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# Trends in hospitalised childhood injury in Australia

1999–07

*Sophie Pointer and Yvonne Helps*



**Flinders**  
UNIVERSITY

INJURY RESEARCH AND STATISTICS SERIES NO. 75



**Australian Government**

**Australian Institute of  
Health and Welfare**

*Authoritative information and statistics  
to promote better health and wellbeing*

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Australian Institute of Health and Welfare  
Canberra

Cat. no. INJCAT 151

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This publication is part of the Australian Institute of Health and Welfare's Injury research and statistics series. A complete list of the Institute's publications is available from the Institute's website <[www.aihw.gov.au](http://www.aihw.gov.au)>.

ISSN 1444-3791

ISBN 978-1-74249-377-0

### **Suggested citation**

AIHW: Pointer S & Helps Y 2012. Trends in hospitalised childhood injury in Australia 1999–07. Injury research and statistics series no. 75. Cat. no. INJCAT 151. Canberra: AIHW.

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Published by the Australian Institute of Health and Welfare

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# Abbreviations

ABS	Australian Bureau of Statistics
AIHW	Australian Institute of Health and Welfare
CI	Confidence Interval
ICD-10-AM	International Statistical Classification of Diseases and Related Health Problems, 10th revision, Australian Modification
NCCH	National Centre for Classification in Health

# Symbols

$n$	number
$p$	probability

# Summary

This report provides summary data on trends in hospitalised childhood injury for the period 1 July 1999 to 30 June 2007. Information is provided for three age groups (0–4, 5–9 and 10–14) for each year; information is also presented on the top five causes of hospitalised injury to children in Australia.

Almost half a million children were hospitalised as a result of an injury during the reporting period, boys outnumbering girls by a factor of 2 to 1.

Falls were the main cause of hospitalised injury ( $n = 193,141$ ), and transport-related injuries were also common ( $n = 66,864$ ). For all but one cause, cases of hospitalised injury were more numerous in boys compared with girls: for the category of intentional self-harm 3,514 girls were hospitalised compared with 837 boys.

Falls and other unintentional injuries were the most frequent causes of hospitalised injury in each of the three age groups. The most frequent cause of hospitalised falls in children aged up to 9 was falls involving playground equipment. At older ages falls involving roller-skates and skateboards were more common.

For 0–4 year olds poisoning by pharmaceuticals and the effects of exposure to smoke, fire, heat and hot substances accounted for 17% of hospitalised injuries. In 5–9 and 10–14 year olds transport incidents accounted for 14% and 23% of all hospitalised injuries respectively.

The rate of hospitalised injury changed little during the reporting period, there being about 1,500 cases per 100,000 children each year. A small (less than 1%) but statistically significant decline in the rate of hospitalised injury was seen overall during the period. There were no significant changes in the rates of fall injuries, other unintentional injuries, transport injuries and injuries due to the effects of exposure to smoke, fire, heat and hot substances. The only significant decline in childhood hospitalised injury was seen in the rate for poisoning by pharmaceuticals, for which the average decrease was 7.5% a year.



# 1 Introduction

This report provides summary data on trends in hospitalised childhood injury for the period 1 July 1999 to 30 June 2007, updating information on childhood injury trends for 1979 to 1994 (Moller & Kreisfeld 1997).

The report contains information on hospitalised childhood injuries for three age groups (0–4, 5–9 and 10–14) by financial year; additional information is presented on the top five external causes of injury to children. An ‘external cause’ is defined as the environmental event, circumstance or condition that was the cause of an injury, poisoning or adverse event.

‘Hospitalised injuries’ are defined as injuries requiring admission to hospital following an injury event. They range from fractures to catastrophic injuries (such as spinal cord injury) that result in lifelong disability at substantial cost to the health system. Episodes of hospital care that occur only in emergency departments or outpatient settings are not included.

The injuries reported here – hospital records with a principal diagnosis in the International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Australian Modification (ICD-10-AM) range S00–T75 or T79 – are defined as injuries usually sustained in the community setting; for example, workplace, educational institution, street or natural environment (Berry & Harrison 2007).

The report does not include an analysis of the trends in injury of Aboriginal and Torres Strait Islander children. Information on injury among this group of children is available in the report *Aboriginal and Torres Strait Islander child safety* (AIHW 2011).

## Cases included in the report

This report covers episodes of admitted (inpatient) care in Australian hospitals that ended during the period from 1 July 1999 to 30 June 2007 where:

- the patient was aged between 0 and 14 at the time of hospitalisation
- the mode of admission was not a transfer from another acute hospital and
- the principal diagnosis code was in the range S00–T75 or T79.

Records for which the mode of admission was recorded as being by transfer from another acute-care hospital are excluded on the ground that such records are likely to result in double-counting of cases. Use of the term ‘cases’ throughout this report reflects this exclusion and forms the basis for case estimation. See Appendix A for more detail.



## 2 Overview of all causes of injury

Over the period 1999–07 there were 471,416 estimated cases of children aged 0–14 hospitalised due to injury in Australia (Table 2.1). The number of injured boys was higher in all age groups compared with girls. The greatest difference between boys and girls was in the 10–14 age group, where the ratio of cases was 2.3:1.

**Table 2.1: Estimated number of children hospitalised for injury, by sex and age group, Australia, 1999–07**

	0–4		5–9		10–14		All children	
	No. of cases	Per cent	No. of cases	Per cent	No. of cases	Per cent	No. of cases	Per cent
Boys	88,650	57	87,247	59	119,229	70	295,126	63
Girls	65,801	43	59,490	41	50,990	30	176,281	37
Children <sup>(a)</sup>	154,456	100	146,739	100	170,221	100	471,416	100

(a) Sex was not reported in 9 cases.

### Trends over time

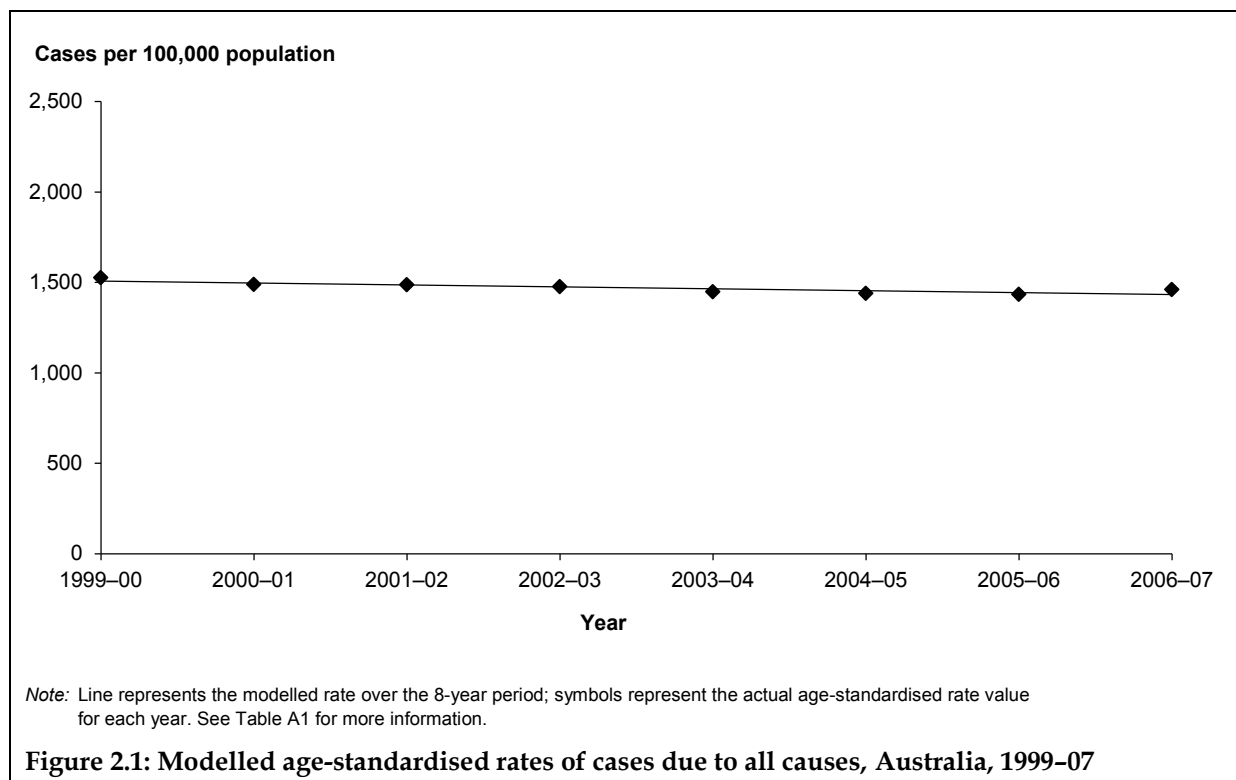
During the eight-year period the highest number of cases of hospitalised injury in children occurred in 1999–00 ( $n = 60,413$ ) and the lowest in 2004–05 ( $n = 57,864$ ) (Table 2.2). The ratio of total cases of boys to girls (1.7:1) remained constant.

**Table 2.2: Estimated number of children hospitalised for injury, by age group, sex and year, Australia, 1999–07**

Year	Age group			All children
	0–4	5–9	10–14	
<b>1999–00</b>				
Boys	11,634	11,534	14,620	37,788
Girls	8,770	7,671	6,184	22,625
Children	20,404	19,205	20,804	60,413
<b>2000–01</b>				
Boys	11,297	11,257	14,485	37,039
Girls	8,287	7,586	6,321	22,194
Children	19,584	18,843	20,806	59,233
<b>2001–02</b>				
Boys	11,316	11,321	14,702	37,339
Girls	8,420	7,484	6,138	22,042
Children <sup>(a)</sup>	19,736	18,806	20,841	59,383
<b>2002–03</b>				
Boys	11,092	11,058	14,818	36,968
Girls	8,195	7,578	6,305	22,078
Children <sup>(a)</sup>	19,289	18,636	21,123	59,048
<b>2003–04</b>				
Boys	10,629	10,668	14,930	36,227
Girls	7,978	7,355	6,523	21,856
Children <sup>(a)</sup>	18,608	18,023	21,454	58,085
<b>2004–05</b>				
Boys	10,679	10,503	15,124	36,306
Girls	7,866	7,259	6,432	21,557
Children <sup>(a)</sup>	18,545	17,763	21,556	57,864
<b>2005–06</b>				
Boys	10,865	10,224	15,049	36,138
Girls	8,184	7,223	6,468	21,875
Children <sup>(a)</sup>	19,051	17,447	21,517	58,015
<b>2006–07</b>				
Boys	11,138	10,682	15,501	37,321
Girls	8,101	7,334	6,619	22,054
Children <sup>(a)</sup>	19,239	18,016	22,120	59,375
<b>Total cases<sup>(a)</sup></b>	<b>154,456</b>	<b>146,739</b>	<b>170,221</b>	<b>471,416</b>

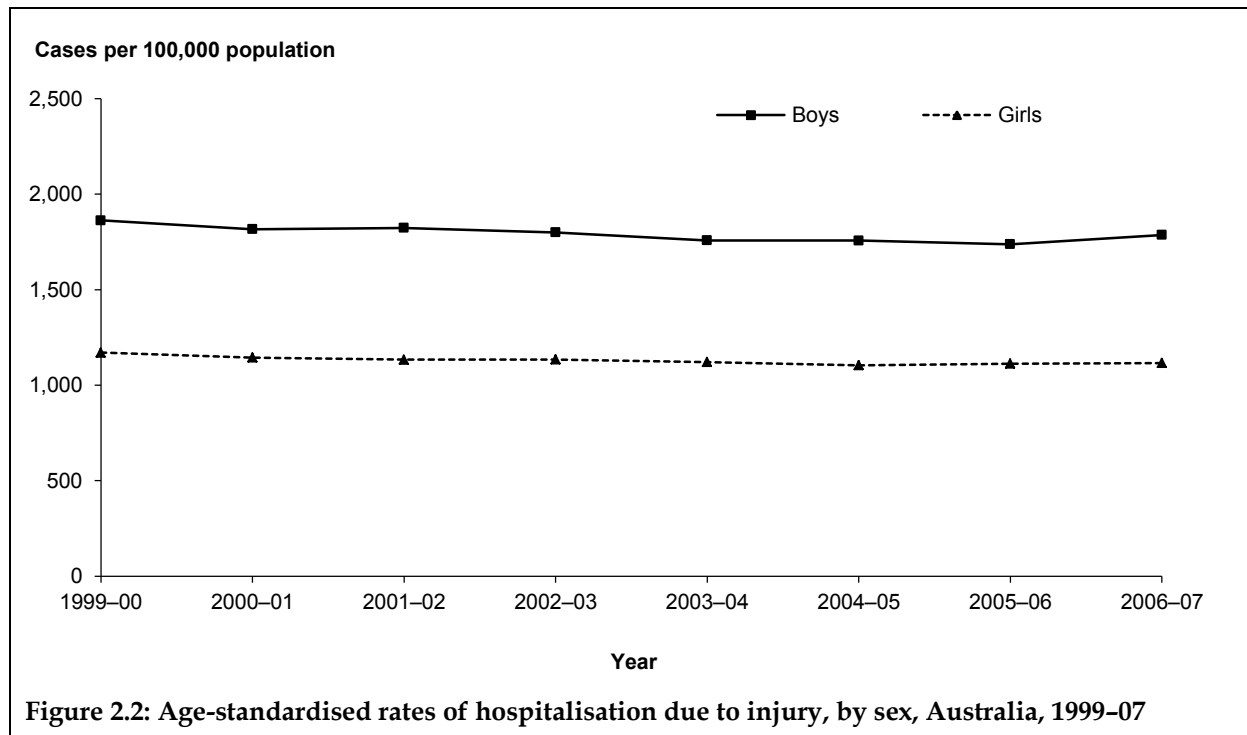
(a) Includes cases for which sex was not stated.

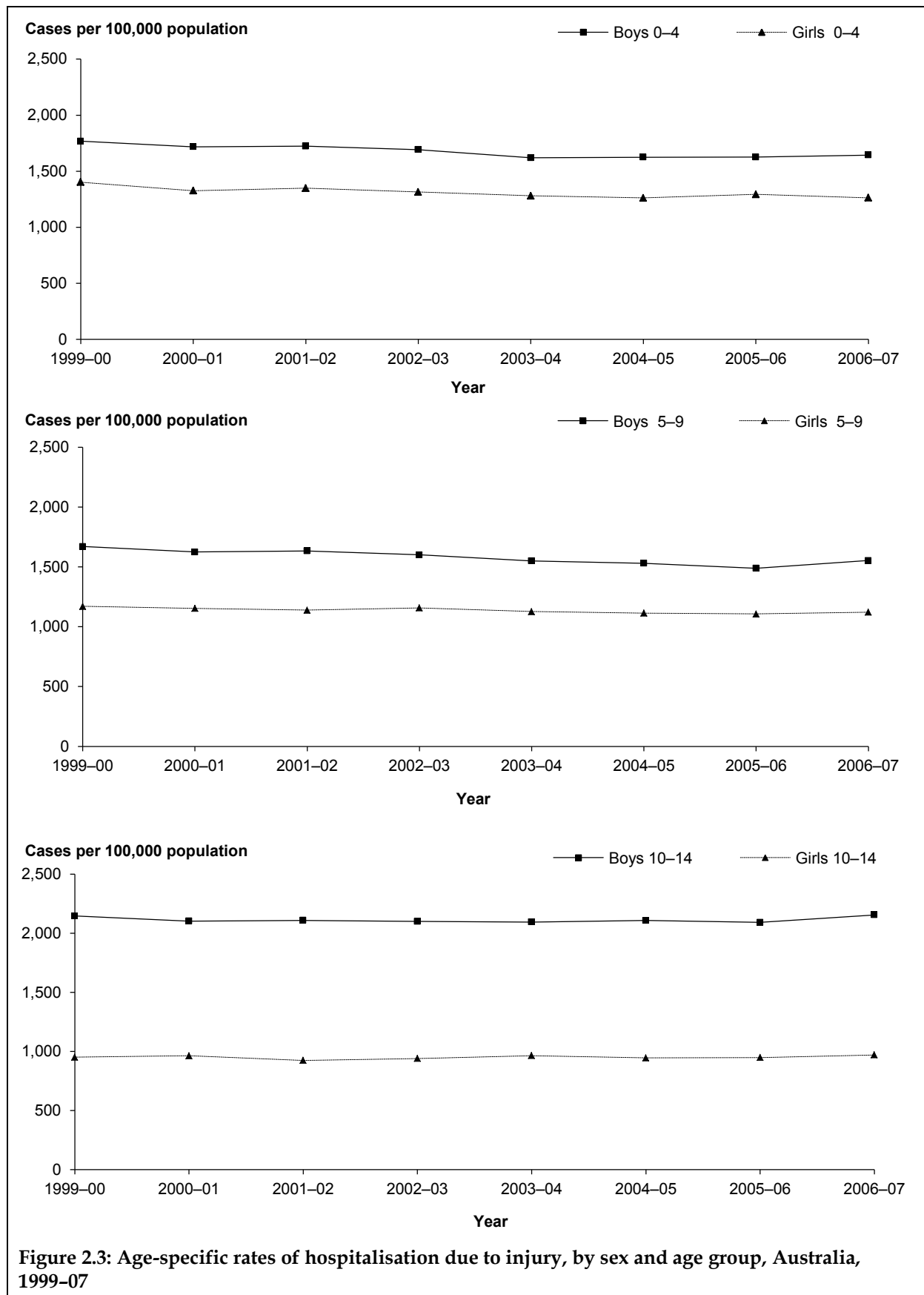
The age-standardised injury hospitalisation rate for children from 1999–00 to 2006–07 was about 1,500 cases per 100,000 population per year (Figure 2.1). Negative binomial regression modelling reveals the presence of a small (–0.7% per year) but statistically significant ( $p = 0.000$ ) downward trend in the age-standardised rates.



