

Injury in Western Australia

An Epidemiology of Injury 1989 to 2000

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Injury in Western Australia – An Epidemiology of Injury, 1989 to 2000

Authors

Gillam C, Legge M, Stevenson M, Gavin A

Performing Organisation

Injury Research Centre
School of Population Health
The University of Western Australia
35 Stirling Highway
Crawley WA 6009
Tel: (08) 9380 1302
Fax: (08) 9380 1199
www.irc.uwa.edu.au

Sponsor

Injury Prevention Unit
Department of Health
Ground Floor, C Block
189 Royal Street
East Perth WA 6004

Abstract: This report presents a descriptive epidemiological study of injury deaths and hospitalisations data in Western Australia for the period from 1995 to 2000, with comparisons to the previous six year period from 1989 to 1994, and trends for the whole of the 12 year period from 1989 to 2000. Rates of injury death and hospitalisation are described in relation to demographics including age, sex, indigenous status and area of residence. Leading causes of injury death and hospitalisation, including intentional injuries, transport injuries and falls, are examined in detail. The findings will assist the Department of Health in Western Australia to prioritise, plan, and evaluate interventions to reduce the incidence and severity of injuries.

Keywords: injuries; epidemiology; Western Australia; males; indigenous; rural; violence-related injuries.

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ABBREVIATIONS

ICD: International Classification of Diseases

PYLLs: Potential Years of Life Lost

GLOSSARY

Age specific rate: Number of cases in a specific age group in a specific period of time, divided by the number of persons in the population in the same age group in the same period of time.

Age standardised rate: A rate weighted according to the age structure of a standard population so that the rate can be used to make comparisons with other populations which may have different age structures.

Current review period: The six year period from 1995 to 2000.

Indigenous people: People who identify themselves as being of Aboriginal or Torres Strait Islander descent.

Previous review period: The six year period between 1989 and 1994.

SUMMARY

Introduction

This report is the third in a series of epidemiological reviews of injuries in Western Australia which together, span almost two decades, from 1983 to 2000 (Sleet, Albany, Lee and Stevens, 1991; Ashwell, Pinder and Thomson, 1996). It was prepared by the Injury Research Centre of the University of Western Australia with funding from the Injury Prevention Unit of the Department of Health, Western Australia. The purpose of the review was to describe the causes and distribution of injuries in Western Australia between 1995 and 2000 according to age, sex, indigenous status and area of residence and compare them to the causes and distribution of injuries between 1989 and 1994. The report presents trends, priority risk groups, priority injury issues and issues that need further investigation. It will assist professionals from a wide range of disciplines to prioritise injury issues, and to design, implement and evaluate interventions to reduce the burden of injuries in Western Australia.

Methods

The Injury Research Centre obtained de-identified injury case records from the Department of Health, following approval from the Human Research Ethics Committee of the University of Western Australia. The cases were defined using the International Classification of Diseases coding scheme, and extracted from the Western Australian Mortality Database (9,009 deaths) and the Western Australian Hospital Morbidity Data System (457,398 hospitalisations). Cases were grouped into major injury groupings using the Centers for Disease Control and Prevention framework.

Descriptive epidemiological techniques were used to analyse the data and produce frequencies, percentages, potential years of life lost, age specific and age standardised rates, trends, rate ratios and rankings. The findings on hospitalisation rates should be regarded as preliminary until the effect of changes in hospital admission recording practices during the review period has been investigated.

Findings

Injuries remained a considerable public health issue between 1995 and 2000, ranking fourth as a cause of death and resulting in three times more potential years of life lost than cancer or circulatory diseases. The review found that, while age standardised injury death rates had not changed significantly in Western Australia between 1989 and 2000, injury hospitalisation rates had increased significantly for males, females, non indigenous people and metropolitan residents in that time. Further investigation may reveal that these increases are partly due to changes in hospital admission recording practices between 1989 and 2000.

The recognised risk groups—males, indigenous people, rural residents, young and elderly adults—remained at greater risk of injury than their comparison groups, and the magnitude of differences remained constant between 1989 and 2000. Indigenous people remained at greatest risk overall with age standardised injury death and hospitalisation rates approximately four times those of non indigenous people.

The review found that falls place a considerable burden on the Western Australian health care system and the health of our youngest and oldest community members. Falls were the single most common cause of injury hospitalisation (excluding the broad category 'other unintentional injuries'), resulting in an average of approximately 10,000 hospital admissions per year, mostly

among older people and young children. Continued investment in evidence-based falls prevention programs is therefore essential.

Intentional, or violence-related injuries, both self-inflicted and inflicted by another, emerged as a growing issue in Western Australia. These injuries resulted in an average of 270 deaths and 5,000 hospitalisations per year between 1995 and 2000. For deaths due to intentional injuries, self-inflicted injuries were more common than injuries inflicted by another. For hospitalisations, injuries inflicted by another were more common. Between 1989 and 2000, the age standardised rate of self-inflicted injury death remained constant. However, the rate of hospitalisation due to injuries inflicted by another increased by more than 40% in the same period.

Intentional injuries were common among males, young people and rural residents. However, the group at greatest overall risk was indigenous people. When compared to non indigenous people this group was 2.2 times more likely to die due to self-inflicted injuries, 3.5 times more likely to be hospitalised due to self-inflicted injuries, and 32.4 times more likely to be hospitalised due to injuries inflicted by another. The impact of European settlement on indigenous cultures, resulting in loss of connection to land, loss of economic systems, and removal of children from families, created potential risk factors for violence in indigenous communities. These include economic and social disadvantage, issues of cultural and spiritual identity and disrupted family relationships (Daube, 1994; Wilson, 1997). Interventions must acknowledge and address these underlying risk factors if they are to achieve success.

The co-ordinated public health intervention needed to reduce the risk of violence-related injuries among all risk groups may be difficult to establish in Western Australia. Common methods of intentionally inflicting injuries on the self and other persons included hanging, suffocation, sharp objects, blunt objects, and bodily force. These are not easily modified by conventional public health strategies. Moreover, not all sectors see public health strategies as relevant to violence prevention. These barriers may be overcome by drawing on the large body of knowledge on prevention strategies available in the scientific literature (eg Krug, Dahlberg, Mercy, Zwi and Lozano, 2002), and from local and national experts.

Another emerging issue was hospitalisation due to accidental poisoning with pharmaceuticals. The age standardised rates of hospitalisation due to accidental poisoning with all substances, and specifically with pharmaceuticals, increased considerably during the review period. Pharmaceuticals were involved in approximately two thirds of accidental poisoning hospitalisations. Pharmaceuticals were also involved in almost nine out of ten self-inflicted poisoning hospitalisations. These findings suggest that pharmaceuticals are being used with varying degrees of intent to cause self-harm and that reducing access to them may reduce the rates of both self-inflicted and accidental poisoning. This requires further investigation.

Although drowning and fires, burns and scalds, established as National Health Priorities in 1996, comprised only a small proportion of all injury deaths and hospitalisations, age specific rates were much higher for young children than for the Western Australian population. Because the youngest and most dependent members of our community are at greatest risk of drowning, and burns and scalds, there must be a continued commitment to prevention of these injuries.

'Other unintentional injuries' were common, accounting for over 10,000 injury hospitalisations per year. This major injury group includes a diverse range of events and risk factors and needs further analysis to yield prevention strategies. Findings from research into areas such as home injuries, sports injuries, furniture-related injuries, can inform this issue.

Finally, although transport injuries remain a significant health issue for Western Australia, the review found a satisfying 34% decrease in the age standardised rate of transport injury death between 1989 and 2000. This improvement represents a sound return on resources invested in transport safety research and intervention over the past few decades. Continued investment should see continued improvements in the years to come.

Conclusion

The review confirmed that injuries remain a significant public health issue in Western Australia. It identified intentional injuries and accidental poisoning as emerging injury issues for the state and re-iterated the need for continued intervention on the National Health Priorities, particularly falls. Indigenous people and elderly people, young adults and males remained high priority groups.

Prevention of intentional, or violence-related injuries depends on less conventional strategies and somewhat different roles for injury prevention professionals than the prevention of unintentional injuries and therefore poses challenges for the injury prevention community. However, the injury prevention community, comprised of professionals from a wide variety of disciplines and characterised by creative and collaborative approaches, are well equipped to meet these challenges.

Injury deaths summary table Western Australia, 1989-2000				
Indicator	Rate ^a 1995–2000	Number 1995–2000	Trend ^b 1989–2000	% change 1989–2000
All causes of injury death				
All Western Australians	43.9	4,780	=	
Males	63.9	3,381	=	
Females	23.9	1,399	=	
Indigenous people	127.5	360	=	
Non indigenous people ^c	34.0	4,250	↓	24%
Rural residents	57.2	1,408	=	
Metropolitan residents ^c	37.3	3,156	=	
20–24 years age group ^d	62.3	518	=	
70 years and older age group ^d	120.9	945	=	
Self-inflicted injuries				
All Western Australians, all methods	13.5	1,462	=	
Males, all methods	21.7	1,178	=	
Females, all methods	5.2	284	=	
All Western Australians:				
Hanging or suffocation	5.9	637	↑	74%
Poisoning	5.0	552	=	
Firearm	1.2	131	N/A	
Jumping from a high place	0.4	42	N/A	
Sharp object	N/A	20	N/A	
Other methods	0.7	80	N/A	
Transport injuries				
All Western Australians, all transport event types and user groups	13.2	1,409	↓	34%
Males, all transport event types and user groups	19.5	1,040	↓	37%
Females, all transport event types and user groups	6.9	369	↓	22%
All Western Australians:				
Traffic crash, motor vehicle occupant	7.2	767	↓	47%
Traffic crash pedestrian	2.0	210	N/A	
Traffic crash, motorcyclist	1.2	130	N/A	
Non-traffic crash, motor vehicle occupant	N/A	81	N/A	
Other transport events and user groups	N/A	221	N/A	
Other unintentional injuries^e				
All Western Australians, all causes	4.7	525	↑	62%
Males, all causes	6.3	325	=	
Females, all causes	2.9	200	N/A	
All Western Australians:				
Threats to breathing	1.1	122	N/A	
Being hit, struck or crushed	0.5	54	N/A	
Other causes of 'other unintentional injury'	3.0	338	N/A	

Injury deaths summary table (cont) Western Australia, 1989-2000				
Indicator	Rate ^a 1995–2000	Number 1995–2000	Trend ^b 1989–2000	% change 1989–2000
Falls				
All Western Australians, all locations	4.3	497	=	
Males, all locations	5.2	233	N/A	
Females, all locations	3.6	264	N/A	
All Western Australians:				
One level to another	N/A	59	N/A	
Same level	N/A	41	N/A	
Steps or stairs	N/A	11	N/A	
Playground equipment	N/A	0	N/A	
Other locations	3.3	386	N/A	
Accidental poisoning				
All Western Australians, all substances	3.4	373	N/A	
Males, all substances	5.1	277	N/A	
Females, all substances	1.8	96	N/A	
All Western Australians:				
Pharmaceuticals except narcotics and hallucinogens	1.7	188	N/A	
Narcotics and hallucinogens	1.4	148	N/A	
Alcohol, including alcoholic beverages	N/A	14	N/A	
Petroleum products	N/A	4	N/A	
Other substances	N/A	19	N/A	
Drowning				
All Western Australians, all causes/locations	1.7	187	N/A	
Males, all causes/locations	2.6	141	N/A	
Females, all causes/locations	0.9	46	N/A	
All Western Australians:				
Other constructed water containers	0.7	74	N/A	
Sport and recreational activity	N/A	32	N/A	
Swimming pool	N/A	21	N/A	
Bath tub	N/A	10	N/A	
Other causes/locations	0.5	50	N/A	

Injury deaths summary table (cont)
 Western Australia, 1989-2000

Indicator	Rate ^a 1995–2000	Number 1995–2000	Trend ^b 1989–2000	% change 1989–2000
Injuries inflicted by another				
All Western Australians, all methods	1.6	174	N/A	
Males, all methods	1.9	108	N/A	
Females, all methods	1.2	66	N/A	
All Western Australians:				
Sharp or blunt object	0.8	83	N/A	
Bodily force	N/A	20	N/A	
Firearm	N/A	15	N/A	
Hanging or strangulation	N/A	18	N/A	
Maltreatment or rape	N/A	3	N/A	
Bite from human	N/A	1	N/A	
Other methods	N/A	34	N/A	
Fires, burns and scalds				
All Western Australians, all causes of fires, burns and scalds	0.5	55	N/A	
Males, all causes of fires, burns and scalds	N/A	32	N/A	
Females, all causes of fires, burns and scalds	N/A	23	N/A	
All Western Australians:				
Fire in a building	N/A	25	N/A	
Clothing ignition	N/A	4	N/A	
Hot objects, fluids, vapours, gases and steam	N/A	3	N/A	
Ignition of flammable material	N/A	2	N/A	
Other causes of fires, burns and scalds	N/A	21	N/A	

