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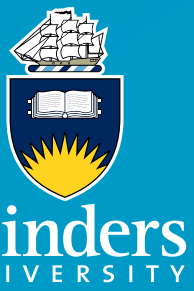
Hospitalised injuries in older Australians 2011–12



INJURY RESEARCH AND STATISTICS SERIES NO. 90

Australian Government
Australian Institute of Health and Welfare

Authoritative information and statistics to promote better health and wellbeing

INJURY RESEARCH AND STATISTICS SERIES
Number 90

Hospitalised injury in older Australians

2011–12

Australian Institute of Health and Welfare
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Contents

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Abbreviations

AIHW	Australian Institute of Health and Welfare
ICD-10-AM	International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification
MLOS	mean length of stay
NHMD	National Hospital Morbidity Database

Summary

As Australia's population gets older, increasing numbers of older people are being admitted to public and private hospitals as a result of an injury. This report describes the causes of hospitalised injury for Australians aged 65 and over. It may be useful for guiding and improving policy aimed at reducing the number of injuries experienced by older people and for targeting investment in injury prevention strategies.

Key findings about injury in older Australians

- There were approximately 126,000 injury cases among older Australians requiring an admission to hospital in 2011–12.
- The rate for women (4,252 cases per 100,000 population) was nearly one-third higher than the rate for men (3,235 cases per 100,000 population).
- The rate of injury increased in line with increasing age.
- Length of stay in hospital averaged 7.6 days for Australian women aged 65 and over compared with 6.8 days for men.

Key findings about external causes of injury in older Australians

The leading external causes of unintentional injury in 2011–12 were falls (77%), inanimate mechanical forces (6%), transport crashes (5%), animate mechanical forces or venomous bites and stings (2%) and poisoning by pharmaceuticals (1%).

There were approximately 96,000 cases of hospitalised falls injury. The rate increased with increasing age.

Striking or being struck by an object (30%) was the most common cause of hospitalised injury due to inanimate mechanical forces, followed by contact with tools and machinery. For the latter group, more than half of the male injury cases were due to powered hand tools such as saws and grinders.

Roughly equal numbers of older men (3,228) and women (2,941) sustained a transport-related injury. However, women were more likely than men to have been injured while in a car (63% versus 46%), as a pedestrian (18% versus 13%) or on a bus (7% versus 3%). Conversely, women were less likely than men to have been injured while using a motorcycle (1% versus 9%) or a pedal cycle (5% versus 14%).

Bites or being struck by dogs, cats, cattle, and horses were the most common causes of hospitalisation among older Australians due to animate mechanical forces.

Medications used to treat diabetes and manage pain were the most common drugs reported in cases of unintentional poisoning by pharmaceuticals for older Australians in 2011–12. The rates of poisoning were similar for men and women, increasing from a low of approximately 25 cases per 100,000 population at ages 65–69 to approximately 95 cases per 100,000 population at age 85 and over.

Over four-fifths of hospitalisations for intentional self-harm among older Australians in 2011–12 involved pharmaceutical drugs, most commonly benzodiazepines.

1 Introduction

Recent analysis of trends for hospitalisation from 1999–00 to 2010–11 (Pointer 2013) indicated that injury and poisoning account for approximately 6% of admissions in public and private hospitals annually. The rate of injury hospitalisations for older Australians has increased since 1999–00 from approximately 2,000 to 3,000 cases per 100,000 population for men and from approximately 3,500 to 4,500 cases per 100,000 population for women, and in 2010–11 people over the age of 65 accounted for 27% of all injury hospitalisations.

The majority of injuries among older Australians are due to falls, and falls prevention has a presence in Australian health policy through the *National Falls Prevention for Older People Plan: 2004 Onwards* (NPHP 2005). There is also considerable literature available on risk factors associated with ageing and falls, such as reduced vision, increased frailty and osteoporosis (AIHW 2010). However, injury of older people is not limited to falls and opportunities for prevention exist for other causes. By examining the causes of injury as older Australians age, insight can be gained into which additional types of injury might be suitable as targets for prevention.

1.1 Structure of this report

This report examines hospitalisations due to injury sustained by older Australians, aged 65 years and over, during the period 1 July 2011 to 30 June 2012 (this period abbreviated as 2011–12), focusing on the most frequent causes. The report is structured as follows:

- **Chapter 2** presents an overview of hospitalised injury by age, sex, major external cause and length of stay.
- **Chapters 3 to 8** present analysis of frequently occurring major external causes of hospitalised injury. The chapters provide information on age, sex, specific causes and, where relevant, nature of injury, place of occurrence and activity being undertaken at time of injury.
- **Appendix A** provides information on the National Hospital Morbidity Database (NHMD), the presentation of data, the population estimates used to calculate population-based rates and the analysis methods.
- **Appendix B** consists of tables of results which are presented as figures in the body of the report.

1.2 Methods and data sources

This report uses data from the Australian Institute of Health and Welfare (AIHW) National Hospital Morbidity Database (NHMD) for hospital separations due to injury and poisoning that occurred in Australia from 1 July 2011 to 30 June 2012. The NHMD contains codes for diagnoses and external causes of injury based on the *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification (ICD-10-AM)* (NCCH 2010).

Important terms regarding the data used in this report are summarised in Box 1.1, which also states which NHMD records were included and how the number of hospitalised injury cases

was estimated. Further information on methods used to describe and analyse hospitalised injury in Australia can be found in Appendix A.

In tables and figures, unless stated otherwise:

- The patient's age is calculated at the date of admission.
- In tables by age group and sex, cases for which age and sex were not reported are included in totals.

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 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, and an external cause code in the ICD-10-AM range V00 to Y36. These include 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 does not include episodes mainly due to complications of surgical and medical care or due to sequelae present a year or more after injury, or other late effects. Records are included whether caused unintentionally ('accidents') or intentionally (intentional self-harm, or assault). Records where intent was not determined are also included.

Injury cases are estimated as the number of injury separations, less those records where the mode of admission was 'inward transfer'. Inward transfers are omitted to reduce over-counting.

The **mean length of stay** 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.

2 Overview of hospitalised injury in older Australians

In Australia during 2011–12, there were 139,069 separations from hospital by people aged 65 and over who had been in hospital because of injury, including poisoning (Table 2.1). Excluding inward transfers, these amount to an estimated 125,926 injury cases. Nearly twice as many women (80,703) were hospitalised as a result of injury as men (45,222). The age-standardised rate for women was nearly one-third higher than men: 4,252 cases per 100,000 women compared with 3,235 cases per 100,000 men.

Table 2.1: Key indicators for hospitalised injury cases, people aged 65 and over, 2011–12

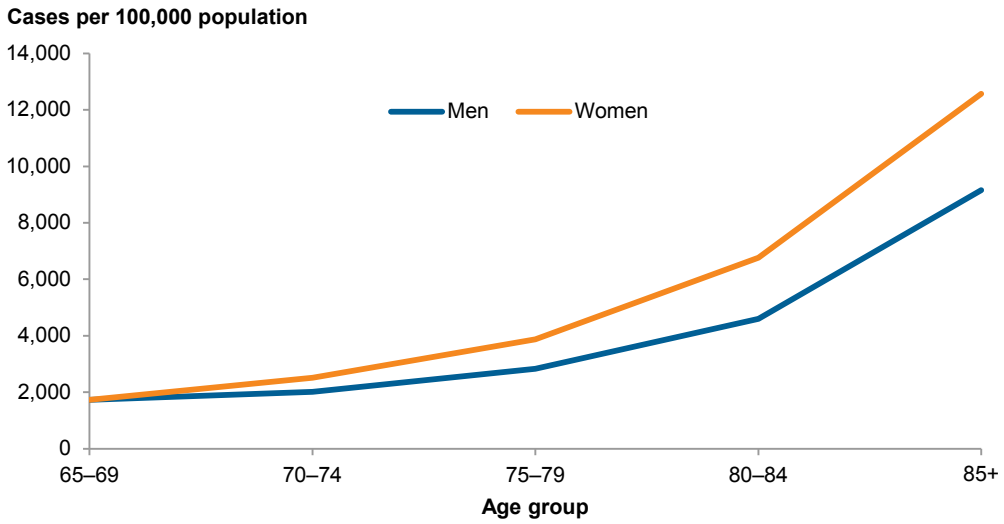
Indicators	Males	Females	Persons
Separations from hospital due to injury	49,914	89,154	139,069
Estimated injury cases	45,222	80,703	125,926
Age-standardised rate/100,000 population	3,235.4	4,252.0	3,829.4

2.1 Age and sex

While case numbers for hospitalised injury were similar for men (8,494) and women (8,612) at ages 65–69, the case numbers for women were greater than those for men in the older age groups (Table 2.2). This largely reflects the larger number of women than men who survive to older ages. However, population-based rates of hospitalised injury for women were also higher than those for men in the older age groups (Figure 2.1). The rate for men was approximately 9,000 cases per 100,000 population at age 85 and over compared with approximately 12,500 cases per 100,000 population for women.

