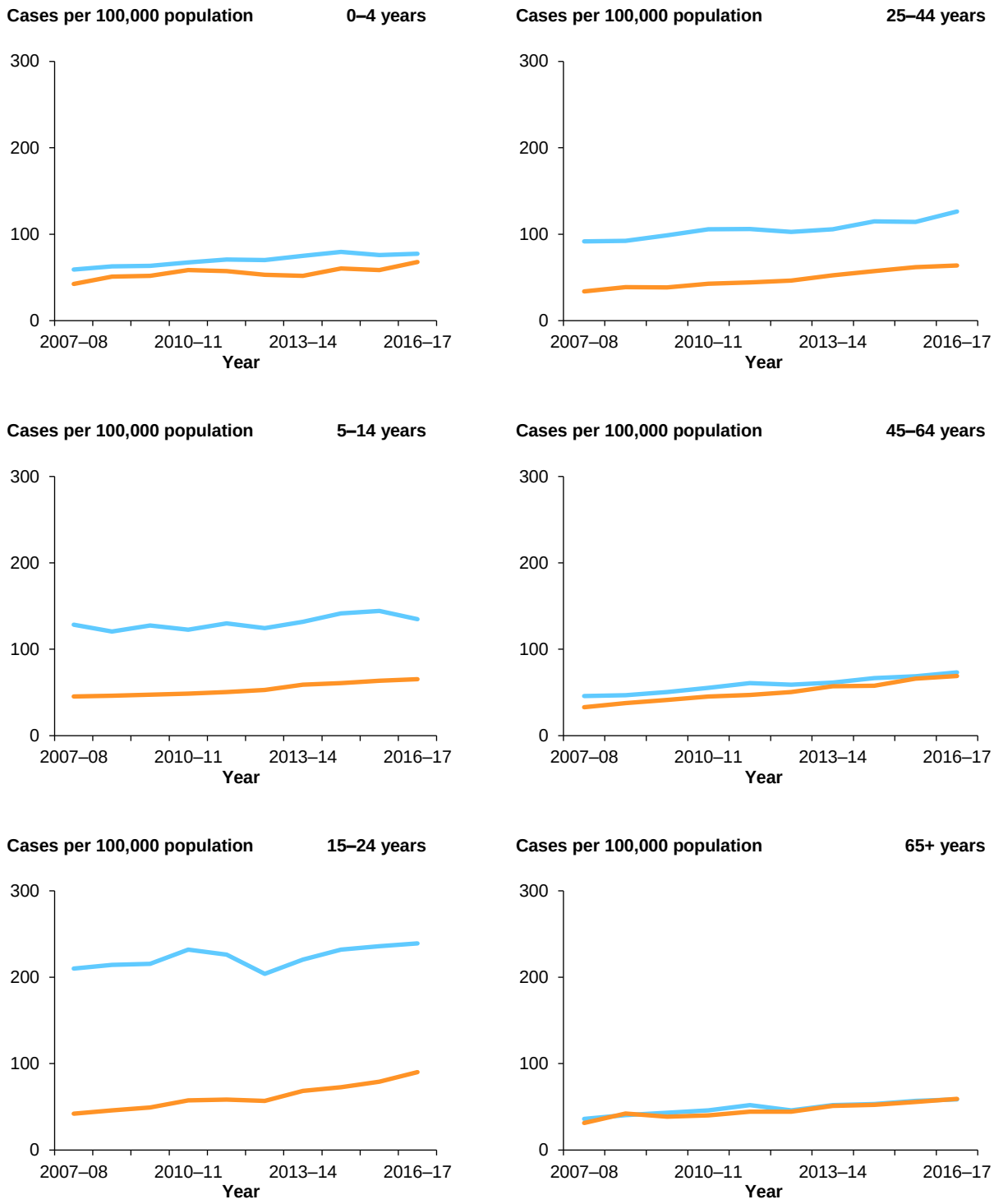
Figure 10.6: Age-standardised rates of injury cases due to *Exposure to animate mechanical forces*, by sex, 2007–08 to 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

The change in rates of injury due to *Exposure to animate mechanical forces* over time, by broad age group as well as by sex, is shown in Figure 10.7. Age-specific rates were higher among males than females in every age group over the period, except for those aged 65 or over. Rates of injury due to *Exposure to animate mechanical forces* appeared to have increased in all age groups. For women in particular, rates of injury have doubled or almost doubled in every age group.

Figure 10.7: Age-specific rates of injury cases due to *Exposure to animate mechanical forces*, by age group, by sex, 2007–08 to 2016–17



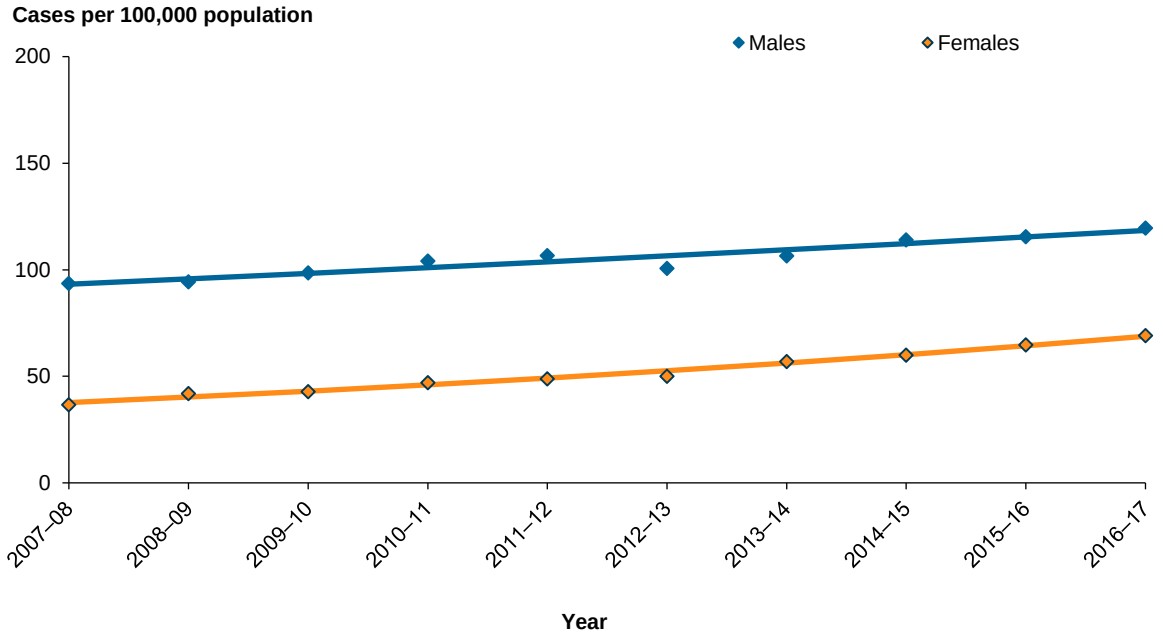
Notes

1. Rates for males are indicated by the blue line and rates for females by the orange line in all charts.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Modelled age-standardised annual rates injury due to *Exposure to animate mechanical forces* increased from 65.8 per 100,000 population in 2007–08 to 93.8 per 100,000 in 2016–17. The increase averaged 4.0% per year and was statistically significant (95% CI: 3.9%, 4.2%).

An analysis by sex showed increases in the rate of injury due to *Exposure to animate mechanical forces* over the period for both males and females (Figure 10.8). For males, the rate increased from 93.2 per 100,000 population in 2007–08 to 118.4 in 2016–17. The increase in the modelled rate for males averaged 2.7% per year and was statistically significant (95% CI: 2.5%, 2.9%). For females, the rate increased from 37.7 per 100,000 population in 2007–08 to 68.8 in 2016–17. The rise in the modelled rate for females averaged 6.9% per year and was statistically significant (95% CI: 6.6%, 7.2%).

Figure 10.8: Modelled age-standardised rates of injury cases due to *Exposure to animate mechanical forces*, by sex, 2007–08 to 2016–17



Notes

1. The solid line represents the modelled rate from 2007–08 to 2016–17. The filled symbols represent the observed age-standardised rate value for each year.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

11 Other external causes of unintentional injury

This chapter presents information on patients who were admitted to hospital as a result of an unintentional injury due to other external causes of unintentional injury. Information in this chapter includes:

- age group and sex of the patient
- cause of the injury
- trends over time.

The specific causes of injury due to other external causes of unintentional injury are listed in Box 11.1 and include events such threats to breathing, electrical injuries and exposure to the forces of nature.

Key findings

About 63,000 cases of hospitalised injury were due to other external causes of unintentional injury in 2016–17.

Sex of patient

In 2016–17, males made up roughly two-thirds (39,139) of all hospitalised cases of injury due to other external causes of unintentional injury.

Age of patient

Age-specific rates for males due to other external causes of unintentional injury were significantly higher than for females, up to about 65+.

Indigenous status

Injury due to other external causes of unintentional injury made up a smaller proportion of all hospitalised cases among Indigenous Australians (8%) compared with non-Indigenous Australians (12%). Rates of injury due to other external causes of unintentional injury were higher among Indigenous Australians (334 cases per 100,000) compared with non-Indigenous Australians (250 cases per 100,000).

Cause of injury

The most common cause of injury due to other external causes of unintentional injury was *Accidental exposure to other and unspecified factors* (67%), with the second most common cause being *Overexertion, travel and privation* (24%).

Trends in injury

Injury hospitalisations due to other external causes of unintentional injury decreased over the period 2007–08 to 2016–17, decreasing on average by 0.1% per year. The decrease among male cases was 0.7% per year, however there was an increase in hospitalisations due to other external causes of unintentional injury among female cases over the period of 1.3% per year.

What methods were used?

This chapter includes injury cases meeting the criteria set out in Section 1.3, providing that the first-reported external-cause code is in the ICD-10-AM ranges W75–W84 (*Other accidental threats to breathing*), W85–W99 (*Exposure to electric current, radiation and*

extreme ambient air temperature and pressure), X20–X29 (*Contact with venomous animals and plants*), X30–X39 (*Exposure to forces of nature*), X50–X57 (*Overexertion, travel and privation*), and X58–X59 (*Accidental exposure to other and unspecified factors*) in 'Chapter XX External causes of morbidity and mortality'.

Relevant terms and information applying to the data used in this chapter are summarised in boxes 1.1, 1.2, and 13.1. Further information on methods is provided in 'Appendix A: Data issues'.

Box 11.1: Other external causes of unintentional injury

This chapter focuses on several sections of ICD-10-AM 'Chapter XX External causes of morbidity and mortality': *Other accidental threats to breathing* (W75–W84); *Exposure to electric current, radiation and extreme ambient air temperature and pressure* (W85–W99); *Contact with venomous animals and plants* (X20–X29); *Accidental exposure to other and unspecified factors* (X58–X59); *Overexertion, travel and privation* (X50–X57); *and Exposure to forces of nature* (X30–X39), which include:

Other accidental threats to breathing (W75–W84)

- Accidental suffocation and strangulation in bed (W75)
- Other accidental hanging and strangulation (W76)
- Threat to breathing due to cave-in, falling earth and other substances (W77)
- Inhalation of gastric contents (W78)
- Inhalation and ingestion of food causing obstruction of respiratory tract (W79)
- Inhalation and ingestion of other objects causing obstruction of respiratory tract (W80)
- Confined to or trapped in a low-oxygen environment (W81)
- Other specified threats to breathing (W83)
- Unspecified threat to breathing (W84).

Exposure to electric current, radiation and extreme ambient air temperature and pressure (W85–W99)

- Exposure to electric transmission lines (W85)
- Exposure to other specified electric current (W86)
- Exposure to unspecified electric current (W87)
- Exposure to ionising radiation (W88)
- Exposure to man-made visible and ultraviolet light (W89)
- Exposure to other non-ionising radiation (W90)
- Exposure to unspecified type of radiation (W91)
- Exposure to excessive heat of man-made origin (W92)
- Exposure to excessive cold of man-made origin (W93)
- Exposure to high and low air pressure and changes in air pressure (W94)
- Exposure to other and unspecified man-made environmental factors (W99).

(continued)

Box 11.1 (continued): Other external causes of unintentional injury

Contact with venomous animals and plants (X20–X29)

- Contact with venomous snakes and lizards (X20)
- Contact with spiders (X21)
- Contact with scorpions (X22)
- Contact with hornets, wasps and bees (X23)
- Contact with centipedes and venomous millipedes (tropical) (X24)
- Contact with other venomous arthropods (X25)
- Contact with venomous marine animals and plants (X26)
- Contact with other specified venomous animals (X27)
- Contact with other specified venomous plants (X28)
- Contact with unspecified venomous animal or plant (X29).

Exposure to forces of nature (X30–X39)

- Exposure to excessive natural heat (X30)
- Exposure to excessive natural cold (X31)
- Exposure to sunlight (X32)
- Victim of lightning (X33)
- Victim of earthquake (X34)
- Victim of volcanic eruption (X35)
- Victim of avalanche, landslide and other earth movements (X36)
- Victim of cataclysmic storm (X37)
- Victim of flood (X38)
- Exposure to other and unspecified forces of nature (X39).

Overexertion, travel and privation (X50–X57)

- Overexertion and strenuous or repetitive movements (X50)
- Travel and motion (X51)
- Prolonged stay in weightless environment (X52)
- Lack of food (X53)
- Lack of water (X54)
- Unspecified privation (X57).

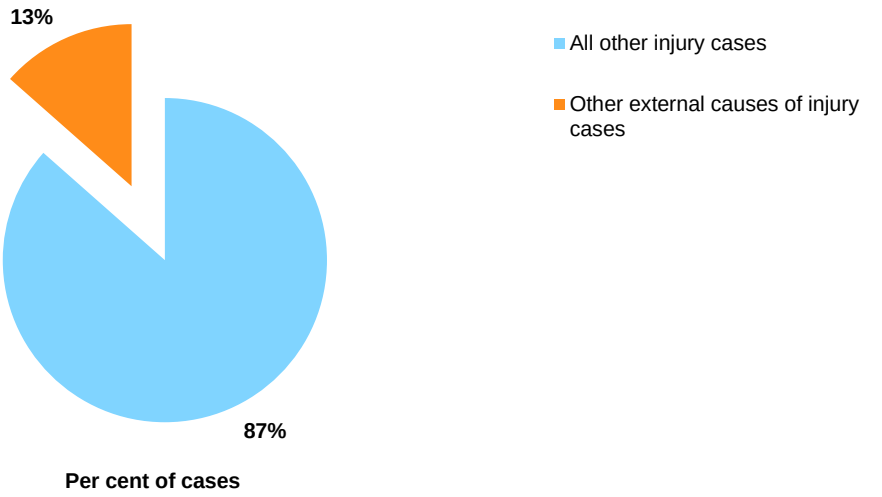
Accidental exposure to other and unspecified factors (X58–X59)

- Exposure to other specified factors (X58)
- Exposure to unspecified factor (X59).

How many other external causes of unintentional injury cases were there in 2016–17?

There were an estimated 63,423 cases due to other external causes of unintentional injury during 2016–17, making up 13% of all hospitalised injury cases in 2016–17 (Figure 11.1).

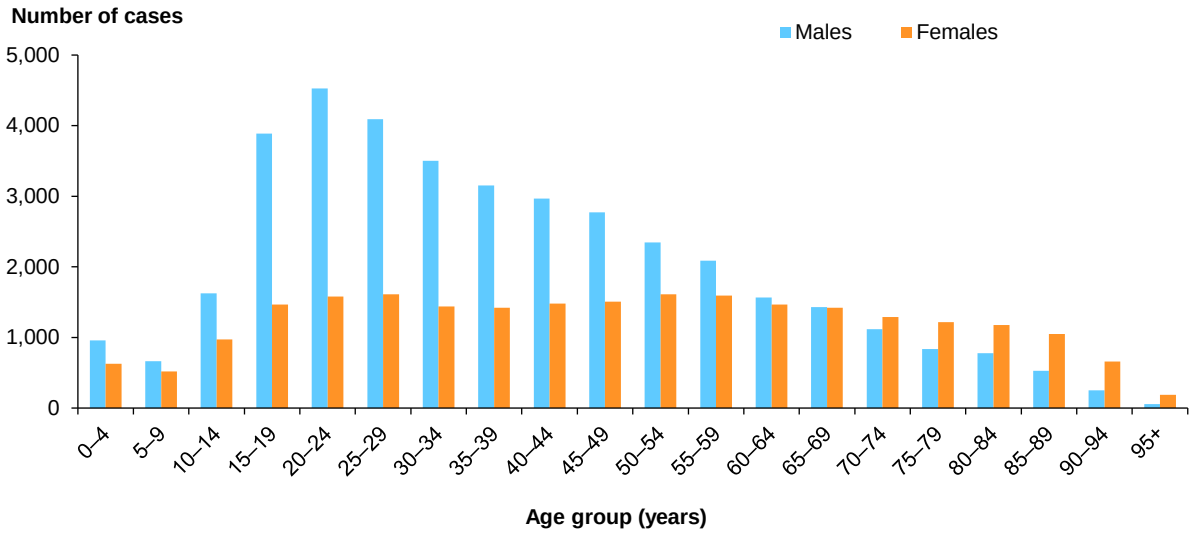
Figure 11.1: Proportion of cases due to other external causes of unintentional injury, 2016–17



Age group and sex, 2016–17

Of the 63,423 cases due to other external causes of unintentional injury in Australia in 2016–17, almost two-thirds were male (39,139). Gender differences by age were apparent, with higher numbers of cases among males occurring in every age group until the 60–64 age group (Figure 11.2). For both males and females, cases of other external causes of unintentional injury were more frequent from ages 15–19 onwards, more so in males. Among males, the largest number of cases due to other external causes of unintentional injury occurred in the 20–24 age group (4,527). Among females, the largest number of cases occurred in the 50–54 age group (1,611).