^a All rates are age standardised unless otherwise stated. Age standardised rates per 100,000 population are standardised with the 1991 Australian population

^b Trends are based on age standardised rates per 100,000 population and only reported as increasing or decreasing if change in direction was statistically significant at 0.05 level

^c Cases with unknown status excluded

^d Age specific rate per 100,000 population

N/A: Not applicable; number of events too small for reliable rates to be calculated

↓ Significant decrease in age standardised rate; ↑ Significant increase in age standardised rate; = No significant change in age standardised rate

Injury hospitalisations summary table Western Australia, 1989-2000				
Indicator	Rate ^a 1995–2000	Number 1995–2000	Trend ^b 1989–2000	% change 1989–2000
All causes of injury hospitalisation				
All Western Australians	2283.8	246,519	↑	3%
Males	2685.7	143,194	↑	2%
Females	1845.8	103,325	↑	6%
Indigenous people	7917.8	22,653	=	
Non indigenous people	1886.8	223,866	↑	2%
Rural residents	3282.2	81,506	=	
Metropolitan residents ^c	1926.7	160,383	↑	13%
20–24 years age group ^d	2650.6	22,034	↓	6%
70 years and older age group ^d	5449.0	42,578	=	
Other unintentional injuries^e				
All Western Australians, all causes	571.3	61,674	↓	17%
Males, all causes	822.4	44,881	=	
Females, all causes	310.0	16,793	↓	23%
All Western Australians:				
Being hit, struck or crushed	149.6	16,052	↑	56%
Cutting or piercing	101.1	10,866	↑	26%
Threats to breathing	4.8	505	=	
Other causes of 'other unintentional injuries' ^f	315.9	34,251	↓	17%
Falls				
All Western Australians, all locations	570.5	62,213	↑	3%
Males, all locations	554.9	28,868	↑	1%
Females, all locations	555.2	33,345	↑	6%
All Western Australians:				
Same level	192.7	20,963	↑	256%
One level to another	124.9	13,557	↑	73%
Playground equipment	25.8	2,770	=	
Steps or stairs	24.4	2,633	↑	71%
Other locations	202.8	22,290	↓	63%

Injury hospitalisations summary table (cont)
 Western Australia, 1989-2000

Indicator	Rate ^a 1995–2000	Number 1995–2000	Trend ^b 1989–2000	% change 1989–2000
Transport injuries				
All Western Australians, all transport event types and user groups	290.0	31,058	=	
Males, all transport event types and user groups	389.6	21,088	↑	2%
Females, all transport event types and user groups	186.9	9,970	=	
All Western Australians:				
Traffic crash, motor vehicle occupant	91.4	9,721	=	
Traffic crash, motorcyclist	22.0	2,340	↓	42%
Traffic crash, pedestrian	18.3	1,960	=	
Traffic crash, pedal cyclist	5.4	580	↓	43%
Non-traffic crash, pedal cyclist	37.2	4,033	↑	52%
Non-traffic crash, motorcyclist	29.1	3,088	↑	132%
Non-traffic crash, motor vehicle occupant	27.3	2,920	↑	467%
Non-traffic crash, pedestrian	5.9	639	=	
Other transport events and user groups	18.8	5,777	=	
Injuries inflicted by another				
All Western Australians, all methods	148.4	15,875	↑	43%
Males, all methods	185.1	10,064	↑	29%
Females, all methods	110.3	5,811	↑	73%
All Western Australians:				
Bodily force	61.0	6,497	↑	134%
Sharp or blunt object	42.5	4,571	↑	108%
Maltreatment or rape	12.4	1,321	↑	450%
Bite from human	5.9	635	=	
Firearm	N/A	32	N/A	
Hanging or strangulation	N/A	16	N/A	
Other methods	26.2	2,803	↑	43%
Self-inflicted injuries				
All Western Australians, all methods	127.3	13,731	=	
Males, all methods	103.0	5,626	=	
Females, all methods	152.6	8,105	=	
All Western Australians:				
Poisoning	110.2	11,910	=	
Sharp object	12.3	1,312	↑	18%
Hanging or suffocation	1.4	149	N/A	
Jumping from a high place	0.7	70	N/A	
Firearms	0.4	39	N/A	
Other methods	2.3	251	N/A	

Injury hospitalisations summary table (cont) Western Australia, 1989-2000				
Indicator	Rate ^a 1995–2000	Number 1995–2000	Trend ^b 1989–2000	% change 1989–2000
Accidental poisoning				
All Western Australians, all substances	62.4	6,614	↑	57%
Males, all substances	69.7	3,750	↑	63%
Females, all substances	54.8	2,864	↑	49%
All Western Australians:				
Pharmaceuticals except narcotics and hallucinogens	36.1	3,819	↑	95%
Narcotics and hallucinogens	7.0	739	N/A	
Alcohol, including alcoholic beverages	1.7	185	N/A	
Petroleum products	1.7	183	N/A	
Other substances	15.8	1,688	=	
Fires, burns and scalds				
All Western Australians, all causes	44.4	4,745	↓	25%
Males, all causes	59.5	3,225	↓	27%
Females, all causes	28.8	1,520	=	
All Western Australians:				
Hot objects, fluids, vapours, gases and steam	26.5	2,825	↑	17%
Ignition of flammable material	5.7	613	↑	48%
Fire in a building	N/A	163	N/A	
Clothing ignition	N/A	129	N/A	
Other causes of fires, burns and scalds	9.4	1,015	↓	68%
Drowning				
All Western Australians, all causes/locations	4.5	476	=	
Males, all causes/locations	6.0	325	=	
Females, all causes/locations	2.9	151	N/A	
All Western Australians:				
Swimming pool	1.3	138	N/A	
Sport and recreational activities	1.1	118	N/A	
Other constructed water containers	0.8	84	N/A	
Bath tub	0.4	37	N/A	
Other causes/locations	0.9	99	=	

a All rates are age standardised unless otherwise stated. Age standardised rates per 100,000 population, are standardised with the 1991 Australian population

b Trends are based on age standardised rates per 100,000 population and only reported as increasing or decreasing if the change in direction was statistically significant at 0.05 level

c Cases with unknown status excluded

d Age specific rate per 100,000 population

N/A: Not applicable, number of events too small for reliable rates to be calculated

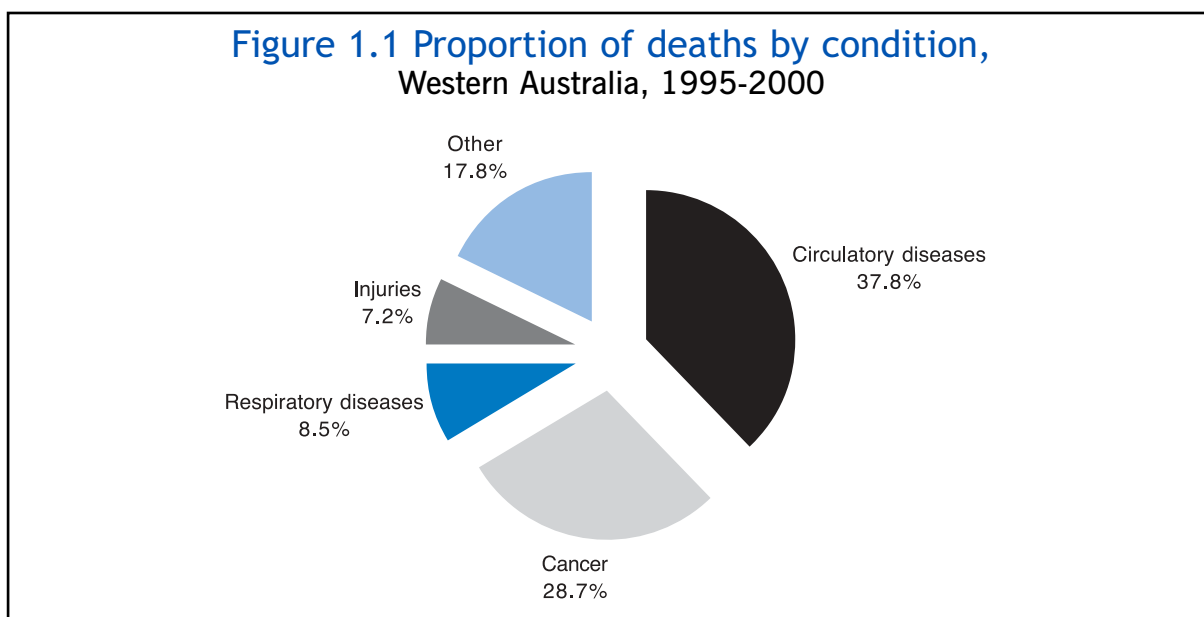
↑ Significant decrease in age standardised rate; ↓ Significant increase in age standardised rate; = No significant change in age standardised rate

1. INJURY AS A PUBLIC HEALTH ISSUE

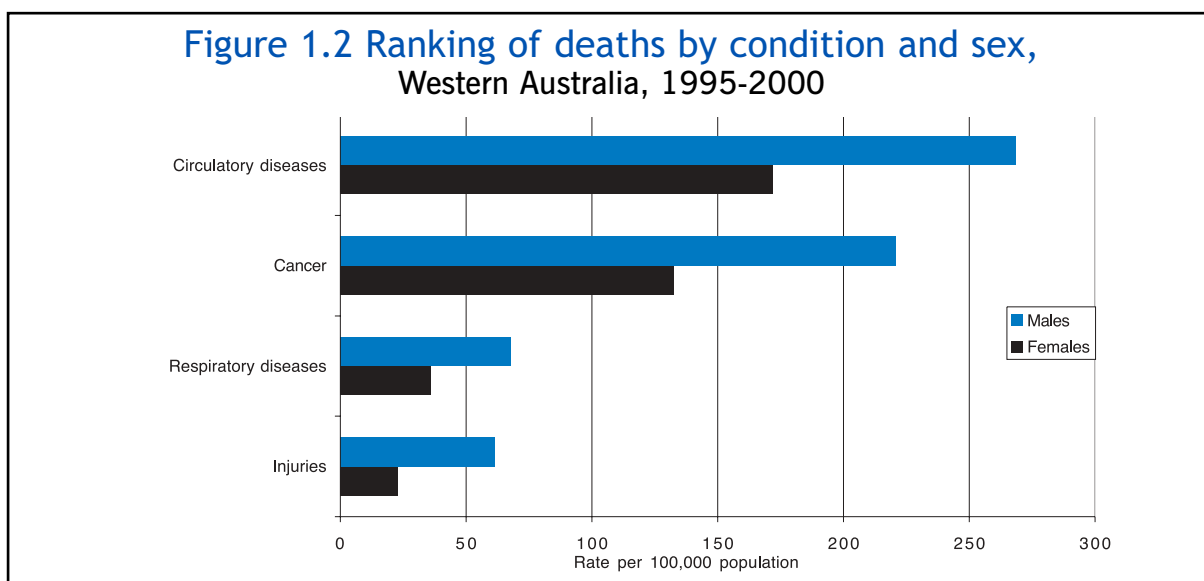
1.1 Comparison with other conditions causing death

In Western Australia, between 1995 and 2000, injuries accounted for 7.2% of all deaths. Circulatory diseases accounted for 37.8% of deaths, cancer for 28.7% of deaths, and respiratory diseases for 8.5% of deaths (Figure 1.1, Table 1.1).

Injuries ranked fourth as a cause of death for both males and females (Table 1.2). The risk of death from every common condition was higher for males than females, the difference being greatest for injuries. Males were 2.7 times more likely than females to die due to injuries (Figure 1.2, Table 1.2).