Rates varied in a very narrow range for boys and girls in the reporting period (Figure 2.2). Age-standardised rates for boys were one and a half times the rates for girls in each reporting year. The rate for boys was highest in the first reporting year (1,863 cases per 100,000 population) and lowest in 2005-06 (1,738 cases per 100,000 population). The highest rate for girls was also reported in 1999-00 (1,171 cases per 100,000 population), and the lowest in 2004-05 (1,105 cases per 100,000 population).

Figure 2.3 presents the age-specific rates of estimated injury cases for the three age groups examined in this report. The age-specific rates of injury were highest in 10-14 boys and 0-4 girls.





## External causes of injury

Over the period 1999–07, *Falls* were the major external cause of injury in children accounting for 41% of total cases (Table 2.3). *Other unintentional injuries* (33%) and transport related injuries (14%) were the second and third most frequent causes respectively. *Other unintentional injuries* is a broad category that encompasses a wide range of injury types and is examined more fully in a later section. Similar proportions of external causes of injury can be seen for boys and girls; however boys outnumbered girls for all external causes of injury other than self-inflicted harm.

**Table 2.3: Estimated number of children hospitalised for injury, by external cause and sex, Australia, 1999–07**

External cause	Boys		Girls		Children	
	No. of cases	Per cent	No. of cases	Per cent	No. of cases	Per cent
<b>Unintentional injuries</b>						
Transportation	45,935	15.6	20,926	11.9	66,864	14.2
Drowning	1,395	0.5	911	0.5	2,306	0.5
Poisoning, pharmaceuticals	8,513	2.9	7,671	4.4	16,184	3.4
Poisoning, other substances	3,387	1.1	2,383	1.4	5,770	1.2
Falls	118,417	40.1	74,719	42.4	193,141	41.0
Smoke, fire, heat and hot substances	9,986	3.4	6,360	3.6	16,347	3.5
Other unintentional injuries	98,888	33.5	55,230	31.3	154,118	32.7
<b>Intentional injuries</b>						
Intentional self-harm	837	0.3	3,514	2.0	4,351	0.9
Assault	3,984	1.3	2,185	1.2	6,169	1.3
Undetermined intent	742	0.3	681	0.4	1,423	0.3
Other or missing	3,042	1.0	1,701	1.0	4,743	1.0
<b>Total<sup>(a)</sup></b>	<b>295,126</b>	<b>100.0</b>	<b>176,281</b>	<b>100.0</b>	<b>471,416</b>	<b>100.0</b>

(a) Includes cases for which sex was not stated.

## External causes of injury by age

Table 2.4 shows differences in the proportion of external causes of injury according to age. While the top two types of external cause (*Falls* and *Other unintentional injuries*) remain the same for all three age groups, differences emerge in other types of external cause injury, as outlined in the following paragraphs.

**Table 2.4: Estimated number of children hospitalised for injury, by external cause and age group, Australia, 1999–07**

External cause	0–4		5–9		10–14		All children
	No. of cases	Per cent	No. of cases	Per cent	No. of cases	Per cent	No. of cases
<b>Unintentional injuries</b>							
Transportation	8,172	5.3	20,717	14.1	37,975	22.3	66,864
Drowning	1,844	1.2	293	0.2	169	0.1	2,306
Poisoning, pharmaceuticals	14,017	9.1	1,114	0.8	1,053	0.6	16,184
Poisoning, other substances	4,563	3.0	527	0.4	680	0.4	5,770
Falls	56,651	36.7	75,009	51.1	61,481	36.1	193,141
Smoke, fire, heat and hot substances	11,390	7.4	2,441	1.7	2,516	1.5	16,347
Other unintentional injuries	53,344	34.5	44,109	30.1	56,665	33.3	154,118
<b>Intentional injuries</b>							
Intentional self-harm	57	0.0	49	0.0	4,245	2.5	4,351
Assault	2,397	1.6	806	0.5	2,966	1.7	6,169
Undetermined intent	488	0.3	239	0.2	696	0.4	1,423
Other or missing	1,533	1.0	1,435	1.0	1,775	1.0	4,743
<b>Total</b>	<b>154,456</b>	<b>100.0</b>	<b>146,739</b>	<b>100.0</b>	<b>170,221</b>	<b>100.0</b>	<b>471,416</b>

### 0–4 year olds

After *Falls* and other unintentional injuries, the most frequent external cause of injury for 0–4 year olds was poisoning by pharmaceuticals. Children aged 0–4 accounted for 87% of all estimated cases of pharmaceutical poisoning injuries. There was a similar pattern for poisoning by other substances where 79% of cases occurred in children aged 0–4.

Fire, burn and scald injuries were the next most frequent external cause after poisoning by pharmaceuticals. Injuries due to effects of exposure to smoke, fire, heat and hot substances in 0–4 year olds accounted for 70% of all burn injuries in this category.

### 5–9 year olds

*Falls* accounted for a higher proportion of hospitalised injuries in 5–9 year olds compared with the other two age groups. About 39% of *Falls* occurred in the 5–9 year age group. After *Falls* and other unintentional injuries, the most frequent external cause of injury for 5–9 year olds was transport injuries.

### 10–14 year olds

After *Falls* and other unintentional injuries, the most frequent external cause of injury for 10–14 year olds was transport injuries followed by *Intentional self-harm* injuries. This age group accounted for over half (57%) of all transport injuries in all children (0–14). Self-harm injuries in 10–14 year olds accounted for 97% of all such cases involving children in the period.

### 3 Falls

This chapter describes hospitalised injury due to *Falls* (W00–W19). *Falls* accounted for the largest proportion of injury hospitalisations for children in the reporting period.

#### Trends over time

*Falls* accounted for the largest proportion of injury hospitalisations for children in each age category regardless of sex in the reporting period. The lowest number of cases ( $n = 23,414$ ) was reported in 2002–03 and the highest ( $n = 24,925$ ) in 2006–07 (Table 3.1). More boys than girls were hospitalised for a fall injury in each year.

**Table 3.1: Estimated number of children hospitalised for fall injury, by sex and year, Australia, 1999–07**

Year	Boys		Girls		Children	
	No. of cases	Per cent	No. of cases	Per cent	No. of cases	M:F ratio
1999–00	15,143	61.0	9,696	39.0	24,839	1.6
2000–01	15,035	61.6	9,356	38.4	24,391	1.6
2001–02 <sup>(a)</sup>	14,560	61.9	8,979	38.1	23,540	1.6
2002–03 <sup>(a)</sup>	14,367	61.4	9,045	38.6	23,414	1.6
2003–04	14,731	60.9	9,475	39.1	24,206	1.6
2004–05 <sup>(a)</sup>	14,785	61.9	9,088	38.1	23,874	1.6
2005–06 <sup>(a)</sup>	14,617	61.0	9,334	39.0	23,952	1.6
2006–07	15,179	60.9	9,746	39.1	24,925	1.6
<b>Total<sup>(a)</sup></b>	<b>118,417</b>	<b>61.3</b>	<b>74,719</b>	<b>38.7</b>	<b>193,141</b>	<b>1.6</b>

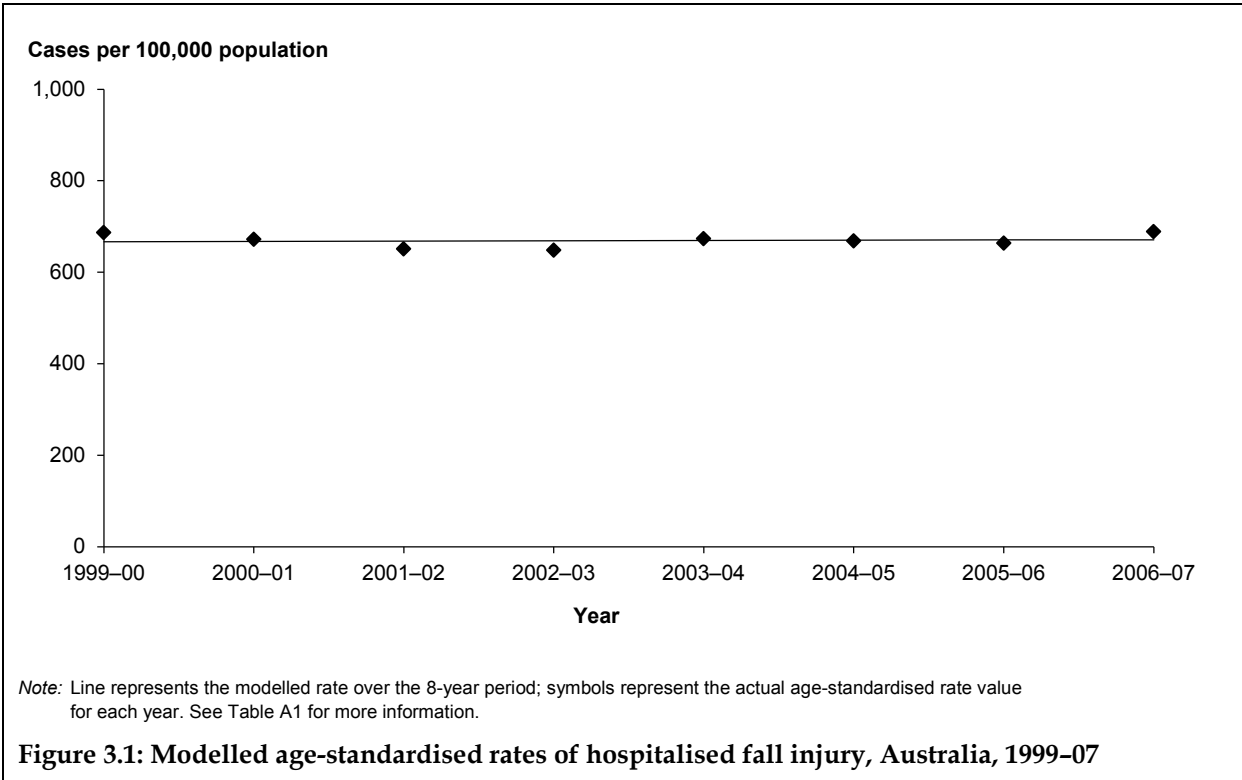
(a) Includes cases for which sex was not stated.

Figure 3.1 shows the age-standardised rates for all children seriously injured as a result of a fall from 1999–00 to 2006–07. When negative binomial regression techniques are used, it is apparent that the age-standardised rate of hospitalised fall-related injuries did not change significantly over the period.

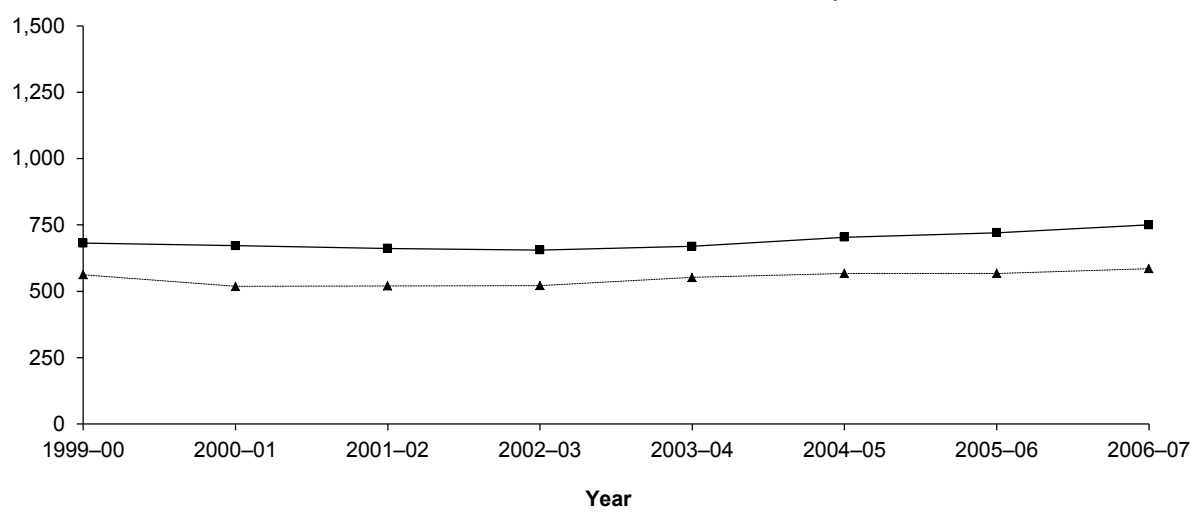
Figure 3.2 shows the age-standardised rates for *Falls* by sex from 1999–00 to 2006–07. There was some change year on year in the rates for both boys and girls. For boys, the rate of fall injury was lowest in 2002–03 (775 cases per 100,000 population); for girls, the lowest rate was in 2001–02 (510 cases per 100,000 population). Both boys and girls recorded their highest rate of *Falls* in 2006–07 (817 and 553 cases per 100,000 respectively).

Figure 3.3 shows the age-specific rates of hospitalised fall injury for the three age groups over the period. Among boys, the rates were lowest for 0–4 year olds; in contrast, the rates for girls were lowest among 10–14 year olds.