Table 2.2: Hospitalised injury cases, by age group and sex, 2011–12

	Males		Females		Persons	
Age group	Number	Per cent	Number	Per cent	Number	Per cent
65–69	8,494	18.8	8,612	10.7	17,107	13.6
70–74	7,340	16.2	9,481	11.7	16,821	13.4
75–79	7,434	16.4	11,694	14.5	19,128	15.2
80–84	8,779	19.4	17,077	21.2	25,856	20.5
85+	13,175	29.1	33,839	41.9	47,014	37.3
Total	**45,222**	**100.0**	**80,703**	**100.0**	**125,926**	**100.0**



Note: Data underpinning this figure are available in Table B.1 in Appendix B.

Figure 2.1: Age-specific rates of hospitalised injury cases, by age group and sex, 2011–12

2.2 Major external causes

Table 2.3 provides an overview of the major external causes of hospitalised injury cases in Australia for men and women aged 65 and over in 2011–12.

The leading cause of unintentional injury for both men and women was falling. Fall injury accounted for 77% of cases overall (men 67%; women 82%).

The most numerous other causes were inanimate mechanical forces (6%), transport crashes (5%), animate mechanical forces or venomous bites and stings (2%), and poisoning by pharmaceuticals (1%). Intentional self-harm accounted for slightly less than 1% of all hospitalised injury cases of Australians aged 65 and over.

A more detailed analysis of these five leading unintentional injury causes is provided in the subsequent sections in the following order: fall injuries, transport-related injuries, poisoning by pharmaceuticals, inanimate mechanical forces, and animate mechanical forces and venom.

A further 2%, or 2,389 injury cases, were coded as being due to *Overexertion and strenuous or repetitive movements* (ICD-10-AM code X50). This unintentional injury group is not the subject of further analysis due to lack of specificity available on causes in this group. It is noted, however, that women (1,518 cases) were nearly twice as likely as men (871 cases) to have been hospitalised for this cause.

The remaining external cause categories each have fewer than 1,000 cases and have not been made the subject of later sections. Unintentional drowning (which includes near drowning) and poisoning by substances other than pharmaceuticals were relatively uncommon causes of injury among older Australians in 2011–12, with 40 and 239 cases, respectively. Assault accounted for 501 cases, 0.4% of the total. Men (323 cases) sustained nearly twice as many injuries of this type as women (178 cases).

Finally, *Exposure to unspecified factor* (X59) was the external cause code for 6,533 unintentional injury cases in 2011–12. This is the code used when no information is available on the external cause of injury. This group has not been analysed further in this report.

Table 2.3: Major external cause groups for hospitalised injury cases, people aged 65 and over, 2011–12

	Males		Females		Persons	
External cause	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**
Unintentional injury						
Transport-related	3,228	7.1	2,941	3.6	6,169	4.9
Drowning & near drowning	26	0.1	14	0.0	40	0.0
Poisoning, pharmaceuticals	697	1.5	822	1.0	1,519	1.2
Poisoning, other substances	138	0.3	101	0.1	239	0.2
Falls	30,420	67.3	65,965	81.7	96,385	76.5
Smoke, fire, heat & hot substances	309	0.7	331	0.4	640	0.5
Other unintentional injuries	9,308	20.6	9,501	11.8	18,809	14.9
Inanimate mechanical forces	4,592	10.2	2,815	3.5	7,407	5.9
Animate mechanical forces & venom	947	2.1	886	1.1	1,833	1.5
Overexertion and strenuous or repetitive movements	871	1.9	1,518	1.9	2,389	1.9
Exposure to unspecified factor	2,580	5.7	3,953	4.9	6,533	5.2
Other	318	0.7	329	0.4	647	0.5
Intentional injury						
Intentional self-harm	554	1.2	619	0.8	1,173	0.9
Assault	323	0.7	178	0.2	501	0.4
Undetermined intent	219	0.5	231	0.3	451	0.4
Total	**45,222**	**100.0**	**80,703**	**100.0**	**125,926**	**100.0**

2.3 Length of stay

Injury hospitalisations for people aged 65 and over accounted for more than 900,000 patient days in 2011–12—a total of 308,240 days for men and 612,467 days for women (Table 2.4). Injuries sustained through exposure to smoke, fire, heat and other hot substances had the longest mean length of stay (9.5 days), while poisoning by substances other than pharmaceuticals had the shortest average stay of 2.7 days. Other external causes with a long average length of stay in hospital were intentional self-harm (8.5 days) and falls (8.0 days). Overall, women tended to stay in hospital slightly longer than men, with an average of 7.6 days compared with 6.8 days for men.

Table 2.4: Total patient days and mean length of stay (MLOS) for causes of hospitalised injury, people aged 65 and over, 2011–12

	Males		Females		Persons	
External cause	Total patient days	MLOS (days)	Total patient days	MLOS (days)	Total patient days	MLOS (days)
Transport-related	21,714	6.7	20,387	6.9	42,101	6.8
Drowning & near drowning	229	8.8	56	4.0	285	7.1
Poisoning, pharmaceuticals	2,812	4.0	3,471	4.2	6,283	4.1
Poisoning, other substances	355	2.6	280	2.8	635	2.7
Falls	238,740	7.8	527,802	8.0	766,542	8.0
Smoke, fire, heat & hot substances	3,073	9.9	3,029	9.2	6,102	9.5
Other unintentional injuries	33,390	3.6	50,736	5.3	84,126	4.5
Intentional self-harm	5,213	9.4	4,708	7.6	9,921	8.5
Assault	1,666	5.2	919	5.2	2,585	5.2
Undetermined intent	1,048	4.8	1,079	4.7	2,129	4.7
Total	**308,240**	**6.8**	**612,467**	**7.6**	**920,709**	**7.3**

The mean length of stay increased with increasing age for both men and women, from nearly 5 days at ages 65–69 to over 8 days at age 85 and over (Figure 2.2).

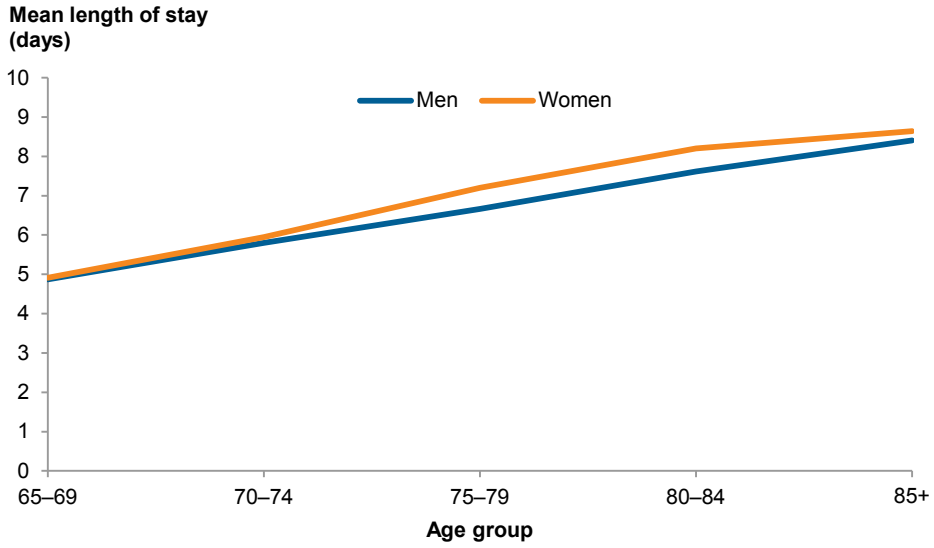


Figure 2.2: Mean length of stay for hospitalised injury cases, by age group and sex, 2011–12

3 Fall injuries

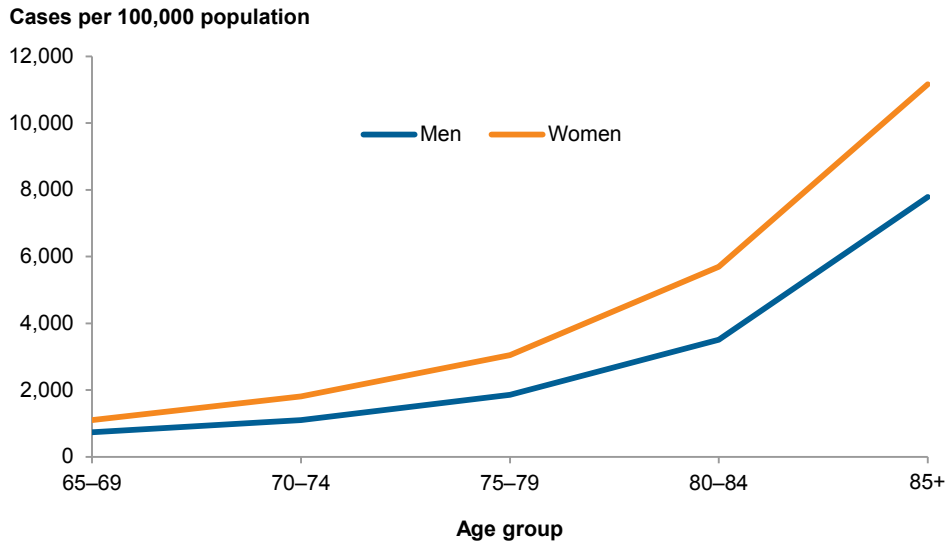
Injuries that occurred unintentionally as a result of a fall have ICD-10-AM external cause codes in the range W00–W19 *Falls*.