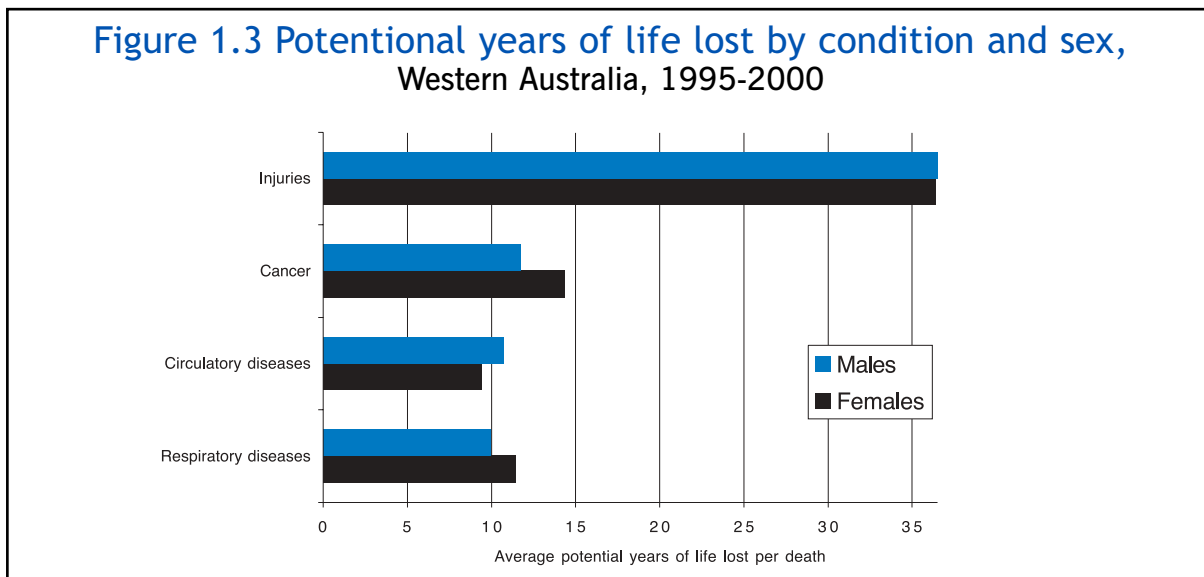
Source: Health Information Centre, Department of Health



Source: Health Information Centre, Department of Health

1.2 Potential years of life lost due to common conditions

In Western Australia, between 1995 and 2000, injuries resulted in approximately three times more potential years of life lost per death (PYLLs) than any other condition (Figure 1.3, Table 1.3). In that period, each injury death resulted in an average of 36.9 PYLLs.

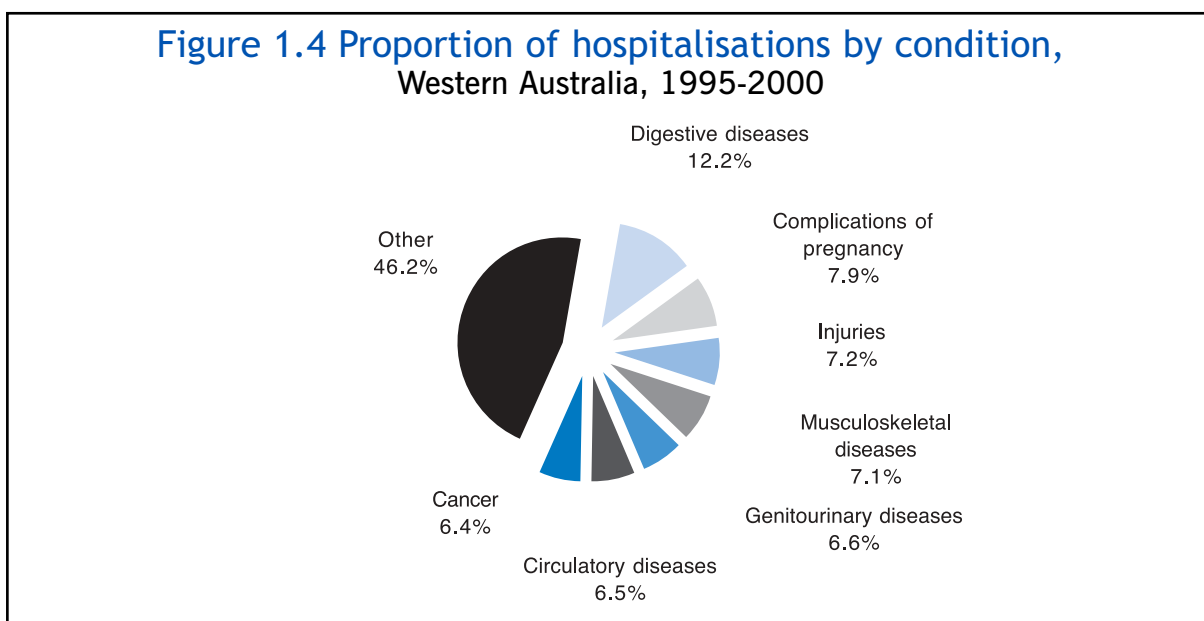


Source: Health Information Centre, Department of Health

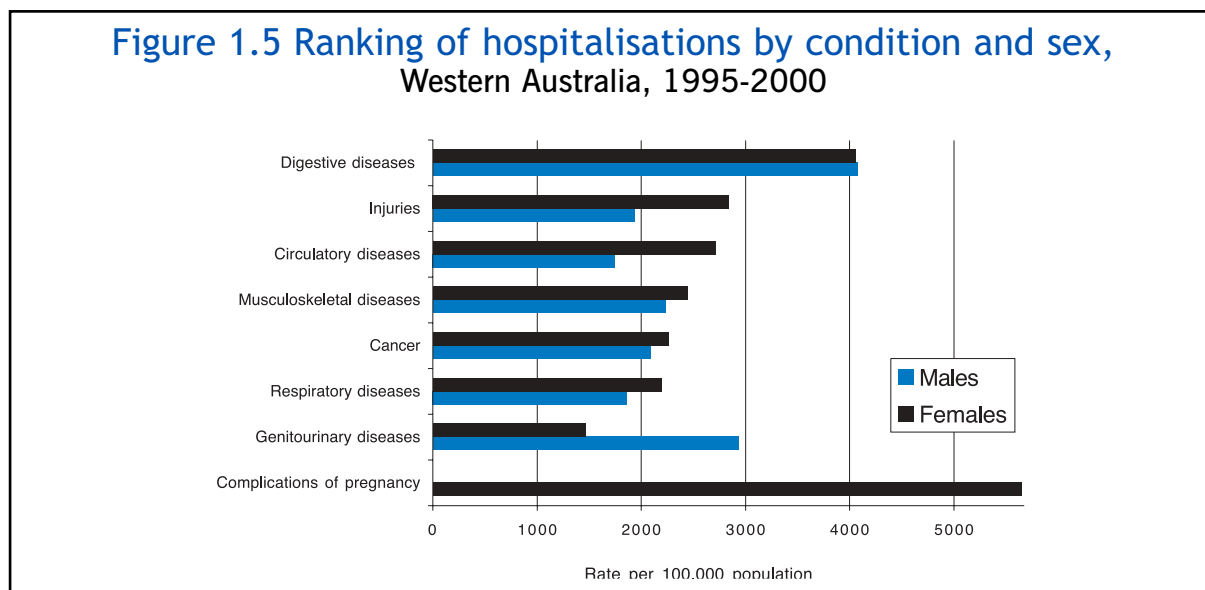
1.3 Comparison with other conditions causing hospitalisation

In Western Australia, between 1995 and 2000, injuries accounted for 7.2% of all hospitalisations (Figure 1.4, Table 1.4). Digestive diseases accounted for 12.2% of hospitalisations, and complications of pregnancy for 7.9% of hospitalisations.

Injuries ranked third as a cause of hospitalisation for the Western Australian population, second as a cause of hospitalisation for males, and sixth for females (Table 1.5). Males and females had a similar risk of hospitalisation for most common conditions. However, compared to females, males were 1.6 times more likely to be hospitalised due to circulatory diseases and 1.5 times more likely to be hospitalised due to injuries (Figure 1.5, Table 1.5).



Source: Health Information Centre, Department of Health



Source: Health Information Centre, Department of Health

Table 1.1 Common conditions resulting in death Western Australia, 1995-2000

Condition	Rate ^a	Number	Percentage ^b
Circulatory diseases	215.2	23,881	37.8%
Cancer	170.2	18,091	28.7%
Respiratory diseases	48.7	5,342	8.5%
Injuries	42.0	4,567	7.2%
Other conditions	N/A	11,223	17.8%
All conditions	577.7	63,104	100%

Source: Health Information Centre, Department of Health

a Age standardised rate per 100,000 population, standardised with 1991 Australian population

b Percentage: Number of deaths due to specified condition (eg circulatory diseases) divided by number of deaths due to all conditions

N/A: Not available

Table 1.2 Rate ratios for common conditions resulting in death Western Australia, 1995-2000

Condition	Rate ^a			Number	
	Males	Females	Rate ratio ^b	Males	Females
Circulatory diseases	268.2	171.8	1.6	11,932	11,949
Cancer	220.6	132.5	1.7	10,287	7,804
Respiratory diseases	67.6	35.8	1.9	2,956	2,386
Injuries	61.2	22.8	2.7	3,227	1,340
Other conditions	N/A	N/A	N/A	5,457	5,766
All conditions	734.9	450.7	1.6	33,859	29,245

Source: Health Information Centre, Department of Health

a Age standardised rate per 100,000 population, standardised with 1991 Australian population

b Rate ratio: Age standardised rate for males for specified condition (eg circulatory diseases) divided by age standardised rate for females

N/A: Not available

**Table 1.3 Average potential years of life lost for common conditions
Western Australia, 1995-2000**

Condition	Males	Females	All persons
Injuries	36.7	36.4	36.9
Cancer	11.7	14.3	12.8
Circulatory diseases	10.7	9.4	10.3
Respiratory diseases	9.9	11.4	10.5

Source: Health Information Centre, Department of Health

**Table 1.4 Common conditions resulting in hospitalisation
Western Australia, 1995-2000**

Condition	Rate ^a	Number	Percentage ^b
Digestive diseases	4,040.0	437,944	12.2%
Complications of pregnancy	2,730.0	285,910	7.9%
Injuries	2,400.0	258,801	7.2%
Musculoskeletal diseases	2,340.0	255,013	7.1%
Genitourinary diseases	2,160.0	236,162	6.6%
Circulatory diseases	2,200.0	235,736	6.5%
Cancer	2,130.0	229,140	6.4%
Other conditions	N/A	1,663,466	46.2%
All conditions	33,470.0	3,602,172	100%

Source: Health Information Centre, Department of Health

a Age standardised rate per 100,000 population, standardised with 1991 Australian population

b Percentage: Number of hospitalisations due to specified condition (eg digestive diseases) divided by number of hospitalisations due to all conditions

N/A: Not available

**Table 1.5 Rate ratios for common conditions resulting in hospitalisation
Western Australia, 1995-2000**

Condition	Rate ^a			Number	
	Males	Females	Rate ratio ^b	Males	Females
Digestive diseases	4,050.0	4,070.0	1.0	215,231	222,713
Complications of pregnancy	N/A	5,550.0	N/A	N/A	285,910
Injuries	2,840.0	1,930.0	1.5	151,647	107,154
Circulatory diseases	2,710.0	1,740.0	1.6	134,351	101,385
Musculoskeletal diseases	2,440.0	2,230.0	1.1	131,033	123,980
Cancer	2,260.0	2,080.0	1.1	112,277	116,863
Respiratory diseases	2,190.0	1,860.0	1.2	112,987	100,619
Genitourinary diseases	1,460.0	2,930.0	0.5	74,426	161,736
Other conditions	N/A	N/A	N/A	714,897	734,963
All conditions	31,670.0	35,770.0	0.9	1,646,849	1,955,323

Source: Health Information Centre, Department of Health

a Age standardised rate per 100,000 population, standardised with 1991 Australian population

b Rate ratio: Age standardised rate for males for specified condition (eg digestive diseases) divided by age standardised rate for females for same condition