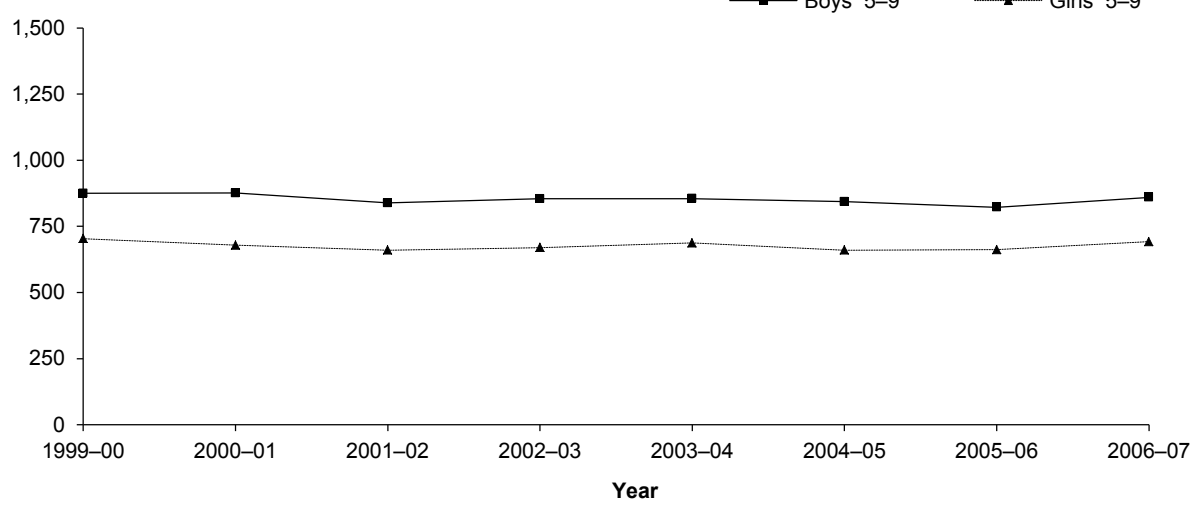




Cases per 100,000 population



Cases per 100,000 population



Cases per 100,000 population

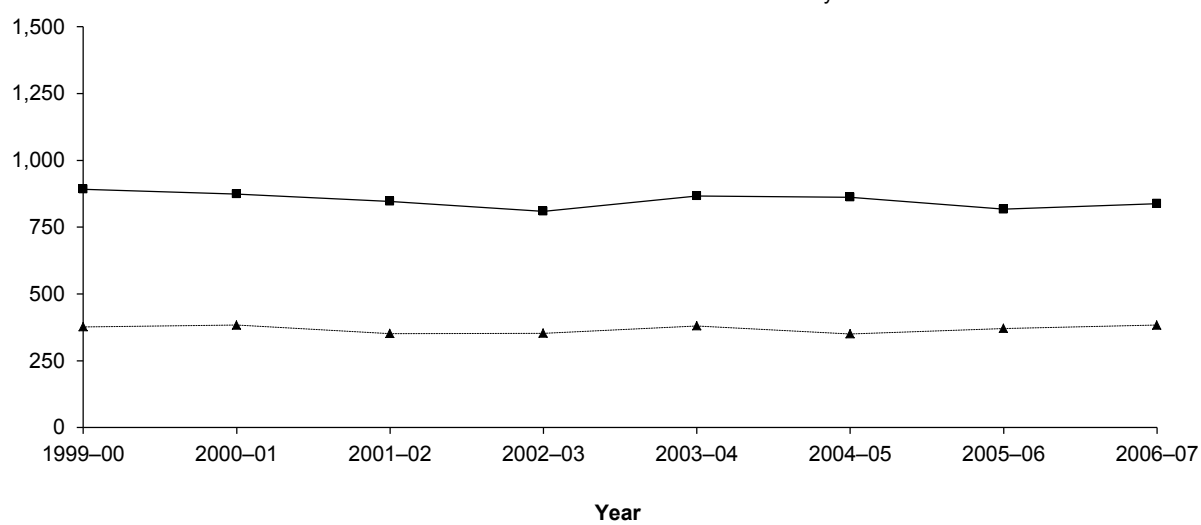
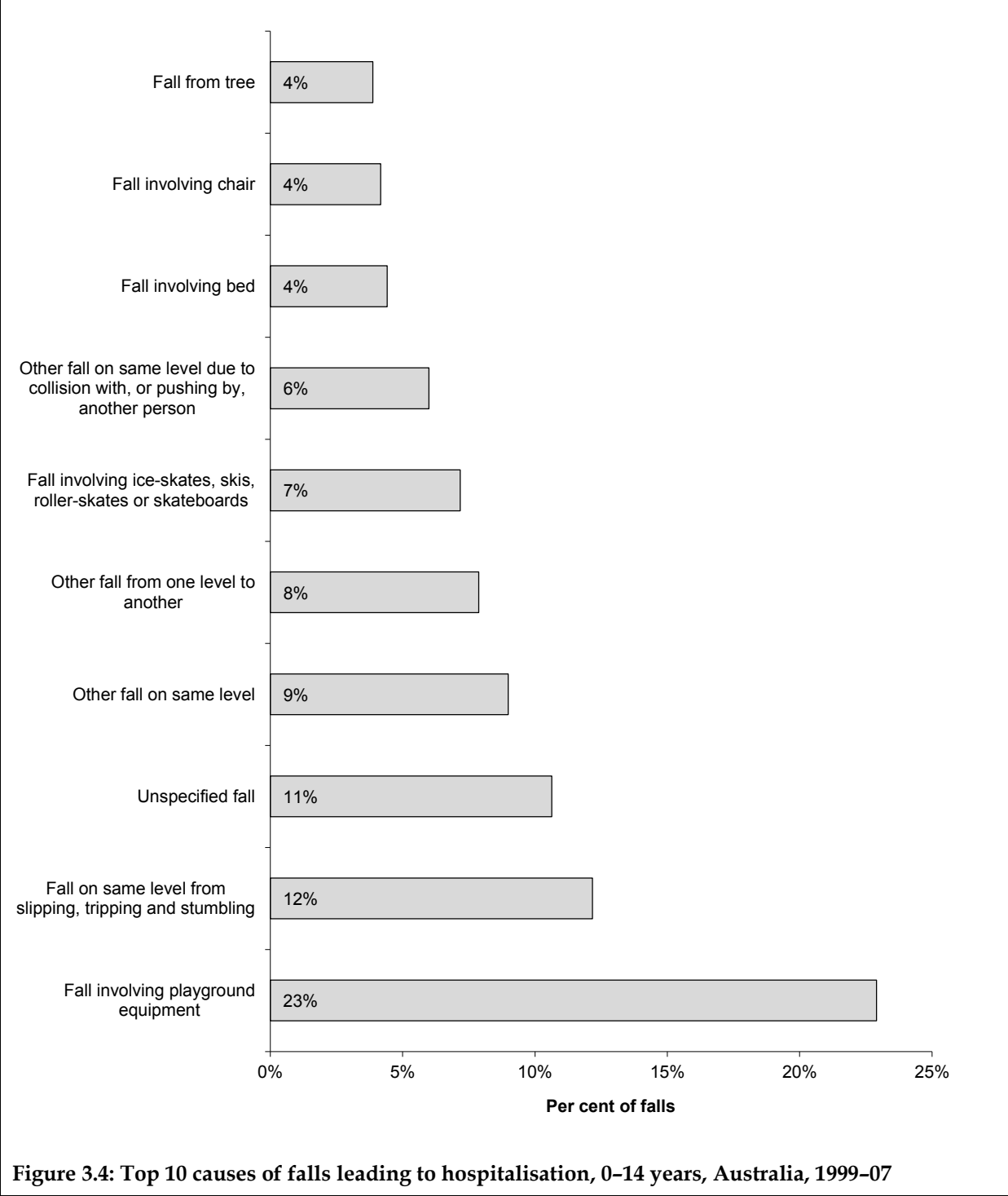


Figure 3.3: Age-specific rates of hospitalised fall injury, by sex and age group, Australia, 1999-07

# Types of fall

Between 1999-00 and 2006-07 the most common type of fall for children was a *Fall involving playground equipment* (23%), accounting for 44,243 cases (Figure 3.4).



## 0–4 year olds

The five leading causes of *Falls* in 0–4 year olds accounted for 59% of all hospitalised fall injuries. The highest proportion of hospitalised fall injury in 0–4 year olds occurred as a result of a *Fall involving playground equipment*; this was followed by a *Fall on same level from slipping, tripping and stumbling* (Table 3.2).

**Table 3.2: Top five causes of hospitalised fall injury, 0–4 years, Australia, 1999–07**

Rank	Type of fall	No. of cases	Per cent of 0–14 cases	No. of 0–14 cases
1	Fall involving playground equipment (W09)	9,673	21.9	44,243
2	Fall on same level from slipping, tripping and stumbling (W01)	6,434	27.4	23,507
3	Unspecified fall (W19)	6,122	29.8	20,531
4	Other fall from one level to another (W17)	6,011	39.5	15,217
5	Fall involving chair (W07)	5,309	66.0	8,050
	<b>All fall injuries for 0–4 years</b>	<b>56,651</b>	<b>29.3</b>	<b>193,141</b>

For cases of a *Fall involving playground equipment*, further specificity on the type of equipment became available from 2002–03: a total of 6,098 cases were recorded in this period with further detail about the type of playground equipment involved. The largest number of cases ( $n = 2,079$ ) resulted from a *Fall involving trampoline*, for which the number of hospitalisations was roughly equal for boys ( $n = 1,078$ ) and girls ( $n = 1,001$ ). Falls involving slides ( $n = 1,140$ ) and playground climbing apparatus ( $n = 1,075$ ) were also common during 2002–03 to 2006–07.

## 5–9 year olds

The five leading causes of *Falls* in 5–9 year olds accounted for 71% of all hospitalised fall injuries in this age group. As with 0–4 year olds, the highest proportion of hospitalised fall injuries in 5–9 year olds occurred as a result of a *Fall involving playground equipment* (Table 3.3). Of the cases of *Fall involving playground equipment* occurring after 2002–03, a total of 17,923 cases specified the type of playground equipment involved. The largest number of cases ( $n = 8,095$ ) resulted from a *Fall involving playground climbing apparatus*; this was followed by a *Fall involving trampoline* ( $n = 4,139$ ).

**Table 3.3: Top five causes of hospitalised fall injury, 5–9 years, Australia, 1999–07**

Rank	Type of fall	No. of cases	Per cent of 0–14 cases	No. of 0–14 cases
1	Fall involving playground equipment (W09)	27,793	62.8	44,243
2	Fall on same level from slipping, tripping and stumbling (W01)	7,967	33.9	23,507
3	Unspecified fall (W19)	7,132	34.7	20,531
4	Other fall from one level to another (W17)	5,334	35.1	15,217
5	Other fall on same level (W18)	5,246	30.2	17,365
	<b>All fall injuries for 5–9 years</b>	<b>75,009</b>	<b>38.8</b>	<b>193,141</b>

## 10–14 year olds

The five leading causes of *Falls* in 10–14 year olds accounted for 69% of all hospitalised fall injuries in this age group. The profile of falls among 10–14 year olds was very different from that for younger children (Table 3.4). *Fall involving ice-skates, skis, roller-skates or skateboards* was the most frequent cause of hospitalised fall injury in this age group.

**Table 3.4: Top five types of hospitalised fall injury, 10–14 years, Australia, 1999–07**

Rank	Type of fall	No. of cases	Per cent of 0–14 cases	No. of 0–14 cases
1	Fall involving ice-skates, skis, roller-skates or skateboards (W02)	9,677	63.8	15,173
2	Fall on same level from slipping, tripping and stumbling (W01)	9,106	35.5	25,636
3	Other fall on same level due to collision with, or pushing by, another person (W03)	8,514	67.5	12,604
4	Other fall on same level (W18)	7,751	39.7	19,501
5	Unspecified fall (W19)	7,277	31.9	22,800
	<b>All fall injuries for 10–14 years</b>	<b>61,481</b>	<b>31.8</b>	<b>193,141</b>

## Trends in trampoline injuries

An analysis of *Fall involving trampoline* by year from 2002–03 reveals an increase in cases for each of the three age groups (Table 3.5). For all children, the highest number of cases ( $n = 1,592$ ) occurred in 2006–07 and the lowest ( $n = 1,273$ ) in 2002–03.

**Table 3.5: Estimated number of children hospitalised for trampolining injuries, by age and year, Australia, 2002–07**

Age group	2002–03	2003–04	2004–05	2005–06	2006–07	Total
0–4	333	326	342	392	441	1,834
5–9	660	821	717	693	793	3,684
10–14	280	294	302	289	358	1,523
<b>Total</b>	<b>1,273</b>	<b>1,441</b>	<b>1,361</b>	<b>1,374</b>	<b>1,592</b>	<b>7,041</b>

## 4 Other unintentional injury

After *Falls*, other unintentional injuries were the most common cause of hospitalised injury among children from 1999–00 to 2006–07, accounting for an estimated 154,118 cases. Other unintentional injury consists of the following external cause categories:

- *Exposure to inanimate mechanical forces (W20–W49)*
- *Exposure to animate mechanical forces (W50–W64)*
- *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)*
- *Exposure to forces of nature (X30–X39)*
- *Overexertion, travel and privation (X50–X57)*
- *Accidental exposure to other and unspecified factors (X58–X59)*
- *Sequelae of external causes of morbidity and mortality (Y85–Y89).*

### Trends over time

Boys were more likely than girls to be hospitalised as a result of other unintentional injury in each of the reporting years (Table 4.1). The number of estimated cases occurring each year did not change markedly during the reporting period.

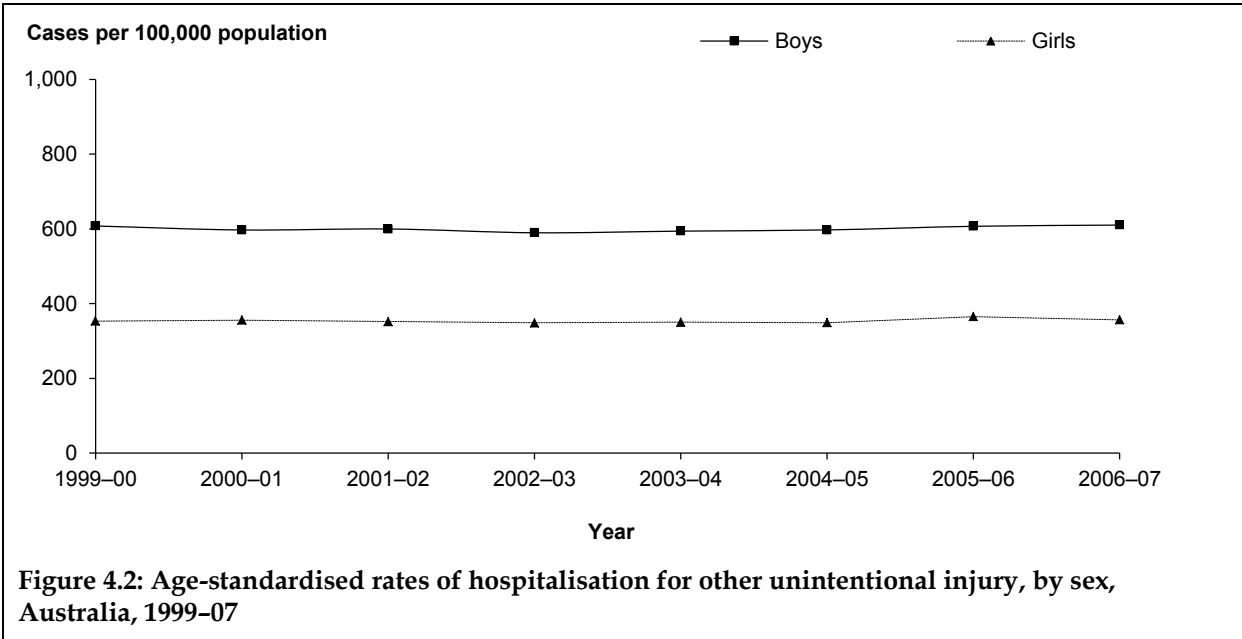
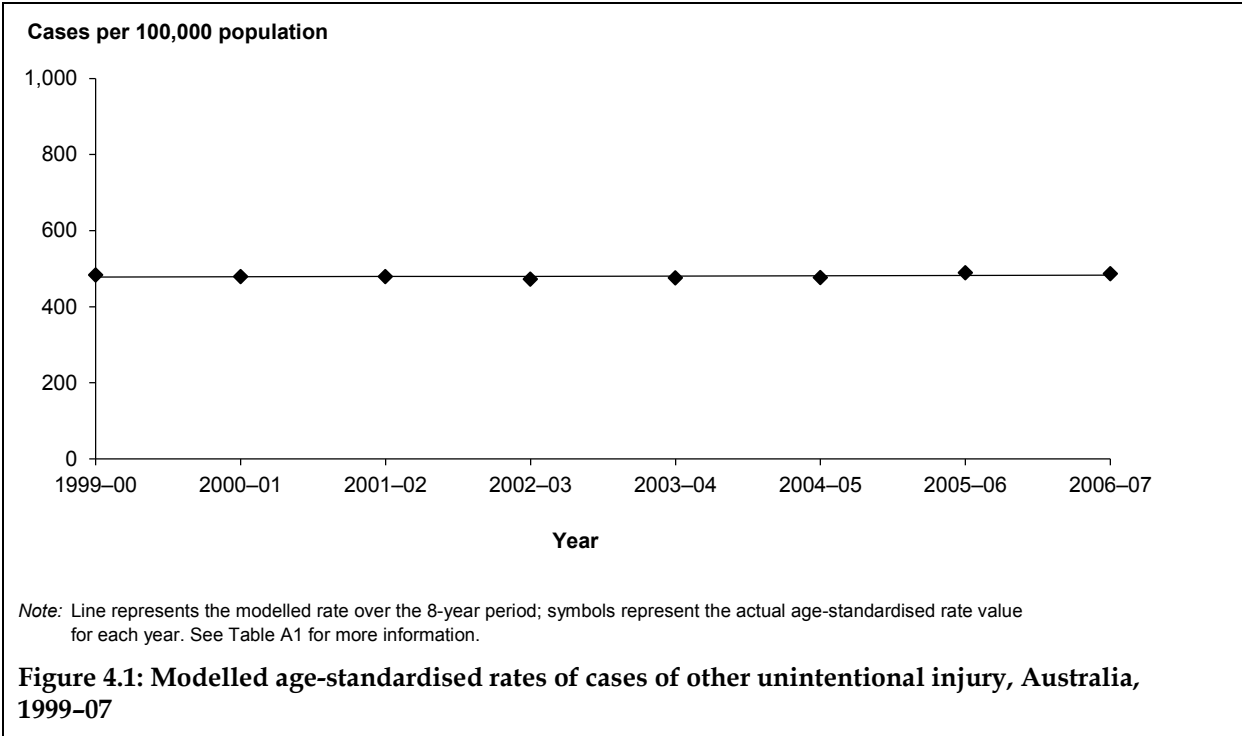
**Table 4.1: Estimated number of children hospitalised for other unintentional injury, by sex and year, Australia, 1999–07**