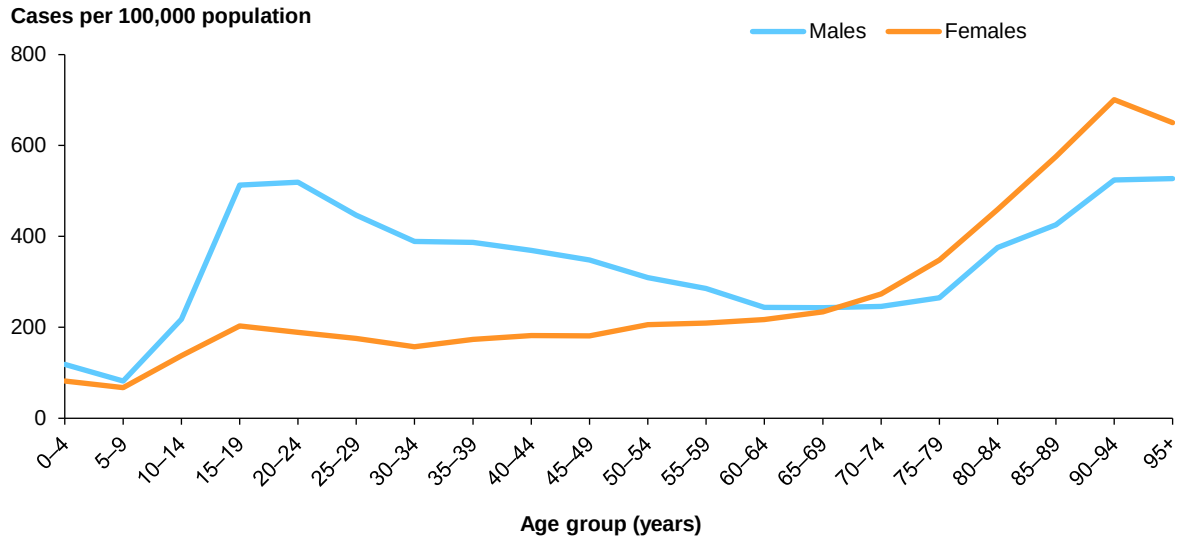
Figure 11.2: Number of other external causes of unintentional injury cases, by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Age-specific rates for males were higher than for females, up to ages 65–69 (Figure 11.3). Male rates for other external causes of unintentional injury peaked in the 20–24 age group, with an age-specific rate of 519 hospitalised cases per 100,000 population, compared with 189 per 100,000 for females in the same age group. The highest rate for females occurred in the 90–94 age group (701).

Figure 11.3: Age-specific rates of other external causes of unintentional injury cases, by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Nature of injury

The diverse causes of other external causes of unintentional injury resulted in damage to various body regions, but the most common region was the hip and lower limb (33%), both for males (30%) and females (37%) (Table 11.1).

Table 11.1: Cases due to other external causes of unintentional injury, by body region injured, by sex, 2016–17

	Males		Females		Persons	
Type of injury	**Number**	**%**	**Number**	**%**	**Number**	**%**
Head and neck	3,398	8.7	2,037	8.4	5,435	8.6
Trunk (thorax, abdomen, lower back, lumbar spine and pelvis)	3,151	8.1	3,171	13.1	6,322	10
Shoulder and upper limb (excluding wrist and hand)	6,610	16.9	3,285	13.5	9,897	15.6
Wrist and hand	8,035	20.5	2,715	11.2	10,750	16.9
Hip and lower limb (excluding ankle and foot)	11,834	30.2	9,046	37.3	20,880	32.9
Ankle and foot	2,133	5.4	1,728	7.1	3,861	6.1
Other, multiple and incompletely specified body regions	919	2.3	632	2.6	1,551	2.4
Injuries not described in terms of body region	3,059	7.8	1,668	6.9	4,727	7.5
Total	**39,139**	**100.0**	**24,282**	**100.0**	**63,423**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

Soft-tissue injuries (35%) and fractures (32%) were the most common types of injury due to other external causes of unintentional injury in 2016–17 (Table 11.2). Males and females had similar patterns of type of injury.

Table 11.2: Cases due to other external causes of unintentional injury, by type of injury, by sex, 2016–17

	Males		Females		Persons	
Type of injury	**Number**	**%**	**Number**	**%**	**Number**	**%**
Fracture	11,934	30.5	8,273	34.1	20,208	31.9
Dislocation	1,958	5.0	1,612	6.6	3,570	5.6
Soft-tissue injury	14,103	36	7,915	32.6	22,018	34.7
Open wound	3,008	7.7	1,581	6.5	4,590	7.2
Intracranial injury	370	0.9	140	0.6	510	0.8
Internal organ or vessel of trunk	159	0.4	83	0.3	242	0.4
Burn	189	0.5	61	0.3	250	0.4
Superficial injury	1,069	2.7	868	3.6	1,937	3.1
Poisoning or toxic effect	1,588	4.1	914	3.8	2,502	3.9
Other and unspecified injuries	4,761	12.1	2,835	11.7	7,596	11.9
Total	**39,139**	**100.0**	**24,282**	**100.0**	**63,423**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

Remoteness of usual residence

The age-standardised rate of injury due to other external causes of unintentional injury in 2016–17 varied according to remoteness of usual residence (Table 11.3). The highest rates were in *Remote* and *Very remote* areas (404 and 439 per 100,000 population, respectively).

Table 11.3: Other external causes of unintentional injury cases, by remoteness of usual residence, 2016–17

	Remoteness of usual residence				
Indicators	**Major cities**	**Inner regional**	**Outer regional**	**Remote**	**Very remote**
Other external causes of unintentional injury cases	43,048	11,637	6,185	1,169	826
Age-standardised rate (cases per 100,000 population)	243	270	308	404	439

Aboriginal and Torres Strait Islander people

There were an estimated 2,198 cases of Indigenous Australians hospitalised as a result of other external causes of unintentional injury in 2016–17 (Table 11.4). More males were hospitalised than females. Other external causes of unintentional injury made up a smaller proportion of all hospitalised cases among Indigenous Australians (8%), compared with non-Indigenous Australians (12%). The age-standardised rate of other external causes of unintentional injury among Indigenous Australians (334 cases per 100,000) was higher than that of non-Indigenous Australians (250), both for Indigenous males and for Indigenous females.

Table 11.4: Other external causes of unintentional injury cases, by Indigenous status, by sex, 2016–17

	Indigenous			Non-Indigenous		
Indicators	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Other external causes of unintentional injury cases	1,326	872	2,198	36,994	22,837	59,833
Age-standardised rate (cases per 100,000 population)	389	278	334	317	181	250

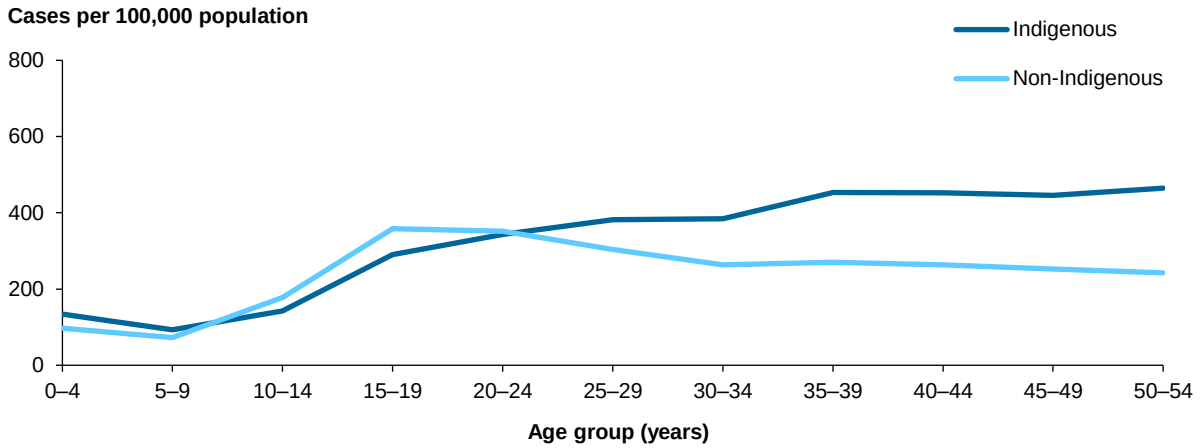
Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Non-Indigenous Australians excludes cases where Indigenous status is not reported.

Due to the small case numbers of injury due to other external causes of unintentional injury among Indigenous Australians over the age of 54, analyses were restricted by age and limited to all Indigenous Australians.

Age-specific rates of injury due to other external causes of unintentional injury were similar for Indigenous and non-Indigenous Australians up until about 20–24 years; thereafter, rates injury due to other external causes of unintentional injury were consistently higher among Indigenous Australians (Figure 11.4). The highest rate of injury occurred in Indigenous Australians aged 50–54 (465 cases per 100,000 population), while the highest rate among non-Indigenous Australians occurred among those aged 15–19 (358).

Figure 11.4: Age-specific rates of other external causes of unintentional injury cases, by Indigenous status, by selected age group, 2016–17



Notes

1. 'Non-Indigenous' includes cases where Indigenous status was not stated.
2. Data underpinning this figure can be found in the supplementary table spreadsheet for Chapter 12.

Socioeconomic status

The proportion of other external causes of unintentional injury cases in each SES group ranged between 18% and 21% (Table 11.5). Unlike many other types of injury, the lowest proportions, for both males and females, were for people living in areas with the highest (least disadvantaged) SES classification.

Table 11.5: Other external causes of unintentional injury cases, by SEIFA quintile, by sex, 2016–17

	Males		Females		Persons	
SEIFA	**Number**	**%**	**Number**	**%**	**Number**	**%**
1–Lowest	6,864	17.5	4,501	18.5	11,366	17.9
2	7,650	19.5	4,648	19.1	12,299	19.4
3	7,915	20.2	4,875	20.1	12,790	20.2
4	8,244	21.1	5,110	21.0	13,354	21.1
5–Highest	8,055	20.6	4,989	20.5	13,044	20.6
Total	**39,139**	**100.0**	**24,282**	**100.0**	**63,423**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.
3. Total includes cases for which the SES group was not able to be determined.

Cause of Other external causes of unintentional injury

The majority of cases in the other external causes of unintentional injury category were coded to *Accidental exposure to other and unspecified factors* (67%) (Table 11.6). No further details on these cases were available. Of the remaining cases, *Overexertion, travel and privation* accounted for 24% and the proportion of cases of this type was higher for females compared with males.

Table 11.6: Types of Other external causes of unintentional injury cases, by sex, Australia, 2016–17

	Males		Females		Persons	
External cause	**Number**	**%**	**Number**	**%**	**Number**	**%**
Other accidental threats to breathing	469	1.2	351	1.4	820	1.3
Exposure to electric current, radiation and extreme ambient air temperature and pressure	599	1.5	215	0.9	814	1.3
Contact with venomous animals and plants	2,142	5.5	1,200	4.9	3,342	5.3
Exposure to forces of nature	585	1.5	275	1.1	860	1.4
Overexertion, travel and privation	8,456	21.6	6,558	27.0	15,014	23.7
Accidental exposure to other and unspecified factors	26,888	68.7	15,683	64.6	42,573	67.1
Total	**39,139**	**100.0**	**24,282**	**100.0**	**63,423**	**100.0**

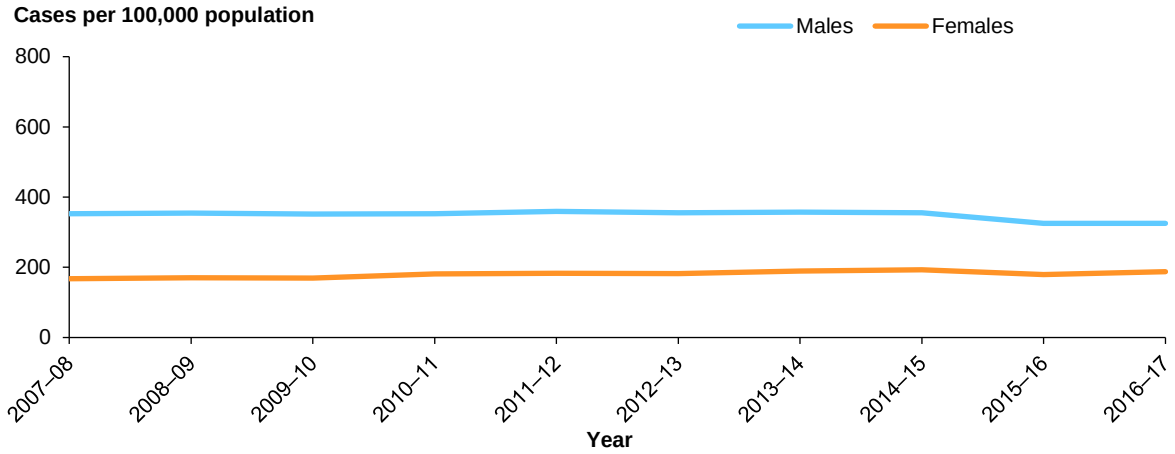
Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

How have Other external causes of unintentional injury cases changed over time?

Age-standardised rates of other external causes of unintentional injury for males were consistently higher than for females at all times throughout the period and there was very little change (Figure 11.5).

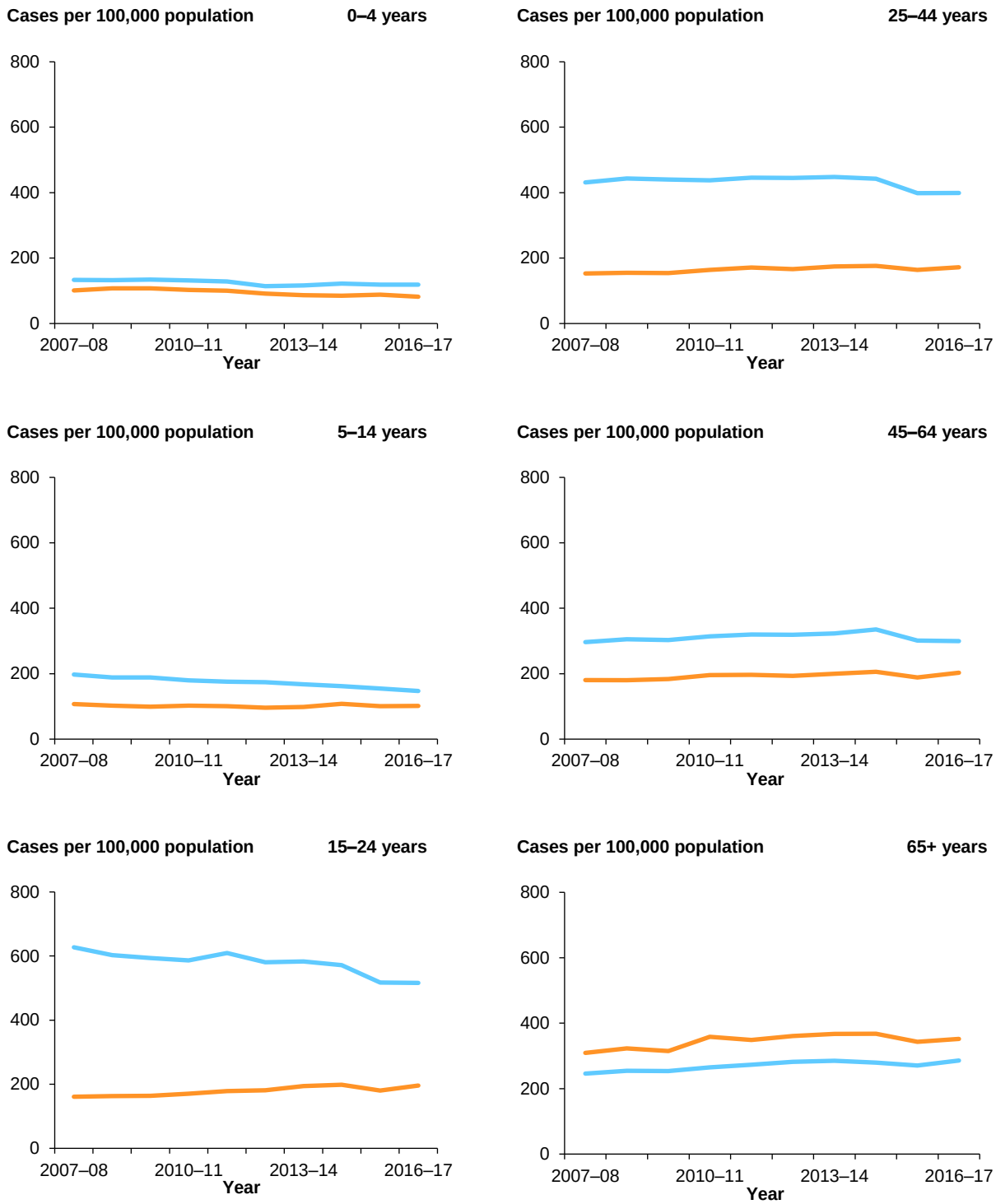
Figure 11.5: Age-standardised rates of other external causes of unintentional injury cases, by sex, 2007–08 to 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

The change in rates of injury over time, by broad age group as well as by sex, is shown in Figure 11.6. The figures show an additional 2 years of data since the publication of the previous *Trends in hospitalised injury, Australia 1999–00 to 2014–15* report (AIHW: Pointer 2018a). As can be seen in Figure 11.6, age-specific rates of other external causes of unintentional injury vary by age and by sex. The highest rates for males occurred in the 15–24 age group, while for females it was among those aged 65 or over.