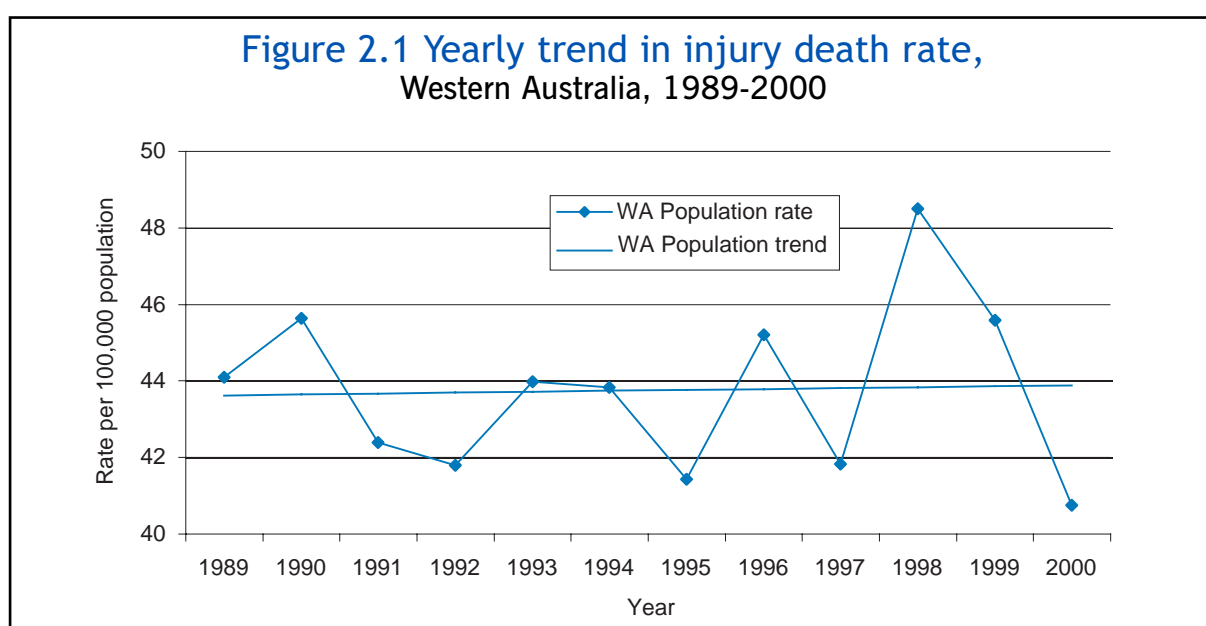
N/A: Not available and not applicable

2. INJURY DEATHS - TRENDS AND COMPARATIVE RISK

2.1 Western Australian population

In Western Australia, the age standardised injury death rate was 43.9 per 100,000 population in the current review period, compared to 43.6 per 100,000 population in the previous review period (Table 2.1). There was no significant change in the rate between 1989 and 2000 ($p = 0.9$) (Figure 2.1).

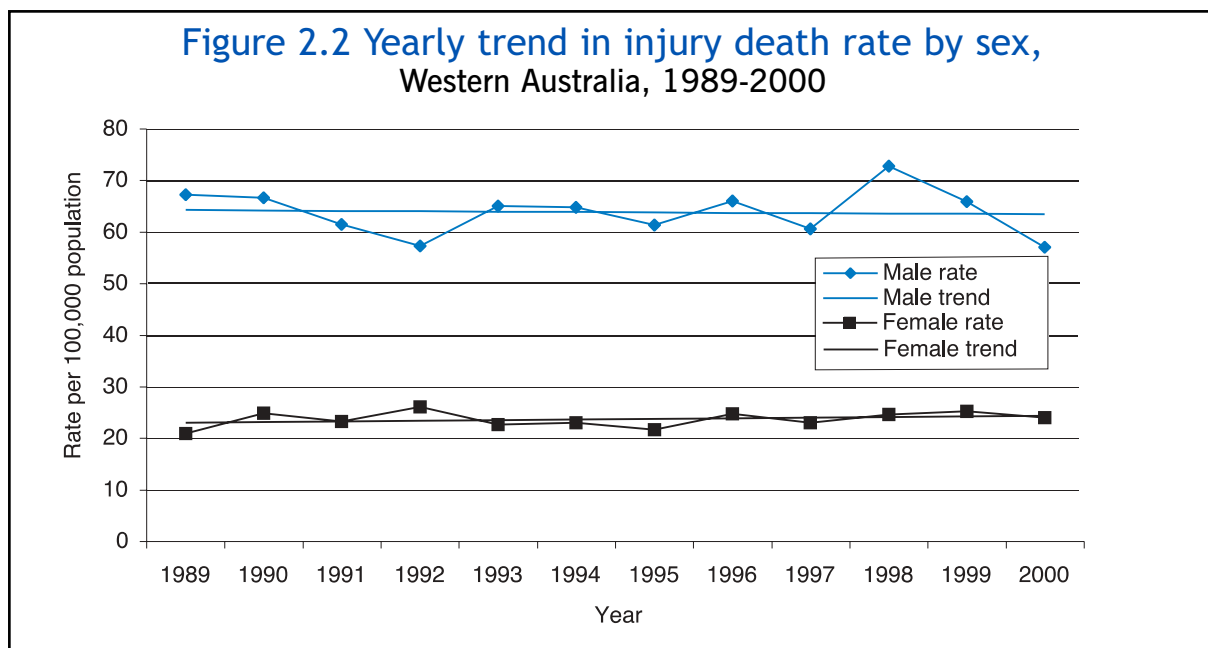
The total number of injury deaths was 4,780 in the current review period compared to 4,229 in the previous review period (Table 2.1). The annual average number of injury deaths was 797 per year between 1995 and 2000 compared to 705 per year between 1989 and 1994 (averages derived from Table 2.1).



2.2 Males and females

In the current review period, the age standardised injury death rate was 63.9 per 100,000 population for males, compared to 23.9 per 100,000 population for females (Table 2.2). The rate did not change significantly for males or females between 1989 and 2000 ($p = 0.8$ for males; $p = 0.4$ for females) (Figure 2.2).

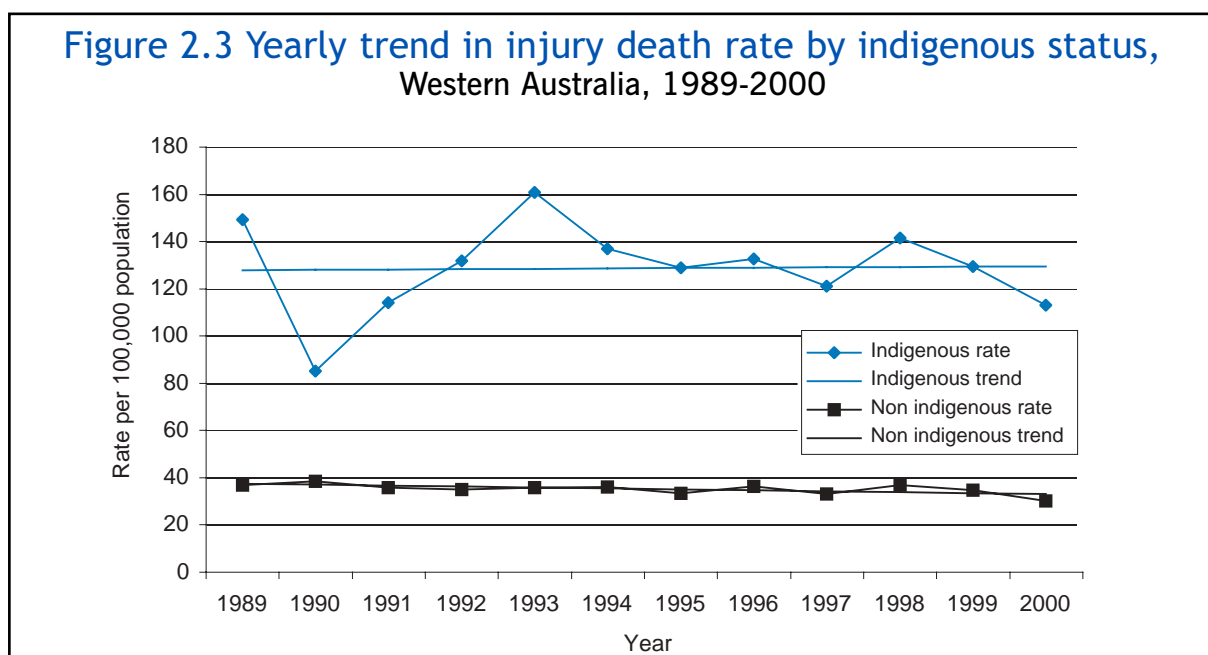
Compared to females, the risk of injury death was 2.7 times higher for males than females in both the current and previous review periods (Table 2.2). Males accounted for almost three quarters of injury deaths (Table 2.3) while comprising half the Western Australian population in both review periods (Tables A5.1 and A5.2, Appendix 1). For males, the average number of injury deaths was 563 per year between 1995 and 2000, compared to 507 per year between 1989 and 1994 (averages derived from Table 2.3).



2.3 Indigenous and non indigenous people

In the current review period, the age standardised injury death rate was 127.5 per 100,000 population for indigenous people, compared to 34.0 per 100,000 population for non indigenous people (Table 2.2). The rate did not change significantly for indigenous people between 1989 and 2000 ($p = 0.9$) (Figure 2.3). For non indigenous people, the rate decreased significantly during that period (by 24%, $p = 0.02$; percentage derived from Table 2.2).

The risk of injury death was 3.8 times higher for indigenous people than for non indigenous people in the current review period, and 3.6 times higher in the previous review period (Table 2.2). Indigenous people accounted for approximately 7% of injury deaths in both the current and previous review periods (Table 2.3) while comprising approximately 3% of the Western Australian population in both review periods (Tables A5.1 and A5.2, Appendix 1). For indigenous people, the average number of injury deaths was 60 per year between 1995 and 2000, compared to 50 per year between 1989 and 1994 (averages derived from Table 2.3).



2.4 Rural and metropolitan residents

In the current review period, the age standardised injury death rate was 57.2 per 100,000 population for rural residents, compared to 37.3 per 100,000 population for metropolitan residents (Table 2.2). The rate did not change significantly for rural or metropolitan residents between 1989 and 2000 ($p = 0.5$ for rural residents; $p = 0.8$ for metropolitan residents) (Figure 2.4).

Compared to metropolitan residents, the risk of injury death was 1.5 times higher for rural residents in both the current and previous review periods (Table 2.2). Rural residents accounted for almost one third of injury deaths (Table 2.3) while comprising approximately one quarter of the Western Australian population in both review periods (Tables A5.1 and A5.2, Appendix 1). For rural residents, the average number of injury deaths was 235 per year in the current review period, compared to 211 per year in the previous review period (averages derived from Table 2.3).

Figure 2.4 Yearly trend in injury death rate by area of residence, Western Australia, 1989-2000

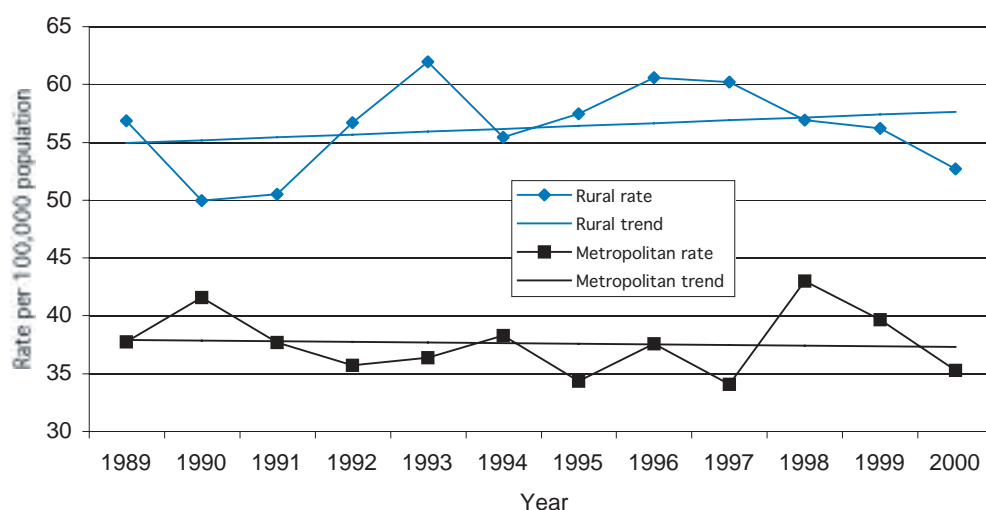


Table 2.1 Rate^a of injury death by year Western Australia, 1989-2000

Year	Rate ^a	Number
1989–1994		
1989	44.1	678
1990	45.6	720
1991	42.4	678
1992	41.8	685
1993	44.0	731
1994	43.8	737
1989-1994	43.6	4,229
1995–2000		
1995	41.4	717
1996	45.2	791
1997	41.8	750
1998	48.5	887
1999	45.6	850
2000	40.7	785
1995-2000	43.9	4,780

^a Age standardised rate per 100,000 population, standardised with 1991 Australian population
Adverse event cases included: 53 (1989-1994), 67 (1995-2000)

**Table 2.2 Injury death rate^a and rate ratio^b by year, sex, indigenous status and area of residence
Western Australia, 1989-2000**