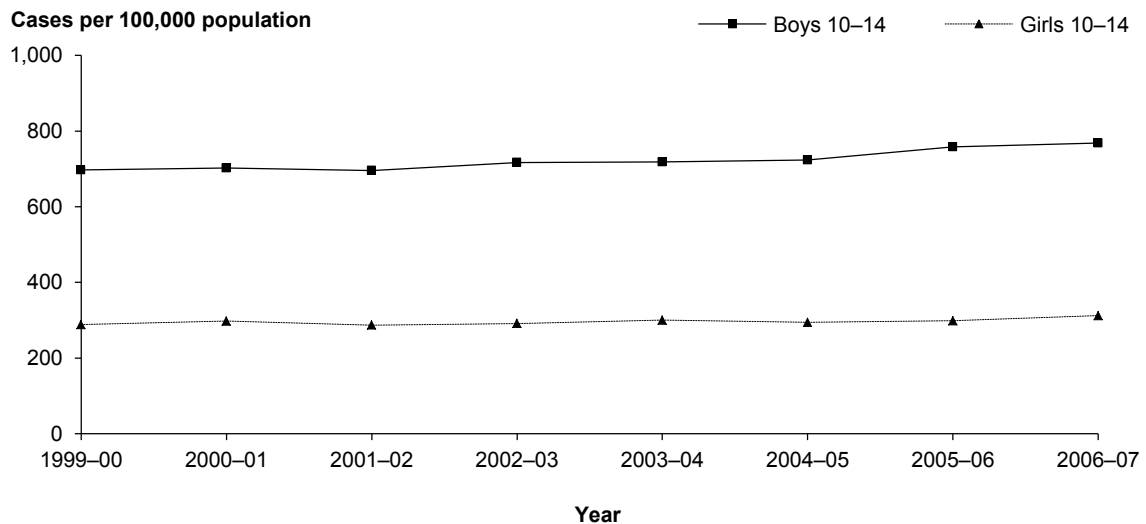
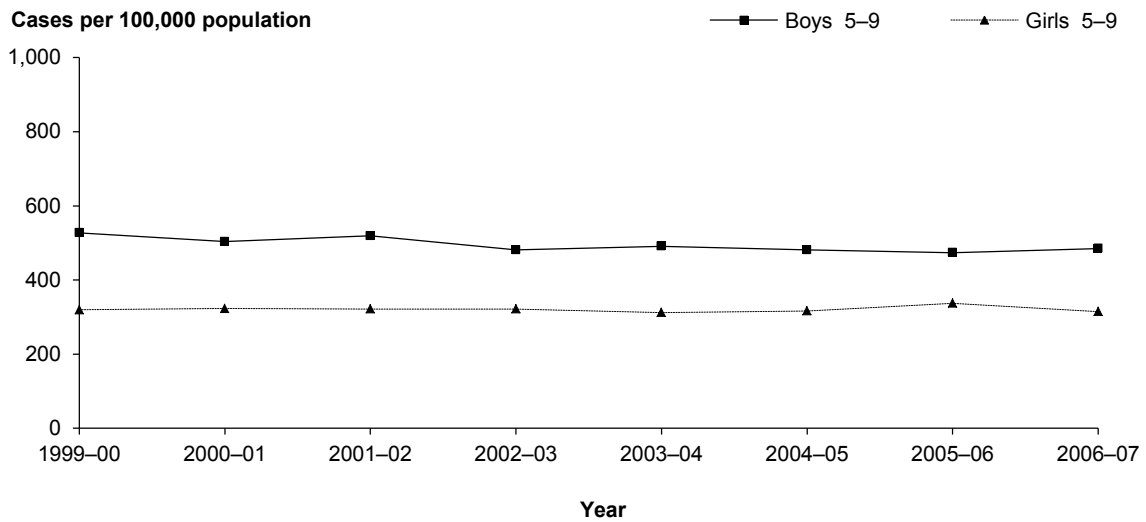
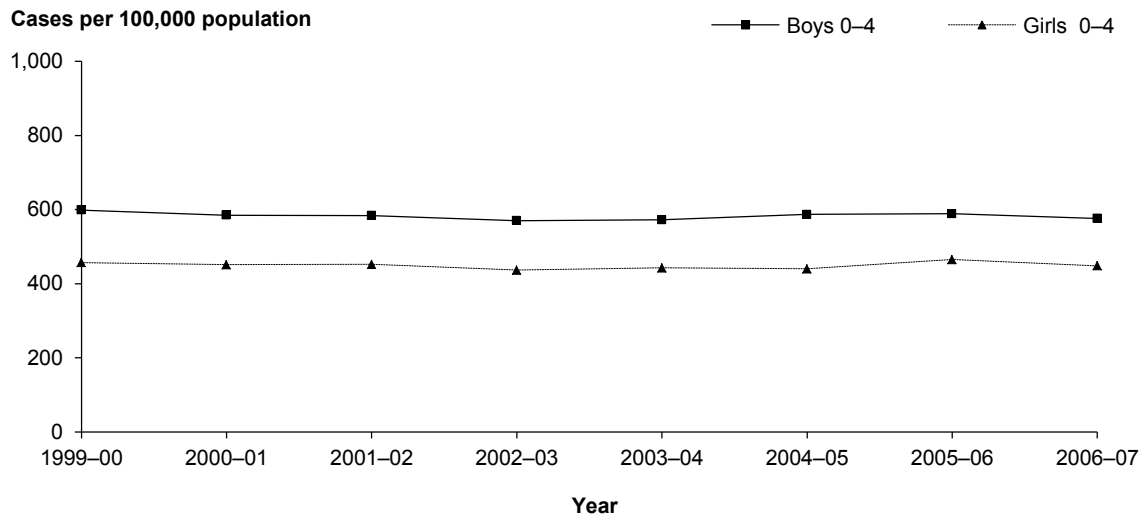
Year	Boys		Girls		Children	
	No. of cases	Per cent	No. of cases	Per cent	No. of cases	Per cent
1999–00	12,329	64.4	6,827	35.6	19,156	1.8
2000–01	12,172	63.8	6,900	36.2	19,072	1.8
2001–02	12,280	64.2	6,844	35.8	19,124	1.8
2002–03	12,117	64.1	6,783	35.9	18,900	1.8
2003–04	12,248	64.2	6,827	35.8	19,075	1.8
2004–05	12,347	64.5	6,809	35.5	19,156	1.8
2005–06	12,635	63.8	7,180	36.2	19,815	1.8
2006–07	12,760	64.4	7,060	35.6	19,820	1.8
<b>Total</b>	<b>98,888</b>	<b>64.2</b>	<b>55,230</b>	<b>35.8</b>	<b>154,118</b>	<b>1.8</b>

Figure 4.1 shows the age-standardised rates for all children hospitalised as a result of other unintentional injury from 1999–00 to 2006–07. When negative binomial regression techniques are used, it is apparent that the age-standardised rate of hospitalised other unintentional injury did not change significantly over the period.

Figure 4.2 shows the age-standardised rates for other unintentional injury by sex for 1999–00 to 2006–07. The rates varied in a very narrow range for both boys and girls.

Figure 4.3 shows the age-specific rates of estimated cases of other unintentional injury for the three age groups. The rates other unintentional injury were higher among boys compared with girls for all three age groups during the period. An increase in the rate of other unintentional injury in boys aged 10–14 was observed in each year from 2003–04 to 2006–07.





**Figure 4.3: Age-specific rates of hospitalisation for other unintentional injury, by sex and age group, Australia, 1999-07**



## Types of other unintentional injury

Between 1999–00 and 2006–07 the most common type of other unintentional injury in children in all age groups was *Exposure to inanimate mechanical forces* (Table 4.2). This injury type is a large category containing items such as *Caught, crushed, jammed or pinched in or between objects* (W23), *Contact with sharp glass* (W25) and *Foreign body entering into or through eye or natural orifice* (W44).

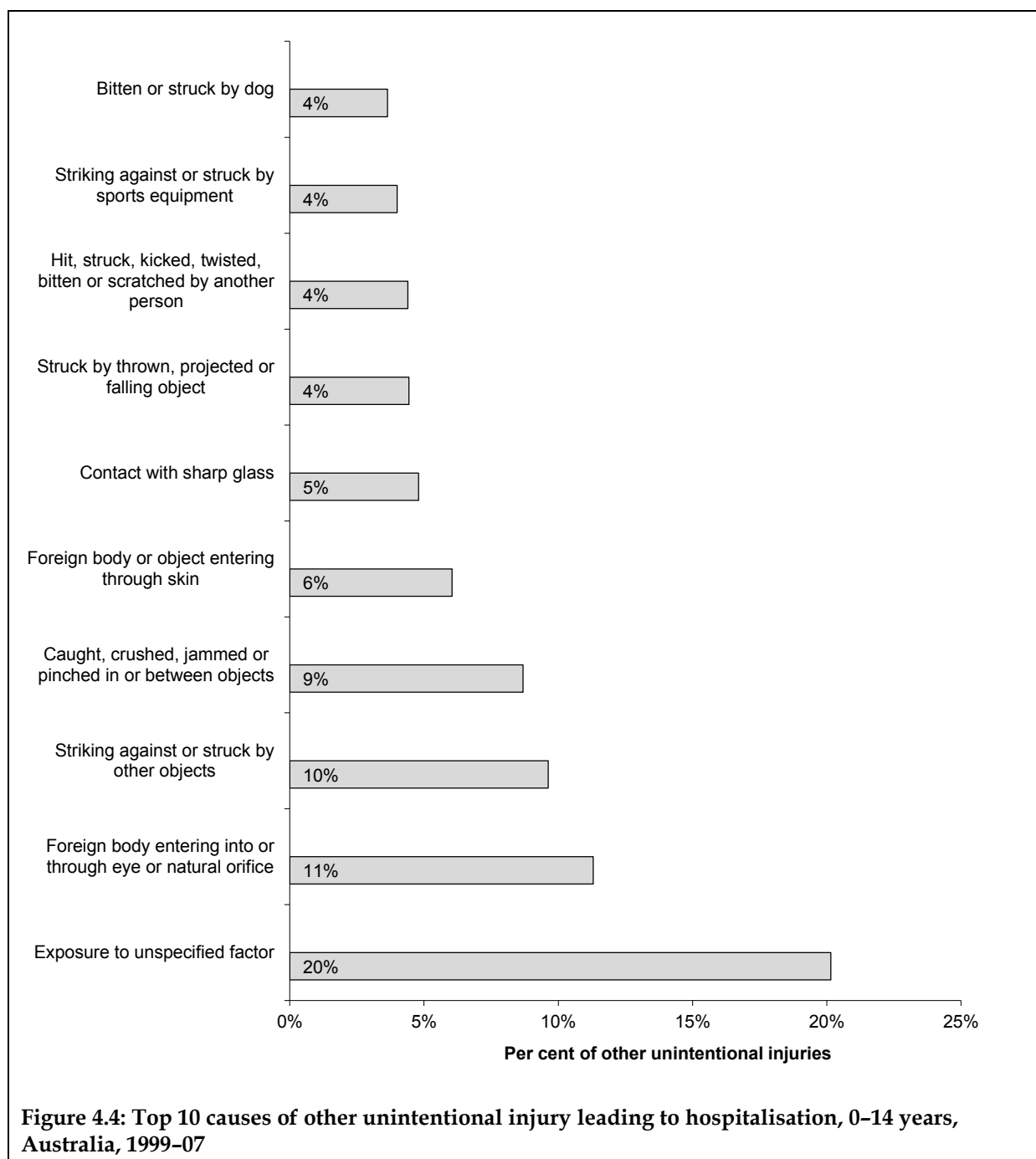
**Table 4.2: Type of other unintentional injury hospitalisations, by age group, Australia, 1999–07**

Type of injury	0–4		5–9		10–14	
	No. of cases	Per cent	No. of cases	Per cent	No. of cases	Per cent
Exposure to inanimate mechanical forces (W20–W49)	34,958	66	26,308	60	24,273	43
Exposure to animate mechanical forces (W50–W64)	6,058	11	6,430	15	10,910	19
Other accidental threats to breathing (W75–W84)	1,674	3	219	0	163	0
Exposure to electric current, radiation and extreme ambient air temperature and pressure (W85–W99)	210	0	168	0	216	0
Contact with venomous animals and plants (X20–X29)	1,532	3	1,968	4	1,978	3
Exposure to forces of nature (X30–X39)	108	0	52	0	128	0
Overexertion, travel and privation (X50–X57)	535	1	589	1	2,741	5
Accidental exposure to other and unspecified factors (X58–X59)	8,213	15	8,298	19	16,146	28
<b>Total<sup>(a)</sup></b>	<b>53,344</b>	<b>100</b>	<b>44,109</b>	<b>100</b>	<b>56,665</b>	<b>100</b>

(a) Includes *Sequelae of external causes of morbidity and mortality* (Y85–Y89) ( $n = 110$ ).

Ten types of causes accounted for 77% ( $n = 118,759$ ) of all other unintentional injuries experienced by children during the reporting period (Figure 4.4). These causes were predominantly from the category *Exposure to inanimate mechanical forces*.

As Figure 4.4 shows, the largest proportion of cases was coded as *Exposure to unspecified factors* (X59). The next most common cause other unintentional injury was a *Foreign body entering into or through eye or natural orifice* (W44) from the *Exposure to inanimate mechanical forces* (W20–W49) group, accounting for 17,411 cases during the period.



## 0–4 year olds

There were 55,344 cases of other unintentional injury in 0–4 year olds from 1999–00 to 2006–07, accounting for 35% of other unintentional injuries in all children (Table 4.3). The leading cause for these younger children was *Foreign body entering into or through eye or natural orifice*, accounting for 57% ( $n = 10,009$ ) of all cases. Over half (56%) of all injuries resulting from being *Caught, crushed, jammed or pinched in or between objects* occurred in this age group.

**Table 4.3: Top five causes of other unintentional injury hospitalisations, 0–4 years, Australia, 1999–07**

Rank	Type of other unintentional injury	No. of cases	Per cent of 0–14 cases	No. of 0–14 cases
1	Foreign body entering into or through eye or natural orifice (W44)	10,009	57	17,411
2	Exposure to unspecified factor (X59)	7,964	26	31,056
3	Caught, crushed, jammed or pinched in or between objects (W23)	7,483	56	13,383
4	Striking against or struck by other objects (W22)	6,000	40	14,827
5	Struck by thrown, projected or falling object (W20)	2,988	44	6,834
	<b>All other unintentional injuries for 0–4 years</b>	<b>53,344</b>	<b>35</b>	<b>154,118</b>

## 5–9 year olds

There were 44,109 cases of other unintentional injury in 5–9 year olds from 1999–00 to 2006–07, accounting for 29% of other unintentional injuries in all children (Table 4.4). *Foreign body entering into or through eye or natural orifice* was the second leading cause.

**Table 4.4: Top five causes of other unintentional injury hospitalisations, 5–9 years, Australia, 1999–07**

Rank	Type of other unintentional injury	No. of cases	Per cent of 0–14 cases	No. of 0–14 cases
1	Exposure to unspecified factor (X59)	7,922	26	31,056
2	Foreign body entering into or through eye or natural orifice (W44)	5,382	31	17,411
3	Striking against or struck by other objects (W22)	4,400	30	14,827
4	Caught, crushed, jammed or pinched in or between objects (W23)	3,764	28	13,383
5	Foreign body or object entering through skin (W45)	3,634	39	9,308
	<b>All other unintentional injuries for 5–9 years</b>	<b>44,109</b>	<b>29</b>	<b>154,118</b>

## 10–14 year olds

There were 56,665 cases of other unintentional injury in 10–14 year olds during the reporting period, accounting for 37% of other unintentional injuries in all children (Table 4.5). The main difference for the leading causes of other unintentional injury between younger and older children was the greater number of injuries caused by striking or being hit by objects and people. Four of the five leading causes of other unintentional injury among 10–14 year olds involved being struck.

**Table 4.5: Top five causes of other unintentional injury hospitalisations, 10–14 years, Australia, 1999–07**

Rank	Type of other unintentional injury	No. of cases	Per cent of 0–14 cases	No. of 0–14 cases
1	Exposure to unspecified factor (X59)	15,170	49	31,056
2	Striking against or struck by other objects (W22)	4,427	30	14,827
3	Hit, struck, kicked, twisted, bitten or scratched by another person (W50)	4,384	65	6,779
4	Striking against or struck by sports equipment (W21)	4,018	65	6,154
5	Striking against or bumped into by another person (W51)	3,716	70	5,282
	<b>All other unintentional injuries for 10–14 years</b>	<b>56,665</b>	<b>37</b>	<b>154,118</b>

## 5 Transport injury

This chapter covers all hospitalisations resulting from unintentional transport injuries (V01-V99) to children. Transport injuries were the third most common cause of injury during the reporting period.

### Trends over time

The lowest number of cases for transport injury in children was reported for 2002–03 ( $n = 8,081$ ) and the highest ( $n = 8,887$ ) at the beginning of the period, in 1999–00 (Table 5.1). Injured boys outnumbered injured girls for the entire period.