Figure 11.6: Age-specific rates of other external causes of unintentional injury cases, by age group, by sex, 2007–08 to 2016–17



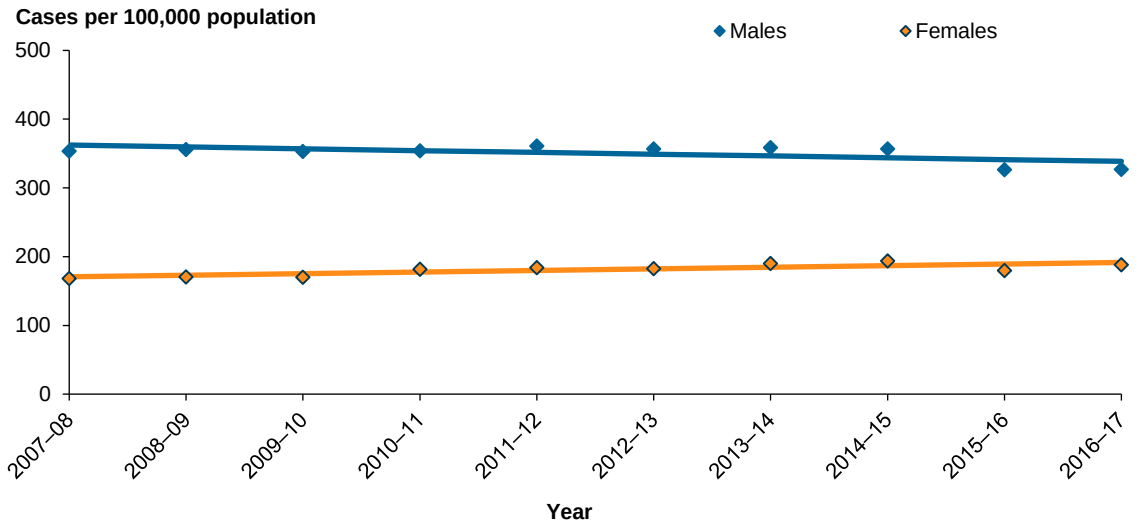
Notes

1. Rates for males are indicated by the blue line and rates for females by the orange line in all charts.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

The modelled age-standardised rate of other external causes of unintentional injury evidenced a small decrease during the 10 years to 2016–17. The rate was 268 per 100,000 population in 2007–08 and 266 in 2016–17. The decrease in the modelled rate averaged 0.1% per year and was statistically significant (95% CI: –0.2%, 0.0%).

An analysis by sex showed differences between males and females in the rate of other external causes of unintentional injury over the period (Figure 11.7). For males, the rate decreased from 362 per 100,000 population in 2007–08 to 339 in 2016–17. The decrease in the modelled rate for males averaged 0.7% per year and was statistically significant (95% CI: –0.9%, –0.6%). For females, the rate increased from 171 per 100,000 population in 2007–08 to 192 in 2016–17. The rise in the modelled rate for females averaged 1.3% per year and was statistically significant (95% CI: 1.1%, 1.4%).

Figure 11.7: Modelled age-standardised rates of injury due to other external causes of unintentional injury, by sex, 2007–08 to 2016–17



Notes

1. The solid line represents the modelled rate from 2007–08 to 2016–17. The filled symbols represent the observed age-standardised rate value for each year.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

12 Intentional self-harm

This chapter presents information on patients who were admitted to hospital as a result of injury due to *Intentional self-harm*. Information in this chapter includes:

- age group and sex of the patient
- cause of the injury
- trends over time.

This chapter includes attempts to suicide, as well as cases where people have intentionally hurt themselves, but not necessarily with the intention of suicide—for example, acts of self-mutilation. This chapter does not include cases where the intent was unspecified, unstated or could not be determined.

Key findings

Just over 33,000 cases of hospitalised injury were due to *Intentional self-harm* in 2016–17.

Sex of patient

In 2016–17, females made up two-thirds (21,065) of *Intentional self-harm* cases.

Age of patient

In 2016–17, the largest number of cases of injury due to *Intentional self-harm* occurred among females aged 15–19 (4,945).

Indigenous status

Age-standardised rates of injury due to *Intentional self-harm* were twice as high for Indigenous as for non-Indigenous Australians.

Cause of injury

Intentional self-poisoning (X60–X69) accounted for 83% of all cases of self-harm in 2016–17.

Trends in injury

Injury hospitalisations due to *Intentional self-harm* rose over the period 2007–08 to 2016–17, increasing on average by 1.7% per year. The increase among male cases was 0.9% per year and 2.1% per year for female cases.

What methods were used?

This chapter includes injury cases meeting the criteria set out in Section 1.3, providing that the first-reported external-cause code is in the ICD-10-AM range X60–X84 (*Intentional self-harm*) in 'Chapter XX External causes of morbidity and mortality'.

Relevant terms and information applying to the data used in this chapter are summarised in boxes 1.1, 1.2, 12.1 and 12.2. Further information on methods is provided in 'Appendix A: Data issues'.

Box 12.1: External causes of exposure to *Intentional self-harm*

This chapter focuses on the ***Intentional self-harm*** **(X60–X84)** section of ICD-10-AM 'Chapter XX External causes of morbidity and mortality', which includes the following:

- Intentional self-poisoning by and exposure to non-opioid analgesics, antipyretics and anti-rheumatics (X60)
- Intentional self-poisoning by and exposure to anti-epileptic, sedative-hypnotic, anti-parkinsonism and psychotropic drugs, not elsewhere classified (X61)
- Intentional self-poisoning by and exposure to narcotics and psychodysleptics (hallucinogens), not elsewhere classified (X62) (includes opioids)
- Intentional self-poisoning by and exposure to other drugs acting on the autonomic nervous system (X63)
- Intentional self-poisoning by and exposure to other and unspecified drugs, medicaments and biological substances (X64)
- Intentional self-poisoning by and exposure to alcohol (X65)
- Intentional self-poisoning by and exposure to organic solvents and halogenated hydrocarbons and their vapours (X66)
- Intentional self-poisoning by and exposure to other gases and vapours (X67)
- Intentional self-poisoning by and exposure to pesticides (X68)
- Intentional self-poisoning by and exposure to other and unspecified chemicals and noxious substances (X69)
- Intentional self-harm by hanging, strangulation and suffocation (X70)
- Intentional self-harm by drowning and submersion (X71)
- Intentional self-harm by handgun discharge (X72)
- Intentional self-harm by other and unspecified firearm discharge (X74)
- Intentional self-harm by explosive material (X75)
- Intentional self-harm by smoke, fire and flames (X76)
- Intentional self-harm by steam, hot vapours and hot objects (X77)
- Intentional self-harm by sharp object (X78)
- Intentional self-harm by blunt object (X79)
- Intentional self-harm by jumping from a high place (X80)
- Intentional self-harm by jumping or lying before moving object (X81)
- Intentional self-harm by crashing of motor vehicle (X82)
- Intentional self-harm by other specified means (X83)
- Intentional self-harm by unspecified means (X84).

Box 12.2: 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 were purposely self-inflicted poisoning or injury, suicide or attempted suicide (NCCC 2012). Determining whether an injury is due to intentional self-harm is not always straightforward. Cases may appear to be intentional self-harm, but inconclusiveness of available information may preclude them being coded as such. In this situation, the case can be coded to an 'undetermined intent' category—for example, Y30 *Falling, jumping or pushed from a high place, undetermined intent* or Y32 *Crashing of motor vehicle, undetermined intent*.

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.

In very young children, ascertaining whether an injury was due to intentional self-harm can be difficult and may involve a parent or caregiver's perception of the intent. Ability to form an intention to inflict self-harm, and to understand the implications of doing so, requires a degree of maturation that is absent in infancy and early childhood.

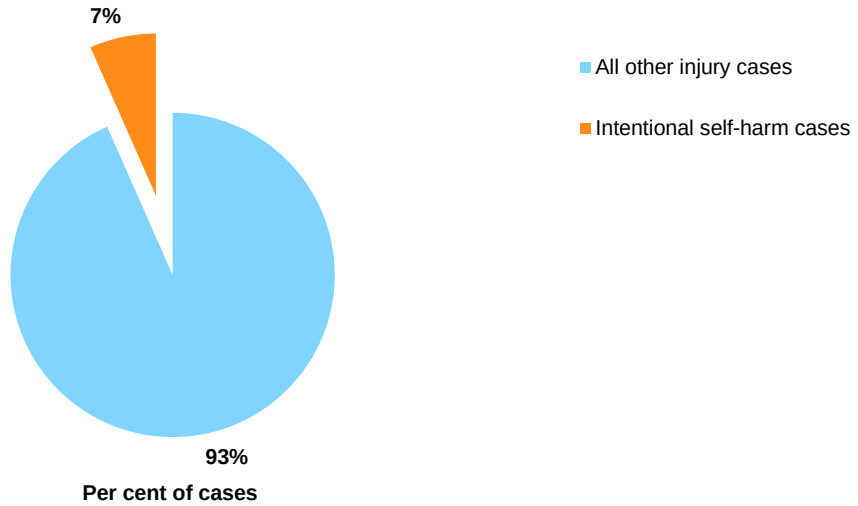
It is not possible to differentiate between acts of self-injury and acts of self-harm with suicidal intent within the NHMD, but it is likely that an unknown proportion of cases of intentional self-harm are self-injurious in nature rather than suicidal in intent.

Such sources of uncertainty about the assignment of intent limit the certainty of any estimates of intentional self-harm based on routine hospital data, particularly for children. For these reasons, in this report, cases of intentional self-harm are presented in aggregate for ages up to and including 14.

How many *Intentional self-harm* cases were there in 2016–17?

There were an estimated 33,131 cases due to *Intentional self-harm* during 2016–17. Cases due to *Intentional self-harm* made up 7% of all hospitalised injury cases in 2016–17 (Figure 12.1).

Figure 12.1: Proportion of injury cases due to *Intentional self-harm*, 2016–17

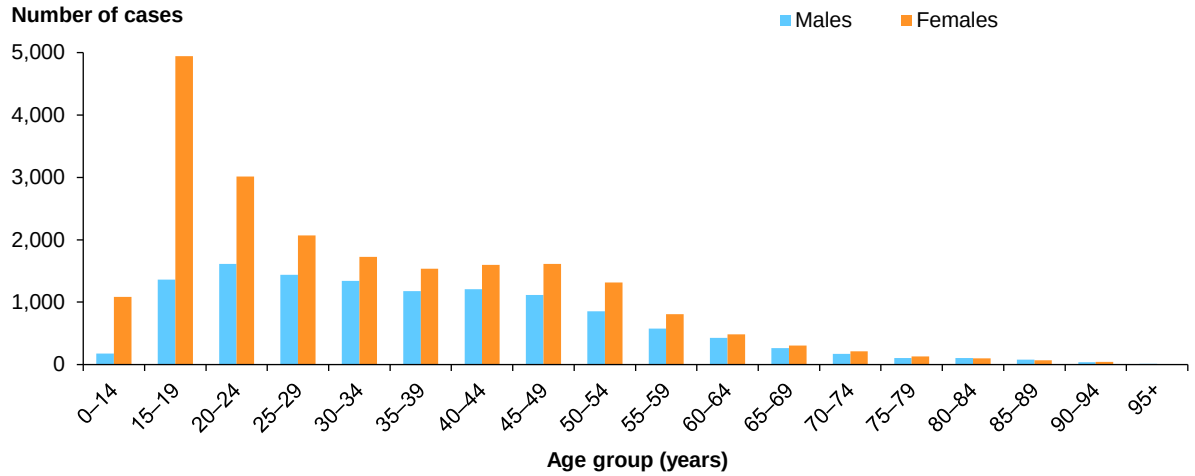


Age group and sex, 2016–17

Cases of *Intentional self-harm* in very young children may be subject to misinterpretation, given the difficulties in assigning intent to the actions of young children. With this in mind, and due to the small number of cases of *Intentional self-harm* in children, the youngest age groups have been combined (see Box 12.2).

Of the 33,131 *Intentional self-harm* cases in Australia in 2016–17, two-thirds were female (21,065). There were more females than males in each age group up to about ages 85+ (Figure 12.2). The highest number of cases (4,945) occurred among females aged 15–19; by comparison there were only 1,362 cases of *Intentional self-harm* among males in the same age group.

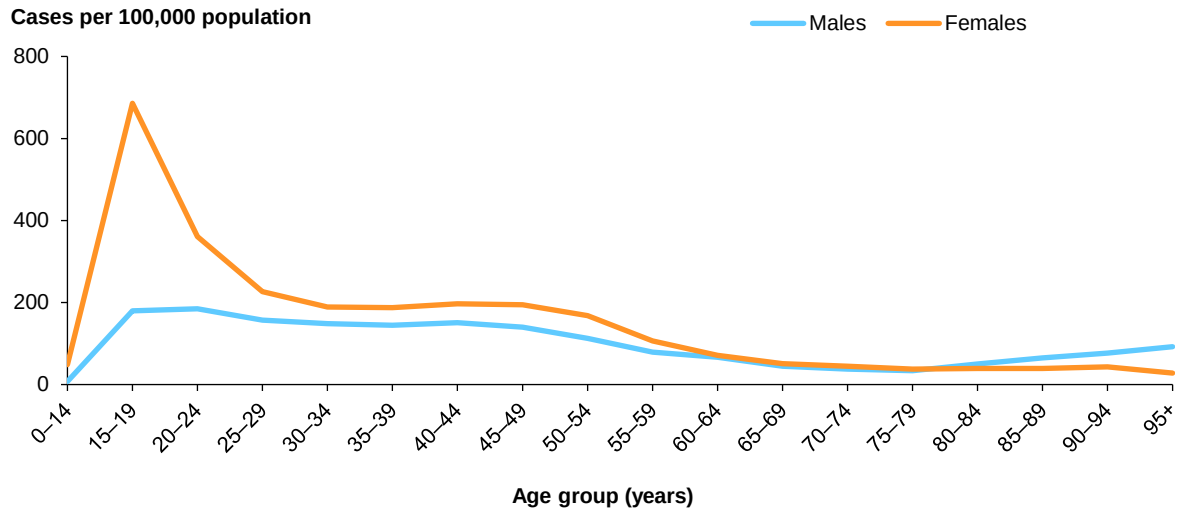
Figure 12.2: Number of *Intentional self-harm* injury cases, by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Age-specific rates of *Intentional self-harm* differed by sex (Figure 12.3). Up to the 60–64 age group, rates were higher for females than for males. The difference was substantial at 15–19, where the rate for females (686 cases per 100,000 population) was more than 3 times that of males (180 cases per 100,000).

Figure 12.3: Age-specific rates of *Intentional self-harm* injury cases, by age group, by sex, Australia, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Nature of injury

Poisoning or toxic effect was the most common type of injury due to *Intentional self-harm*, accounting for 83% of cases in 2016–17 (Table 12.1). Among males (10%) and females (9%), *Open wound* was the second most likely injury to result from *Intentional self-harm*.