Year	Sex		Indigenous status		Area of residence		Rate ratio
	Males	Females	Indigenous	Non indigenous	Rural	Metropolitan	
	Rate ratio	Rate ratio	Rate ratio	Rate ratio	Rate ratio	Rate ratio	
1989-1994							
1989	67.2	20.9	149.2	36.8	56.8	37.7	1.5
1990	66.6	24.9	84.9	38.4	50.0	41.5	1.2
1991	61.4	23.2	113.9	35.8	50.5	37.7	1.3
1992	57.3	26.1	131.6	35.0	56.7	35.7	1.6
1993	65.0	22.6	160.7	35.6	61.9	36.3	1.7
1994	64.7	23.0	136.7	36.1	55.4	38.2	1.4
1989-1994	63.6	23.4	130.5	36.3	55.2	37.8	1.5
1995-2000							
1995	61.4	21.6	128.9	33.1	57.4	34.3	1.7
1996	66.0	24.7	132.5	36.3	60.6	37.6	1.6
1997	60.6	22.9	120.9	33.0	60.2	34.0	1.8
1998	72.8	24.6	141.5	36.7	56.9	43.0	1.3
1999	65.9	25.2	129.2	34.6	56.2	39.6	1.4
2000	57.1	23.9	112.8	30.2	52.7	35.3	1.5
1995-2000	63.9	23.9	127.5	34.0	57.2	37.3	1.5

a Age standardised rate per 100,000 population, standardised with 1991 Australian population

b Rate ratio: Age standardised rate for 'at risk' group (eg males) for specified year (eg 1989) divided by age standardised rate for comparison group (eg females) for same year

**Table 2.3 Number of injury deaths by year, sex, indigenous status and area of residence
Western Australia, 1989–2000**

Year	Sex			Indigenous status			Area of residence					
	Males	Females	Total	% ^a Male	Indigenous	Non indigenous	Total	% Indigenous	Rural	Metropolitan	Total	% Rural
1989-1994												
1989	513	165	678	75.7%	41	627	668	6.1%	208	440	648	32.1%
1990	516	204	720	71.7%	39	679	718	5.4%	193	498	691	27.9%
1991	486	192	678	71.7%	41	633	674	6.1%	190	460	650	29.2%
1992	463	222	685	67.6%	49	633	682	7.2%	217	446	663	32.7%
1993	533	198	731	72.9%	69	656	725	9.5%	242	464	706	34.3%
1994	535	202	737	72.6%	58	675	733	7.9%	216	497	713	30.3%
1989-1994	3,046	1,183	4,229	72.0%	297	3,903	4,200	7.1%	1,266	2,805	4,071	31.1%
1995-2000												
1995	517	200	717	72.1%	59	655	714	8.3%	227	459	686	33.1%
1996	561	230	791	70.9%	55	733	788	7.0%	239	513	752	31.8%
1997	528	222	750	70.4%	53	677	730	7.3%	246	472	718	34.3%
1998	646	241	887	72.8%	67	773	840	8.0%	231	607	838	27.6%
1999	596	254	850	70.1%	65	738	803	8.1%	238	574	812	29.3%
2000	533	252	785	67.9%	61	674	735	8.3%	227	531	758	29.9%
1995-2000	3,381	1,399	4,780	70.7%	360	4,250	4,610	7.8%	1,408	3,156	4,564	30.9%

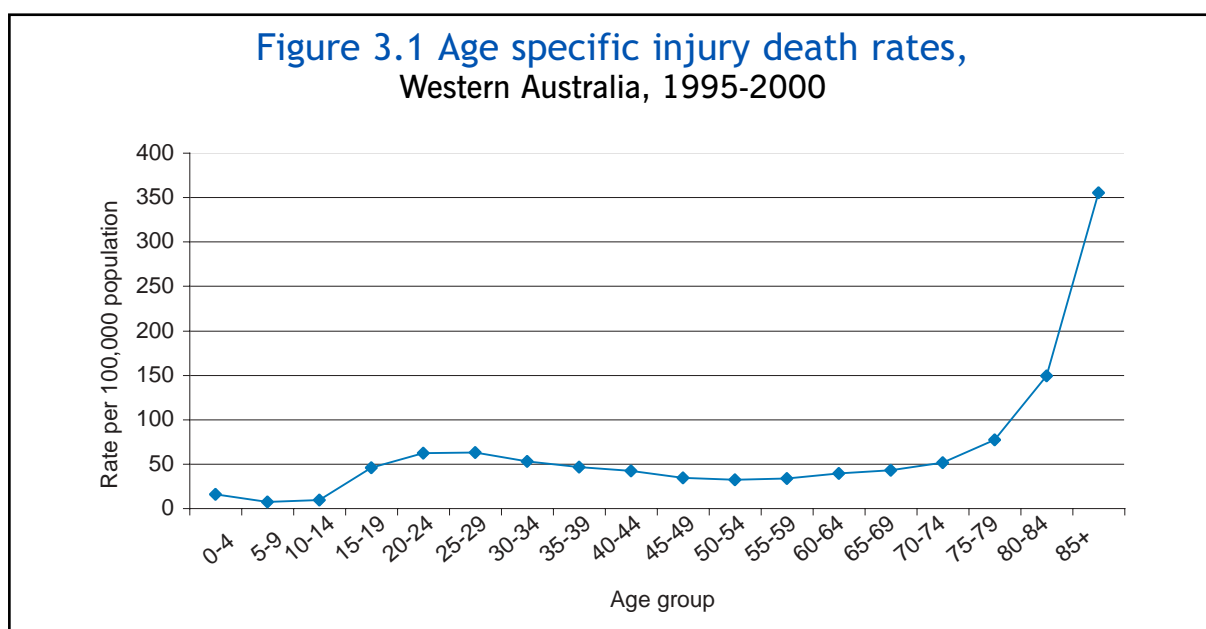
^a Percentage: Number of injury deaths for specified 'at risk group' (eg male) for specified year (eg 1989) divided by total number of injury deaths for combined group (eg males and females) for same year
 Cases with unknown indigenous status excluded: 29 (1989-1994), 170 (1995-2000)
 Interstate or overseas visitor cases excluded: 158 (1989-1994), 216 (1995-2000)
 Adverse event cases included: 53 (1989-1994), 67 (1995-2000)

3. INJURY DEATHS - DISTRIBUTION BY AGE

3.1 Distribution of injury deaths by age

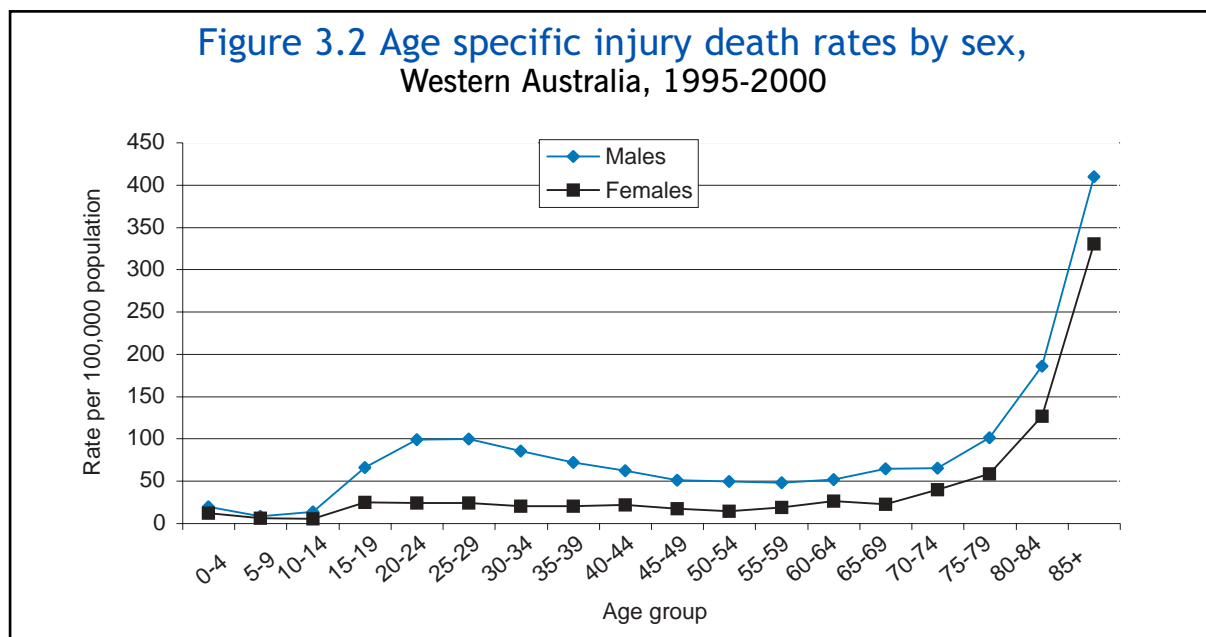
In Western Australia, in the current and previous review periods, age specific injury death rates rose after childhood, were higher in late adolescence and early adulthood than in middle age, and reached their peak in old age (Figure 3.1, Table 3.1). Between 1995 and 2000, age specific injury death rates were eight times higher for the 85 years and older age group than for the Western Australian population.

Trends in age specific injury death rates were tested for the age groups 20 to 24 years and 70 years and older. The age specific rate of injury death did not change significantly for either of these age groups between 1989 and 2000 ($p = 0.13$ and $p = 0.14$, respectively).



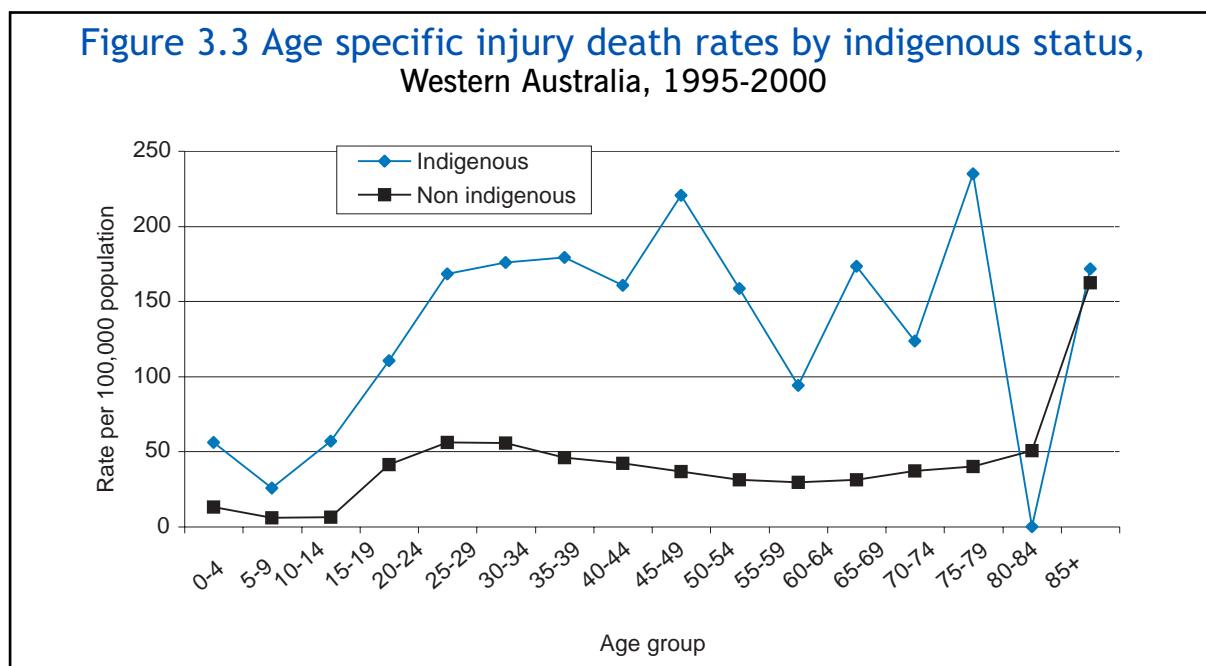
3.2 Distribution of injury deaths by age and sex

In the current and previous review periods, age specific injury death rates were more than four times higher for males in the age groups between 20 and 29 years than for females in the same age groups (Figure 3.2, Table 3.2).



3.3 Distribution of injury deaths by age and indigenous status

Age specific injury death rates could only be calculated for the age groups between 20 and 34 years for the current review period because the number of cases in other age groups was too small to yield reliable rates. The age specific injury death rates were between three and four times higher for indigenous people than for non indigenous people in these age groups (Figure 3.3, Table 3.2).