**Table 5.1: Estimated number of children hospitalised for transport injury, by sex and year, Australia, 1999–07**

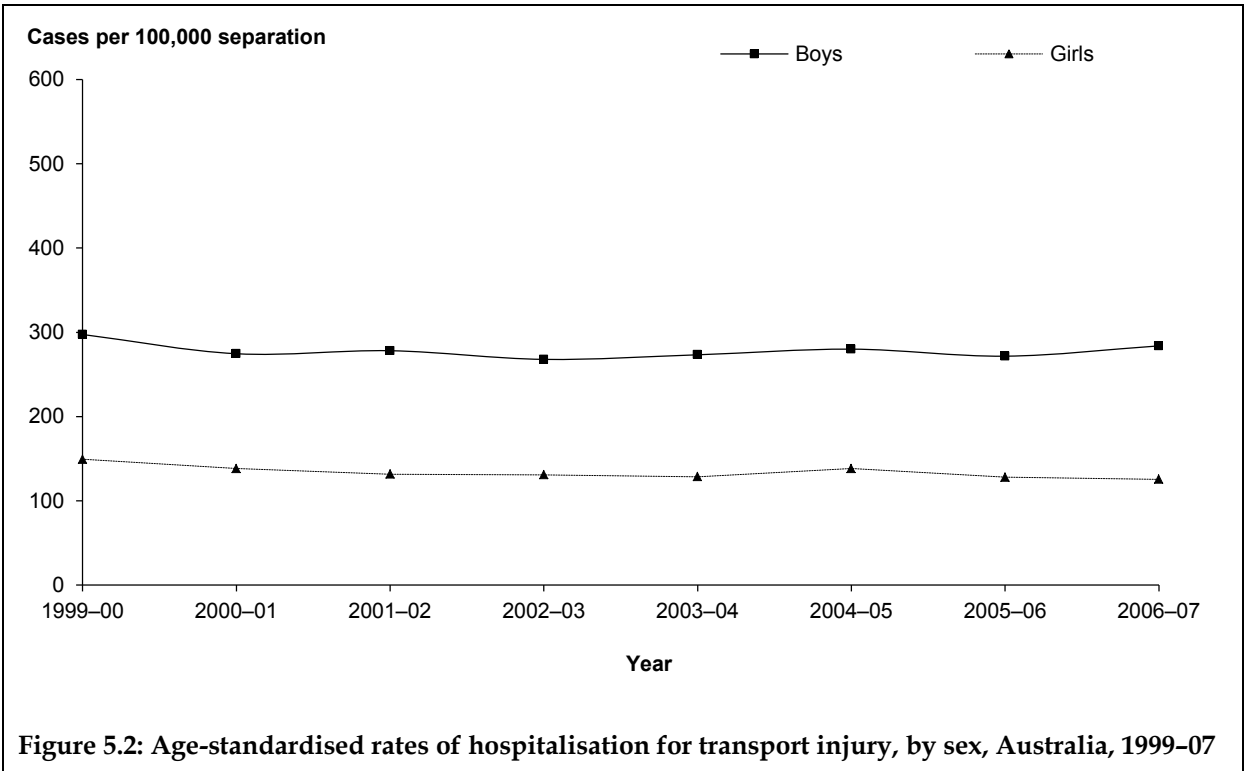
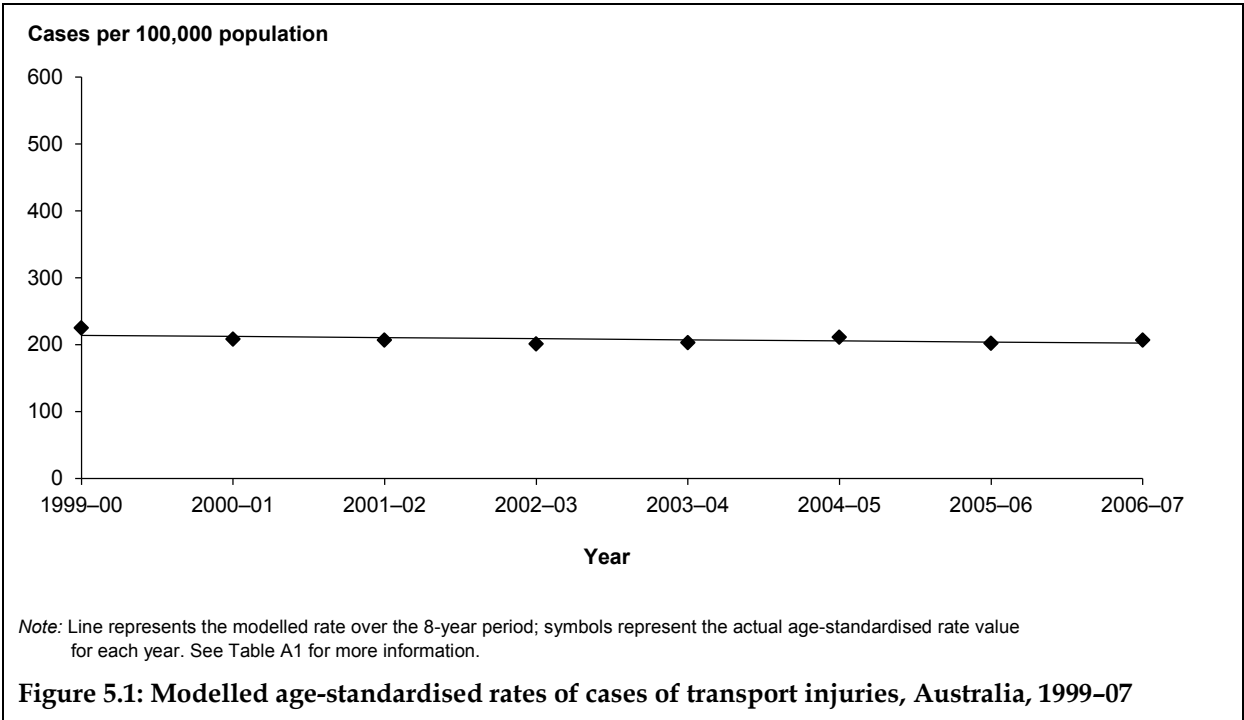
Year	Boys		Girls		Children	
	No. of cases	Per cent	No. of cases	Per cent	No. of cases	M:F ratio
1999–00	6,010	67.6	2,877	32.4	8,887	2.1
2000–01	5,589	67.6	2,677	32.4	8,266	2.1
2001–02	5,701	69.0	2,564	31.0	8,265	2.2
2002–03	5,523	68.3	2,558	31.7	8,081	2.2
2003–04 <sup>(a)</sup>	5,668	69.2	2,521	30.8	8,191	2.2
2004–05	5,828	68.2	2,718	31.8	8,546	2.1
2005–06 <sup>(a)</sup>	5,675	69.2	2,528	30.8	8,204	2.2
2006–07	5,941	70.5	2,483	29.5	8,424	2.4
<b>Total<sup>(a)</sup></b>	<b>45,935</b>	<b>68.7</b>	<b>20,926</b>	<b>31.3</b>	<b>66,864</b>	<b>2.2</b>

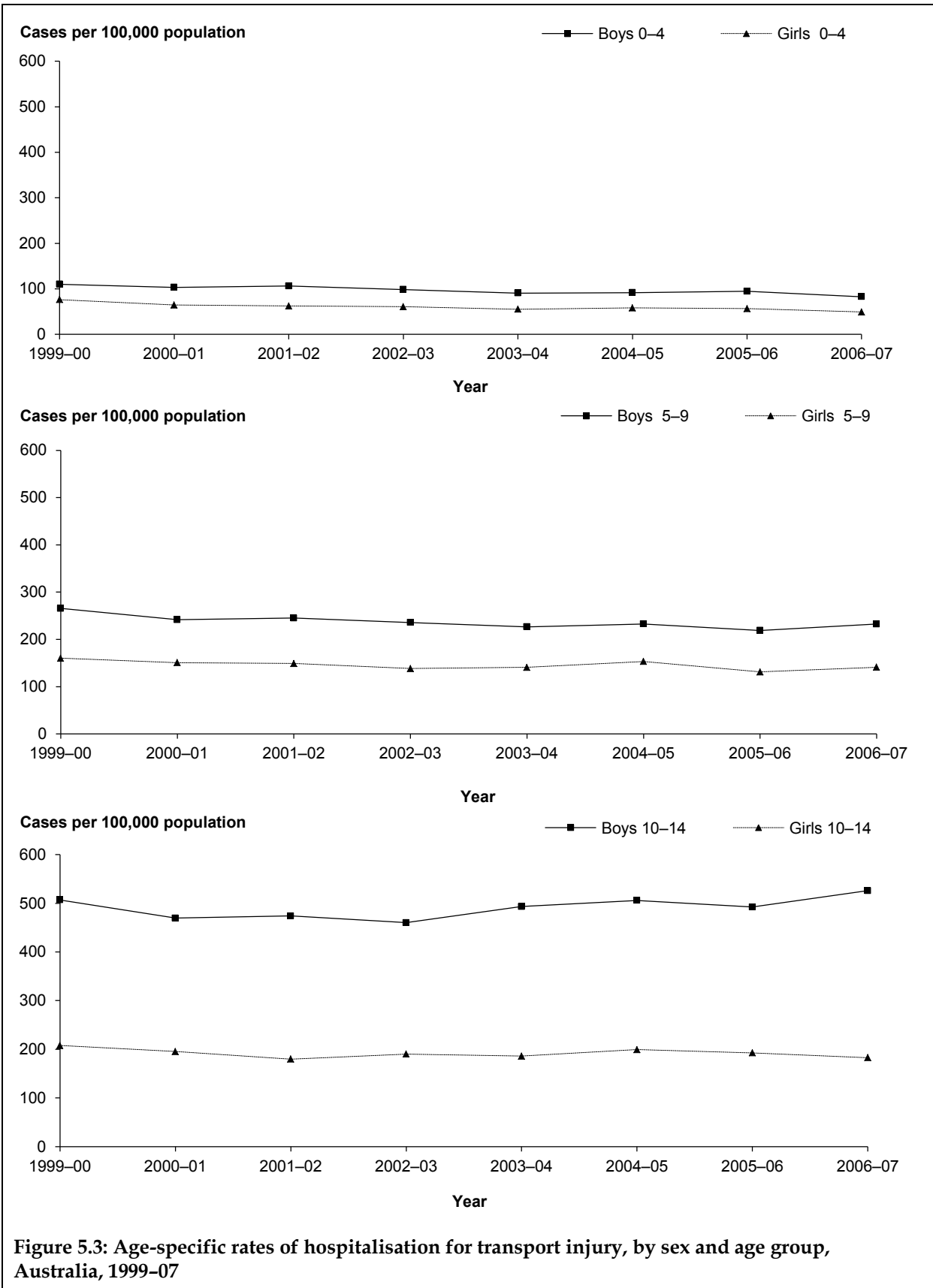
(a) Includes cases for which sex was not stated.

Figure 5.1 shows the age-standardised rates for all children hospitalised as a result of transport injury from 1999–00 to 2006–07. When negative binomial regression techniques are used, it is apparent that the age-standardised rate of hospitalised transport-related injuries did not change significantly over the period.

Figure 5.2 shows the age-standardised transport injury rates by sex for 1999–00 to 2006–07. The rates varied in a very narrow range for both boys and girls. Rates were lowest for boys in 2002–03 (268 cases per 100,000 population) and in 2006–07 for girls (126 cases per 100,000 population). Both boys and girls recorded their highest rate of transport injury in 1999–00 (297 and 149 cases per 100,000 children respectively).

Figure 5.3 shows the age-specific rates of transport injury for the three age groups. The rates were consistently higher over time among 10–14 year olds and lowest in the youngest age category, for both boys and girls.





## Types of transport injury

Table 5.2 presents information on the injured persons mode of transport for hospitalisations due to transport injuries. For all age groups, pedal cycles were the most frequent mode of transport involved in a transport injury. In the 0–4 and 5–9 year age groups, 29% and 13% of children respectively were injured while in a car. Motorcycles were the second most common mode of transport causing transport hospitalisations in the older age group.

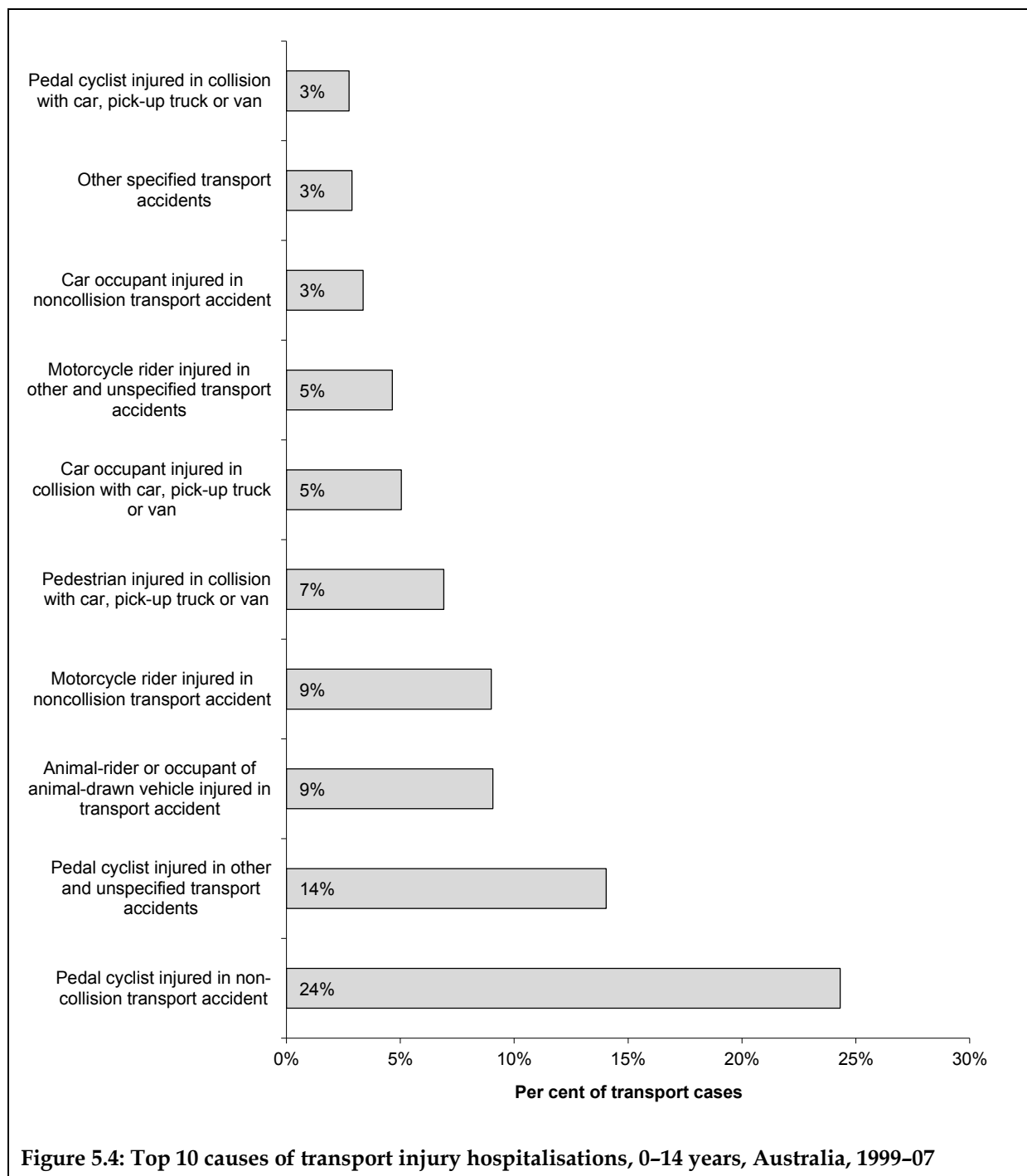
**Table 5.2: Mode of transport for injury hospitalisations, by age group, Australia, 1999–07**

Mode	0–4		5–9		10–14	
	No. of cases	Per cent	No. of cases	Per cent	No. of cases	Per cent
Pedestrian	1,959	24.0	2,232	10.8	2,225	5.9
Pedal cycle	2,385	29.2	9,646	46.6	17,281	45.5
Motorcycle	340	4.2	2,679	12.9	8,297	21.8
Car	2,345	28.7	2,713	13.1	3,402	9.0
Pick-up truck or van	104	1.3	135	0.7	148	0.4
Heavy transport vehicle	52	0.6	52	0.3	28	0.1
Bus	30	0.4	61	0.3	137	0.4
Animal or animal-drawn vehicle	285	3.5	1,794	8.7	3,984	10.5
Special all-terrain or off-road vehicle	94	1.2	335	1.6	645	1.7
Other land transport	228	2.8	314	1.5	445	1.2
Water transport	66	0.8	141	0.7	306	0.8
Other and unspecified transport <sup>(a)</sup>	284	3.5	615	3.0	1,077	2.8
<b>Total</b>	<b>8,172</b>	<b>100.0</b>	<b>20,717</b>	<b>100.0</b>	<b>37,975</b>	<b>100.0</b>

(a) Includes cases of *Air and space transport accidents* ( $n = 7$ ).

Ten types of specific transport injury accounted for 82% of all hospitalised transport injuries for children during the reporting period ( $n = 66,864$ ). As Figure 5.4 shows, the largest proportions of cases were for accidents involving pedal cyclists.





## 0–4 year olds

There were 8,172 cases of hospitalised transport injury for 0–4 year olds between 1999–00 and 2006–07 (Table 5.3). The five leading causes accounted for 62% ( $n = 5,096$ ) of all such injuries. The leading cause of transport injury for children aged 0–4 was *Pedestrian injured in a collision with a car, pick-up truck or van*. Pedal cycle incidents were the second- and third-ranked cause of hospitalised transport injury in this age group.