Table 12.1: *Intentional self-harm* injury cases, by type of injury, by sex, 2016–17

	Males		Females		Persons	
Type of injury	**Number**	**%**	**Number**	**%**	**Number**	**%**
Fracture	167	1.4	54	0.3	221	0.7
Dislocation	3	0.0	4	0.0	7	0.0
Soft-tissue injury	179	1.5	146	0.7	325	1.0
Open wound	1,158	9.6	1,794	8.5	2,956	8.9
Intracranial injury	70	0.6	22	0.1	92	0.3
Internal organ or vessel of trunk	97	0.8	51	0.2	148	0.4
Burn	93	0.8	85	0.4	178	0.5
Superficial injury	203	1.7	229	1.1	432	1.3
Poisoning or toxic effect	9,267	76.9	18,126	86.0	27,397	82.7
Other and unspecified injuries	819	6.8	554	2.6	1,375	4.1
Total	**12,056**	**100.0**	**21,065**	**100.0**	**33,131**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

Remoteness of usual residence

The age-standardised rate of injury due to *Intentional self-harm* in 2016–17 varied according to remoteness of usual residence (Table 12.2). The lowest rate of *Intentional self-harm* was in *Major cities* (126 per 100,000 population) and the highest in *Remote* and *Very remote* areas (180 per 100,000 population each).

Table 12.2: *Intentional self-harm* injury cases, by remoteness of usual residence, 2016–17

	Remoteness of usual residence				
Indicators	**Major cities**	**Inner regional**	**Outer regional**	**Remote**	**Very remote**
Intentional self-harm cases	21,689	6,465	3,560	497	356
Age-standardised rate (cases per 100,000 population)	126	165	194	180	180

Aboriginal and Torres Strait Islander people

There were an estimated 2,849 cases of Indigenous Australians hospitalised as a result of *Intentional self-harm* in 2016–17 (Table 12.3). More females than males were hospitalised. Intentional self-harm cases among Indigenous Australians made up a slightly higher proportion (10%) of all injury cases, compared with non-Indigenous Australians (6%). Age-standardised rates of *Intentional self-harm* among Indigenous Australians were more than twice those of non-Indigenous Australians, and in the case of Indigenous males, 3 times the rate for non-Indigenous males.

Table 12.3: *Intentional self-harm* injury cases, by Indigenous status, by sex, 2016–17

	Indigenous			Non-Indigenous		
Indicators	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Intentional self-harm cases	1,113	1,736	2,849	10,755	19,154	29,919
Age-standardised rate (cases per 100,000 population)	325	445	384	93	170	131

Notes

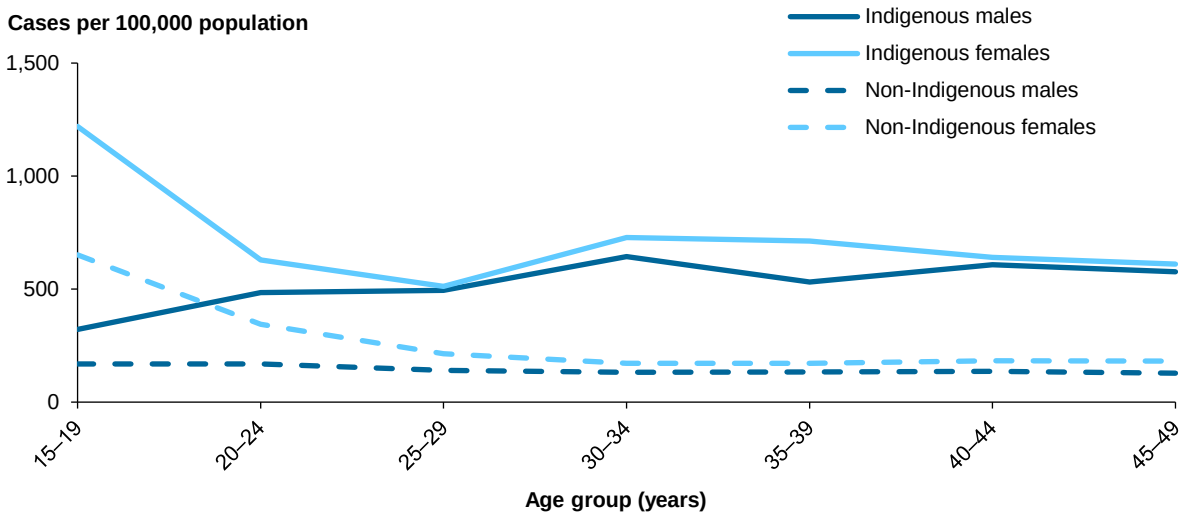
1. Persons total includes cases for which age and/or sex were not reported.
2. Non-Indigenous Australians excludes cases where Indigenous status is not reported.

Due to the small case numbers of injury due to *Intentional self-harm* among Indigenous Australians over the age of 50 and younger than 15, analyses were restricted by age.

The patterns of age- and sex-specific rates of *Intentional self-harm* for Indigenous Australians were different from those of non-Indigenous Australians (Figure 12.2). Indigenous rates of *Intentional self-harm* remained high after the late teenage years, while rates decreased from this point among non-Indigenous Australians. Rates of *Intentional self-harm* were higher for both male and female Indigenous Australians in all age groups, compared with their non-Indigenous counterparts. Rates of self-harm were higher for Indigenous females, compared with Indigenous males, at all ages.

The highest rate of injury due to *Intentional self-harm* in Indigenous males occurred for those aged 30–34 (644 cases per 100,000 population), while the rate of injury for non-Indigenous males in the same age group was 132. For Indigenous females, the highest rate of self-harm injury occurred for those aged 15–19 (1,220 cases per 100,000 population), while the rate of injury for non-Indigenous females in the same age group was 652 per 100,000.

Figure 12.4: Age-specific rates of *Intentional self-harm* injury cases, by Indigenous status, by selected age group, by sex, 2016–17



Notes

1. 'Non-Indigenous' includes cases where Indigenous status was not stated.
2. Data underpinning this figure can be found in the supplementary table spreadsheet for Chapter 13.

Socioeconomic status

The proportion of injury due to *Intentional self-harm* cases in each SES group ranged between 13% and 26% (Table 12.4). The highest proportions, for both males and females, were for people living in areas with the lowest (most disadvantaged) SES classification. For males, twice the proportion of *Intentional self-harm* cases were for those living in areas with the lowest (most disadvantaged) SES classification, compared with those in areas with the highest (most advantaged) SES classification.

Table 12.4: *Intentional self-harm* injury cases, by SEIFA quintile, by sex, 2016–17

	Males		Females		Persons	
SEIFA	**Number**	**%**	**Number**	**%**	**Number**	**%**
1–Lowest	3,141	26.1	5,034	23.9	8,180	24.7
2	2,678	22.2	4,617	21.9	7,298	22.0
3	2,272	18.8	4,200	19.9	6,472	19.5
4	2,021	16.8	3,877	18.4	5,898	17.8
5–Highest	1,576	13.1	3,129	14.9	4,707	14.2
Total	**12,056**	**100.0**	**21,065**	**100.0**	**33,131**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.
3. Total includes cases for which the SES group was not able to be determined.

Cause of injury due to *Intentional self-harm*

Intentional self-poisoning (X60–X69) accounted for 83% of all cases of self-harm in 2016–17 (Table 12.5), with female case numbers (18,124) more than twice those of males (9,270). The second most common cause overall was *Intentional self-harm by sharp object* (12%), and again there were more cases for females than for males.

Forty-two per cent of all cases of *Intentional self-harm* were *Intentional poisoning by and exposure to anti-epileptic, sedative-hypnotic, anti-parkinsonism and psychotropic drugs* (13,819). This category includes *benzodiazepines*, *other and unspecified antidepressants*—which include selective serotonin reuptake inhibitors; *other and unspecified antipsychotics and neuroleptics*; *other anti-epileptic and sedative-hypnotic drugs*; *tricyclic and tetracyclic antidepressants; phenothiazine antipsychotics; and neuroleptics and psychostimulants with potential for use disorder.*

Intentional self-poisoning by non-opioid analgesics, antipyretics and anti-rheumatics accounted for 22% of self-harm cases. This category includes, for example, anti-inflammatory drugs (non-steroidal anti-inflammatory drugs or NSAIDs) such as ibuprofen and paracetamol, antipyretics (for example, aspirin and acetaminophen) and antirheumatics (some of which are used to treat arthritis). More females were hospitalised due to this cause, compared with males (5,536 and 1,679 cases, respectively).

Hanging, strangulation and suffocation accounted for 3% of all self-harm cases, but substantially more males than females were admitted for this method (584 and 289 cases, respectively).

Table 12.5: Cause of *Intentional self-harm* injury cases, by sex, 2016–17

	Males		Females		Persons	
Cause	**Number**	**%**	**Number**	**%**	**Number**	**%**
Intentional self-poisoning by and exposure to:						
Non-opioid analgesics, antipyretics and anti-rheumatics	1,679	13.9	5,536	26.3	7,215	21.8
Anti-epileptic, sedative-hypnotic, anti-parkinsonism and psychotropic drugs	4,783	39.7	9,034	42.9	13,819	41.7
Narcotics and psychodysleptics (hallucinogens)	1,015	8.4	1,110	5.3	2,125	6.4
Other drugs acting on the autonomic nervous system	168	1.4	305	1.4	473	1.4
Other and unspecified drugs, medicaments and biological substances	930	7.7	1,498	7.1	2,430	7.3
Alcohol	166	1.4	183	0.9	349	1.1
Organic solvents and their halogenated hydrocarbons and their vapours	32	0.3	35	0.2	67	0.2
Other gases and vapours (for example, carbon monoxide)	225	1.9	64	0.3	289	0.9
Pesticides	81	0.7	44	0.2	125	0.4
Other and unspecified chemicals and noxious substances	191	1.6	315	1.5	506	1.5
Subtotal	*9,270*	*77.0*	*18,124*	*86.1*	*27,398*	*82.7*
Intentional self-harm by hanging, strangulation and suffocation	584	4.8	289	1.4	873	2.6
Intentional self-harm by drowning and submersion	11	0.1	16	0.1	27	0.1
Intentional self-harm by handgun discharge	8	0.1	0	0.0	8	0.0
Intentional self-harm by other and unspecified firearm discharge	24	0.2	0	0.0	24	0.1
Intentional self-harm by smoke, fire and flames	69	0.6	50	0.2	119	0.4
Intentional self-harm by steam, hot vapours and hot objects	8	0.1	9	0.0	17	0.1
Intentional self-harm by sharp object	1,609	13.3	2,185	10.4	3,799	11.5
Intentional self-harm by blunt object	76	0.6	51	0.2	127	0.4
Intentional self-harm by jumping from a high place	77	0.6	52	0.2	129	0.4
Intentional self-harm by jumping or lying before moving object	43	0.4	17	0.1	60	0.2
Intentional self-harm by crashing of motor vehicle	71	0.6	44	0.2	115	0.3
Intentional self-harm by other specified means	164	1.4	160	0.8	324	1.0
Intentional self-harm by unspecified means	42	0.3	68	0.3	111	0.3
Total	**12,056**	**100.0**	**21,065**	**100.0**	**33,131**	**100.0**

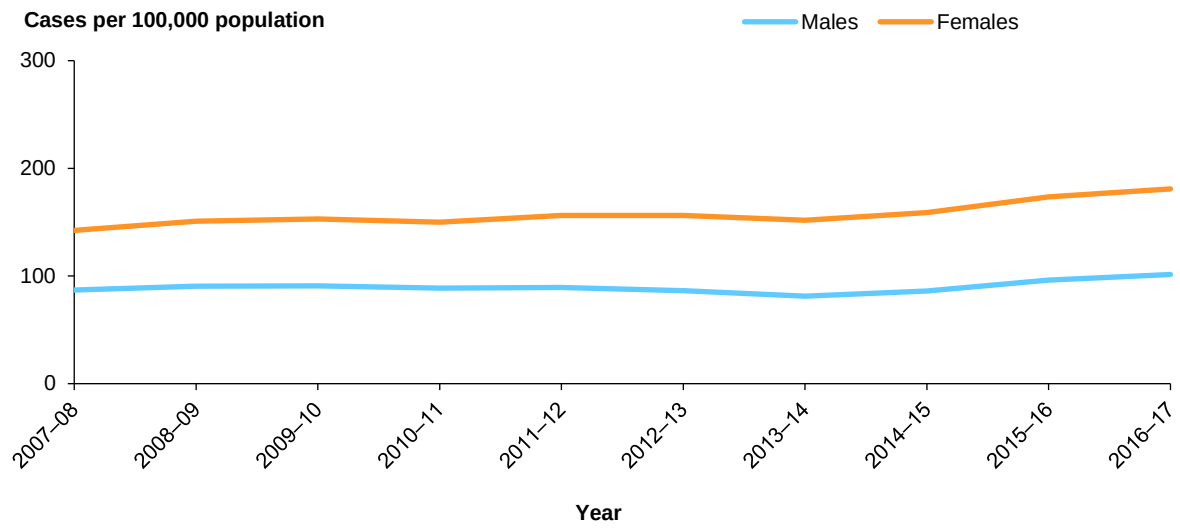
Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

How have *Intentional self-harm* cases changed over time?

Age-standardised rates for females were consistently higher than for males throughout the period (Figure 12.5). A rise in rates for both males and females over the period is evident.

Figure 12.5: Age-standardised rates of *Intentional self-harm* injury cases, by sex, 2007–08 to 2016–17

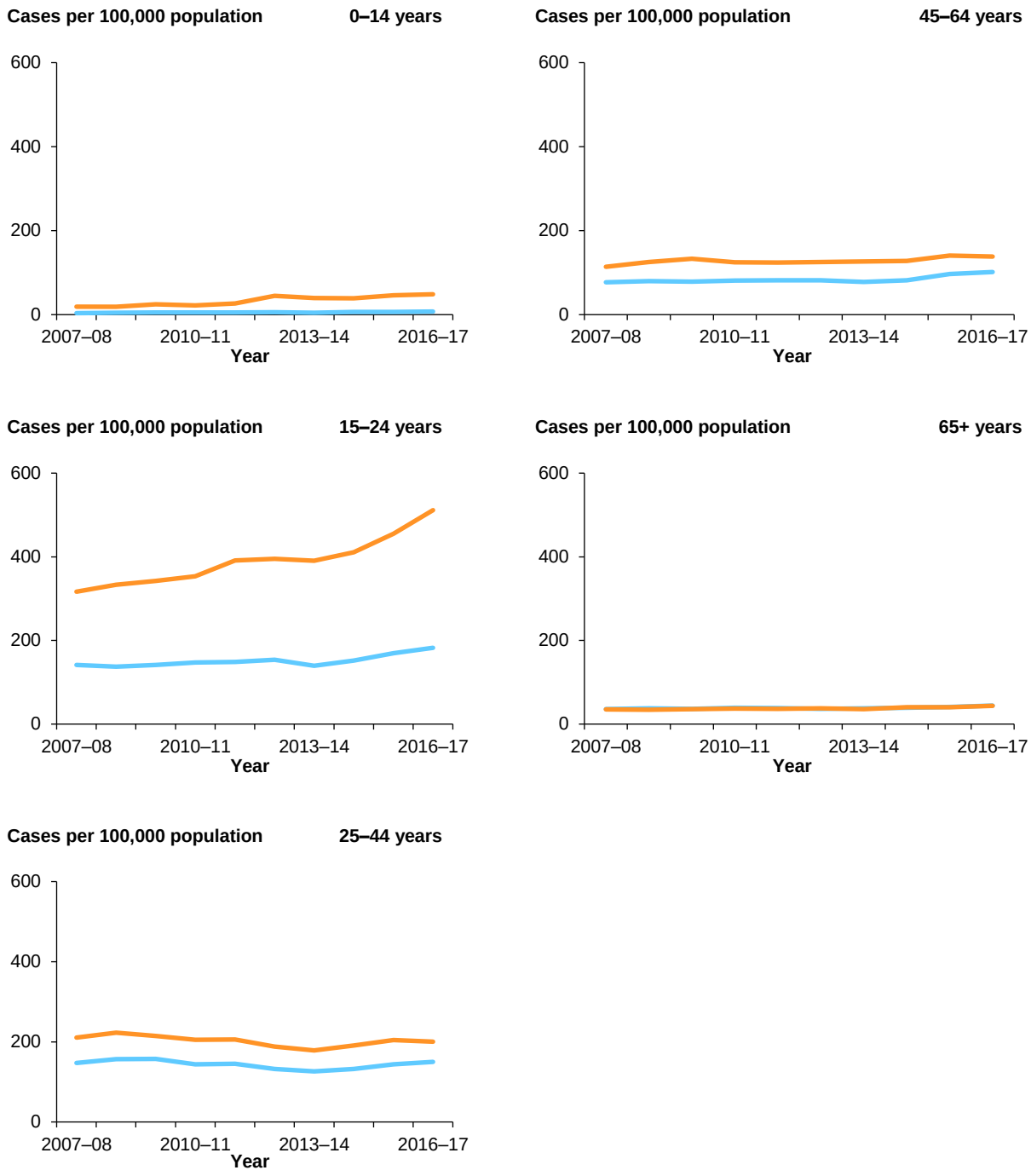


Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

The change in rates of injury over time, by broad age group as well as by sex, is shown in Figure 12.6. The figures show an additional 2 years of data since the publication of the previous *Trends in hospitalised injury, Australia 1999–00 to 2014–15* report (AIHW: Pointer 2018a). Age-specific rates for *Intentional self-harm* for children aged 0–14 are shown in aggregate, due to small case numbers.