3.4 Distribution of injury deaths by age and area of residence

In the current and previous review periods, age specific injury death rates were more than twice as high for rural residents in the age group between 15 and 19 years as for metropolitan residents in the same age group (Figure 3.4, Table 3.2).

Figure 3.4 Age specific injury death rates by area of residence, Western Australia, 1995-2000

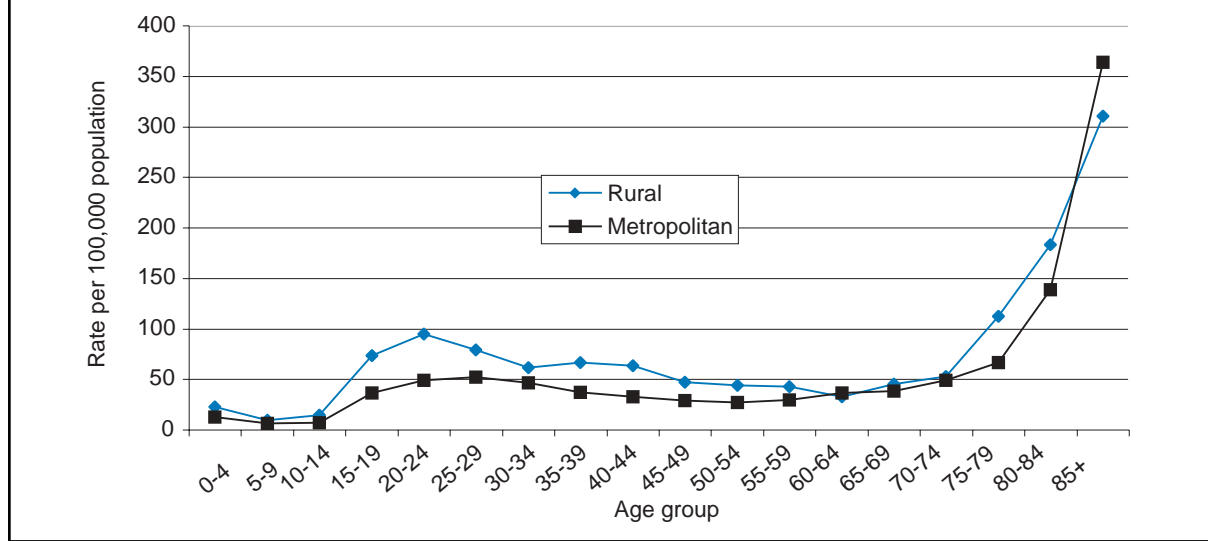


Table 3.1 Age specific injury death rates Western Australia, 1989-2000

Age group	1989–1994			1995–2000		
	Rate ^a	Number	Percentage ^b	Rate	Number	Percentage
0-4	15.0	114	2.7%	15.6	119	2.5%
5-9	8.3	64	1.5%	7.1	57	1.2%
10-14	8.7	65	1.5%	9.4	76	1.6%
15-19	51.9	401	9.5%	45.6	362	7.6%
20-24	67.9	543	12.9%	62.3	518	10.8%
25-29	57.0	458	10.8%	62.6	535	11.2%
30-34	48.9	407	9.6%	53.0	448	9.4%
35-39	40.3	323	7.6%	46.4	408	8.5%
40-44	38.3	290	6.9%	42.0	354	7.4%
45-49	40.0	244	5.8%	34.4	269	5.6%
50-54	41.7	200	4.7%	32.4	208	4.4%
55-59	40.0	160	3.8%	33.8	166	3.5%
60-64	39.3	146	3.5%	39.1	157	3.3%
65-69	42.8	141	3.3%	42.9	153	3.2%
70-74	57.6	144	3.4%	51.4	156	3.3%
75-79	79.1	148	3.5%	76.8	170	3.6%
80-84	114.7	137	3.2%	149.0	211	4.4%
85+	291.6	238	5.6%	354.7	408	8.5%
WA popn	42.8	4,223	100%	43.9	4,775	100%

a Age specific rates per 100,000 population
 b Percentage: Number of injury deaths for specified age group (eg 0-4) and specified period (eg 1989-1994) divided by number of injury deaths for WA population in same period
 Cases with unknown age excluded: 6 (1989-1994), 5 (1995-2000)
 Adverse event cases included: 53 (1989-1994), 67 (1995-2000)

**Table 3.2 Age specific injury death rates^a by age group, sex, indigenous status and area of residence
Western Australia, 1989-2000**

1989-1994	Sex		Indigenous status		Area of residence	
Age group	Males	Females	Indigenous	Non indigenous	Rural	Metropolitan
0-4	17.7	12.2	N/A	11.6	25.0	10.2
5-9	10.4	N/A	N/A	7.0	N/A	N/A
10-14	11.7	N/A	N/A	8.2	N/A	N/A
15-19	80.1	22.1	142.1	47.5	90.6	39.8
20-24	108.8	25.3	N/A	64.6	89.4	54.9
25-29	90.9	22.4	N/A	54.1	63.6	50.7
30-34	75.8	21.7	N/A	46.3	56.2	44.2
35-39	62.9	17.7	N/A	37.3	50.0	35.0
40-44	54.5	21.4	N/A	36.5	47.3	34.4
45-49	60.8	17.5	N/A	38.0	53.2	33.9
50-54	60.5	21.6	N/A	40.7	60.0	35.2
55-59	54.4	25.0	N/A	37.5	51.5	32.7
60-64	56.1	22.3	N/A	37.9	48.3	32.9
65-69	61.8	24.8	N/A	40.4	N/A	39.8
70-74	80.4	38.7	N/A	56.9	N/A	56.1
75-79	109.0	57.8	N/A	133.2	N/A	75.7
80-84	144.4	96.7	*	*	N/A	116.8
85+	302.7	286.6	*	*	320.8	285.2
WA popn	61.3	24.1	106.9	40.7	51.9	37.7
1995–2000						
0-4	19.4	11.6	N/A	12.9	22.6	12.8
5-9	N/A	N/A	N/A	5.7	N/A	N/A
10-14	13.2	N/A	N/A	6.5	N/A	7.2
15-19	65.7	24.4	N/A	41.3	73.1	36.2
20-24	98.6	24.0	168.1	56.0	94.8	49.0
25-29	99.5	24.1	175.9	55.8	78.9	52.1
30-34	85.4	20.0	179.1	45.9	61.4	46.4
35-39	72.2	20.3	N/A	42.1	66.5	37.1
40-44	62.0	21.9	N/A	36.9	63.2	32.5
45-49	51.0	17.2	N/A	31.1	46.8	28.9
50-54	49.5	13.9	N/A	29.7	44.1	27.2
55-59	47.8	18.9	N/A	31.1	42.7	29.4
60-64	51.9	26.1	N/A	37.1	N/A	36.1
65-69	64.1	22.1	N/A	40.2	N/A	38.0
70-74	64.8	39.4	N/A	50.5	N/A	48.7
75-79	101.4	58.1	N/A	162.5	111.9	66.6
80-84	185.8	126.4	*	*	182.8	138.3
85+	409.5	329.9	*	*	310.3	363.6
WA popn	61.7	25.9	114.5	40.2	54.7	38.0

^a Age specific rate per 100,000 population

N/A: Number of cases too small for reliable rate to be calculated

* Note: Rates not calculated for indigenous and non indigenous people in age groups 80-84 and 85+ because population data was not available

**Table 3.3 Number of injury deaths by age group, sex, indigenous status and area of residence
Western Australia, 1989-2000**

1989-1994	Sex		Indigenous status		Area of residence	
Age group	Males	Females	Indigenous	Non indigenous	Rural	Metropolitan
0-4	69	45	28	83	57	54
5-9	41	23	13	51	32	31
10-14	45	20	6	59	21	43
15-19	318	83	40	354	152	241
20-24	444	99	38	499	167	336
25-29	369	89	35	421	136	299
30-34	317	90	27	376	126	269
35-39	252	71	28	293	102	209
40-44	211	79	16	272	83	200
45-49	193	51	15	228	73	160
50-54	150	50	7	192	66	130
55-59	111	49	11	148	47	101
60-64	105	41	7	139	40	95
65-69	99	42	9	132	33	104
70-74	91	53	3	141	25	113
75-79	85	63	10	513	32	115
80-84	65	72	*	*	22	114
85+	77	161	*	*	47	191
WA popn	3,042	1,181	293	3,901	1,261	2,805
1995–2000						
0-4	76	43	23	93	48	70
5-9	35	22	11	43	21	35
10-14	55	21	22	50	30	43
15-19	268	94	35	315	122	227
20-24	421	97	47	450	165	322
25-29	434	101	48	462	164	337
30-34	364	84	44	377	133	292
35-39	319	89	34	362	148	244
40-44	262	92	36	305	126	209
45-49	203	66	19	239	80	176
50-54	165	43	8	188	61	137
55-59	121	45	11	151	47	112
60-64	105	52	6	147	29	113
65-69	113	40	9	142	34	107
70-74	93	63	0	152	31	119
75-79	97	73	5	772	46	120
80-84	100	111	*	*	50	158
85+	147	261	*	*	71	335
WA popn	3,378	1,397	358	4,248	1,406	3,156

Cases with unknown age excluded: 6 (1989-1994), 5 (1995-2000)

Cases with unknown indigenous status excluded: 29 (1989-1994), 170 (including 1 unknown age and indigenous status) (1995-2000)

Interstate or overseas visitor cases excluded: 158 (including 1 unknown age and area of residence) (1989-1994), 216 (including 3 unknown age and area of residence) (1995-2000)

Adverse event cases included: 53 (1989-1994), 67 (1995-2000)

* Note: Indigenous cases in age groups 75-79, 80-84 and 85+ were combined and reported as 75-79 age group to preserve confidentiality

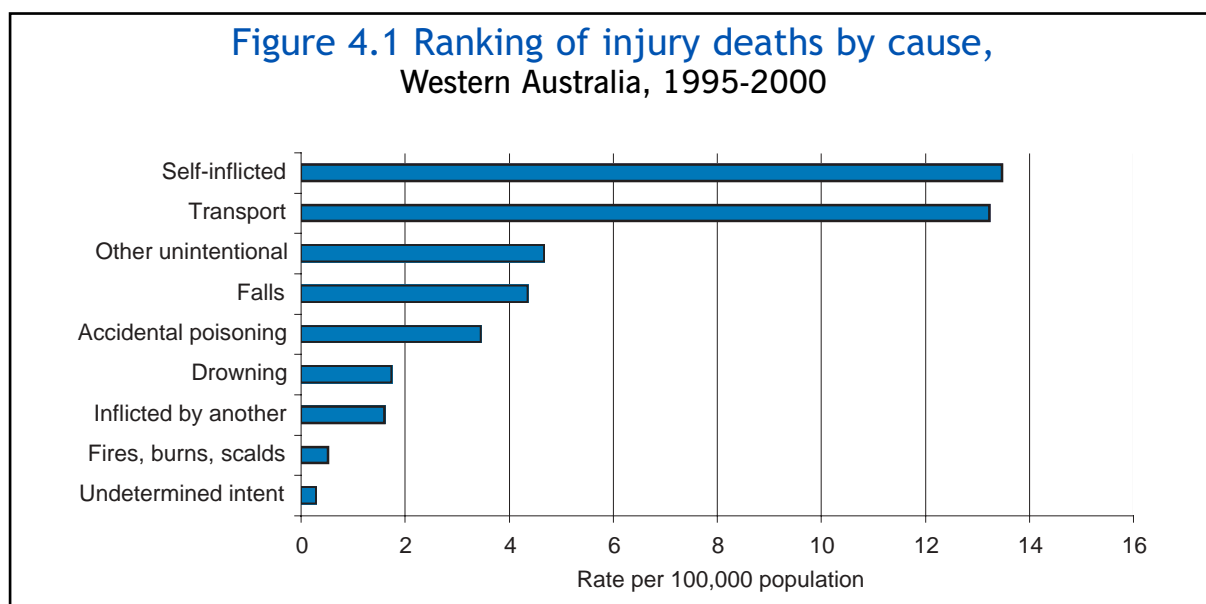
4. INJURY DEATHS - CAUSES

4.1 Ranking of common causes of injury death

In Western Australia, in the current review period, the most common causes of injury death were self-inflicted injuries and transport injuries. These two causes ranked almost equally, the age standardised death rates being 13.5 per 100,000 population for self-inflicted injury and 13.2 per 100,000 population for transport injury (Figure 4.1). In the previous review period, the ranking was more distinct, with transport injuries clearly first, and self-inflicted injuries clearly second (Table 4.1). This change in rank order was due to a significant decrease in the age standardised rate of transport injury death between 1989 and 2000 (by 34%, $p = 0.02$; percentage derived from Table 4.1). There was no significant change in the rate of self-inflicted injury death in this period ($p = 0.3$).