**Table 5.3: Top five causes of transport injury hospitalisations, 0–4 years, Australia, 1999–07**

Rank	Type of transport injury	No. of cases	Per cent of 0–14 cases	No. of 0–14 cases
1	Pedestrian injured in collision with car, pick-up truck or van (V03)	1,361	29	4,621
2	Pedal cyclist injured in non-collision transport accident (V18)	1,337	8	16,259
3	Pedal cyclist injured in other and unspecified transport accidents (V19)	849	9	9,383
4	Car occupant injured in collision with car, pick-up truck or van (V43)	837	25	3,371
5	Car occupant injured in non-collision transport accident (V48)	712	32	2,254
	<b>All transport injuries for 0–4 years</b>	<b>8,172</b>	<b>12</b>	<b>66,864</b>

## 5–9 year olds

There were 20,717 cases of transport injury for 5–9 year olds from 1999–00 to 2006–07 (Table 5.4). The five leading causes accounted for 63% ( $n = 13,031$ ) of all such injuries. Pedal cycle incidents were the two leading causes. The third most common transport injury for this age group involved riding or being the occupant of an animal-drawn vehicle.

**Table 5.4: Top five causes of transport injury hospitalisations, 5–9 years, Australia, 1999–07**

Rank	Type of transport injury	No. of cases	Per cent of 0–14 cases	No. of 0–14 cases
1	Pedal cyclist injured in non-collision transport accident (V18)	5,210	32	16,259
2	Pedal cyclist injured in other and unspecified transport accidents (V19)	3,154	34	9,383
3	Animal-rider or occupant of animal-drawn vehicle injured in transport accident (V80)	1,794	30	6,063
4	Pedestrian injured in collision with car, pick-up truck or van (V03)	1,602	35	4,621
5	Motorcycle rider injured in non-collision transport accident (V28)	1,271	21	6,009
	<b>All transport injuries for 5–9 years</b>	<b>20,717</b>	<b>31</b>	<b>66,864</b>

## 10–14 year olds

There were 37,957 cases of transport injury in 10–14 year olds during the reporting period (Table 5.5). The five leading causes accounted for 68% ( $n = 25,928$ ) of all such injuries. As with 5–9 year olds, pedal cycle incidents were the most frequent cause of hospitalised transport injury in the 10–14 age group. Motorcycle-related incidents also accounted for a high proportion of hospitalised transport injuries.

**Table 5.5: Top five causes of transport injury hospitalisations, 10–14 years, Australia, 1999–07**

Rank	Type of transport injury	No. of cases	Per cent of 0–14 cases	No. of 0–14 cases
1	Pedal cyclist injured in non-collision transport accident (V18)	9,712	60	16,259
2	Pedal cyclist injured in other and unspecified transport accidents (V19)	5,380	57	9,383
3	Motorcycle rider injured in non-collision transport accident (V28)	4,558	76	6,009
4	Animal-rider or occupant of animal-drawn vehicle injured in transport accident (V80)	3,984	66	6,063
5	Motorcycle rider injured in other and unspecified transport accidents (V29)	2,294	74	3,110
	<b>All transport injuries for 10–14 years</b>	<b>37,975</b>	<b>57</b>	<b>66,864</b>

## 6 Poisoning by pharmaceuticals

This chapter describes injury admissions where the first reported external cause code refers to accidental poisoning by a drug or medicament (X40–X44). It includes drugs given or taken in error or inadvertently and accidental overdosage. The substances included in this category are listed in Appendix A.

### Trends over time

Table 6.1 shows the estimated number of children hospitalised as a result of poisoning by pharmaceuticals in the reporting period. The lowest number of cases ( $n = 1,537$ ) was reported for 2005–06 and the highest ( $n = 2,552$ ) for 1999–00 (Table 6.1). Slightly more boys than girls were hospitalised for a poisoning by pharmaceuticals in each year. There was a steady decline in the number of cases during the reporting period, for both boys and girls.

**Table 6.1: Estimated number of children hospitalised for poisoning by pharmaceuticals, by sex and year, Australia, 1999–07**

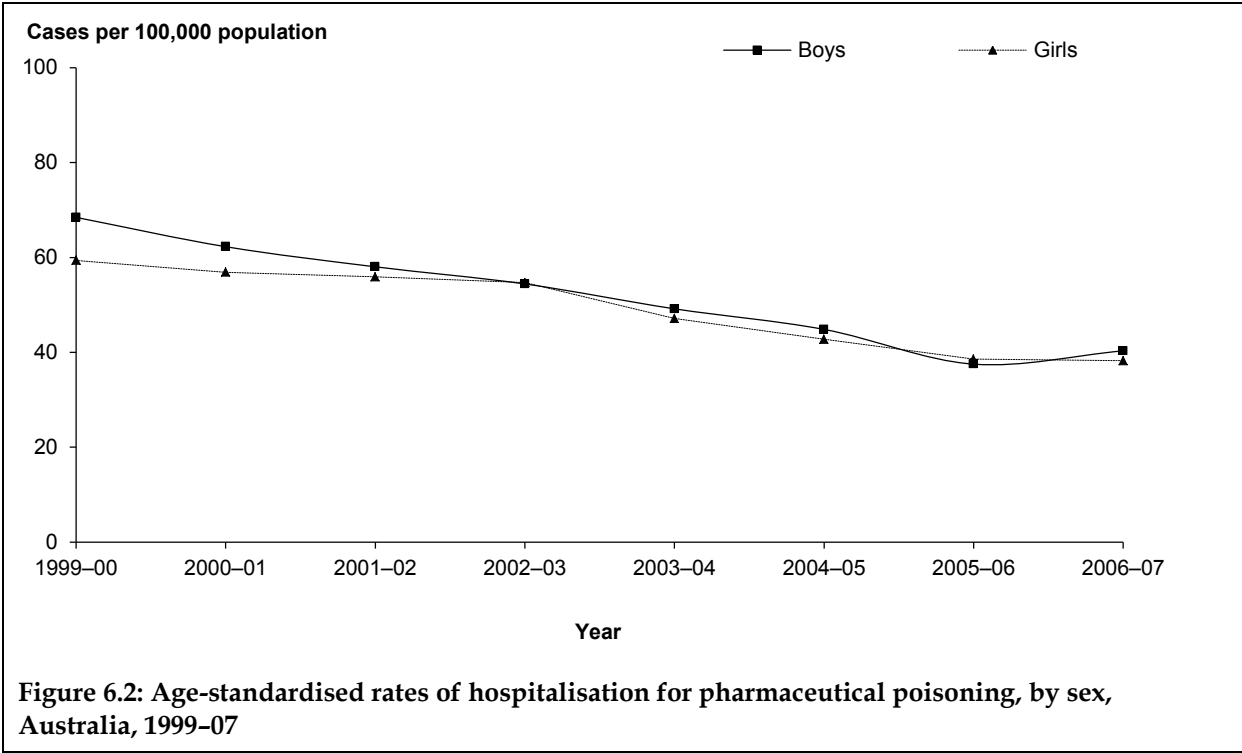
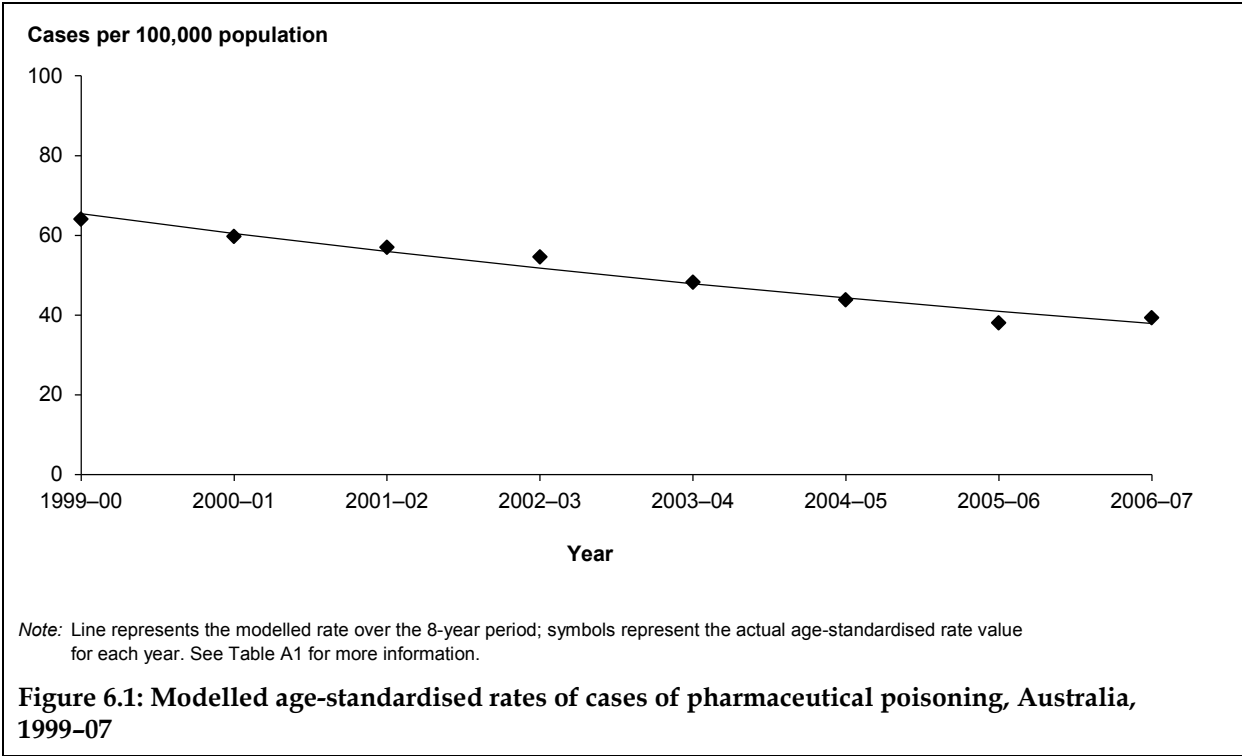
Year	Boys		Girls		Children	
	No. of cases	Per cent	No. of cases	Per cent	No. of cases	M:F ratio
1999–00	1,399	54.8	1,153	45.2	2,552	1.2
2000–01	1,273	53.5	1,105	46.5	2,378	1.2
2001–02	1,185	52.2	1,086	47.8	2,271	1.1
2002–03	1,110	51.1	1,061	48.9	2,171	1.0
2003–04	1,004	52.3	915	47.7	1,919	1.1
2004–05	917	52.5	831	47.5	1,748	1.1
2005–06	778	50.6	759	49.4	1,537	1.0
2006–07	847	52.7	761	47.3	1,608	1.1
<b>Total</b>	<b>8,513</b>	<b>52.6</b>	<b>7,671</b>	<b>47.4</b>	<b>16,184</b>	<b>1.1</b>

Figure 6.1 shows the age-standardised rates for all children hospitalised as a result of pharmaceutical poisoning from 1999–00 to 2006–07. When negative binomial regression techniques are used, it is apparent that the age-standardised rate of hospitalised pharmaceutical poisoning decreased by 7.5% a year. This result was statistically significant ( $p = 0.000$ ).

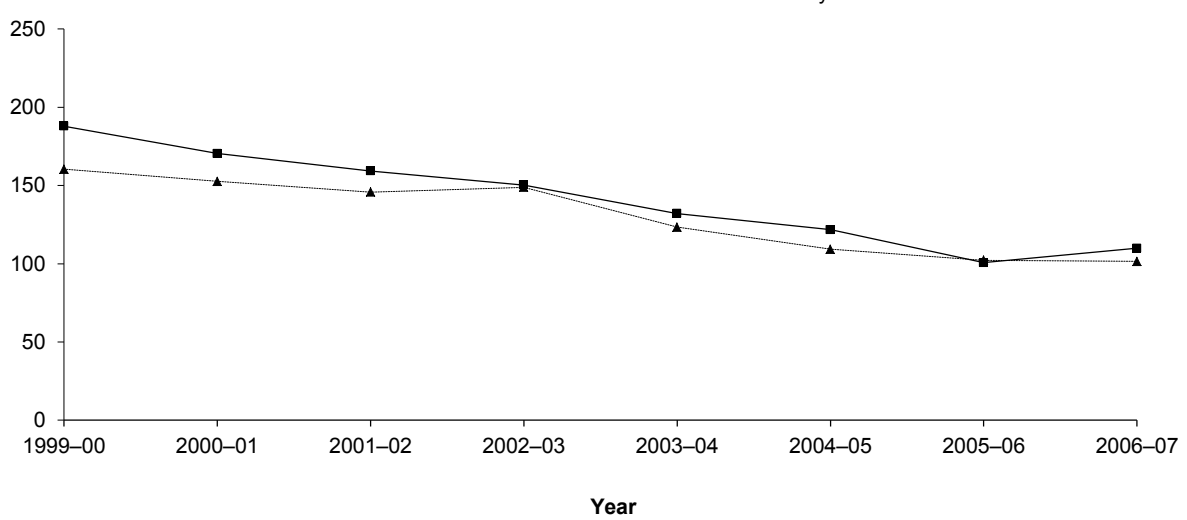
Figure 6.2 shows the age-standardised rates for children hospitalised as a result of poisoning by pharmaceuticals from 1999–00 to 2006–07. The decline in the rate of poisoning by pharmaceutical injury was similar for boys and girls. The lowest rates for boys and girls occurred in 2005–06 (38 and 39 cases per 100,000 population respectively) and the highest at the beginning of the reporting period (68 and 59 cases per 100,000 population respectively).

Figure 6.3 shows the age-specific rates of poisoning by pharmaceuticals for the three age groups. The rates were consistently higher over time in the youngest age group. The rate for 0–4 girls and boys declined steadily from the beginning of the period. In 1999–00 the rate for 0–4 boys was 188 cases per 100,000; it decreased to 101 cases per 100,000 in 2005–06. Similarly, in 1999–00 the rate for 0–4 girls was 160 cases per 100,000 and decreased to 102

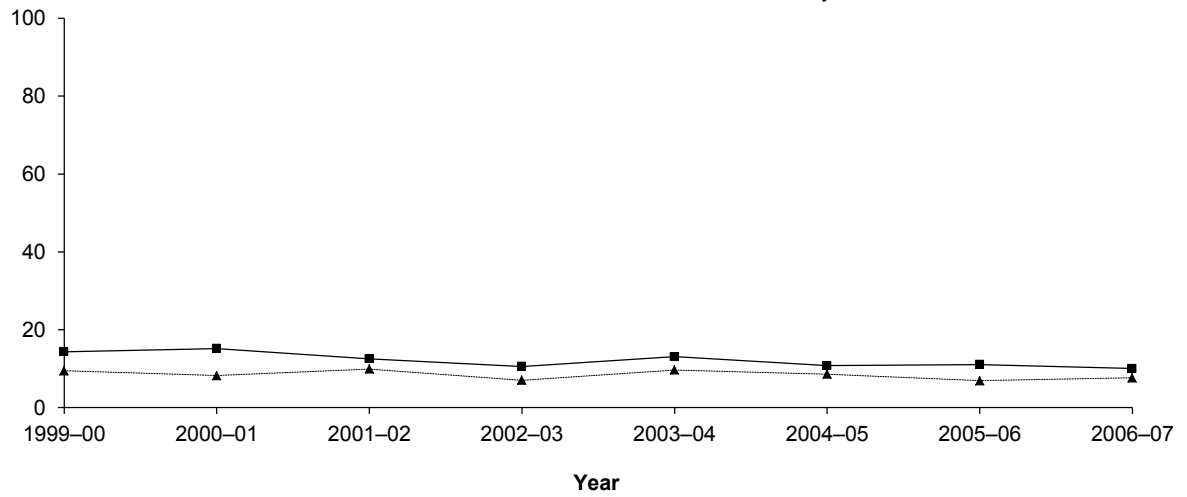
cases per 100,000 in 2005-06. Rates of poisoning by pharmaceuticals were consistently higher over time for girls in the 10-14 age group compared with boys in that group.



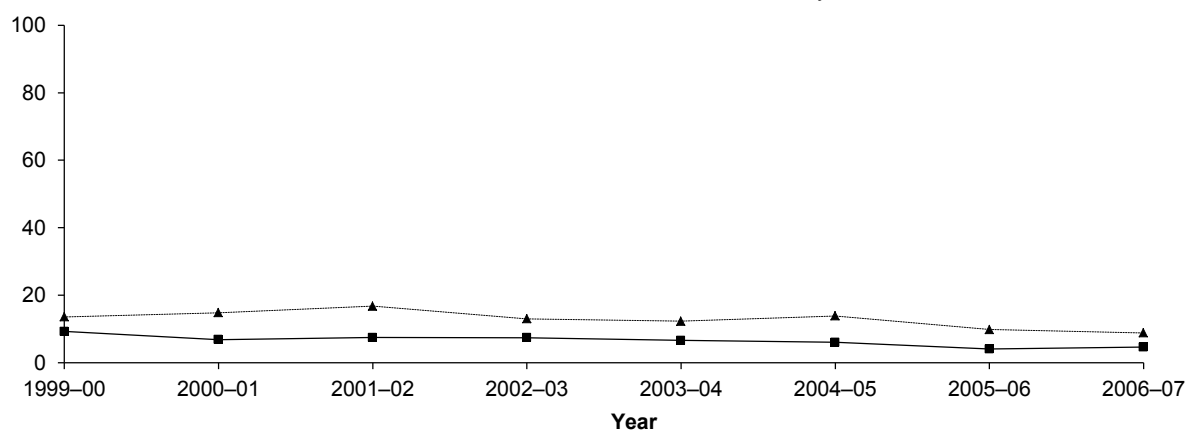
Cases per 100,000 population



Cases per 100,000 population



Cases per 100,000 population



Note: The scale of the Y axis for the 0-4 year age group differs from that for the other age groups.