Age-specific rates of *Intentional self-harm* were higher for females in all age groups, other than for those aged 65 or over. A rise in rate over the period was evident among females in 2 age categories: 0–14 and 15–24. For girls aged 0–14, the rate of intentional self-harm increased from 19 cases per 100,000 in 2007–08 to 49 cases per 100,000 in 2016–17. For females aged 15–24, the rate of intentional self-harm increased from 317 cases per 100,000 in 2007–08 to 512 cases per 100,000 in 2016–17.

Figure 12.6: Age-specific rates of *Intentional self-harm* injury cases, by age group, by sex, Australia, 2007–08 to 2016–17



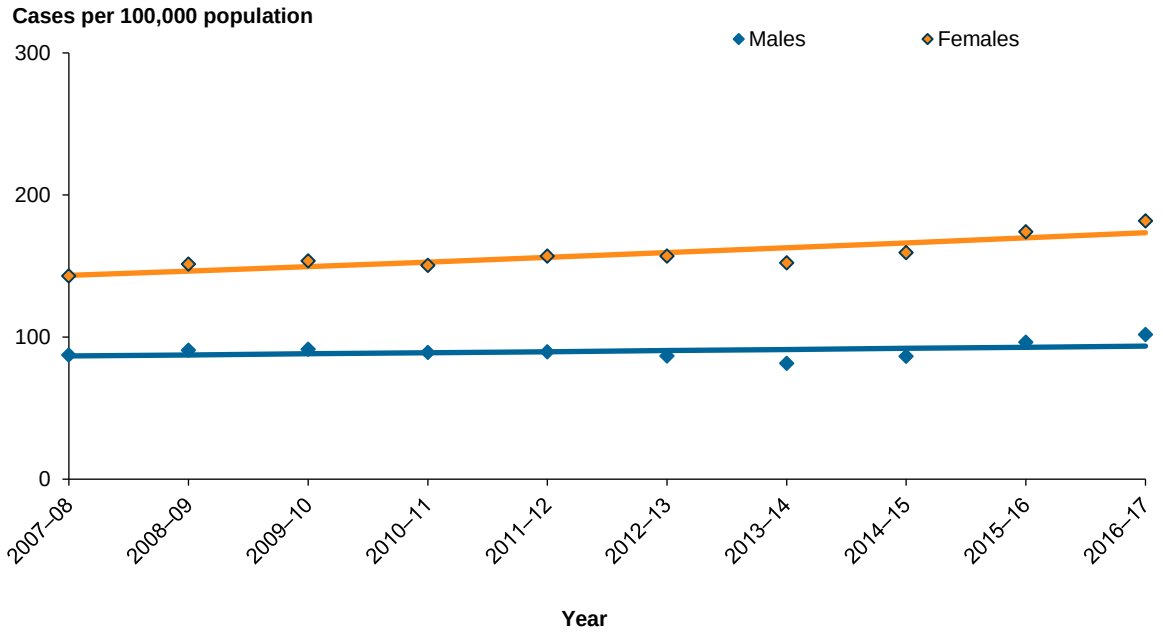
Notes

1. Rates for males are indicated by the blue line and rates for females by the orange line in all charts. For age group 65+ years the rates for males and females were very similar which results in overlap of the trend lines.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Modelled age-standardised annual rates injury due to *Intentional self-harm* increased from 115 per 100,000 population in 2007–08 to 133 per 100,000 in 2016–17. The increase averaged 1.7% per year and was statistically significant (95% CI: 1.5%, 1.8%).

An analysis by sex showed increases in the rate of injury due to *Intentional self-harm* over the period for both males and females (Figure 12.7). For males, the rate increased from 86.7 per 100,000 population in 2007–08 to 93.7 in 2016–17. The increase in the modelled rate for males averaged 0.9% per year and was statistically significant (95% CI: 0.6%, 1.1%). For females, the rate increased from 144 per 100,000 population in 2007–08 to 174 in 2016–17. The rise in the modelled rate for females averaged 2.1% per year and was statistically significant (95% CI: 2.0%, 2.3%).

Figure 12.7: Modelled age-standardised rates of injury due to *Intentional self-harm*, by sex, 2007–08 to 2016–17



Notes

1. The solid line represents the modelled rate from 2007–08 to 2016–17. The filled symbols represent the observed age-standardised rate value for each year.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

13 Assault

This chapter presents information on patients who were admitted to hospital as a result of injury due to intentional assault. Information in this chapter includes:

- age group and sex of the patient
- cause of the injury
- trends over time.

Key findings

Almost 22,000 cases of hospitalised injury were due to *Assault* in 2016–17.

Sex of patient

In 2016–17, males made up two-thirds (14,454) of hospitalised *Assault* cases.

Age of patient

In 2016–17, for both males and females, cases of *Assault* were more frequent from the age group 15–19 onwards. Among males, the largest number of cases of injury due to intentional assault occurred in the 20–24 age group (2,179).

Indigenous status

Assaults made up a much higher proportion of all hospitalised injury cases among Indigenous Australians (23%), compared with non-Indigenous Australians (3%). The age-standardised rate of *Assault* among Indigenous Australians was 14 times that of non-Indigenous Australians. The rate for Indigenous females was over 29 times the rate for non-Indigenous females.

Cause of injury

The most common cause of injury due to intentional assault was *Assault by bodily force*, comprising 60% of cases in 2016–17.

Trends in injury

Assault injury hospitalisations declined over the period 2007–08 to 2016–17, decreasing on average by 3.2% per year. The decrease among male cases was 5% per year however there was an increase in *Assault* injury hospitalisations among female cases over the period of 1.4% per year.

What methods were used?

This chapter includes injury cases meeting the criteria set out in Section 1.3, providing that the first-reported external-cause code is in the ICD-10-AM ranges X85–Y09 (*Assault*) and Y35–Y36 (*Legal intervention and operations of war*) in 'Chapter XX External causes of morbidity and mortality'.

Relevant terms and information applying to the data used in this chapter are summarised in boxes 1.1, 1.2, 13.1 and 13.2. Further information on methods is provided in 'Appendix A: Data issues'.

Box 13.1: External causes of *Assault* injury

This chapter focuses on 2 sections of the ICD-10-AM 'Chapter XX External causes of morbidity and mortality': **Assault (X85–Y09)** and **Legal intervention and operations of war (Y35–Y36)**, which include:

Assault (X85–Y09)

- Assault by drugs, medicaments and biological substances (X85)
- Assault by corrosive substance (X86)
- Assault by pesticides (X87)
- Assault by gases and vapours (X88)
- Assault by other specified chemicals and noxious substances (X89)
- Assault by unspecified chemical or noxious substance (X90)
- Assault by hanging, strangulation and suffocation (X91)
- Assault by drowning and submersion (X92)
- Assault by handgun discharge (X93)
- Assault by other and unspecified firearm discharge (X95)
- Assault by explosive material (X96)
- Assault by smoke, fire and flames (X97)
- Assault by steam, hot vapours and hot objects (X98)
- Assault by sharp object (X99)
- Assault by blunt object (Y00)
- Assault by pushing from high place (Y01)
- Assault by pushing or placing victim before moving object (Y02)
- Assault by crashing of motor vehicle (Y03)
- Assault by bodily force (Y04)
- Sexual assault by bodily force (Y05)
- Neglect and abandonment (Y06)
- Other maltreatment syndromes (Y07)
- Assault by other specified means (Y08)
- Assault by unspecified means (Y09).

Legal intervention and operations of war (Y35–Y36)

- Legal intervention (Y35)
- Operations of war (Y36).

Box 13.2: Ascertainment of injury due to *Assault*

As with injury due to intentional self-harm, cases of injury due to intentional assault may be difficult to identify. Feelings of shame or embarrassment may underlie reticence to admit to either of these forms of intentional injury. In addition, most injuries due to interpersonal violence have potential legal implications. Pressures or incentives to not reveal assault may be particularly likely in circumstances such as injury of a child or other dependent person by a caregiver, or injury of one spouse by the other. Cases recognised as possibly being due to assault—but where doubt remains—may therefore be coded as *Undetermined intent*.

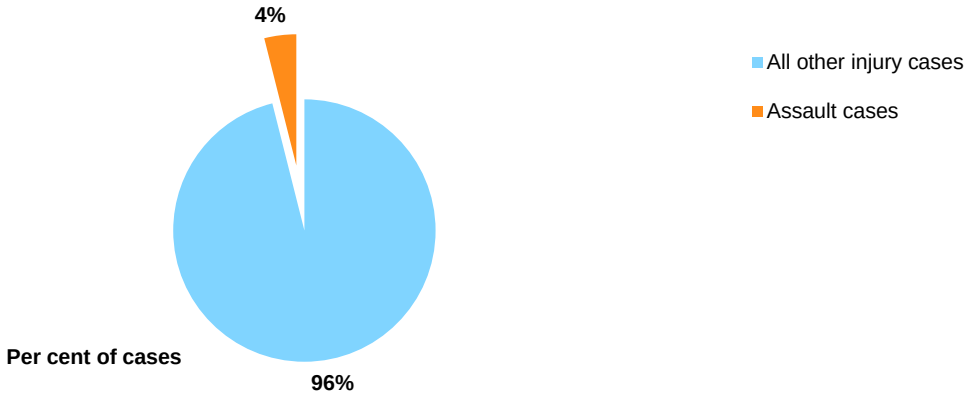
Perpetrator codes are used in ICD-10-AM when a code from the ICD-10-AM category *Assault* (X85–Y09) is present (see 'Appendix A: Data issues'). A coding standard (NCCH 2002) provides guidance to clinical coders in assigning codes identifying the perpetrator of assault, abuse or neglect. The coding rules operate on a hierarchical basis, with coders required to code the closest relationship between the perpetrator and the victim. The 10 subcategories of perpetrator consist of the following:

- Spouse or domestic partner
- Parent
- Other family member
- Carer
- Acquaintance or friend
- Official authorities
- Person unknown to the victim
- Multiple persons unknown to the victim
- Other specified person
- Unspecified person.

How many *Assault* cases were there in 2016–17?

There were an estimated 22,086 cases of injury due to intentional *Assault* during 2016–17. These cases made up 4% of all hospitalised injury cases in 2016–17 (Figure 13.1).

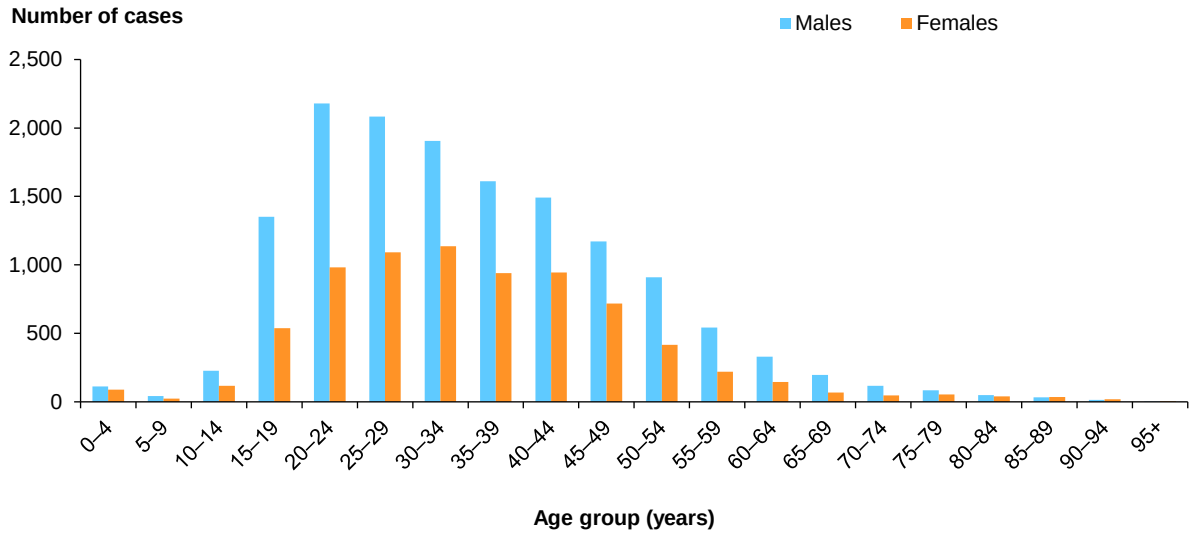
Figure 13.1: Proportion of injury cases due to *Assault*, 2016–17



Age group and sex, 2016–17

Of the 22,086 cases due to *Assault* in Australia in 2016–17, two-thirds (14,454) were male. Gender differences by age were apparent, with higher numbers of cases among males occurring for every age group (Figure 13.2). For both males and females, cases of *Assault* were more frequent from the 15–19 age group onwards. Among males, the largest number of cases due to *Assault* occurred in the 20–24 age group (2,179), while among females, the largest number of cases occurred in the 30–34 age group (1,136).

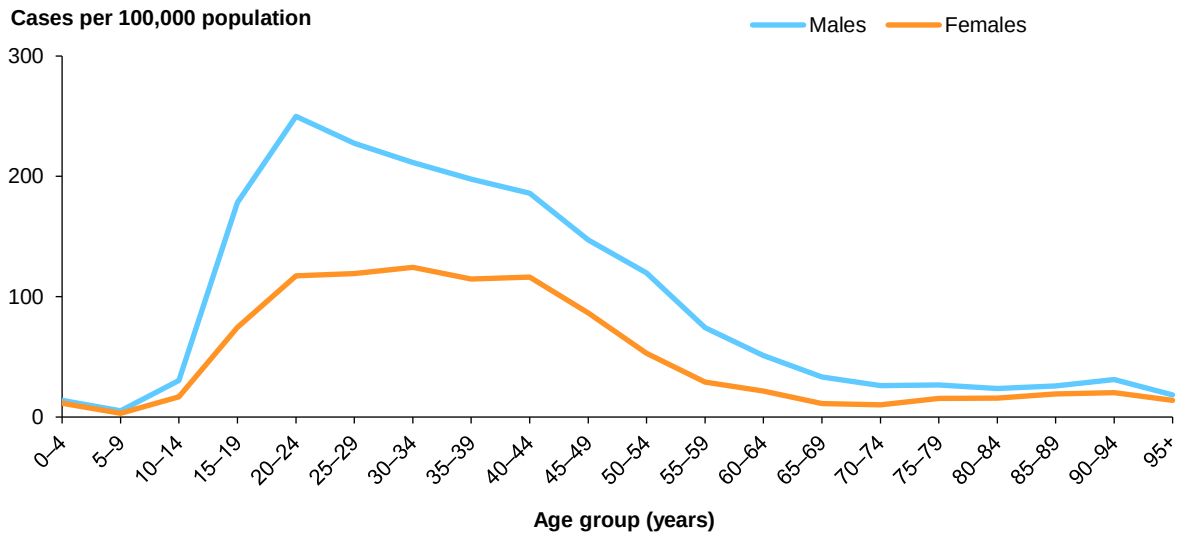
Figure 13.2: Number of *Assault* injury cases, by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Age-specific rates for males were much higher than for females at all age groups (Figure 13.3). Male rates for *Assault* peaked in the 20–24 age group, with an age-specific rate of 250 hospitalised cases per 100,000 population compared with 118 per 100,000 for females in the same age group.

Figure 13.3: Age-specific rates of *Assault* injury cases, by age group, by sex, 2016–17



Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Nature of injury

Injury due to *Assault* resulted in damage to various body regions, but the most common region was the head and neck (65%), both for males (68%) and for females (60%) (Table 13.1).

Table 13.1: Cases due to *Assault*, by body region injured, by sex, 2016–17

	Males		Females		Persons	
Type of injury	**Number**	**%**	**Number**	**%**	**Number**	**%**
Head and neck	9,852	68.2	4,569	59.9	14,422	65.3
Trunk (thorax, abdomen, lower back, lumbar spine and pelvis)	1,601	11.1	1,056	13.8	2,657	12.0
Shoulder and upper limb (excluding wrist and hand)	1,028	7.1	650	8.5	1,678	7.6
Wrist and hand	1,114	7.7	462	6.1	1,576	7.1
Hip and lower limb (excluding ankle and foot)	603	4.2	418	5.5	1,023	4.6
Ankle and foot	61	0.4	105	1.4	166	0.8
Other, multiple and incompletely specified body regions	73	0.5	82	1.1	155	0.7
Injuries not described in terms of body region	122	0.8	287	3.8	409	1.9
Total	**14,454**	**100.0**	**7,629**	**100.0**	**22,086**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

Fracture was the most common type of injury due to *Assault*, accounting for 33% of cases in 2016–17 (Table 13.2). Fracture was far more common among males, with 39% of cases resulting in a fracture. Among females, fracture (20%), open wound (20%) and superficial injury (19%) were the injuries most likely to result from intentional *Assault*.