In 2011–12, the estimated number of falls requiring a hospital stay in people aged 65 and over was 96,385 (Table 3.1), an increase of some 4,000 cases for the previously reported year 2010–11 (Bradley 2013). More than twice as many women were hospitalised as men. The highest proportion of cases for both men and women was ages 85 and over (37% and 46%, respectively).

Table 3.1: Fall injury cases, people aged 65 and over, 2011–12

	Males		Females		Persons	
Age group	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**
65–69	3,623	11.9	5,477	8.3	9,100	9.4
70–74	3,995	13.1	6,836	10.4	10,831	11.2
75–79	4,887	16.1	9,209	14.0	14,096	14.6
80–84	6,706	22.0	14,385	21.8	21,091	21.9
85+	11,209	36.8	30,058	45.6	41,267	42.8
Total	**30,420**	**100.0**	**65,965**	**100.0**	**96,385**	**100.0**

Women had higher age-specific rates for falls than men across the age groups (Figure 3.1). The lowest rate observed for men was 737 cases per 100,000 population at ages 65–69, and 1,100 cases for women at ages 65–69. The highest was at ages 85 and over, with 7,785 cases per 100,000 population for men and 11,160 cases per 100,000 population for women.



Note: Data underpinning this figure are available in Table B.2 in Appendix B.

Figure 3.1: Age-specific rates of fall injury cases, by age group and sex, 2011–12

3.1 Cause of falls

The most commonly recorded cause of fall injury was *Falling on same level from slipping, tripping and stumbling* (Table 3.2). With the exception of *Fall on and from ladder,* there was little difference in the pattern of causes of falls between men and women (see Box 3.1 for more information on falls involving ladders).

Table 3.2: External causes of fall injury cases, people aged 65 and over, 2011–12

	Males		Females		Persons	
External cause	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**
Fall on same level involving ice and snow	6	0.0	12	0.0	18	0.0
Fall on same level from slipping, tripping and stumbling	8,910	29.3	22,876	34.7	31,786	33.0
Fall involving ice-skates, skis, roller-skates, skateboards, scooters and other pedestrian conveyances	200	0.7	201	0.3	401	0.4
Other fall on same level due to collision with, or pushing by, another person	56	0.2	199	0.3	255	0.3
Fall while being carried or supported by other persons	10	0.0	37	0.1	47	0.0
Fall involving wheelchair	244	0.8	357	0.5	601	0.6
Fall involving bed	1,279	4.2	2,906	4.4	4,185	4.3
Fall involving chair	946	3.1	2,005	3.0	2,951	3.1
Fall involving other furniture	59	0.2	97	0.1	156	0.2
Fall involving playground equipment	2	0.0	4	0.0	6	0.0
Fall on and from stairs and steps	1,928	6.3	3,880	5.9	5,808	6.0
Fall on and from ladder	1,294	4.3	374	0.6	1,668	1.7
Fall on and from scaffolding	36	0.1	3	0.0	39	0.0
Fall from, out of or through building or structure	406	1.3	132	0.2	538	0.6
Fall from tree	37	0.1	6	0.0	43	0.0
Fall from cliff	34	0.1	25	0.0	59	0.1
Diving or jumping into water causing injury other than drowning or submersion	10	0.0	6	0.0	16	0.0
Other fall from one level to another	520	1.7	578	0.9	1,098	1.1
Other fall on same level	6,959	22.9	15,152	23.0	22,111	22.9
Unspecified fall	7,484	24.6	17,115	25.9	24,599	25.5
Total	**30,420**	**100.0**	**65,965**	**100.0**	**96,385**	**100.0**

Box 3.1: Fall on and from a ladder

In 2011–12, 1,294 men and 374 women aged 65 and over were hospitalised in Australia as a result of a fall on or from a ladder (ICD-10-AM code W11). The age-specific rate for a ladder-related fall followed a different pattern to the rate for falls overall. Although men had considerably higher rates than women, rates were relatively stable across the age groups for both sexes. The lowest observed rate for men was 81 cases per 100,000 population for ages 85 and over and the highest was 96 cases for ages 70–74. For women the lowest was 16 cases at ages 80–84, and the highest was 25 cases at ages 70–74.

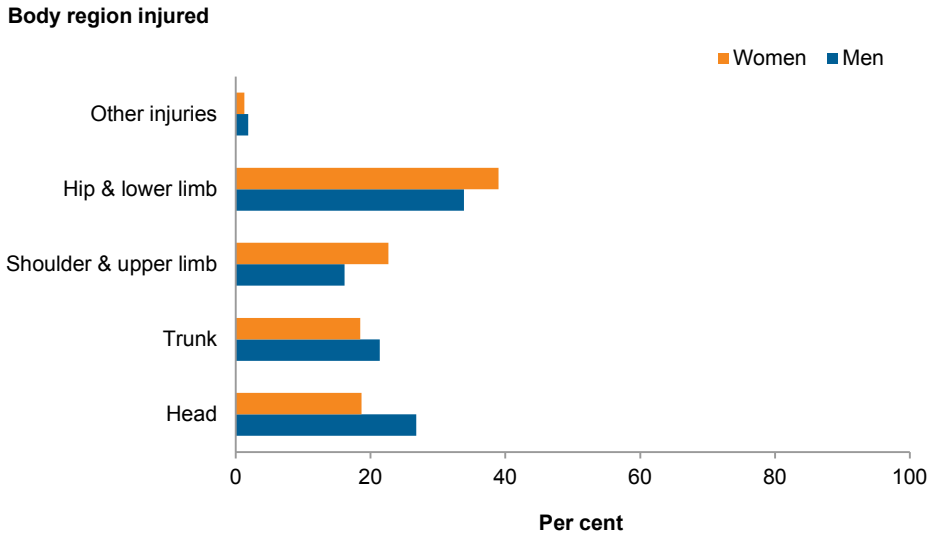
Approximately 3 in 5 hospitalised falls involving a ladder resulted in a fracture (63%). The two next most commonly reported injuries were an open wound (excluding eye) and an intracranial injury including concussion (both 8%).

Sixty-two per cent of fall injuries from a ladder occurred in or around the home. The most common area of the house where a fall occurred was an outdoor area (45%). Two per cent of cases occurred in each of the garage or kitchen.

In only 773 of the total 1,668 ladder-related cases was the type of activity being undertaken at the time of injury reported. Of these known cases, 85% were engaged in unpaid work including household maintenance tasks such as pruning trees, clearing gutters and painting ceilings.

3.2 Nature of injury

Fractures (57%) were the most common type of injury associated with a fall, followed by open wounds (12%) (data not shown). Men sustained an injury to the head or trunk more often than women, while women more likely to sustain an injury to the hip, leg, shoulder or arm (Figure 3.2).



Note: The trunk region also includes the neck, thorax, abdomen, lower back, lumbar spine and pelvis.

Figure 3.2: Major body regions injured for fall injury cases, people aged 65 and over, 2011–12

3.3 Place of occurrence

The place of occurrence was not specified in 16% of falls cases (Table 3.3). Fifty per cent of all hospitalised falls occurred in or around the home (47,759 cases). More specifically, 7,860 cases involved a fall in an outdoor area, such as in a courtyard or the garden. A further 5,467 cases occurred in bathrooms and 4,669 in bedrooms.

The next most common place of occurrence was a residential institution (21,639 cases). Nearly three times as many women as men were hospitalised for a fall that occurred in an aged care facility or a similar residential institution (15,885 and 5,754 cases, respectively).

Table 3.3: Place of occurrence for fall injury cases, people aged 65 and over, 2011–12

	Males		Females		Persons	
Place of occurrence	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**
Driveway to home	373	1.2	602	0.9	975	1.0
Outdoor areas	2,872	9.4	4,988	7.6	7,860	8.2
Garage	295	1.0	221	0.3	516	0.5
Bathroom	1,745	5.7	3,722	5.6	5,467	5.7
Kitchen	809	2.7	2,554	3.9	3,363	3.5
Bedroom	1,346	4.4	3,323	5.0	4,669	4.8
Laundry	63	0.2	207	0.3	270	0.3
Indoor living areas	1,183	3.9	2,877	4.4	4,060	4.2
Other and unspecified place in home	6,459	21.2	14,120	21.4	20,579	21.4
Total home	*15,145*	*49.7*	*32,614*	*49.4*	*47,759*	*49.6*
Residential institution	5,754	18.9	15,885	24.1	21,639	22.5
Health service area	514	1.7	889	1.3	1,403	1.5
Total school, other institution and public administrative area	*652*	*2.1*	*1,245*	*1.9*	*1,897*	*2.0*
Sports and athletics area	163	0.5	260	0.4	423	0.4
Footpath (sidewalk)	892	2.9	1,695	2.6	2,587	2.7
Other and unspecified public highway, street or road	554	1.8	824	1.2	1,378	1.4
Total street and highway	*1,446*	*4.8*	*2,519*	*3.8*	*3,965*	*4.1*
Trade and service area	1,071	3.5	2,317	3.5	3,388	3.5
Industrial and construction area	37	0.1	17	0.0	54	0.1
Farm	97	0.3	48	0.1	145	0.2
Other specified place of occurrence	572	1.9	1,073	1.6	1,645	1.7
Unspecified place of occurrence or place not reported	5,483	18.0	9,987	15.1	15,470	16.0
Total	**30,420**	**100.0**	**65,965**	**100.0**	**96,385**	**100.0**