Figure 6.3: Age-specific rates of hospitalisation for pharmaceutical poisoning, by sex and age group, Australia, 1999-07

## Types of pharmaceutical poisoning

Of the five categories of pharmaceutical poisoning, 43% of cases in the reporting period were classified as *Accidental poisoning by unspecified drugs, medicaments and biological substances* (Table 6.2). This is a diverse group that includes a range of drugs in the broad categories of other and unspecified drugs, medicaments and biological substances. It includes, for example, anaesthetics (general and local), anti-infectives, and drugs affecting the cardiovascular and gastrointestinal systems. The high proportion of cases recorded in this category probably reflects uncertainty about which drugs caused poisoning episodes, in young children in particular.

The second most frequent poisoning category was *Accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified* (29%). This category includes benzodiazepines, other and unspecified antipsychotics and neuroleptics, psychostimulants with potential for use disorder, other and unspecified antidepressants, and tricyclic and tetracyclic antidepressants.

**Table 6.2: Causes of pharmaceutical poisoning hospitalisations, 0–14 years, Australia, 1999–07**

ICD-10-AM code	Type of pharmaceutical poisoning	Number	Per cent
X40	Accidental poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics	3,001	18.5
X41	Accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified	4,629	28.6
X42	Accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified	583	3.6
X43	Accidental poisoning by and exposure to other drugs acting on the autonomic nervous system	1,013	6.3
X44	Accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances	6,958	43.0
	<b>All pharmaceutical poisoning cases for 0–14 years</b>	<b>16,184</b>	<b>100.0</b>

### 0–4 year olds

During the reporting period there were 14,017 cases of pharmaceutical poisoning in 0–4 year olds, accounting for 87% of all poisoning by pharmaceutical injury hospitalisations in children aged 0–14 (Table 6.3). The leading cause of pharmaceutical poisoning injury for children aged 0–4 was *Accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances*, accounting for 44% ( $n = 6,209$ ) of cases (Table 6.3). Of the 3,851 cases of *Poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified*, 42% ( $n = 1,608$ ) of cases occurred as a result of benzodiazepine poisoning. A substantial proportion (78%;  $n = 2,007$ ) of *Accidental poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics* cases involved 4-aminophenol derivatives (for example, paracetamol).

**Table 6.3: Top five causes of pharmaceutical poisoning hospitalisations, 0–4 years, Australia, 1999–07**

Rank	Type of pharmaceutical poisoning	No. of cases	Per cent of 0–14 cases	No. of 0–14 cases
1	Accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances (X44)	6,209	89.2	6,958
2	Accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified (X41)	3,851	83.2	4,629
3	Accidental poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics (X40)	2,559	85.3	3,001
4	Accidental poisoning by and exposure to other drugs acting on the autonomic nervous system (X43)	929	91.7	1,013
5	Accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified (X42)	469	80.4	583
	<b>All pharmaceutical poisoning cases for 0–4 years</b>	<b>14,017</b>	<b>86.6</b>	<b>16,184</b>

### 5–9 year olds

There were 1,114 cases of pharmaceutical poisoning in 5–9 year olds in the reporting period (Table 6.4). The leading cause of such poisoning injury for children aged 5–9 was *Accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances*, accounting for 44% ( $n = 487$ ) of cases (Table 6.4). This age group had a higher proportion (36%;  $n = 403$ ) of *Accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified* compared with 0–4 year olds, and 25% ( $n = 99$ ) occurred as a result of benzodiazepine poisoning. Of the 115 cases of *Accidental poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics*, 77% ( $n = 89$ ) involved 4-aminophenol derivatives (for example, paracetamol).

**Table 6.4: Top five causes of pharmaceutical poisoning hospitalisations, 5–9 years, Australia, 1999–07**

Rank	Type of pharmaceutical poisoning	No. of cases	Per cent of 0–14 cases	No. of 0–14 cases
1	Accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances (X44)	487	7	6,958
2	Accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified (X41)	403	9	4,629
3	Accidental poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics (X40)	115	4	3,001
4	Accidental poisoning by and exposure to other drugs acting on the autonomic nervous system (X43)	57	6	1,013
5	Accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified (X42)	52	9	583
	<b>All pharmaceutical poisoning cases for 5–9 years</b>	<b>1,114</b>	<b>7</b>	<b>16,184</b>



## 10–14 year olds

There were 1,053 cases of pharmaceutical poisoning in 10–14 year olds during the reporting period (Table 6.5). The leading pharmaceutical poisoning injury for children aged 10–14 was *Accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified*, accounting for 36% ( $n = 375$ ) of cases (Table 6.5). Of these cases, 28% ( $n = 104$ ) occurred as a result of benzodiazepine poisoning. The second leading cause of pharmaceutical poisoning in 10–14 year olds was *Accidental poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics*, accounting for 31% of cases ( $n = 327$ ); of these, a large proportion (90%;  $n = 294$ ) involved 4-aminophenol derivatives (for example, paracetamol).

**Table 6.5: Top five causes of pharmaceutical poisoning hospitalisations, 10–14 years, Australia, 1999–07**

Rank	Type of pharmaceutical poisoning	No. of cases	Per cent of 0–14 cases	No. of 0–14 cases
1	Accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified (X41)	375	8	4,629
2	Accidental poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics (x40)	327	4	6,958
3	Accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances (X44)	262	11	3,001
4	Accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified (X42)	62	3	1,013
5	Accidental poisoning by and exposure to other drugs acting on the autonomic nervous system (X43)	27	11	583
	<b>All pharmaceutical poisoning cases for 10–14 years</b>	<b>1,053</b>	<b>7</b>	<b>16,184</b>

## 7 Smoke, fire, heat and hot substances

This chapter deals with injury cases in which the first reported external cause was unintentional *Exposure to smoke, fire and flames* (X00–X09) or *Contact with heat and hot substances* (X10–X19).

### Trends over time

Cases of injury from the effects of exposure to smoke, fire, heat and hot substances accounted for 3.5% of all hospitalisations of children in the reporting period ( $n = 16,347$ ). The lowest number of cases ( $n = 1,884$ ) was reported in 2002–03 and the highest ( $n = 2,128$ ) in 2001–02 (Table 7.1). More boys than girls were hospitalised in each year.

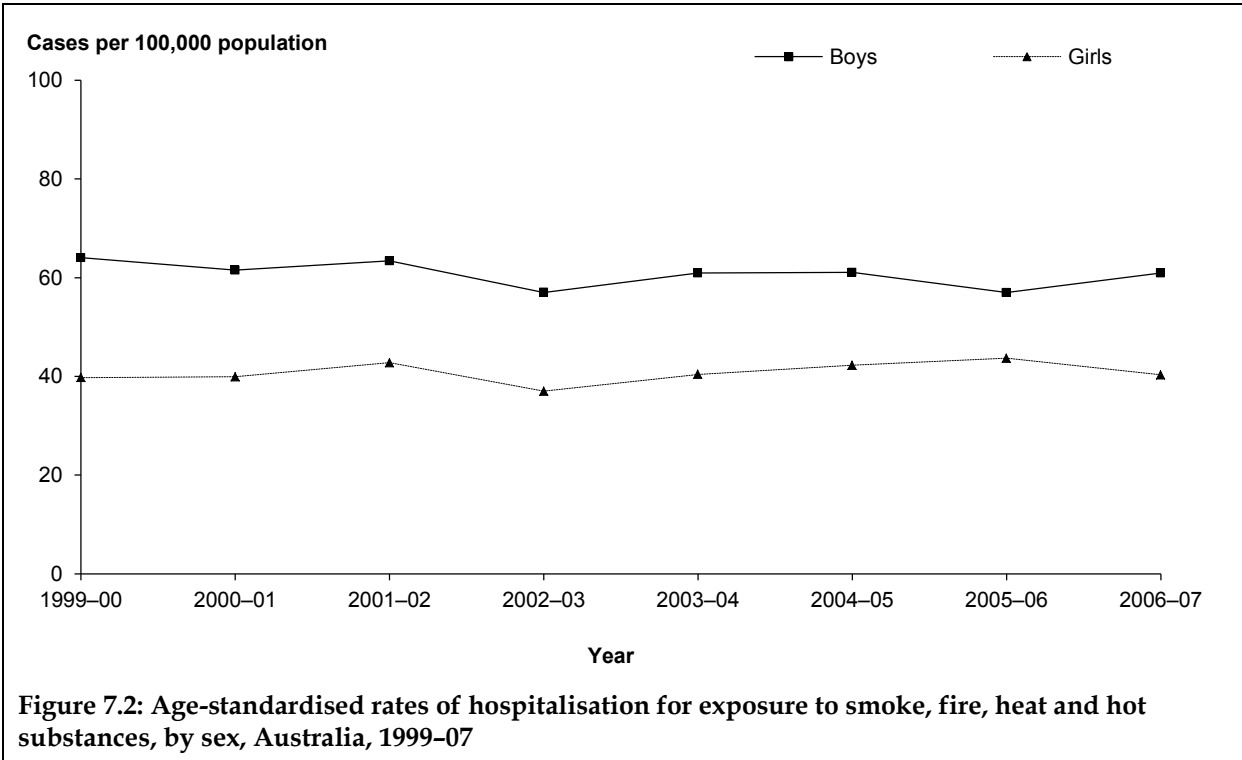
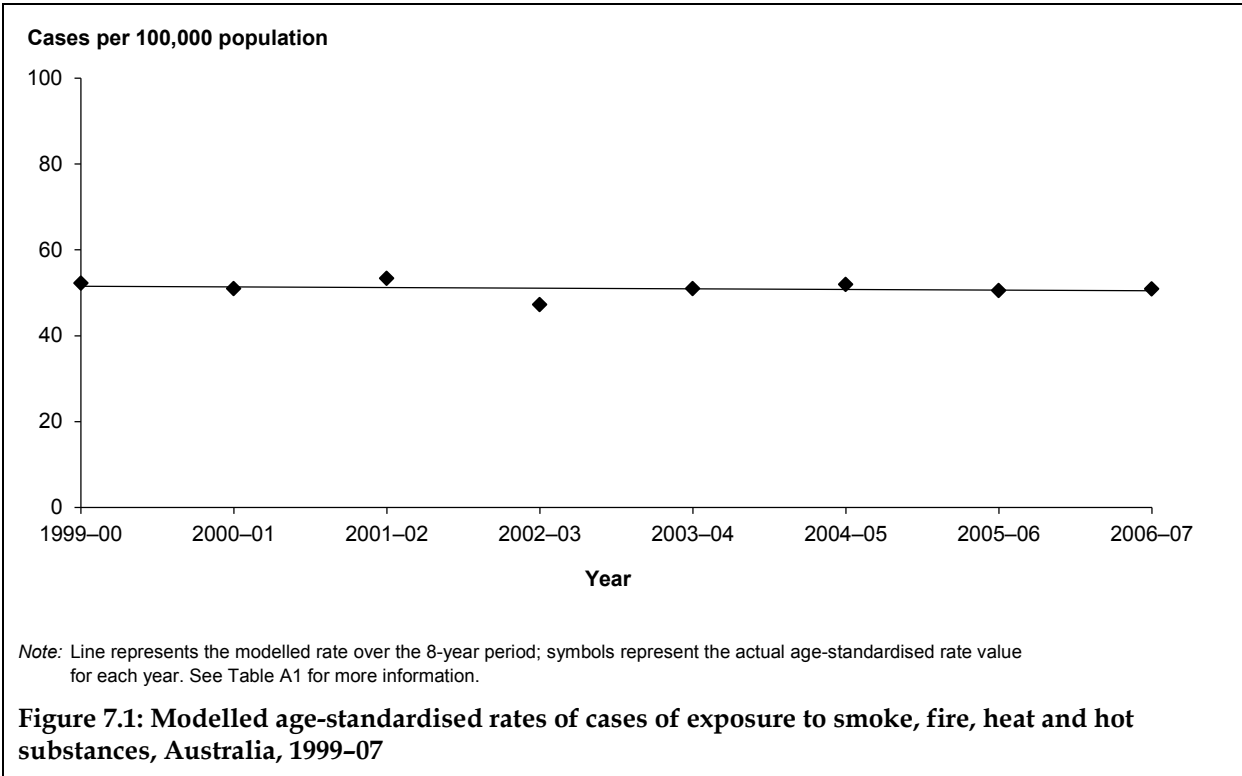
**Table 7.1: Estimated number of children hospitalised for injury from exposure to smoke, fire, heat and hot substances, by sex and year, Australia, 1999–07**

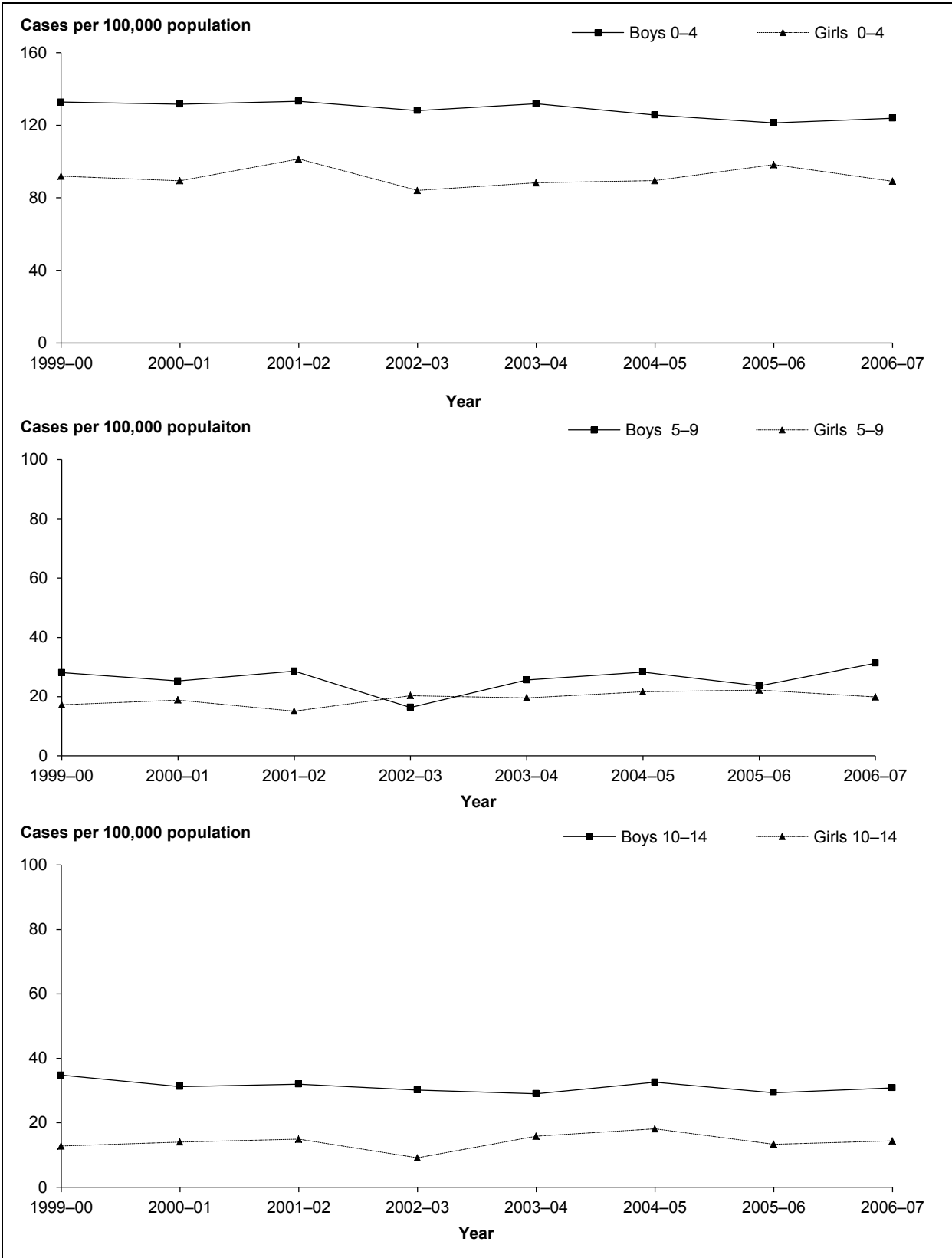
Year	Boys		Girls		Children	
	No. of cases	Per cent	No. of cases	Per cent	No. of cases	M:F ratio
1999–00	1,305	62.9	771	37.1	2,076	1.7
2000–01	1,256	61.8	775	38.2	2,031	1.6
2001–02	1,296	60.9	831	39.1	2,128	1.6
2002–03	1,166	61.9	718	38.1	1,884	1.6
2003–04	1,248	61.4	785	38.6	2,033	1.6
2004–05	1,254	60.4	822	39.6	2,076	1.5
2005–06	1,184	58.0	858	42.0	2,042	1.4
2006–07	1,277	61.5	800	38.5	2,077	1.6
<b>Total</b>	<b>9,986</b>	<b>61.1</b>	<b>6,360</b>	<b>38.9</b>	<b>16,347</b>	<b>1.6</b>

Figure 7.1 shows the age-standardised rates for all children seriously injured as a result of exposure to smoke, fire, heat and hot substances from 1999–00 to 2006–07. When negative binomial regression techniques are used, it is apparent that the age-standardised rate of hospitalised injuries associated with the effects of exposure to fire, heat and hot substances did not change significantly during the period.