Table 13.2: Cases due to *Assault*, by type of injury, by sex, 2016–17

	Males		Females		Persons	
Type of injury	**Number**	**%**	**Number**	**%**	**Number**	**%**
Fracture	5,656	39.1	1,523	20.0	7,181	32.5
Dislocation	129	0.9	54	0.7	183	0.8
Soft-tissue injury	490	3.4	234	3.1	724	3.3
Open wound	2,951	20.4	1,542	20.2	4,493	20.3
Intracranial injury	1,637	11.3	543	7.1	2,180	9.9
Internal organ or vessel of trunk	494	3.4	159	2.1	653	3.0
Burn	49	0.3	46	0.6	95	0.4
Superficial injury	1,091	7.5	1,476	19.3	2,567	11.6
Poisoning or toxic effect	29	0.2	27	0.4	56	0.3
Other and unspecified injuries	1,928	13.4	2,025	26.6	3,954	17.9
Total	**14,454**	**100.0**	**7,629**	**100.0**	**22,086**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

Remoteness of usual residence

The age-standardised rate of injury due to *Assault* in 2016–17 varied according to remoteness of usual residence (Table 13.3). The rate of assault in *Very remote* areas (1,142 cases per 100,000 population) was 17 times the rate in *Major cities* (68 cases per 100,000).

Table 13.3: *Assault* injury cases, by remoteness of usual residence, 2016–17

	Remoteness of usual residence				
Indicators	**Major cities**	**Inner regional**	**Outer regional**	**Remote**	**Very remote**
Assault cases	11,967	2,871	2,775	1,459	2,319
Age-standardised rate (cases per 100,000 population)	68	76	154	519	1,142

Aboriginal and Torres Strait Islander people

There were an estimated 6,314 cases of Indigenous Australians hospitalised as a result of *Assault* in 2016–17 (Table 13.4). More females were hospitalised than males. *Assaults* made up a much higher proportion of all hospitalised cases among Indigenous Australians (23%), compared with non-Indigenous Australians (3%). The age-standardised rate of *Assault* among Indigenous Australians was 14 times that of non-Indigenous Australians. The *Assault* rate among Indigenous females was over 29 times the rate for non-Indigenous females.

Table 13.4: *Assault* injury cases, by Indigenous status, by sex, 2016–17

	Indigenous			Non-Indigenous		
Indicators	**Males**	**Females**	**Persons**	**Males**	**Females**	**Persons**
Assault cases	2,856	3,458	6,314	11,322	4,095	15,420
Age-standardised rate (cases per 100,000 population)	872	1,021	947	99	35	67

Notes

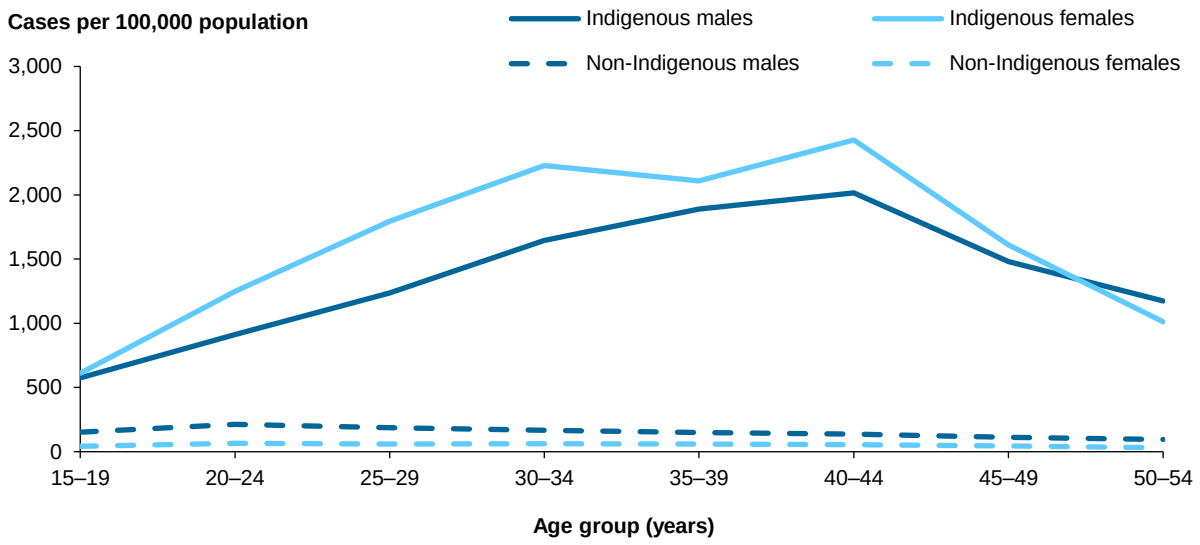
1. Persons total includes cases for which age and/or sex were not reported.
2. Non-Indigenous Australians excludes cases where Indigenous status is not reported.

Due to the small case numbers of injury due to *Assault* among Indigenous Australians over the age of 54 and younger than 15, analyses were restricted by age.

The patterns of age- and sex-specific rates of *Assault* for Indigenous Australians were different from those of non-Indigenous Australians (Figure 13.4). Rates of *Assault* were higher for both male and female Indigenous Australians in all age groups, compared with non-Indigenous Australians and. Among Indigenous Australians, rates of *Assault* were consistently higher among females, while the reverse was true among non-Indigenous Australians.

The highest rate of *Assault* for Indigenous females occurred in the 40–44 age group (2,427 cases per 100,000 population), while the rate of *Assault* injury for non-Indigenous females in this age group was 55 cases per 100,000. For Indigenous males, the highest rate occurred in the 40–44 age group (2,016 cases per 100,000 population), while the rate for non-Indigenous males in the same age group was 136 cases per 100,000.

Figure 13.4: Age-specific rates of *Assault* injury cases, by Indigenous status, by selected age group, by sex, 2016–17



Notes

1. 'Non-Indigenous' includes cases where Indigenous status was not stated.
2. Data underpinning this figure can be found in the supplementary table spreadsheet for Chapter 12.

Socioeconomic status

The proportion of *Assault* cases in each SES group ranged between 7% and 42% (Table 13.5). The highest proportion, for both males and females, were for people living in areas with the lowest (most disadvantaged) SES classification. For females, 6 times the proportion of *Assault* cases occurred for those living in areas with the lowest SES classification, compared with those in the highest (most advantaged) SES group.

Table 13.5: *Assault* injury cases, by SEIFA quintile, by sex, 2016–17

	Males		Females		Persons	
SEIFA	**Number**	**%**	**Number**	**%**	**Number**	**%**
1–Lowest	4,717	32.6	3,206	42.0	7,923	35.9
2	3,085	21.3	1,482	19.4	4,569	20.7
3	2,572	17.8	1,280	16.8	3,852	17.4
4	2,105	14.6	918	12.0	3,023	13.7
5–Highest	1,480	10.2	533	7.0	2,014	9.1
Total	**14,454**	**100.0**	**7,629**	**100.0**	**22,086**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.
3. Total includes cases for which the SES group was not able to be determined.

Cause of injury due to *Assault*

The most common cause by which injury occurred was *Assault by bodily force*, comprising 60% of cases (13,179). Twice as many males as females were injured as a result of bodily force (Table 13.6). The second and third most common causes of injury were *Assault by blunt object* (14%) and *Assault by sharp object* (12%), and again, more males than females were hospitalised due to these causes. Females were much more likely than males to be hospitalised as a result of a sexual assault (202 and 11 cases, respectively).

Table 13.6: Cause of *Assault* injury cases, by sex, 2016–17

	Males		Females		Persons	
Cause	**Number**	**%**	**Number**	**%**	**Number**	**%**
Assault by drugs, medicaments and biological substances	17	0.1	17	0.2	34	0.2
Assault by corrosive substance	5	0.0	5	0.1	10	0.0
Assault by pesticides	1	0.0	0	0.0	1	0.0
Assault by other specified chemicals and noxious substances	4	0.0	2	0.0	6	0.0
Assault by unspecified chemical or noxious substance	5	0.0	10	0.1	15	0.1
Assault by hanging, strangulation and suffocation	26	0.2	135	1.8	161	0.7
Assault by drowning and submersion	1	0.0	1	0.0	2	0.0
Assault by handgun discharge	13	0.1	2	0.0	15	0.1
Assault by other and unspecified firearm discharge	102	0.7	7	0.1	109	0.5
Assault by explosive material	1	0.0	0	0.0	1	0.0
Assault by smoke, fire and flames	21	0.1	14	0.2	35	0.2
Assault by steam, hot vapours and hot objects	22	0.2	27	0.4	49	0.2
Assault by sharp object	1,975	13.7	611	8.0	2,586	11.7
Assault by blunt object	2,003	13.9	1,140	14.9	3,143	14.2
Assault by pushing from high place	8	0.1	11	0.1	19	0.1
Assault by pushing or placing victim before moving object	2	0.0	4	0.1	6	0.0
Assault by crashing of motor vehicle	24	0.2	14	0.2	38	0.2
Assault by bodily force	8,620	59.6	4,558	59.7	13,179	59.7
Sexual assault by bodily force	11	0.1	202	2.6	213	1.0
Neglect and abandonment	24	0.2	23	0.3	47	0.2
Other maltreatment syndromes	111	0.8	207	2.7	318	1.4
Assault by other specified means	270	1.9	186	2.4	456	2.1
Assault by unspecified means	1,089	7.5	438	5.7	1,529	6.9
Legal intervention involving firearm discharge and Operations of war	99	0.7	15	0.2	114	0.5
Total	**14,454**	**100.0**	**7,629**	**100.0**	**22,086**	**100.0**

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

The top 3 causes of hospitalisation as a result of *Assault* did not vary much by age. *Assault by bodily force* accounted for well over 50% of all causes of hospitalisation in each age group, other than for children aged 0–4; for that age group, the most common cause was *Other maltreatment syndromes* (Table 13.7).

Table 13.7: Top 3 causes of *Assault* injury cases, 0–4 years, 2016–17

0–4 year olds	Number	%
Other maltreatment syndromes	121	60.2
Assault by bodily force	27	13.4
Neglect and abandonment	25	12.4
All other types of assault	28	14.0
Total	**201**	**100.0**

Perpetrator

The relationship of the perpetrator to the victim of *Assault* is presented in Table 13.8. Overall, the most commonly reported perpetrator of an *Assault* was a *Spouse or domestic partner* (19%), followed by *Acquaintance or friend* (10%). Gender differences were apparent, with 46% of female *Assault* victims identifying the perpetrator as a *Spouse or domestic partner,* compared with just 4% of males. For males hospitalised as a result of an *Assault*, reported perpetrators were more likely to be a person or persons unknown to the victim (19% for the 2 categories combined). Almost 50% of cases had an *Unspecified person* listed as the perpetrator. Cases lacking specific information about a perpetrator may have occurred for a number of reasons, including information not being reported by or on behalf of victims, or information not being recorded in the patient's hospital record.

Table 13.8: Relationship of the perpetrator to the victim of *Assault* injury cases, by sex, 2016–17

	Males		Females		Persons	
Perpetrator	**Number**	**%**	**Number**	**%**	**Number**	**%**
Spouse or domestic partner	616	4.3	3,541	46.4	4,157	18.8
Parent	218	1.5	202	2.6	421	1.9
Other family member	1,042	7.2	996	13.1	2,038	9.2
Carer	12	0.1	21	0.3	33	0.1
Acquaintance or friend	1,520	10.5	569	7.5	2,089	9.5
Official authorities	125	0.9	17	0.2	142	0.6
Person unknown to the victim	1,388	9.6	306	4.0	1,694	7.7
Multiple persons unknown to the victim	1,394	9.6	176	2.3	1,570	7.1
Other specified person	887	6.1	352	4.6	1,239	5.6
Unspecified person	7,153	49.5	1,434	18.8	8,589	38.9
Total[(a)]	**14,454**	**100.0**	**7,629**	**100.0**	**22,086**	**100.0**

(a) Contains 114 cases of *Legal intervention involving firearm discharge* or *Operations of war*.

Notes

1. Persons total includes cases for which age and/or sex were not reported.
2. Due to rounding, the sum of the percentages in tables may not equal 100 per cent.

The type of perpetrator reported also differed by age group of victim (Table 13.9). For children, the majority of perpetrators were a *Parent* or *Other family member* (80% and 31% for victims aged 0–4 and 5–14, respectively). Among those aged 15–24 who were hospitalised as a result of an *Assault*, *Spouse or domestic partner* was the most commonly identified perpetrator (14%). Similar results were seen for the 25–44 age group, where 23% of cases had *Spouse or domestic partner* listed as the perpetrator. In the oldest age group, high proportions identified *Other family member* (24%) and *Acquaintance or friend* (15%) as perpetrators.

Table 13.9: Relationship of the perpetrator to the victim of *Assault* injury cases, by age of victim, 2016–17

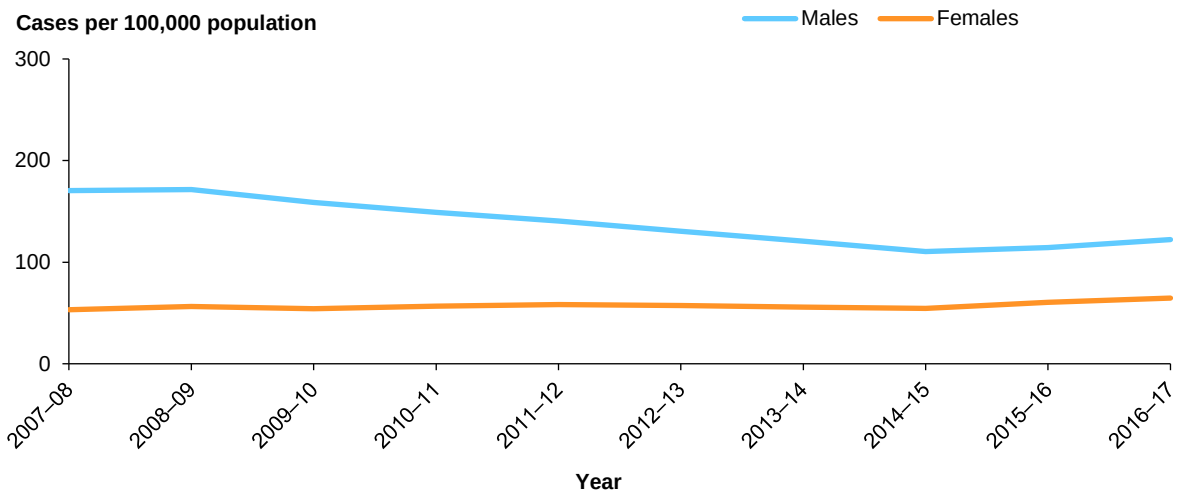
	0–4		5–14		15–24		25–44		45–64		65+	
Perpetrator	**Number**	**%**	**Number**	**%**	**Number**	**%**	**Number**	**%**	**Number**	**%**	**Number**	**%**
Spouse or domestic partner	2	1.0	5	1.2	726	14.4	2,589	23.1	767	17.2	68	8.9
Parent	142	70.6	75	18.2	113	2.2	80	0.7	10	0.2	1	0.1
Other family member	18	9.0	53	12.9	323	6.4	886	7.9	573	12.9	185	24.2
Carer	3	1.5	3	0.7	1	0.0	6	0.1	9	0.2	11	1.4
Acquaintance or friend	3	1.5	81	19.7	444	8.8	955	8.5	488	11.0	118	15.4
Official authorities	0	0.0	1	0.2	30	0.6	77	0.7	30	0.7	4	0.5
Person unknown to the victim	0	0.0	23	5.6	444	8.8	800	7.1	353	7.9	74	9.7
Multiple persons unknown to the victim	0	0.0	17	4.1	468	9.3	771	6.9	279	6.3	35	4.6
Other specified person	3	1.5	52	12.7	243	4.8	566	5.1	285	6.4	90	11.8
Unspecified person	29	14.4	101	24.6	2,233	44.2	4,412	39.4	1,638	36.8	176	23.0
Total[(a)]	**201**	**100.0**	**411**	**100.0**	**5,051**	**100.0**	**11,204**	**100.0**	**4,455**	**100.0**	**22,086**	**100.0**

(a) Contains 114 cases of Legal intervention involving firearm discharge or Operations of war.

How have *Assault* cases changed over time?

Age-standardised rates of *Assault* for males were consistently higher than for females at all times throughout the 10-year period, although in recent years the gap has narrowed (Figure 13.5). There has been a decrease in the rate of *Assault* injury for males from 2007–08 (171 cases per 100,000 population) to 2016–17 (122 cases per 100,000).