3.4 Activity

In less than 1 in 3 falls cases was the activity in which the person was involved at the time of injury specified (data not shown). Of the 30% identified, the most common type of activity recorded was *While resting, sleeping, eating or engaged in other vital activities,* with 4,312 cases recorded for men and 10,137 cases for women. In all, 2,227 men and 3,935 women were injured while undertaking household or unpaid work activities, and a further 212 men and 147 women were hospitalised for a fall injury *While working for income*. Four per cent of both men and women had a fall injury *While engaged in leisure* and 4% of men and 3% of women had a fall injury *While engaged in sport.*

4 Transport-related injuries

This section provides data on unintentional injuries related to transportation. It includes cases related to all types of transport, but most are due to road crashes. The records included are those with ICD-10-AM external cause codes in the range V00–V99 *Transport accidents*. The categories in this range describe cases in terms of the injured person's mode of transport, counterpart in collision and other characteristics. For example:

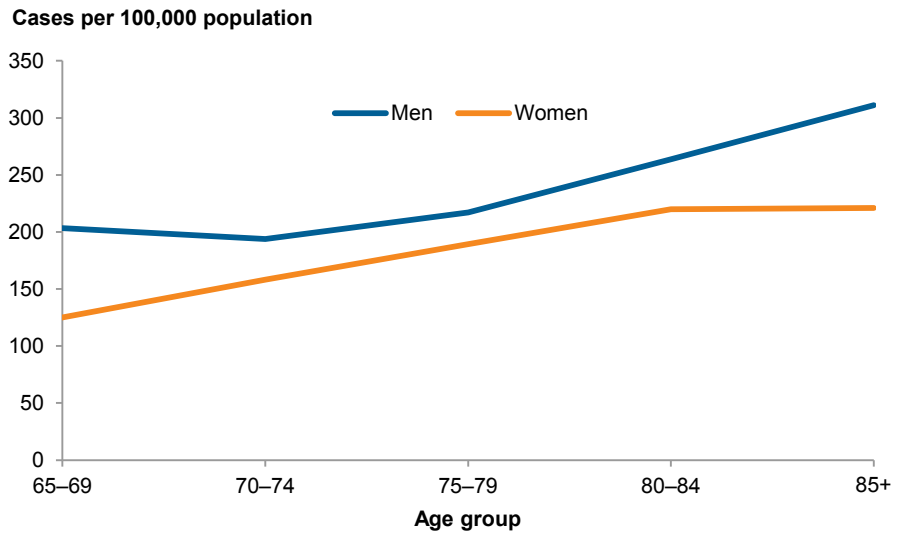
- *Pedestrian injured in collision with car, pick-up truck or van* (V03)
- *Car driver injured in a traffic crash with heavy transport vehicle or bus* (V44.5)
- *Bus occupant injured in non-collision event* (V78).

Table 4.1 summarises hospitalised transport-related injury cases for older Australians in 2011–12 by age and sex. Roughly equal numbers of older men (3,228) and women (2,941) were hospitalised due to a transport-related injury. The highest proportion of transport-related injury cases for both sexes was seen in the youngest age group 65–69 (men 31%; women 21%).

Table 4.1: Transport-related injury cases, people aged 65 and over, 2011–12

	Males		Females		Persons	
Age group	Number	Per cent	Number	Per cent	Number	Per cent
65–69	1,000	31.0	622	21.1	1,622	26.3
70–74	706	21.9	597	20.3	1,303	21.1
75–79	570	17.7	572	19.4	1,142	18.5
80–84	504	15.6	555	18.9	1,059	17.2
85+	448	13.9	595	20.2	1,043	16.9
Total	**3,228**	**100.0**	**2,941**	**100.0**	**6,169**	**100.0**

Rates of transport-related injury were higher for men than women in each age group, and higher rates occurred in the older age categories (Figure 4.1). The highest rates for both men and women were observed in the 85-and-over age group, at 311 and 221 cases per 100,000 population, respectively.



Note: Data underpinning this figure are available in Table B.3 in Appendix B.

Figure 4.1: Age-specific rates of transport-related injury cases, by age group and sex, 2011–12

4.1 Cause of injuries

In 2011–12, 5,969 cases of transport-related injury (97%) involved land transport crashes (ICD-10-AM external cause codes in the range V01–V89). The remaining 3% involved water, air and other modes of transport.

Of the land transport injury cases, 54% involved car occupants (Table 4.2). The proportion of men in this group who sustained the injury while riding a motor cycle (9%) or a pedal cycle (14%) was higher than the equivalent proportions for women (1% and 5%, respectively). Women, however, were more likely to have been injured while a car occupant (63%), a bus occupant (7%) or as a pedestrian (18%).

Table 4.2: Injury cases by mode of land transport, people aged 65 and over, 2011–12

	Males		Females		Persons	
Mode of land transport	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**
Car	1,413	45.7	1,804	62.7	3,217	53.9
Motorcycle	281	9.1	41	1.4	322	5.4
Pedal cycle	446	14.4	134	4.7	580	9.7
Pedestrian	411	13.3	526	18.3	937	15.7
Animal or animal-drawn vehicle	102	3.3	36	1.3	138	2.3
Heavy transport vehicle	35	1.1	9	0.3	44	0.7
Bus	90	2.9	198	6.9	288	4.8
Three-wheeled motor vehicle	10	0.3	6	0.2	16	0.3
Other land transport	303	9.8	124	4.3	427	7.2
Total land transport	**3,091**	**100.0**	**2,878**	**100.0**	**5,969**	**100.0**

More than half (53%) of the injured car occupants were involved in a collision with another car, or with a pick-up truck or van (data not shown). A collision with a fixed or stationary object (18%) was the second most common type of crash involving car occupants.

The great majority of transport-related injury cases were reported to have occurred on a public highway or street (70%). Other places where transport-related injuries occurred were on a farm, in the driveway to a home and on a footpath (3% each); a further 2% of injuries occurred in a parking area.

4.2 Nature of injury

Figure 4.2 indicates the main body region involved in transport-related injury cases in 2011–12. For both sexes, the trunk, including the neck, thorax, abdomen, lower back, lumbar spine and pelvis, was the body region most often injured (men 41%; women 44%), followed by an injury to the hip, leg or foot (22% and 25%, respectively). Men were more likely to sustain an injury to the head, including concussion, than women (20% compared with 14%, respectively).

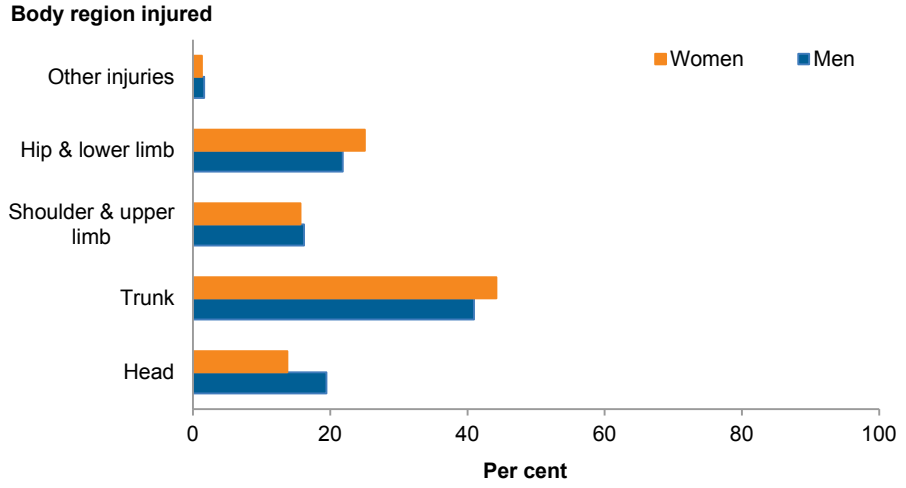


Figure 4.2: Major body region injured for transport-related injury cases, people aged 65 and over, 2011–12

The nature of nearly half of all of transport-related injuries was a fracture (48%) (Table 4.3). Superficial injuries (10%), open wounds (10%), intracranial injury including concussion (7%) and injuries to an internal organ (4%) were the next most common types of injuries requiring hospitalisation of older Australians due to transport crashes.