Figure 7.2 shows the age-standardised rates of injury from the effects of exposure to smoke, fire, heat and hot substances for from 1999–00 to 2006–07. There was some change year on year in the rates for both boys and girls. For boys, the rate of injury was lowest in 2002–03 and 2005–06 (57 cases per 100,000 population in both instances) and highest in 1999–00 (64 cases per 100,000 population). For girls, the rate of injury was lowest in 2002–03 (37 cases per 100,000 population) and highest in 2005–06 (44 cases per 100,000 population).

Figure 7.3 shows the age-specific rates of cases of injury from exposure to smoke, fire, heat and hot substances for the three age groups. Rates were more than twice as high in the 0–4 age group compared with the others. Rates were steady throughout the reporting period overall for boys and girls in all age groups.

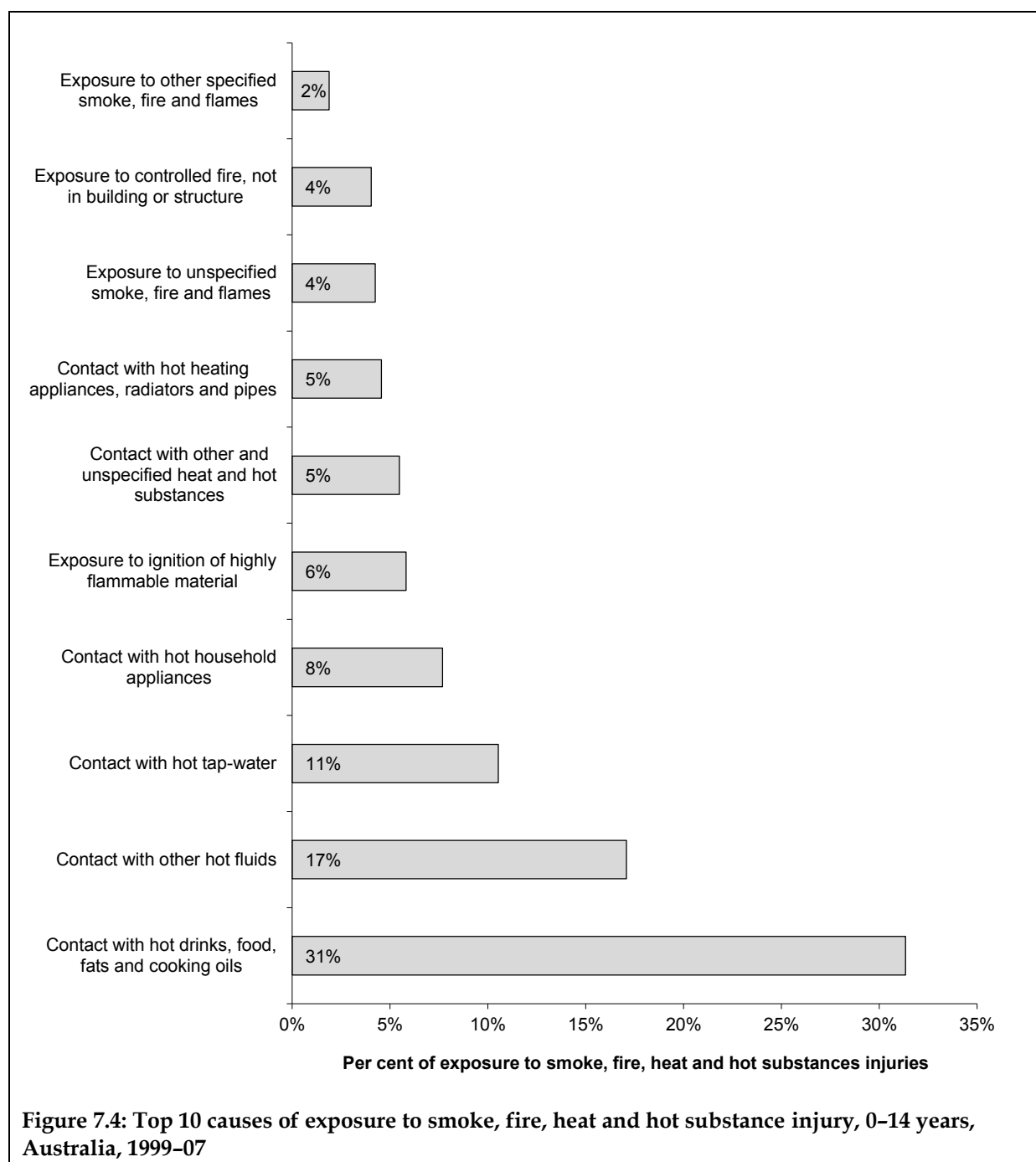




**Figure 7.3: Age-specific rates of hospitalisation for exposure to smoke, fire, heat and hot substances, by sex and age group, Australia, 1999-07**

## Types of exposure to smoke, fire, heat and hot substances

Ten types of injury accounted for 93% ( $n = 15,142$ ) of all injuries associated with exposure to smoke, fire, heat and hot substances experienced by children during the reporting period. As Figure 7.4 shows, the largest proportion of cases was for accidents involving *Contact with hot drinks, food, fats and cooking oils*.



## 0–4 year olds

During the reporting period there were 11,390 cases of hospitalisation as a result of exposure to smoke, fire, heat and hot substances for 0–4 year olds. The leading cause was *Contact with hot drinks, food, fats and cooking oils*, accounting for 79% ( $n = 4,030$ ) of cases (Table 7.2).

**Table 7.2: Top five causes of exposure to smoke, fire, heat and hot substances injury hospitalisations, 0–4 years, Australia, 1999–07**

Rank	Type of fire, burn and scald injury	No. of cases	Per cent of 0–14 cases	No. of 0–14 cases
1	Contact with hot drinks, food, fats and cooking oils (X10)	4,030	79	5,122
2	Contact with other hot fluids (X12)	2,089	75	2,791
3	Contact with hot tap-water (X11)	1,371	80	1,721
4	Contact with hot household appliances (X15)	1,146	91	1,255
5	Contact with hot heating appliances, radiators and pipes (X16)	612	82	744
	<b>All fire, burn and scald injuries for 0–4 years</b>	<b>11,390</b>	<b>70</b>	<b>16,347</b>

## 5–9 year olds

There were 2,441 cases of hospitalisations as a result of exposure to smoke, fire, heat and hot substances for 5–9 year olds in the reporting period (Table 7.3); this was considerably fewer than the number of cases among 0–4 year olds. The three leading causes of exposure to smoke, fire, heat and hot substances injury were the same for children aged 0–4 and 5–9.

**Table 7.3: Top five causes of exposure to smoke, fire, heat and hot substances injury hospitalisations, 5–9 years, Australia, 1999–07**

Rank	Type of fire, burn and scald injury	No. of cases	Per cent of 0–14 cases	No. of 0–14 cases
1	Contact with hot drinks, food, fats and cooking oils (X10)	638	12	5,122
2	Contact with other hot fluids (X12)	393	14	2,791
3	Contact with hot tap-water (X11)	208	12	1,721
4	Exposure to ignition of highly flammable material (X04)	198	21	951
5	Contact with other and unspecified heat and hot substances (X19)	167	19	896
	<b>All fire, burn and scald injuries for 5–9 years</b>	<b>2,441</b>	<b>15</b>	<b>16,347</b>

## 10–14 year olds

There were 2,516 cases of hospitalisation as a result of exposure to smoke, fire, heat and hot substances in 10–14 year olds in the reporting period (Table 7.4). The leading cause was *Exposure to ignition of highly flammable material* – different from the leading cause among the younger age groups. This category includes exposure to ignition of petrol.

**Table 7.4: Top five causes of exposure to smoke, fire, heat and hot substances injury hospitalisations, 10–14 years, Australia, 1999–07**

Rank	Type of fire, burn and scald injury	No. of cases	Per cent of 0–14 cases	No. of 0–14 cases
1	Exposure to ignition of highly flammable material (X04)	682	72	951
2	Contact with hot drinks, food, fats and cooking oils (X10)	454	9	5,122
3	Contact with other hot fluids (X12)	309	11	2,791
4	Exposure to unspecified smoke, fire and flames (X08)	186	27	694
5	Contact with hot tap-water (X11)	142	8	1,721
	<b>All fire, burn and scald injuries for 10–14 years</b>	<b>2,516</b>	<b>15</b>	<b>16,347</b>

## 8 Conclusion

From July 1999 to June 2007 there were 471,416 estimated cases of hospitalised injury in children aged between 0 and 14. Boys continued to outnumber girls by a factor of 2 to 1 in injury statistics, and there has been little change in the overall rate of hospitalised injury for children since 1999. For all causes of injury combined, hospitalisation rates remained at about 1,500 cases per 100,000 population during the period.

Falls were the main reason for hospitalised injury in children throughout the period; they are followed by other unintentional injuries and transport-related injuries. Rates of hospitalised fall injury were stable during the period, at about 680 cases per 100,000 population for both boys and girls. When examined by age group, fall rates were found to be much lower for girls aged 10–14. The most frequent type of fall for children aged up to 9 was a fall involving playground equipment. At older ages, falls involving roller-skates and skateboards were more common. The number of hospitalised falls involving trampolines increased in children aged 0–4, from 371 cases in 2002–03 to 492 in 2006–07.

Other unintentional injuries were the second most frequent cause of hospitalised injury in children during the reporting period. Rates of other unintentional injury remained steady, averaging 500 cases per 100,000 population. For young children (0–4) foreign bodies in the eye or other natural orifices were the most common other unintentional injury requiring hospitalisation.

Transport-related injury hospitalisations involving pedal cycles were most commonly reported in 5–14 year olds, while being hit in a collision with a car, pick-up truck or van as a pedestrian was most common for 0–4 year olds.

The most significant declines in childhood hospitalised injury were seen in rates of poisoning by pharmaceuticals. An average decrease of 7.5% a year was seen during the reporting period. Until 9 years of age the rate of poisoning by pharmaceuticals was similar for boys and girls; in contrast, rates of poisoning by pharmaceuticals were consistently higher in girls compared with boys in the 10–14 age group. Children aged 0–4 are more vulnerable to poisoning, and this was reflected in their higher rates compared with the older age groups. Benzodiazepine poisoning was found to be relatively common among this (0–4) age group.

Fire, burn and scald hospitalised injuries remained steady during the period, with about 2,000 children hospitalised each year. Rates of hospitalised burns were higher in younger children (0–4) and for boys in each age group. For children aged 0–9 the most common cause of burn injury throughout the period was *Contact with hot drinks, fats and cooking oils*. For older children, the most common cause of hospitalised injury was *Exposure to ignition of highly flammable material*, including petrol.



# Appendix A: Data issues

## Data sources

This report is based on hospital separations data reported for the financial years 1999–00 to 2006–07, as supplied by the Australian Institute of Health and Welfare from the National Hospital Morbidity Database. Population data were obtained from the Australian Bureau of Statistics.

## Definitions

A 'separation' is defined as 'A formal, or statistical, process by which an episode of care for an admitted patient ceases' (AIHW 2001).

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

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

## ICD-10-AM

Data on principal diagnosis and external cause of injury were coded according to four editions (covering the period 1999 to 2007) of the Australian clinical modification of ICD-10, ICD-10-AM. Changes to the ICD-10-AM over the four revisions have not affected the inclusion of cases for analysis. Where more detailed analyses have been undertaken using specific editions of the ICD-10-AM, this is noted in the text.

## Estimated cases

Since some injuries result in more than one episode in hospital as a result of transfers and re-admissions, analysis of a data set consisting of hospital separations is likely to overestimate the number of new cases of injury. At the national level, Australian hospital data files lack direct means of avoiding such over-counting.

For this report a method was used to reduce over-counting of cases: records in which the mode of admission is recorded as being by transfer from another acute-care hospital were omitted on the ground that such cases were likely to result in more than one separation record that meets the operational definition of a case of hospitalised injury. It should be recognised that this method for avoiding multiple counting of cases is approximate. It should allow for cases involving transfer between or within hospitals. It cannot allow for readmissions which meet the project's selection criteria. As such, reporting of hospitalised cases is an estimate.

## Community injury

For this report community injury separations are defined as unit records with a principal diagnosis in the ICD-10-AM range S00–T75 or T79. These injuries are thought to be those sustained in the community setting – the home, the workplace, an educational institution, the street, the natural environment, and so on. Community injuries are further categorised into two main types: unintentional injuries (for example, falls and motor vehicle crashes) and intentional injuries (for example, assault and self-harm).

## Denominators, rates and confidence intervals

Age-standardised rates were reported for the 0–14 year age group. This adjustment allows for comparison without distortion as a result of population group differences in the 0–14 bracket. All age-specific rates in this report were calculated using, as the denominator, the final estimate of the estimated resident population as at 31 December in the relevant year (for example, 31 December 2006 for 2006–07 data). Direct standardisation was used to age-standardise rates, using the Australian population in 2001 as the standard (ABS 2003).

Age-standardised rates were calculated in Stata version 10.1 statistical software (Stata Corporation 2008) using the `-stdize-` command. Estimated trends in age-standardised rates were reported as annual percentage change obtained using negative binomial regression modelling performed in Stata. Use of the terms ‘significant’ and ‘significantly’ throughout the report refers to an outcome that is statistically significant. Table A1 shows the results of the negative binomial regressions for each chapter.

**Table A1.1: Negative binomial regression results, by chapter**

Chapter	Point estimate (per cent change)	Confidence intervals (95%, CI+, CI–)	Probability	Trend
All injury types	–0.7	–1.0, –0.4	$p = 0.000$	Decrease
Other unintentional	–0.2	–0.2, 0.5	$p = 0.319$	No change
Falls	0.1	–1.5, 0.7	$p = 0.758$	No change
Transport	–0.8	–1.7, 0.0	$p = 0.063$	No change
Poisoning, pharmaceuticals	–7.5	–8.5, –6.5	$p = 0.000$	Decrease
Exposure to smoke, fire, heat and hot substances	–0.3	–1.2, 0.7	$p = 0.568$	No change

The Australian Institute of Health and Welfare is carrying out a review to assess the provision of confidence intervals and statistical tests when data arise from sources that provide information on all subjects, rather than from a sample survey. This review will include analysis of the methods used to calculate confidence intervals, as well as the appropriateness of reporting confidence intervals and performing statistical testing for such data. The review aims to ensure that statistical methods used in the institute’s reports remain robust and appropriately inform understanding and decision making. As a consequence, the type of information reported in future editions of this publication might change.

## Pharmaceutical agents

Table A2 provides a description of the drugs included in each of the five categories of poisoning by pharmaceutical substances. For more detail, see the tables in the Alphabetic index of the ICD-10-AM fourth edition (NCCH 2004).

Table A1.2: ICD-10-AM drug code inclusions

ICD-10-AM code	Drug code inclusions (NCCH 2004)
X40	<b>Accidental poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics</b> 4-aminophenol derivatives, nonsteroidal anti-inflammatory drugs [NSAID], pyrazolone derivatives, and salicylates.
X41	<b>Accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified</b> Antidepressants, barbiturates, hydantoin derivatives, iminostilbenes, methaqualone compounds, neuroleptics, psychostimulants, succinimides and oxazolinediones, and tranquillisers.
X42	<b>Accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified</b> Cannabis (derivatives), cocaine, codeine, heroin, lysergide [LSD], mescaline, methadone, morphine, and opium (alkaloids).
X43	<b>Accidental poisoning by and exposure to other drugs acting on the autonomic nervous system</b> Parasympatholytics [anticholinergics and antimuscarinics] and spasmolytics, parasympathomimetics [cholinergics], sympatholytics [antiadrenergics], and sympathomimetics [adrenergics].
X44	<b>Accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances</b> Agents primarily acting on smooth and skeletal muscles and the respiratory system, anaesthetics (general)(local), anti-infectives, drugs affecting the cardiovascular system and gastrointestinal system, hormones and synthetic substitutes, systemic and haematological agents, systemic antibiotics and other anti-infectives, therapeutic gases, topical preparations, vaccines, water-balance agents and drugs affecting mineral and uric acid metabolism.

## Errors and inconsistencies

This report is based on data collected from state and territory hospitals. After coding and collection from the states and territories, the data are further processed by the institute and the National Injury Surveillance Unit. The geographical spread of the data and the large number of people involved in the processing increase the risk of inconsistencies across time and place. Variations in reporting and coding continue to exist in the jurisdictions, although National Minimum Data Sets have been in place for a considerable time.

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This report provides summary data on trends in hospitalised childhood injury for 1 July 1999 to 30 June 2007. Information is provided for three age groups (0–4, 5–9 and 10–14 year-olds) for each year.

Falls and other unintentional injuries were the most frequent causes of hospitalised injury in each age group.