Figure 13.5: Age-standardised rates of *Assault* injury cases, by sex, 2007–08 to 2016–17

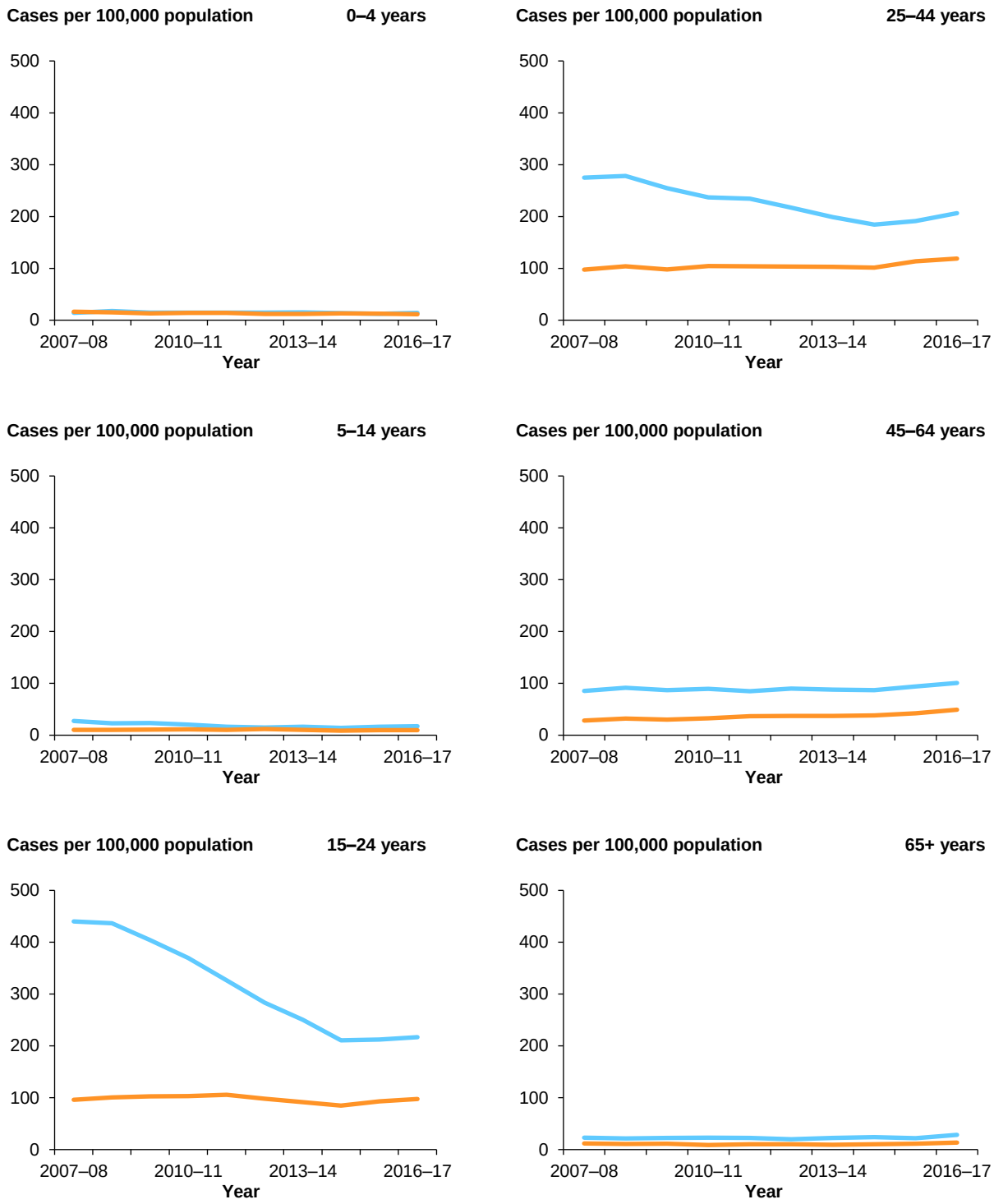


Note: Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

The change in rates of injury over time, by broad age group as well as by sex, is shown in Figure 13.6. The figures show an additional 2 years of data since the publication of the previous *Trends in hospitalised injury, Australia 1999–00 to 2014–15* report (AIHW: Pointer 2018a). As can be seen in Figure 13.6, age-specific rates of *Assault* vary by age and by sex, with the highest rates for both males and females occurring in the 15–24 and 25–44 year age groups.

Rates of *Assault* injury for males aged 15–24 and 25–44 have continued to decline since the beginning of the period. For males aged 15–24, the rate of *Assault* has halved between 2007–08 (440 cases per 100,000 population) and 2016–17 (217). A similar decrease can be seen in males aged 25–44, where the rate of *Assault* injury has dropped from 278 in 2008–09 to 207 in the most recent year.

Figure 13.6: Age-specific rates of injury cases due to *Assault*, by age group, by sex, Australia, 2007–08 to 2016–17



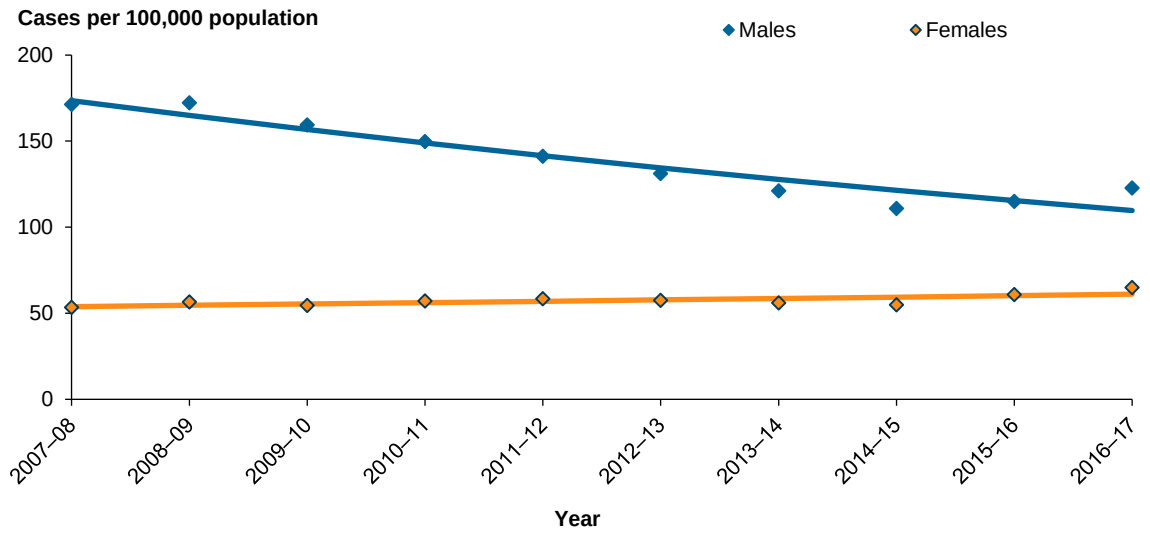
Notes

1. Rates for males are indicated by the blue line and rates for females by the orange line in all charts.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

The modelled age-standardised rate of *Assault* injury decreased during the 10 years to 2016–17. The rate was 114 per 100,000 population in 2007–08 and 85 in 2016–17. The decrease in the modelled rate averaged 3.2% per year and was statistically significant (95% CI: –3.3%, –3.1%).

An analysis by sex showed differences between males and females in the rate of *Assault* injury over the period (Figure 13.7). For males, the rate decreased from 174 per 100,000 population in 2007–08 to 110 in 2016–17. The decrease in the modelled rate for males averaged 5.0% per year and was statistically significant (95% CI: –5.1%, –4.8%). For females, the rate increased from 53.8 per 100,000 population in 2007–08 to 61.1 in 2016–17. The rise in the modelled rate for females averaged 1.4% per year and was statistically significant (95% CI: 1.2%, 1.7%).

Figure 13.7: Modelled age-standardised rates of *Assault* injury cases, by sex, 2007–08 to 2016–17



Notes

1. The solid line represents the modelled rate from 2007–08 to 2016–17. The filled symbols represent the observed age-standardised rate value for each year.
2. Data underpinning this figure can be found in the accompanying supplementary spreadsheets.

Appendix A: Data issues

Data sources

The data on hospital separations are from the Australian Institute of Health and Welfare's National Hospital Morbidity Database (NHMD). Comprehensive information on the quality of the data for 2016–17 is available in *Australian hospital statistics 2016–17* (AIHW 2018) and in the data quality statement below. Nearly all injury cases admitted to hospitals in Australia are included in the NHMD data reported.

Diagnosis, procedure and external-cause data for 2016–17 were reported to the NHMD by all states and territories using the ninth edition of the International Statistical Classification of Diseases and Related Health Problems, tenth revision, Australian modification (ICD-10-AM) (ACCD 2014). Data from 1999–2000 were coded to earlier editions of ICD-10-AM.

Denominators for most age-specific and age-standardised rates are estimated resident population (ERP) values as at 31 December of the relevant year. Australian ERPs for 30 June 2001 (persons, by 5-year age groups to 95+) were used as the standardising population throughout the report (ABS 2003). Data from other sources, mostly based on ERPs, were used as denominators for rates categorised by remoteness of usual residence and by Indigenous status (see 'Rates', below).

Selection criteria

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

Period

This report is restricted to admitted-patient episodes that ended in the period 1 July 2016 to 30 June 2017 for the single-year analyses, and to admitted-patient episodes that ended in the period 1 July 2007 to 30 June 2017 for the trend analyses. Selection was 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 were small.

Injury

Injury separations were defined as records that contained a principal diagnosis in the ICD-10-AM range S00–T75 or T79, using 'Chapter XIX Injury, poisoning and certain other consequences of external causes' codes but excluding any with *Z50 Care involving use of rehabilitation procedures* appearing in any additional diagnosis field. Nearly all injury separations were thought to be included in the data reported, representing minimal risk of sampling error.

Adjusting for changes to rehabilitation coding

A change in coding practice for ICD-10-AM *Z50 Care involving the use of rehabilitation procedures* has necessitated a change to the standard record inclusion criteria for National Injury Surveillance Unit (NISU) reports of hospital-admitted injury cases. The change applies to episodes that ended on 1 July 2015, or later. For details of the change see 'Box 4.2' in *Admitted patient care 2015–16: Australian hospital statistics* (AIHW 2017).

Due to the change in coding practice, an increase in the numbers of separations in 2015–16 with a principal diagnosis in the ICD-10-AM *Chapter 19 Injury, poisoning and certain other consequences of external causes (S00–T98)* range occurred (approximately an additional 60,000 records).

In order to minimise the effect of the coding change on the estimation of injury occurrence and trends, a change to the case estimation method used by NISU was required. Records with Z50—either as Principal diagnosis or as Additional diagnosis—are now omitted by the NISU in data-years both before and after the coding change. The change to data prior to 2015–16 amounts to an adjustment of less than 0.1% of records. Where injury trends are presented by Principal diagnosis for years prior to 2015–16, data will not be directly comparable with previous reporting periods.

Estimating incident cases

Each record in the NHMD refers to a single episode of care in a hospital. Some injuries result in more than 1 episode in hospital and, hence, more than 1 NHMD record.

This can occur in 2 main ways:

- a person is admitted to 1 hospital, then transferred to another or has a change in care type (for example, acute to rehabilitation) within the same hospital
- 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 for the same injury, to the same hospital or to another one.

The NHMD does not include information designed to enable the set of records belonging to the same injury case to be recognised as such. Hence, there is potential for some incident injury cases to be counted more than once, which occurs when a single incident injury case results in 2 or more NHMD records being generated, 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 began with inward transfer from another acute care hospital. Episodes of this type (inward transfers) are likely to have been preceded by another episode that also met the case selection criteria for injury cases, so are omitted from estimated case counts.

This procedure should largely correct for over-estimation of cases due to transfers, but will not correct for over-estimation due to re-admissions.

Length of stay

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

Note that ‘length of stay’, as presented in this report, does not include some patient days potentially attributable to injury. In particular, it does not include days for most aspects of injury rehabilitation, which were difficult to assign correctly without information enabling identification of all admitted episodes associated with an injury case.

Intensive care and continuous ventilatory support

Intensive care

Data for hours in an ICU are required to be reported by public hospitals that have either an approved level 3 adult ICU or an approved paediatric ICU. Information on ICU hours was not available for private hospitals in New South Wales, Tasmania, the Australian Capital Territory or the Northern Territory.

A level 3 adult ICU must be capable of providing complex, multisystem life support for an indefinite period; be a tertiary referral centre for patients in need of intensive care services; and have extensive backup laboratory and clinical service facilities to support the tertiary referral role. It must be capable of providing mechanical ventilation, extra-corporeal renal support services and invasive cardiovascular monitoring for an indefinite period—or care of a similar nature.

A paediatric ICU must be capable of providing complex, multisystem life support for an indefinite period; be a tertiary referral centre for children needing intensive care; and have extensive backup laboratory and clinical service facilities to support this tertiary role. It must be capable of providing mechanical ventilation, extra-corporeal renal support services and invasive cardiovascular monitoring for an indefinite period to infants and children aged under 16—or care of a similar nature.

If a patient's episode involves more than 1 period in an ICU, then the total number of hours in ICU were summed for reporting. Values of '0' in the record were assumed to indicate no stay in ICU.

Continuous ventilatory support

CVS (also known as invasive ventilatory support or mechanical ventilation) refers to the use of a machine to assist breathing.

If a patient undergoes CVS on more than 1 occasion during their admitted-patient episode, then the CVS hours are summed for reporting. For example, if a patient is on CVS on the first day of their admission, then again on the fourth day of their admission, the 2 periods of ventilation are added together for reporting.

Periods of ventilatory support that are associated with anaesthesia during surgery, and which are considered an integral part of the surgical procedure, are not included.

Information on CVS hours was not available for private hospitals in Tasmania, the Australian Capital Territory or the Northern Territory.

Rates

Age-standardisation

Cases per 100,000 population are reported as directly age-standardised rates based on the Australian population as at 30 June of the year of interest. The Australian population as at 30 June 2001 was used as the reference population for this report. Age-standardisation of rates enables valid comparison across years and/or jurisdictions without being affected by the differences in age distributions.

Changes in rates due to changes in underlying population data

All populations, except those used for analyses by Indigenous status, are based on the 2011 Census data. The age-standardised rates (per 100,000 population) presented in this report for the years 2007–08 to 2011–12 in time-series tables have been calculated using 'rebased' estimated resident populations. Therefore, the separation rates reported for 2007–08 to 2011–12 in this report cannot be compared with the separation rates presented in earlier hospitalised injury statistics reports.

Population denominators

General population

Where possible, rates were calculated using the final ERP as at 31 December in the relevant year as the denominator (for example, 31 December 2006 for 2006–07 data). Where tables of 31 December ERPs were not available, but tables of 30 June ERPs were available, population denominators were calculated as the average of 30 June estimates for adjacent years. This method was used to produce denominators for rates by remoteness of usual residence.

Indigenous population

Separation rates by Indigenous status were directly age-standardised, using the projected Indigenous population (low series) as at 30 June 2017. The population for non-Indigenous Australians was based on the estimated resident populations as at 30 June 2017, based on 2011 Census data.

Rates for Indigenous Australians in this report are only reported by financial year. Hence, all rates were calculated using, as the denominator, the final estimate of the estimated resident Indigenous population as at 31 December for the relevant period (for example, 31 December 2006 for 2006–07 cases). Since estimates of resident Indigenous populations are only provided for 30 June, estimates for 31 December are calculated by adding 2 consecutive 30 June estimates and dividing by 2 (for example, the estimate for 31 December 2006 is calculated by adding estimates for 30 June 2006 and 30 June 2007 and dividing by 2).

Estimated change in rates over time

Estimated trends in rates of separations were reported as annual percentage change, obtained using negative binomial regression modelling using Stata 13 (StataCorp 2015).

The use of the terms 'significant' or 'significantly' throughout this report indicates an outcome that was *statistically* significant (p = 0.05 or less).

Population-based rates of injury tend to have similar values from 1 year to the next. Exceptions to this can occur (for example, due to a mass-casualty disaster), but are unusual in Australian injury data. Some year-to-year variation and other short-run fluctuations are to be expected, due to unknown and essentially random factors, and so small changes in rates over a short period normally do not provide a firm basis for asserting that a trend is present.

However, the period covered by this report is long enough for noteworthy changes to be identified. The fundamental questions concerning a series of annual estimates of population-based rates are whether they show a statistically significant rise or fall over the period and, if so, the average rate of change. Analysis in this report is limited to those characteristics of change.

For each type of injury for which estimates of change were made:

- age-adjusted annual case numbers were obtained by multiplying age-adjusted unscaled rates by the Australian population in the corresponding year
- negative binomial regression, a method suitable for count-based data, was run with the adjusted case numbers as the dependent variable; year (as an integer, from 0 to the number of years of data) as an independent variable; and annual population as the exposure. The relevant outputs are a modelled rate for each year and a model-based estimate of average annual change in rate and its 95% confidence interval (CI).