Table 4.3: Most common types of transport-related injury, people aged 65 and over, 2011–12

	Males		Females		Persons	
Nature of injury	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**
Fracture (excluding tooth)	1,498	46.4	1,481	50.4	2,979	48.3
Superficial (excluding eye)	303	9.4	333	11.3	636	10.3
Open wound (excluding eye)	371	11.5	236	8.0	607	9.8
Intracranial (including concussion)	280	8.7	153	5.2	433	7.0
Internal organ	134	4.2	83	2.8	217	3.5

5 Poisoning by pharmaceuticals

Cases of unintentional poisoning by medications and related substances are the subject of this section. The records included are those coded to the categories in ICD-10-AM *Accidental poisoning by and exposure to*:

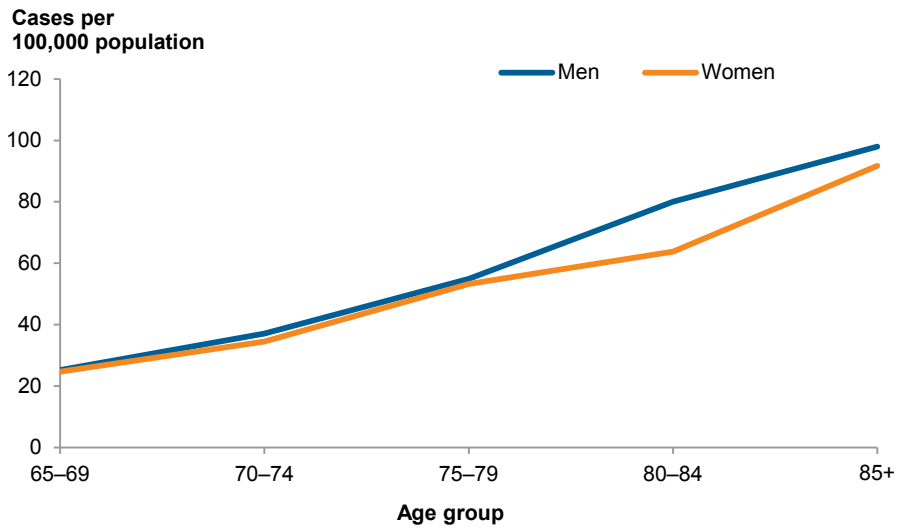
- *Nonopioid analgesics, antipyretics and antirheumatics* (X40)
- *Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified* (X41)
- *Narcotics and psychodysleptics [hallucinogens], not elsewhere classified* (X42)
- *Other drugs acting on the autonomic nervous system* (X43)
- *Other and unspecified drugs, medicaments and biological substances* (X44).

In 2011–12, similar numbers of men (697) and women (822) were hospitalised as a result of poisoning by pharmaceuticals (Table 5.1).

Table 5.1: Poisoning by pharmaceuticals cases, people aged 65 and over, 2011–12

	Males		Females		Persons	
Age group	Number	Per cent	Number	Per cent	Number	Per cent
65–69	124	17.8	123	15.0	247	16.3
70–74	135	19.4	130	15.8	265	17.4
75–79	144	20.7	161	19.6	305	20.1
80–84	153	22.0	161	19.6	314	20.7
85+	141	20.2	247	30.0	388	25.5
Total	**697**	**100.0**	**822**	**100.0**	**1,519**	**100.0**

The age-specific rates of poisoning by pharmaceuticals were similar for men and women in each age group (Figure 5.1). Rates were higher for those in the older age groups, with the highest rates in the 85-and-over age group for both men (98 cases per 100,000 population) and women (92 cases per 100,000 population).



Note: Data underpinning this figure are available in Table B.4 in Appendix B.

Figure 5.1: Age-specific rates of poisoning by pharmaceuticals cases, by age group and sex, 2011–12

5.1 Cause of poisonings

Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs was the most frequently reported drug group, accounting for 19% of all hospitalisations for poisoning by pharmaceuticals (Table 5.2). The second leading drug group for both men (14%) and women (15%) was narcotics and hallucinogens. Over 50% of cases were recorded as involving other and unspecified drugs, medicaments and biological substances. The types of substances included in this broad category are drugs affecting the cardiovascular and gastrointestinal systems, hormones, antibiotics, topical preparations and drugs affecting mineral and uric acid metabolism.

Table 5.2: Poisoning by drug group cases, people aged 65 and over, 2011–12

	Males		Females		Persons	
Accidental poisoning by and exposure to:	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**
Nonopioid analgesics, antipyretics and antirheumatics	38	5.5	54	6.6	92	6.1
Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	123	17.6	162	19.7	285	18.8
Narcotics and psychodysleptics (hallucinogens)	98	14.1	125	15.2	223	14.7
Other drugs acting on the autonomic nervous system	44	6.3	59	7.2	103	6.8
Other and unspecified drugs, medicaments and biological substances	394	56.5	422	51.3	816	53.7
Total	**697**	**100.0**	**822**	**100.0**	**1,519**	**100.0**

The recorded principal diagnosis offers further insight into the types of drugs involved in unintentional poisoning. A list of common drug types associated with unintentional poisoning is provided in Table 5.3. Medications used to treat diabetes (17%) or manage strong pain (11%) were reported most often as the principal diagnosis code for these cases in 2011–12.

Table 5.3: Common types of drugs reported for poisoning cases, people aged 65 and over, 2011–12

Type of drug	Number	Per cent
Insulin and oral hypoglycaemic [antidiabetic] drugs	258	17.0
Opioids (including codeine and morphine)[(a)]	162	10.7
Anticoagulants	146	9.6
Benzodiazepines	132	8.7
4-Aminophenol derivatives (e.g. paracetamol)	56	3.7

(a) Includes ICD-10-AM principal diagnosis codes T40.0 to T40.2.

5.2 Place of occurrence

The place where the unintentional poisoning by pharmaceuticals occurred was recorded in approximately 85% of cases. Of 1,284 cases where the place was identified, 60% occurred in the home, 27% occurred in a hospital or similar health service area and 11% occurred in an residential aged care facility (data not shown).

6 Inanimate mechanical forces

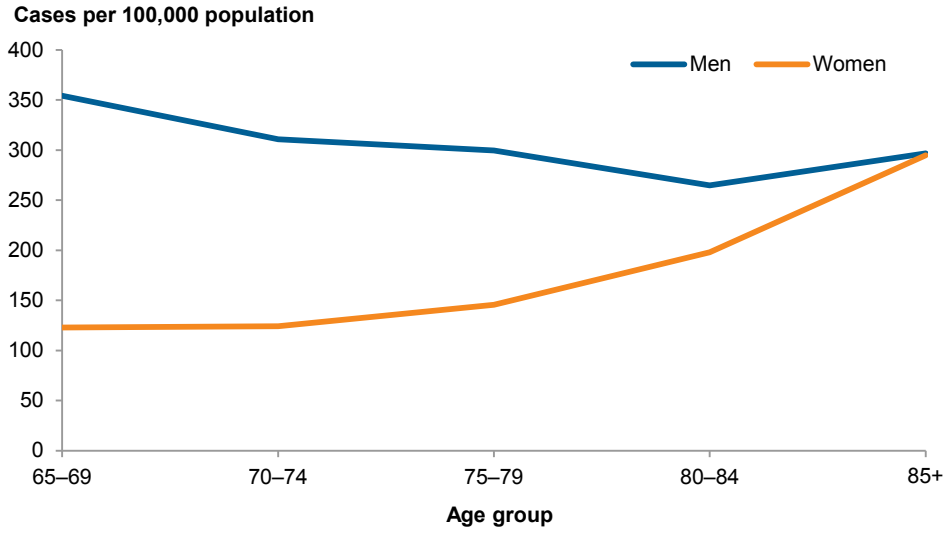
Several types of external cause of injury are brought together in the ICD-10-AM range entitled *Exposure to inanimate mechanical forces* (W20–W49). In this section, the cases have been divided into four groups, Striking or struck by objects (W20–W22), Contact with tools and machinery (W27–W31), Foreign bodies (W44–W45) and Other inanimate mechanical forces (remainder of W20–W49).

In 2011–12, nearly one-third of injuries due to inanimate mechanical forces occurred in the 65–69 age group (32%; 2,353) (Table 6.1). The proportion of injuries decreased with age for men, but not for women.

Table 6.1: Inanimate mechanical forces injury cases, by age group and sex, 2011–12

	Males		Females		Persons	
Age group	Number	Per cent	Number	Per cent	Number	Per cent
65–69	1,741	37.9	612	21.7	2,353	31.8
70–74	1,132	24.7	469	16.7	1,601	21.6
75–79	786	17.1	440	15.6	1,226	16.6
80–84	506	11.0	500	17.8	1,006	13.6
85+	427	9.3	794	28.2	1,221	16.5
Total	**4,592**	**100.0**	**2,815**	**100.0**	**7,407**	**100.0**

Men aged 65–69 had a much higher rate of injury due to inanimate mechanical forces than women in the same age group, 354 cases per 100,000 population for men compared with 123 cases per 100,000 population for women (Figure 6.1). However, there was little difference between the sexes at ages 85 and over.



Note: Data underpinning this figure are available in Table B.5 in Appendix B.

Figure 6.1: Age-specific rates of inanimate mechanical forces injury cases, by age group and sex, 2011–12

6.1 Cause of injuries

Striking or being struck by an object (30%) was the most common cause of hospitalised injury in this category, followed by contact with tools and machinery (Table 6.2). The latter also had the greatest difference in the proportion of injury by sex—36% for men compared with 8% for women. Tools and machinery includes non-powered hand tools (W27), powered lawnmowers (W28), powered hand tools and household machinery (W29), agricultural machinery (W30) and other machinery (W31). More than half of the male injury cases in this broader category were powered hand tools and household machinery (52%). Further analysis of these cases is provided in Box 6.1. Foreign bodies include those entering into or through an eye or natural orifice and those entering the skin.