The third and fourth most common causes of injury death were ‘other unintentional injuries’ and falls (Figure 4.1). Falls ranked third in the previous review period, but fourth, after ‘other unintentional injuries’ in the current review period (Table 4.1). This change in rank order was due to a significant increase in the age standardised rate of death due to ‘other unintentional injuries’ between 1989 and 2000 (by 62%, $p = 0.05$; percentage derived from Table 4.1). There was no significant change in the rate of fall injury death for this period ($p = 0.3$).

Figure 4.1 Ranking of injury deaths by cause, Western Australia, 1995-2000

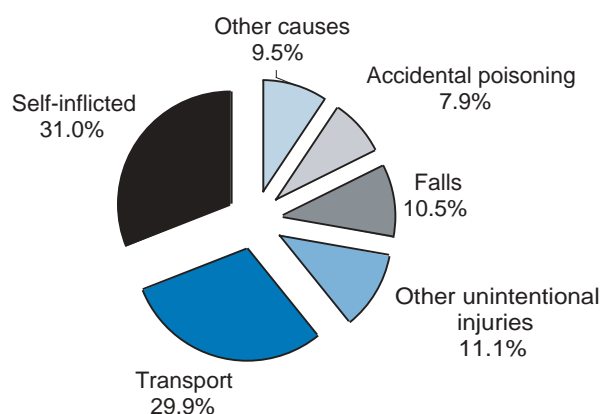


Between 1995 and 2000, self-inflicted injuries accounted for approximately one third of injury deaths, and transport injuries for a further one third (Figure 4.2). Transport injuries accounted for a slightly smaller proportion of all injury deaths in the current review period than in the previous review period (29.9% compared to 34.7% respectively) (Table 4.2).

‘Other unintentional injuries’ and falls each accounted for approximately 11% of injury deaths in the current review period (Figure 4.2). ‘Other unintentional injuries’ accounted for a slightly larger proportion of all injury deaths in the current review period than in the previous review period (11.1% compared to 8.2%) (Table 4.2).

Drowning, accidental poisoning, fires, burns and scalds, and injuries inflicted by another each accounted for less than 10% of injury deaths in both review periods (Table 4.2).

Figure 4.2 Proportion of injury deaths by cause, Western Australia, 1995-2000



4.2 Potential years of life lost due to specific causes of injury death

Injuries resulted in a greater average number of potential years of life lost per death than any other common condition. Between 1995 and 2000, injuries resulted in an average of 36.9 PYLLs per death compared to 12.8 PYLLs per death due to cancer, 10.5 PYLLs per death due to respiratory diseases and 10.3 PYLLs per death due to circulatory diseases (Table 1.3).

Between 1995 and 2000, drowning contributed the greatest average number of potential years of life lost per death (44.8 PYLLs) and falls contributed the lowest (18.9 PYLLs) (Figure 4.3, Table 4.3). High average numbers of potential years of life lost per death also resulted from transport injuries (39.1 PYLLs), injuries inflicted by another (38.1 PYLLs), accidental poisoning (37.9 PYLLs), and fires, burns and scalds (37.4 PYLLs) (Table 4.3).

Figure 4.3 Ranking of potential years of life lost by cause and sex, Western Australia, 1995-2000

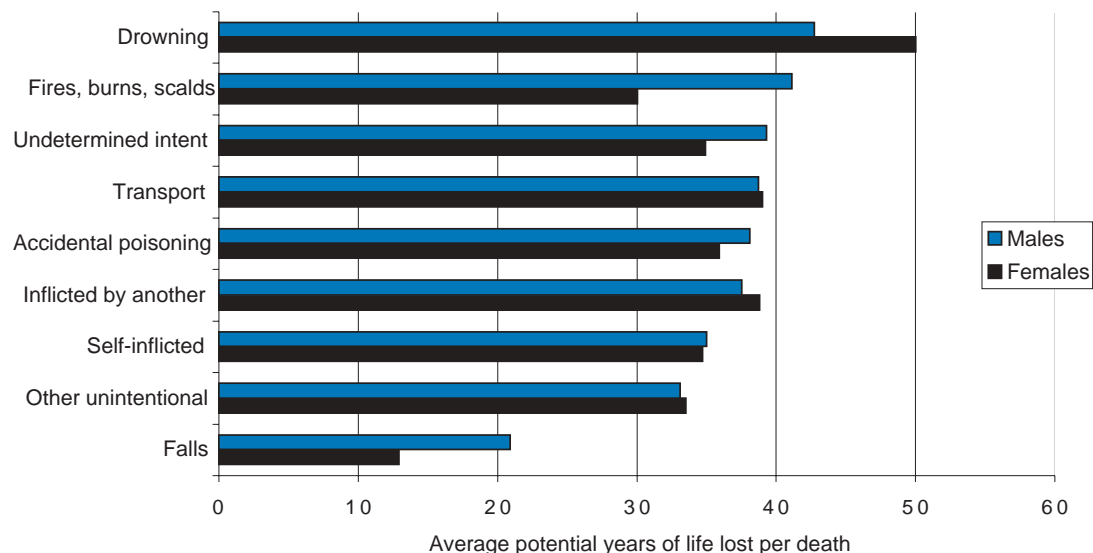


Table 4.1 Rate^a of injury death by cause and year
Western Australia, 1989–2000

Cause	1989-1994										1995-2000									
	1989	1990	1991	1992	1993	1994	Total	1995	1996	1997	1998	1999	2000	Total						
Unintentional							14.8													
Transport	16.9	14.7	13.9	14.2	15.2	14.0	14.8	13.1	16.5	12.3	12.9	13.5	11.2	13.2						
Other unintentional	4.3	3.5	3.6	2.9	3.7	3.2	3.5	3.7	3.5	3.2	3.8	6.3	7.0	4.7						
Falls	5.0	5.7	3.6	4.2	4.0	4.4	4.5	4.8	6.0	5.2	5.4	2.9	2.1	4.3						
Accidental poisoning	N/A	2.9	2.4	N/A	3.3	4.1	2.7	N/A	N/A	2.3	5.2	5.1	4.2	3.4						
Drowning	N/A	N/A	N/A	N/A	N/A	N/A	1.8	N/A	N/A	N/A	N/A	N/A	N/A	1.7						
Fires, burns, scalds	N/A	N/A	N/A	N/A	N/A	N/A	0.5	N/A	N/A	N/A	N/A	N/A	N/A	0.5						
Intentional																				
Self-inflicted	12.0	13.7	12.8	12.8	13.0	12.8	12.8	12.7	12.6	14.0	16.0	12.9	12.6	13.5						
Inflicted by another	N/A	N/A	N/A	N/A	N/A	N/A	2.0	N/A	N/A	N/A	N/A	N/A	N/A	1.6						
Undetermined	N/A	N/A	N/A	N/A	N/A	N/A	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A						

a Age standardised rate per 100,000 population, standardised with 1991 Australian population

N/A: Not applicable, number of cases too small for reliable rates to be calculated

Table 4.2 Number of injury deaths by cause and year
Western Australia, 1989–2000

Cause	1989-1994										1995-2000									
	1989	1990	1991	1992	1993	1994	Total	Percentage ^a	1995	1996	1997	1998	1999	2000	Total	Percentage				
Unintentional							1,450	34.7%												
Transport	267	237	225	234	252	235	1,450	34.7%	223	283	217	234	244	208	1,409	29.9%				
Other unintentional	66	55	56	47	62	55	341	8.2%	64	63	58	70	125	145	525	11.1%				
Falls	67	81	53	65	65	73	404	9.7%	85	108	99	105	56	44	497	10.5%				
Accidental poisoning	17	47	40	36	55	69	264	6.3%	36	31	41	94	94	77	373	7.9%				
Drowning	30	21	36	33	25	30	175	4.2%	34	37	31	21	39	25	187	4.0%				
Fires, burns, scalds	6	10	5	6	7	9	43	1.0%	10	8	17	11	4	5	55	1.2%				
Intentional																				
Self-inflicted	185	218	207	209	217	217	1,253	30.0%	219	222	250	290	241	240	1,462	31.0%				
Inflicted by another	29	28	26	35	38	40	196	4.7%	39	22	29	27	28	29	174	3.7%				
Undetermined	7	13	19	8	1	2	50	1.2%	1	1	2	21	4	2	31	0.7%				
All injury causes	674	710	667	673	722	730	4,176	100%	711	775	744	873	835	775	4,713	100%				

a Percentage: Number of injury deaths for specified cause (eg transport) and specified period (eg 1989-1994) divided by number of injury deaths due to all injury causes for same period
Adverse event cases not included: 53 (1989-1994), 67 (1995-2000)

Table 4.3 Potential years of life lost by cause of injury
 Western Australia, 1989–2000

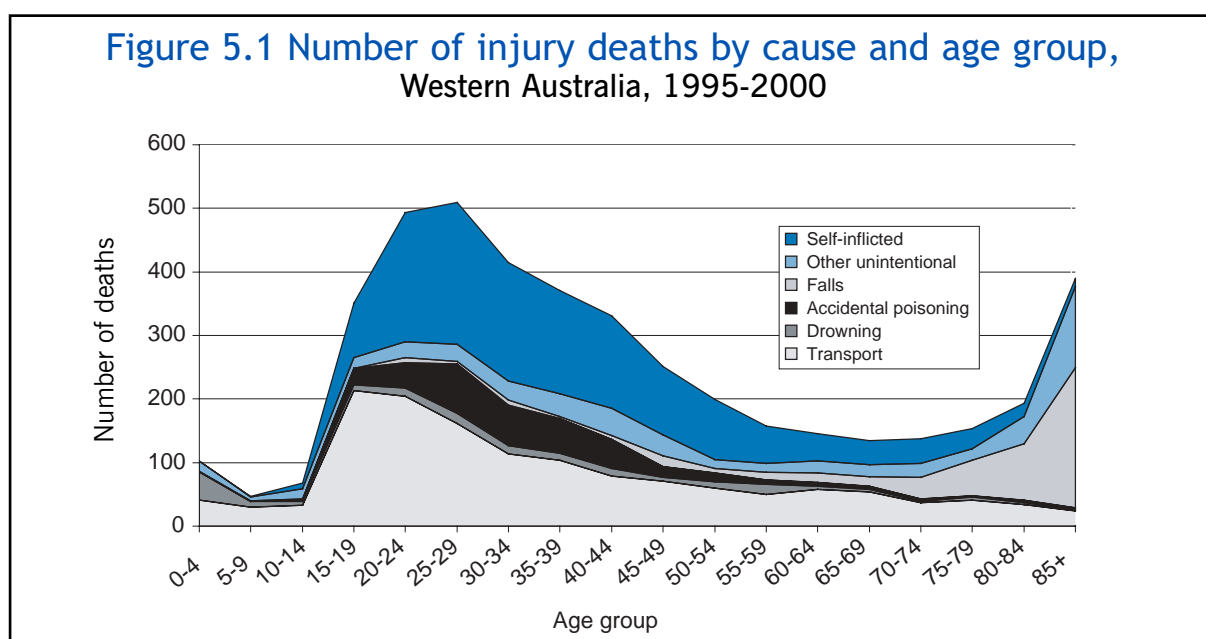
Cause	1989-1994						1995-2000					
	Males	Average	Females	Average	Persons	Average	Males	Average	Females	Average	Persons	Average
Unintentional												
Transport	40,770.8	39.9	14,059.5	39.7	54,830.3	40.2	37,906.6	38.7	12,842.9	39.0	51,151.7	39.1
Other	7,738.4	33.6	2,098.5	38.9	9,836.9	35.1	8,845.6	33.1	2,314.4	33.5	11,275.7	33.6
Falls	1,860.2	21.9	551.4	17.8	2,411.6	21.0	1,983.5	20.9	479.0	12.9	2,490.3	18.9
Accidental poisoning	6,969.6	37.5	2,388.3	32.3	9,357.9	36.3	10,297.1	38.1	3,335.4	35.9	13,750.1	37.9
Drowning	5,782.6	43.2	1,435.1	44.8	7,217.7	44.0	5,765.4	42.7	2,101.7	50.0	7,928.1	44.8
Fires, burns, scalds	566.0	29.8	285.9	35.7	851.9	31.8	1,026.4	41.1	420.5	30.0	1,457.0	37.4
Intentional												
Self-inflicted	33,339.6	33.6	6,517.2	31.2	39,856.8	33.6	39,301.5	35.0	9,494.9	34.7	49,269.0	35.3
Inflicted by another	3,896.2	38.6	3,760.3	43.2	7,656.5	40.8	3,895.3	37.5	2,482.4	38.8	6,402.4	38.1
Undetermined	1,266.6	37.3	431.0	30.8	1,697.6	35.7	747.0	39.3	383.4	34.9	1,136.4	37.9
All injury causes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	36.7	N/A	36.4	N/A	36.9