Interpretation: if the 95% CI around the point estimate for trend is entirely above zero then the rates have tended to rise; if the 95% CI is entirely below zero then the rates have tended to fall; otherwise it cannot be said with useful confidence that the age-standardised rates tended to rise or to fall in the period considered.

Classification of remoteness area

Data on geographical location of the patient's usual residence and of the hospital location are defined using the Australian Bureau of Statistics (ABS) Australian Statistical Geography Standard (ASGS). Data on the remoteness area of usual residence are defined using the ABS's ASGS Remoteness Structure 2011 (ABS 2011). The period examined in this report is limited to 2012–13 to 2016–17, due to changes in the Remoteness Structure at the time of the 2006 Census (see ABS 2006).

Australia can be divided into several regions based on their distance from urban centres. This is considered to determine the range and types of services available. In this report, 'remoteness area' refers to the place of usual residence of the person who was admitted to hospital, assigned on the basis of the reported Statistical Local Area (SLA) of residence.

The remoteness areas were specified according to the ABS Australian Standard Geographical Classification (ASGC). Remoteness categories were defined in a manner based on the Accessibility/Remoteness Index of Australia (ARIA). According to this method, remoteness is an index applicable to any point in Australia, based on road distance from urban centres of 5 sizes. The reported areas are defined as the following ranges of the index:

Major cities (for example, Sydney, Geelong, Gold Coast), ARIA index 0 to 0.2

Inner regional (for example, Hobart, Ballarat, Coffs Harbour), ARIA index >0.2 and ≤2.4

Outer regional (for example, Darwin, Cairns, Coonabarabran), ARIA index >2.4 and ≤5.92

Remote (for example, Alice Springs, Broome, Strahan), ARIA index of >5.92 and ≤10.53

Very remote (for example, Coober Pedy, Longreach, Exmouth), ARIA index >10.53.

Most SLAs lie entirely within 1 of the 5 areas. If this was so for all SLAs, then each record could simply be assigned to the area in which its SLA lies. However, some SLAs overlap 2 or more of the areas. Records with these SLAs were assigned to remoteness areas in proportion to the area-specific distribution of the resident population of the SLA according to the 2006 Census. Each record in the set having a particular SLA code was randomly assigned to 1 or other of the remoteness areas present in it, in proportion to the resident population of that SLA.

Socioeconomic status

Data on SES groups are defined using the ABS's Socio-Economic Indexes for Areas 2011 (SEIFA 2011) (ABS 2013).

The SEIFA 2011 data are generated by the ABS using a combination of 2011 Census data such as income; education; health problems/disability; access to internet; occupation/ unemployment; wealth and living conditions; dwellings without motor vehicles; rent paid; mortgage repayments; and dwelling size. Composite scores are averaged across all people living in areas, and defined for areas based on the Census collection districts.

However, they are also compiled for higher levels of aggregation. The SEIFAs are described in detail on the ABS website www.abs.gov.au.

The SEIFA Index of Relative Socio-Economic Disadvantage (IRSD) is one of the ABS's SEIFA indexes. The relative disadvantage scores indicate the collective SES of the people living in an area, with reference to the situation and standards applying in the wider community at a given point in time. A relatively disadvantaged area is likely to have a high proportion of relatively disadvantaged people. However, such an area is also likely to contain people who are not disadvantaged, and people who are relatively advantaged.

Separation rates by SES were generated by the AIHW using the IRSD scores for the SA2 of usual residence of the patient reported (or derived) for each separation. The '1—Lowest' group represents the areas containing the 20% of the national population with the most disadvantage, and the '5—Highest' group represents the areas containing the 20% of the national population with the least disadvantage. These SES groups do not necessarily represent 20% of the population in each state or territory. Disaggregation by SES group is based on the area of usual residence of the patient, not the location of the hospital.

The following labels for each socioeconomic group have been used throughout this report:

1. Lowest (most disadvantaged)
2. Second most disadvantaged
3. Middle
4. Second least disadvantaged
5. Highest (least disadvantaged).

Indigenous status

In this report, the term 'Indigenous Australians' is used to refer to persons identified as such in Australian hospital separations data and population data collections. For this report, the term 'non-Indigenous' includes all separations for persons identified as 'not Indigenous' and excludes separations where Indigenous status was not stated**.**

Quality of Indigenous status data

The AIHW report *Indigenous identification in hospital separations data: quality report* (AIHW 2013) presents the latest findings on the quality of Indigenous identification in hospital separations data in Australia, based on studies conducted in public hospitals during 2011. Private hospitals were not included in the assessment. The results of the study indicate that, overall, the quality of Indigenous identification in hospital separations data was similar to that achieved in a previous study (AIHW 2010). However, the survey for the 2013 report was performed on larger samples for each jurisdiction/region and is therefore considered more robust than the previous study.

The report recommends using data from all jurisdictions in national analyses of Indigenous admitted-patient care for data from 2010–11 onwards. Therefore, the trend analyses presented in this report commence from 2010–11.

Data quality statement: National Hospital Morbidity Database

The National Hospital Morbidity Database (NHMD) is a compilation of episode-level records from admitted-patient morbidity data collection systems in Australian hospitals. The data supplied are based on the National Minimum Data Set (NMDS) for admitted-patient care and include demographic, administrative and length-of-stay data, as well as data on the diagnoses of the patients, the procedures they underwent in hospital and external causes of injury and poisoning.

The purpose of the NMDS for admitted-patient care is to collect information about care provided to admitted patients in Australian hospitals. The scope of the NMDS is episodes of care for admitted patients in all public and private acute and psychiatric hospitals, free-standing day hospital facilities, and alcohol and drug treatment centres in Australia. Hospitals operated by the Australian Defence Force, corrections authorities and in Australia's offshore territories are not in scope, but some are included.

The reference period for this data set is 2016–17. The data set includes records for admitted-patient separations between 1 July 2014 and 30 June 2015.

A complete data quality statement for the NHMD is available online at www.meteor.aihw.gov.au.

Summary of key issues

- The NHMD is a comprehensive data set that has records for all separations of admitted patients from essentially all public and private hospitals in Australia.
- A record is included for each separation, not for each patient, so patients who separated more than once in the year have more than 1 record in the NHMD. (AIHW 2018).
- For 2016–17, almost all public hospitals provided data for the NHMD. The exception was an early parenting centre in the Australian Capital Territory. The great majority of private hospitals also provided data, the exception being the private free-standing day hospital facilities in the Australian Capital Territory.
- There is some variation between jurisdictions as to whether hospitals that predominantly provide public hospital services, but are privately owned and/or operated, are reported as public or private hospitals. In addition, hospitals may be re-categorised as public or private between or within years.
- Revised definitions for care types were implemented from 1 July 2013 with the aim of improving comparability in care-type assignment among jurisdictions. Therefore, information presented by care type may not be comparable with data presented for earlier periods.
- There was variation between states and territories in the reporting of separations for *Newborns* (without qualified days).
- Data on state of hospitalisation should be interpreted with caution because of cross-border flows of patients. This is particularly the case for the Australian Capital Territory. In 2016–17, about 18% of separations for Australian Capital Territory hospitals were for patients who resided in New South Wales.

- Although there are national standards for data on hospital services, there are some variations in how hospital services are defined and counted, between public and private hospitals, among the states and territories, and over time. For example, there is variation in admission practices for some services, such as chemotherapy and endoscopy; as a result, people receiving the same type of service may be counted as same-day admitted patients in some hospitals and as non-admitted patients in other hospitals. In addition, some services are provided by hospitals in some jurisdictions and by non-hospital health services in other jurisdictions. The national data on hospital care does not include care provided by non-hospital providers, such as community health centres.
- Caution should be used in comparing diagnosis, procedure and external-cause data over time, as the classifications and coding standards for those data can change over time.
- Between 2010–11 and 2016–17, there were changes in coverage or data supply for New South Wales, Victoria, Queensland and Western Australia that may affect the interpretation of the data:
  - For New South Wales, increases in the numbers of separations reported for private hospitals are, in part, accounted for by improvement in the coverage of reporting.
  - For Victoria, between 2011–12 and 2012–13, a relatively large decrease in public hospital separations reflects a change in Victoria's emergency department admission policy.
  - For Queensland, between 2013–14 and 2016–17, a relatively large increase in same-day separations in public hospitals partly reflects a change in admission practices for chemotherapy in some hospitals.
  - For Western Australia, between 2012–13 and 2013–14, the relatively large decrease in public hospital separations may reflect a change in Western Australia's emergency department admission policy, which resulted in fewer admissions.
- The Indigenous status data in the NHMD for all states and territories are considered to be of sufficient quality for statistical reporting. In 2011–12, an estimated 88% of Indigenous patients were correctly identified in public hospitals (AIHW 2013). In the publication *Admitted patient care 2016–17: Australian hospital statistics*, the overall quality of the data provided for Indigenous status is considered to need some improvement, and varied between states and territories. It is unknown to what extent Indigenous Australians might be under-identified in private hospital admissions data.

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Abbreviations

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
ASGC	Australian Standard Geographical Classification
CVS	continuous ventilatory support
DALY	disability-adjusted life year
ERP	estimated resident population
HTTL	high threat to life
ICD 10 AM	International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification
ICU	intensive care unit
LOS	length of stay
METeOR	Metadata Online Registry
MLOS	mean length of stay
NCCC	National Casemix and Classification Centre
NEC	not elsewhere classified
NHMD	National Hospital Morbidity Database
NMDS	National Minimum Data Set
WHO	World Health Organization
YLD	years lived with a disability
YLL	years of life lost

Symbols

n.p.	not publishable because of small numbers, confidentiality or other concerns about the quality of the data
p	probability
CI	confidence interval

Glossary

Registry (METeOR). METeOR is Australia's central repository for health, community services and housing assistance metadata, or 'data about data'. It provides definitions for data for health and community services-related topics and specifications for related national minimum data sets (NMDSs). METeOR can be viewed on the AIHW website at www.meteor.aihw.gov.au.

acute: Having a short and relatively severe course.

acute care: See **care type**.

acute care hospital: See **establishment type**.

additional diagnosis: A condition or complaint either coexisting with the **principal diagnosis** or arising during the episode of admitted-patient care, episode of residential care or attendance at a health-care establishment. METeOR identifier: 514271.

admitted patient: A patient who undergoes a hospital's admission process to receive treatment and/or care. This treatment and/or care is provided over a period of time and can occur in hospital and/or in the person's home (for hospital-in-the-home patients). METeOR identifier: 268957.

age-standardisation: A set of techniques used to remove, as far as possible, the effects of differences in age when comparing 2 or more populations.

burden of disease and injury: The quantified impact of a disease or injury on an individual or population, using the **disability-adjusted life year** (DALY) measure.

care type: The overall nature of a clinical service provided to an admitted patient during an episode of care (admitted care), or the type of service provided by the hospital for boarders or posthumous organ procurement (care other than admitted care). METeOR identifier: 491557.

Admitted-patient care consists of:

- acute care
- rehabilitation care
- palliative care
- geriatric evaluation and management
- psychogeriatric care
- maintenance care
- newborn care
- other admitted-patient care—this is where the principal clinical intent does not meet the criteria for any of the above.

Care other than admitted care includes:

- posthumous organ procurement
- hospital boarder.

DALY (disability-adjusted life years): A measure (in years) of healthy life lost, either through premature death—defined as dying before the life span that could be expected at the age of death (YLL)—or through living with ill health due to illness or injury (YLD).

disability: In burden of disease analysis, any departure from an ideal health state.

disability weight: A factor that reflects the severity of health loss from a particular health state, on a scale from 0 (perfect health) to 1 (equivalent to death).

disease: A broad term that can be applied to any health problem, including symptoms, diseases, injuries and certain risk factors, such as high blood cholesterol and obesity. Often used synonymously with 'condition', 'disorder' or 'problem'.

episode of care: The period of admitted-patient care between a formal or statistical admission and a formal or statistical separation, characterised by only 1 care type (see **care type** and **separation**). METeOR identifier: 491557 (Care type). METeOR identifier: 268956 (Episode of admitted-patient care).

external cause: The environmental event, circumstance or condition given as the cause of injury, poisoning and other adverse effect. METeOR identifier: 514295.

hospital: A health-care facility established under Commonwealth, state or territory legislation as a hospital or a free-standing day procedure unit and authorised to provide treatment and/or care to patients. METeOR identifier: 268971.

inpatient: See **admitted patient**. METeOR identifier: 268957.

International Classification of Diseases and Related Health Conditions (ICD): The World Health Organization's internationally accepted classification of diseases and related health conditions. The tenth revision, Australian modification (ICD-10-AM), is currently in use in Australian hospitals for admitted patients.

length of stay: The length of stay of an overnight patient is calculated by subtracting the date the patient is admitted from the date of separation and deducting days the patient was on leave. A same-day patient is allocated a length of stay of 1 day.
METeOR identifier: 269982.

mode of admission: The mechanism by which a person begins an episode of admitted-patient care. METeOR identifier: 269976.

mode of separation: Status at separation (discharge/transfer/death) of a person and the place to which the person is released (where applicable). METeOR identifier: 270094.

non-fatal burden: The burden from living with ill health as measured by years lived with disability. Often used synonymously with YLD, and also referred to as 'health loss' in this report.

patient days: The total number of days for patients who were admitted for an episode of care and who separated during a specified reference period. A patient who is admitted but separates on the same day is allocated 1 patient day. METeOR identifier: 270045.

population attributable fraction (PAF): The proportion (fraction) of a disease, illness, disability or death in a population that can be attributed to a particular risk factor or combination of risk factors.

premature mortality: Deaths that occur at a younger age than a selected cut-off.

principal diagnosis: The diagnosis established, after study, to be chiefly responsible for occasioning an episode of admitted-patient care. METeOR identifier: 514273.

private hospital: A privately owned and operated institution, catering for patients who are treated by a doctor of their own choice. Patients are charged fees for accommodation and other services provided by the hospital and relevant medical and paramedical practitioners. Acute care and psychiatric hospitals are included, as are private free-standing day hospital facilities.

public hospital: A hospital controlled by a state or territory health authority. Public hospitals offer free diagnostic services, treatment, care and accommodation to all eligible patients.

same-day patient: An admitted patient who is admitted and separates on the same date.

separation: An episode of care for an admitted patient, which can be a total hospital stay (from admission to discharge, transfer or death) or a portion of a stay beginning or ending in a change of type of care (for example, from acute to rehabilitation). 'Separation' also means the process by which an admitted patient completes an episode of care either by being discharged, dying, transferring to another hospital or changing type of care.

separation rate: The total number of episodes of care for admitted patients, divided by the total number of persons in the population under study. Often presented as a rate per 10,000 or 100,000 members of a population. Rates may be crude or standardised.

separations: The total number of episodes of care for admitted patients, which can be total hospital stays (from admission to discharge, transfer or death) or portions of hospital stays beginning or ending in a change of type of care (for example, from acute to rehabilitation) that cease during a reference period. METeOR identifier: 270407.

YLD (years lived with disability): A measure of the years of what could have been a healthy life but were instead spent in states of less-than-full health. YLD represent **non-fatal burden**.

YLL (years of life lost): Years of life lost due to premature death, defined as dying before the global ideal life span at the age of death. YLL represent **fatal burden**.

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List of tables

List of figures

List of boxes

Related publications

The AIHW has published annual reports on hospitalised cases occurring as a result of an injury. Earlier editions and any published subsequently can be downloaded for free from the AIHW website at www.aihw.gov.au/publications. The website also includes information on ordering printed copies.

The following AIHW publications relating to injury might also be of interest:

AIHW (various years). Australian hospital statistics. Canberra: AIHW

AIHW: Henley G & Harrison JE 2018. Hospitalised farm injury, Australia, 2010–11 to 2014–15. Injury research and statistics series no. 109. Cat. no. INJCAT 189. Canberra: AIHW.

AIHW: Henley G & Harrison JE 2018. Trends in injury deaths, Australia, 1999–00 to 2014–15. Injury research and statistics series no. 112. Cat. no. INJCAT 192. Canberra: AIHW.

AIHW 2018. Hospitalised injury due to land transport crashes. Cat. no. INJCAT 195. Canberra: AIHW.

AIHW 2018. Hospitalised assault injuries among men and boys. Cat. no: INJCAT 196. Canberra: AIHW.

AIHW: Tovell A 2018. Spinal cord injury, Australia, 2014–15. Injury research and statistics series no. 113. Cat. no. INJCAT 193. Canberra: AIHW.

AIHW: Tovell A & McKenna K 2018. Eye injuries in Australia, 2010–11 to 2014–15. Injury research and statistics series no. 194. Cat. no. INJCAT 114. Canberra: AIHW.

The rate of hospitalised injury cases in Australia increased over the last 10 years (2007–08 to 2016–17) by an average of 1% per year. The 2 main causes of hospitalised injury in 2016–17 were Falls (41%) and Transport crashes (12%). In 2016–17, there were more hospitalised injury cases among males at all ages up to 60–64 years; after that age, rates of injury hospitalisation for women were much higher.

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