Table 6.2: Causes of inanimate mechanical forces injury cases, people aged 65 and over, 2011–12

	Males		Females		Persons	
External cause	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**
Striking or struck by objects	981	21.4	1,217	43.2	2,198	29.7
Contact with tools and machinery	1,629	35.5	225	8.0	1,854	25.0
Foreign bodies	998	21.7	753	26.7	1,751	23.6
Other inanimate mechanical forces	984	21.4	620	22.0	1,604	21.7
Total	**4,592**	**100.0**	**2,815**	**100.0**	**7,407**	**100.0**

Box 6.1: Injuries in men aged 65 and over due to powered hand tools and household machinery

In 2011–12, 847 men over the age of 65 were hospitalised in Australia in 2011–12 due to powered hand tools and household machinery (W29). Of these, 370 were aged 65–69, 251 aged 70–74, 125 aged 75–79, 70 aged 80–84 and 31 aged 85 and over. Approximately 2 in 5 injuries occurred in or around the home.

Powered saws (46%) and grinders (27%) were the most common types of power tools involved. Chainsaw injuries accounted for a further 13% of male injury cases and 4% involved a powered drill.

Thirty-four per cent of injuries sustained by men for this external cause were open wounds, followed by muscle or tendon damage (23%) and fractures (17%). Amputation of a body part, including cutting off the tip of a finger, accounted for a further 13% of injuries.

Table 6.3 provides a summary of the age and sex distribution of hospitalised injury cases for people aged 65 and over due to inanimate mechanical forces in 2011–12.

Table 6.3: Causes of inanimate mechanical forces injury cases, by age group and sex, 2011–12

	Males		Females		Persons	
Age group	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**
Striking or struck by objects						
65–69	283	28.8	160	13.1	443	20.2
70–74	201	20.5	165	13.6	366	16.7
75–79	166	16.9	180	14.8	346	15.7
80–84	151	15.4	261	21.4	412	18.7
85+	180	18.3	451	37.1	631	28.7
Objects total	***981***	***100.0***	***1,217***	***100.0***	***2,198***	***100.0***
Contact with tools and machinery						
65–69	699	42.9	92	40.9	791	42.7
70–74	469	28.8	46	20.4	515	27.8
75–79	279	17.1	42	18.7	321	17.3
80–84	124	7.6	24	10.7	148	8.0
85+	58	3.6	21	9.3	79	4.3
Tools total	***1,629***	***100.0***	***225***	***100.0***	***1,854***	***100.0***
Foreign bodies						
65–69	323	32.4	188	25.0	511	29.2
70–74	229	22.9	131	17.4	360	20.6
75–79	197	19.7	118	15.7	315	18.0
80–84	137	13.7	118	15.7	255	14.6
85+	112	11.2	198	26.3	310	17.7
Foreign bodies total	***998***	***100.0***	***753***	***100.0***	***1,751***	***100.0***
Other inanimate mechanical forces						
65–69	436	44.3	172	27.7	608	37.9
70–74	233	23.7	127	20.5	360	22.4
75–79	144	14.6	100	16.1	244	15.2
80–84	94	9.6	97	15.6	191	11.9
85+	77	7.8	124	20.0	201	12.5
Other inanimate total	***984***	***100.0***	***620***	***100.0***	***1,604***	***100.0***

7 Animate mechanical forces and venom

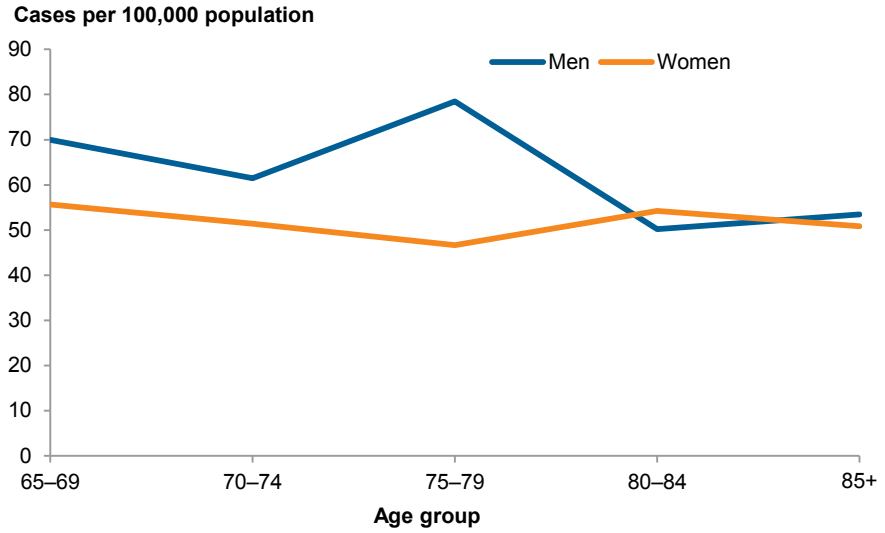
The ICD-10-AM provides codes for unintentional injuries due to contact with animals (including birds and reptiles), another person, or crowd of people, in a block titled *Exposure to animate mechanical forces* (W50–W64). Another block is for injury due to *Contact with venomous animals and plants* (X20–X29). Cases coded to these blocks are presented in this section in the following five groups: Contact with another person or persons (W50–W52), Bitten or struck by dog (W54), Bitten or struck by other mammal (W55), Contact with venomous animal or plant (X20–X29) and Other animate mechanical forces (remainder of W50–W64).

Nearly 2,000 hospitalised injury cases in older Australians in 2011–12 were due to animate mechanical forces and venom (Table 7.1).

Table 7.1: Animate mechanical forces and venom injury cases, by age group and sex, 2011–12

	Males		Females		Persons	
Age group	Number	Per cent	Number	Per cent	Number	Per cent
65–69	344	36.3	277	31.3	621	33.9
70–74	224	23.7	194	21.9	418	22.8
75–79	206	21.8	141	15.9	347	18.9
80–84	96	10.1	137	15.5	233	12.7
85+	77	8.1	137	15.5	214	11.7
Total	**947**	**100.0**	**886**	**100.0**	**1,833**	**100.0**

The rates for men were a little higher than those for women in the three younger age groups, but rates for older men and women were similar (Figure 7.1).



Note: Data underpinning this figure are available in Table B.6 in Appendix B.

Figure 7.1: Age-specific rates of animate mechanical forces and venom injury cases, by age group and sex, 2011–12

7.1 Cause of injuries

Being bitten or struck by a dog was the most common cause of injury in this category, accounting for 26% of cases, closely followed by being bitten or struck by another type of mammal (25%) (Table 7.2). Of the 475 cases involving a dog, 78% were the result of a bite (data not shown).

Cats (34%), cattle (29%) and horses (22%) were the most common types of mammals to bite or strike a person seriously enough to require hospitalisation.

Nearly one-quarter of injuries due to venomous bites and stings were attributable to *Contact with bees* (code X23.3) (23%).

More than twice as many women as men were hospitalised due to injury resulting unintentionally from contact with another person or persons. Types of causes in this group include being hit or struck by another person and bumped into by another person or crowd of people. This category specifically excludes cases of assault and cases where the intention of other persons was not determined.

Table 7.2: Causes of animate mechanical forces and venom injury cases, people aged 65 and over, 2011–12

	Males		Females		Persons	
External cause	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**
Contact with another person or persons	49	5.2	111	12.5	160	8.7
Bitten or struck by dog	211	22.3	264	29.8	475	25.9
Bitten or struck by other mammal	257	27.1	208	23.5	465	25.4
Contact with venomous animal or plant	191	20.2	132	14.9	323	17.6
Other animate mechanical forces	239	25.2	171	19.3	410	22.4
Total	**947**	**100.0**	**886**	**100.0**	**1,833**	**100.0**

Table 7.3 provides a summary of the age and sex distribution for each of the five sub-groups of cases due to animate mechanical forces or venom for people aged 65 and over in 2011–12.

Table 7.3: Causes of animate mechanical forces and venom injury cases, by age group and sex, 2011–12

	Males		Females		Persons	
Age group	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**
Contact with another person or persons						
65–69	18	36.7	12	10.8	30	18.8
70–74	12	24.5	8	7.2	20	12.5
75–79	7	14.3	18	16.2	25	15.6
80–84	5	10.2	24	21.6	29	18.1
85+	7	14.3	49	44.1	56	35.0
Person total	***49***	***100.0***	***111***	***100.0***	***160***	***100.0***
Bitten or struck by dog						
65–69	68	32.2	79	29.9	147	30.9
70–74	46	21.8	67	25.4	113	23.8
75–79	44	20.9	45	17.0	89	18.7
80–84	25	11.8	42	15.9	67	14.1
85+	28	13.3	31	11.7	59	12.4
Dog total	***211***	***100.0***	***264***	***100***	***475***	***100.0***
Bitten or struck by other mammal						
65–69	87	33.9	74	35.6	161	34.6
70–74	64	24.9	50	24.0	114	24.5
75–79	46	17.9	30	14.4	76	16.3
80–84	36	14.0	32	15.4	68	14.6
85+	24	9.3	22	10.6	46	9.9
Other mammal total	***257***	***100.0***	***208***	***100.0***	***465***	***100.0***
Contact with venomous animal or plant						
65–69	86	45.0	45	34.1	131	40.6
70–74	53	27.7	31	23.5	84	26.0
75–79	29	15.2	26	19.7	55	17.0
80–84	13	6.8	18	13.6	31	9.6
85+	10	5.2	12	9.1	22	6.8
Venom total	***191***	***100.0***	***132***	***100.0***	***323***	***100.0***
Other animate mechanical forces						
65–69	85	35.6	67	39.2	152	37.1
70–74	49	20.5	38	22.2	87	21.2
75–79	80	33.5	22	12.9	102	24.9
80–84	17	7.1	21	12.3	38	9.3
85+	8	3.3	23	13.5	31	7.6
Other animate total	***239***	***100.0***	***171***	***100.0***	***410***	***100.0***

8 Intentional self-harm

Cases of purposely self-inflicted poisoning or other injury are the subject of this section. The scope includes, but is not limited to, suicide and attempted suicide. The cases included are those with codes in the ICD-10-AM external cause range X60–X84, *Intentional self-harm*.

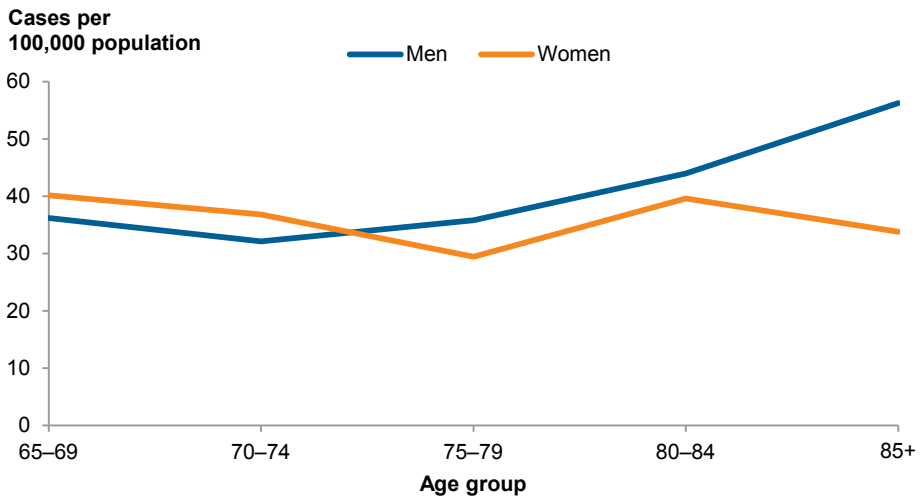
Determining whether an injury is due to intentional self-harm is not always straightforward. Some patients may choose not to disclose that their injuries resulted from intentional self-harm, or may be unable to do so due to the nature of the injuries or because they are uncertain about their own motives. Similarly, some information in the case record may allude to self-harm, but other available information casts doubt as to the certainty of intent. In this situation, a case can be coded to an 'undetermined intent' category (for example, Y30 *Falling, jumping or pushed from a high place, undetermined intent*).

In 2011–12, 1,173 older Australians were hospitalised for intentionally self-inflicted injury, with similar distribution of cases between the sexes (Table 8.1).

Table 8.1: Intentional self-harm injury cases, by age group and sex, 2011–12

	Males		Females		Persons	
Age group	Number	Per cent	Number	Per cent	Number	Per cent
65–69	178	32.1	200	32.3	378	32.2
70–74	117	21.1	139	22.5	256	21.8
75–79	94	17.0	89	14.4	183	15.6
80–84	84	15.2	100	16.2	184	15.7
85+	81	14.6	91	14.7	172	14.7
Total	**554**	**100.0**	**619**	**100.0**	**1,173**	**100.0**

The age-specific rates in Figure 8.1 show no clear age-related pattern for women. For men, slightly higher rates of intentional self-harm injuries were observed in the older age groups. For men aged 65–69 in 2011–12, the rate was 36 cases per 100,000 population. For men aged 85 and over, it was 56 cases per 100,000 population.



Note: Data underpinning this figure are available in Table B.7 in Appendix B.

Figure 8.1: Age-specific rates of intentional self-harm cases, by age group and sex, 2011–12

8.1 Cause of intentional self-harm

The numbers and proportions of cases that involved intentional self-harm are presented in Table 8.2. Over four-fifths of hospitalisations in this category were the result of intentional self-poisoning (that is, the record had an external cause code in the range X60–X69). Poisoning accounted for a larger proportion of intentional self-harm cases for women (91%) than men (76%).

Just under half of all intentional self-harm cases involved use of substances in the broad group *Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs* (48%). More women (59%) than men (36%) used this type of substance for intentional self-poisoning. This drug group includes antidepressants, tranquillisers and sedatives, including barbiturates. Intentional self-poisoning by *Benzodiazepines* (code T42.4) was the leading principal diagnosis, with 370 cases overall (data not shown).

In all, 106 of the 113 cases in the group *Nonopioid analgesics, antipyretics and antirheumatics* involved non-opioid analgesic *4-Aminophenol derivatives* (code T39.1). Paracetamol is the main drug of this type.

Using a knife or other sharp object was the next most commonly reported method of intentional self-harm (11%) after self-poisoning (Table 8.2). This method was used in 16% of male cases and 6% of female cases.

A handgun or other firearm had been used in less than 1% of all hospitalised intentional self-harm cases and all of the cases were men.

Table 8.2: Types of intentional self-harm, people aged 65 and over, 2011–12

	Males		Females		Persons	
Type of intentional self-harm	**Number**	**Per cent**	**Number**	**Per cent**	**Number**	**Per cent**
Intentional self-poisoning by and exposure to:						
Nonopioid analgesics, antipyretics and antirheumatics	55	9.9	58	9.4	113	9.6
Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs	198	35.7	365	59.0	563	48.0
Narcotics and psychodysleptics (hallucinogens)	34	6.1	51	8.2	85	7.2
Other drugs acting on the autonomic nervous system	9	1.6	12	1.9	21	1.8
Other and unspecified drugs, medicaments and biological substances	66	11.9	52	8.4	118	10.1
Alcohol	6	1.1	4	0.6	10	0.9
Other gases and vapours (for example, carbon monoxide)	22	4.0	4	0.6	26	2.2
Pesticides	21	3.8	3	0.5	24	2.0
Other and unspecified chemicals and noxious substances	12	2.2	11	1.8	23	2.0
Total intentional self-poisoning	*423*	*76.4*	*560*	*90.5*	*983*	*83.8*
Intentional self-harm by:						
Hanging, strangulation and suffocation	8	1.4	7	1.1	15	1.3
Firearm discharge	10	1.8	0	0.0	10	0.9
Sharp object	88	15.9	39	6.3	127	10.8
Other and unspecified means	25	4.5	13	2.1	38	3.2
Total	**554**	**100.0**	**619**	**100.0**	**1,173**	**100.0**

8.2 Place of occurrence

Two-thirds of intentional self-harm injuries occurred in the home (67%), with only minor differences in the proportions of men (65%) and women (69%) (data not shown). Place of occurrence was not specified in 18% of cases. Locations around the home differed slightly, with men self-harming in outdoor areas (3%) or the garage (3%) a little more often than women (1% for both). Women, however, were more a little more likely to select the bedroom, 7% compared with 5% for men. Seven per cent of self-harm cases occurred in an aged care or residential institution and 3% occurred in a health service area.

Appendix A: Data issues

Data sources

The data on hospital separations are from the Australian Institute of Health and Welfare's (AIHW's) National Hospital Morbidity Database (NHMD). Comprehensive information on the quality of the data for 2011–12 is available in *Australian hospital statistics 2011–12* (AIHW 2013) and the data quality statement below. Nearly all injury cases admitted to hospitals in Australia are thought to be included in the NHMD.

In 2011–12, diagnoses and external cause injury and poisoning were recorded using the seventh edition of the *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification* (ICD-10-AM) (NCCH 2010).

Definitions

The principal diagnosis is the diagnosis established after study to be chiefly responsible for occasioning the patient's episode of admitted patient care (AIHW 2012a).

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.

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 which ended during the period 1 July 2011 to 30 June 2012.

Injury

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, of *Chapter XIX Injury, poisoning and certain other consequences of external causes* and an external cause code in the ICD-10-AM range V00 to Y36 of *Chapter XX External causes of morbidity and mortality*. 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 does not include episodes mainly due to complications of surgical and medical care (ICD-10-AM range T80–T88) or due to sequelae present a year or more after injury, or other late effects (ICD-10-AM range T90–T98). Records are included whether caused unintentionally ('accidents') or intentionally (intentional self-harm or assault). Records where intent was not determined are also included. Nearly all injury separations were thought to be included in the data reported, representing minimal risk of sampling error.

Estimating incident cases

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

- a person is admitted to one hospital, then transferred to another or has a change in care type (for example, acute to rehabilitation) within the one 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 another one.

The NHMD does not include information designed to enable the set of records belonging to an injury case to be recognised as such. Hence, there is potential for some incident injury cases to be counted more than once, when a single incident injury case results in two 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 our estimated case counts.

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

Length of stay

Mean length of stay is calculated by dividing the total number of patient days for injury separations by the estimated number of injury cases. Patients who were admitted and discharged from hospital on the same day are counted as staying for 1 day.

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.

Rates

All age-specific rates in this report were calculated using, as the denominator, the final estimate of the estimated resident population (ERP) as at 31 December 2011.

Age-standardisation

Direct standardisation was used to age-standardise rates (in Table 2.1) using the Australian population in 2001 as the standard (ABS 2003).

Errors, inconsistencies and uncertainties

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

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

Data quality statement: National Hospital Morbidity Database

This section provides a summary of key issues relevant to interpretation of the NHMD for 2011–12.

The full AIHW data quality statement for the NHMD is accessible at:

<http://meteor.aihw.gov.au/content/index.phtml/itemId/529483>.

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 one record in the NHMD.
- For 2011–12, almost all public hospitals provided data for the NHMD. The exception was a mothercraft hospital in the Australian Capital Territory. The great majority of private hospitals also provided data, the exceptions being the private day hospital facilities in the Australian Capital Territory and the single private free-standing day hospital facility in the Northern Territory.
- There is apparent variation between states and territories in the use of statistical discharges and associated assignment of care types. For example, for public hospitals, the proportion of separations ending with a statistical discharge varied from 0.9% to 3.9% across states and territories.
- Variations in admission practices and policies led to variation among providers in the number of admissions for some conditions.
- 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. In particular, between 2009–10 and 2010–11, there were significant changes in the coding of diagnoses for diabetes and obstetrics and for reporting imaging procedures.

Appendix B: Additional tables

Table B.1: Age-specific rates of hospitalised injury cases, by age group and sex, 2011–12

	Age group					
	65–69	70–74	75–79	80–84	85+	Total
	Rate	Rate	Rate	Rate	Rate	Rate
Males	1,727.9	2,014.8	2,833.0	4,592.9	9,150.7	**3,111.4**
Females	1,729.6	2,511.4	3,867.2	6,761.5	12,563.3	**4,748.0**
Persons	1,728.8	2,267.5	3,386.7	5,827.3	11,374.5	**3,993.6**

Table B.2: Age-specific rates of fall injury cases, by age group and sex, 2011–12

	Age group					
	65–69	70–74	75–79	80–84	85+	Total
	Rate	Rate	Rate	Rate	Rate	Rate
Males	737.0	1,096.6	1,862.3	3,508.4	7,785.2	**2,093.0**
Females	1,100.0	1,810.8	3,045.4	5,695.6	11,159.5	**3,880.9**
Persons	919.7	1,460.0	2,495.7	4,753.4	9,984.1	**3,056.8**

Table B.3: Age-specific rates of transport-related injury cases, by age group and sex, 2011–12

	Age group					
	65–69	70–74	75–79	80–84	85+	Total
	Rate	Rate	Rate	Rate	Rate	Rate
Males	203.4	193.8	217.2	263.7	311.2	**222.1**
Females	124.9	158.1	189.2	219.7	220.9	**173.0**
Persons	163.9	175.6	202.2	238.7	252.3	**195.6**

Table B.4: Age-specific rates of poisoning by pharmaceuticals cases, by age group and sex, 2011–12

	Age group					
	65–69	70–74	75–79	80–84	85+	Total
	Rate	Rate	Rate	Rate	Rate	Rate
Males	25.2	37.1	54.9	80.0	97.9	**48.0**
Females	24.7	34.4	53.2	63.7	91.7	**48.4**
Persons	25.0	35.7	54.0	70.8	93.9	**48.2**

Table B.5: Age-specific rates of inanimate mechanical forces injury cases, by age group and sex, 2011–12

	Age group					
	65–69	70–74	75–79	80–84	85+	Total
	Rate	Rate	Rate	Rate	Rate	Rate
Males	354.2	310.7	299.5	264.7	296.6	**315.9**
Females	122.9	124.2	145.5	198.0	294.8	**165.6**
Persons	237.8	215.8	217.1	226.7	295.4	**234.9**

Table B.6: Age-specific rates of animate mechanical forces and venom injury cases, by age group and sex, 2011–12

	Age group					
	65–69	70–74	75–79	80–84	85+	Total
	Rate	Rate	Rate	Rate	Rate	Rate
Males	70.0	61.5	78.5	50.2	53.5	**65.2**
Females	55.6	51.4	46.6	54.2	50.9	**52.1**
Persons	62.8	56.3	61.4	52.5	51.8	**58.1**

Table B.7: Age-specific rates of intentional self-harm cases, by age group and sex, 2011–12

	Age group					
	65–69	70–74	75–79	80–84	85+	Total
	Rate	Rate	Rate	Rate	Rate	Rate
Males	36.2	32.1	35.8	43.9	56.3	**38.1**
Females	40.2	36.8	29.4	39.6	33.8	**36.4**
Persons	38.2	34.5	32.4	41.5	41.6	**37.2**

Glossary

Where relevant, definitions in this glossary contain an identification number from the Metadata Online 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), such as those which form the basis of this report. METeOR can be viewed on the Australian Institute of Health and Welfare (AIHW) website at <www.aihw.gov.au>. For further information on the terms used in this report, refer to the definitions in the *National health data dictionary,* version 16 (AIHW 2012b).

Activity when injured: The type of activity being undertaken by a person at the time of injury. METeOR identifier: 391320.

Acute: Having a short and relatively severe course.

Acute care: Acute care is care in which the clinical intent or treatment goal is to:

- cure illness or provide definitive treatment of injury
- perform surgery
- relieve symptoms of illness or injury (excluding palliative care)
- reduce severity of an illness or injury
- protect against exacerbation and/or complication of an illness and/or injury which could threaten life or normal function
- perform diagnostic or therapeutic procedures. METeOR identifier: 270174.

Acute care hospital: Establishments which provide at least minimal medical, surgical or obstetric services for inpatient treatment and/or care, and which provide round-the-clock comprehensive qualified nursing service as well as other necessary professional services. They must be licensed by the state/territory health department, or controlled by government departments. Most of the patients have acute conditions or temporary ailments and the average stay per admission is relatively short. METeOR identifier: 269971.

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 two or more populations.

Episode of care: A period of health care with a defined start and end. METeOR identifier: 268978.

External cause: The environmental event, circumstance or condition as the cause of injury, poisoning and other adverse effect, as represented by a code. METeOR identifier: 391330.

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.

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. METeOR identifier: 391301.

Length of stay: The length of stay (LOS) of a patient, excluding leave days, measured in days. Formula: LOS = Separation date minus Admission date minus Total leave days. The calculation is inclusive of admission and separation dates. METeOR identifier: 269982.

Mode of admission: The mechanism by which a person begins an episode of care, as represented by a code. METeOR identifier: 269976.

Mode of separation: Status at separation of person (discharge/transfer/death) and place to which person is released as represented by a code. METeOR identifier: 270094.

Patient days: The total number of days for all patients who were admitted for an episode of care and who separated during a specified reference period. Patients admitted and separated on the same date (same-day patients) are given a count of 1 patient day. METeOR identifier: 270045.

Principal diagnosis: The diagnosis established after study to be chiefly responsible for occasioning an episode of admitted patient care, an episode of residential care or an attendance at the health-care establishment, as represented by a code. METeOR identifier: 391326.

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 separated on the same date. METeOR identifier: 327270.

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 separations occurring during the reference period. This includes both formal and statistical separations. METeOR identifier: 270407.

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NPHP (National Public Health Partnership) 2005. The national falls prevention for older people plan: 2004 onwards. Canberra: NPHP.

Pointer S 2013. Trends in hospitalised injury, Australia: 1999–00 to 2010–11. Injury research and statistics series no. 86. Cat. no. INJCAT 162. Canberra: AIHW.

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Related publications

Annual statistics for hospitalisations due to falls by older people in Australia have been published for each financial year since 2003–04. These reports are available to download for free from the Australian Institute of Health and Welfare (AIHW) website <http://www.aihw.gov.au/publication-detail/?id=60129542825>. The website also includes information on ordering printed copies.

The following AIHW publications relating to trends in injury might also be of interest:

- Bradley C 2013. Trends in hospitalisations due to falls by older people, Australia: 1999–00 to 2010–11. Injury research and statistics series no. 84. Cat. no. INJCAT 160. Canberra: AIHW.
- Pointer S 2013. Trends in hospitalised injury, Australia: 1999–00 to 2010–11. Injury research and statistics series no. 86. Cat. no. INJCAT 162. Canberra: AIHW.

This report focuses on the most frequent causes of hospitalisations due to injury sustained by Australians, aged 65 years or older, during the period 1 July 2011 to 30 June 2012. Whilst the vast majority of hospitalisations were due to falls, the report focuses on other injuries (such as unintentional poisoning by medications) and it may be useful for guiding and improving policy aimed at reducing those other injuries and for targeting investment in injury prevention strategies.