Source: Health Information Centre, Department of Health

5. INJURY DEATHS - DISTRIBUTION OF CAUSES

5.1 Distribution of causes of injury death by age

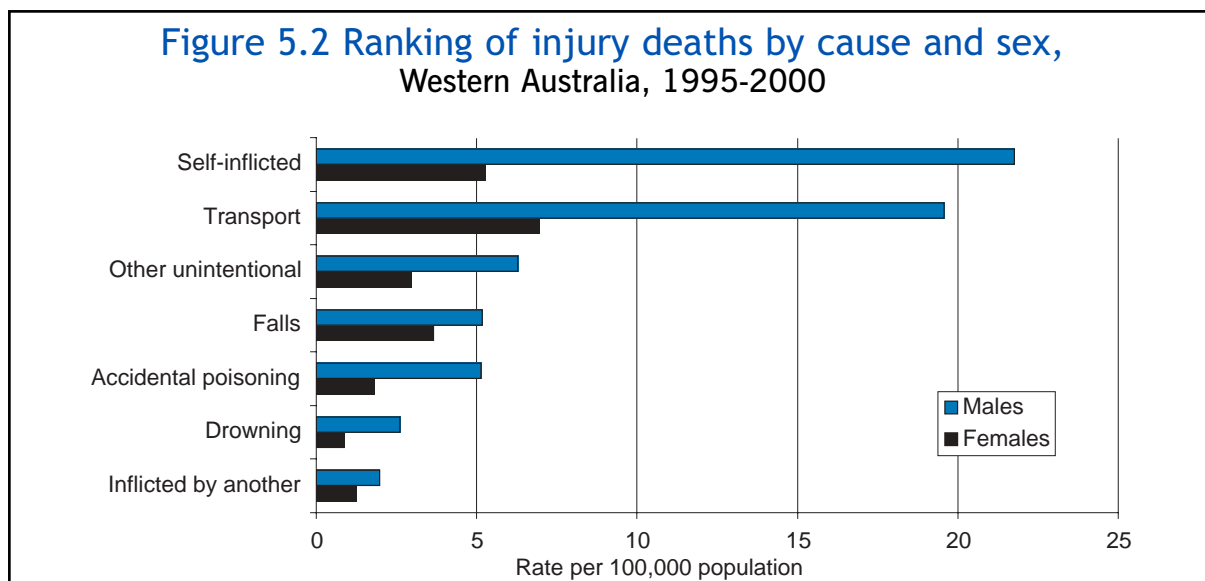
The most common cause of injury death varies according to age group. In Western Australia, between 1995 and 2000, drowning, transport injuries, self-inflicted injuries and falls each ranked first as a cause of injury death at some point in the lifespan (Figure 5.1, Table 5.1). In early childhood, drowning was the most common cause; in childhood, adolescence, early adulthood and again in late adulthood (ie 60 to 69 years) transport injuries were the most common cause; in middle adulthood, self-inflicted injuries were most common; and in old age, falls were most common (Table 5.2, Table 5.3).



5.2 Distribution of causes of injury death by sex

In the current review period, compared to females, males were 4.2 times more likely to die due to self-inflicted injuries, 3.0 times more likely to drown, 2.9 times more likely to die due to accidental poisoning, 2.8 times more likely to die due to transport injuries and approximately twice as likely to die due to ‘other unintentional injuries’ (Figure 5.2, Table 5.4).

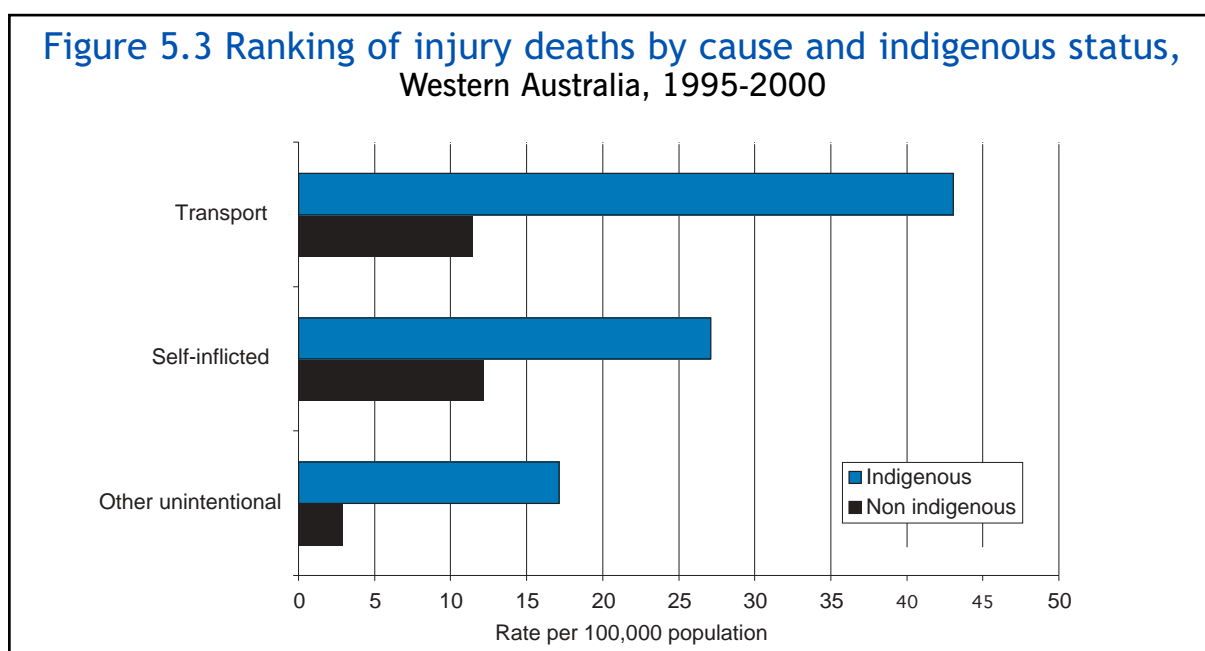
In both review periods, males accounted for more than half of every cause of injury death except falls (Table 5.5) although they comprised only half the Western Australian population (Tables A5.1 and A5.2, Appendix 1).



5.3 Distribution of causes of injury death by indigenous status

In the current review period, compared to non indigenous people, indigenous people were 6.0 times more likely to die due to ‘other unintentional injuries’, 3.8 times more likely to die due to transport injuries and 2.2 times more likely to die due to self-inflicted injuries than non indigenous people (Figure 5.3, Table 5.4). Rate ratios for indigenous people could not be calculated for other causes of injury death because the number of cases for each cause was too small to yield a reliable rate (Table 5.4).

In both review periods, indigenous people were over-represented in most causes of injury death, comprising between 3.5% and 25.1% of cases (Table 5.6) despite comprising only approximately 3% of the population (Tables A5.1 and A5.2, Appendix 1). (Exceptions were self-inflicted injury deaths between 1989 and 1994, and deaths of undetermined intent between 1995 and 2000.)



NOTE: Age standardised rates are only presented for causes with sufficient number of cases to calculate reliable rates

5.4 Distribution of causes of injury death by area of residence

In the current review period, compared to metropolitan residents, rural residents were 2.2 times more likely to die due to transport injuries, 1.7 times more likely to die due to injuries inflicted by another, 1.7 times more likely to die due to drowning, and 1.5 times more likely to die due to ‘other unintentional injuries’ (Figure 5.4, Table 5.4). Rural residents were 20% less likely than metropolitan residents to die due to accidental poisoning.

In both review periods, rural residents were over-represented in most causes of injury death, comprising up to 41.5% of cases (Table 5.7) while comprising slightly less than 25% of the population (Tables A5.1 and A5.2, Appendix 1). (Exceptions were falls and accidental poisoning in both review periods and injuries of undetermined intent in the current review period).

Figure 5.4 Ranking of injury deaths by cause and area of residence, Western Australia, 1995-2000

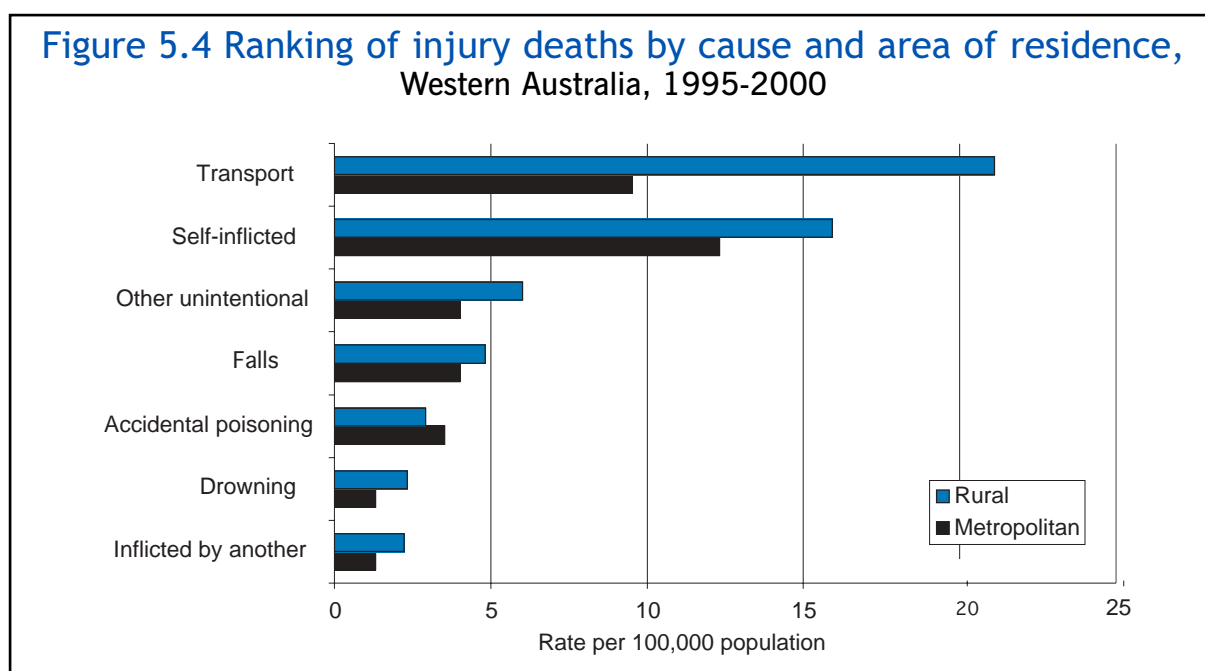


Table 5.1 Number of injury deaths and ranking^a by cause and age group
Western Australia, 1995-2000

Rank	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
1	Drown'g 45	Transpt 30	Transpt 33	Transpt 213	Transpt 204	Self-inflicted 223	Self-inflicted 187	Self-inflicted 163	Self-inflicted 146	Self-inflicted 107	Self-inflicted 94	Self-inflicted 58	Transpt 58	Transpt 54	Self-inflicted 39	Falls 56	Falls 89	Falls 220
2	Transpt 41	Drown'g 9	Other unintent 16	Self-inflicted 86	Self-inflicted 203	Acc poison'g 161	Transpt 114	Transpt 104	Transpt 79	Transpt 71	Transpt 60	Transpt 50	Self-inflicted 43	Self-inflicted 38	Transpt 37	Transpt 41	Other unintent 42	Other unintent 128
3	Other unintent 16	Inflicted by another 8	Self-inflicted 9	Acc poison'g 26	Acc poison'g 40	Acc poison'g 78	Acc poison'g 63	Acc poison'g 54	Acc poison'g 46	Other unintent 33	Acc poison'g 14	Drown'g 16	Other unintent 19	Other unintent 19	Falls 34	Self-inflicted 31	Transpt 34	Transpt 24
4	Fires, burns, scalds 8	Other unintent 6	Inflicted by another 8	Other unintent 17	Other unintent 25	Other unintent 27	Other unintent 30	Other unintent 36	Other unintent 42	Acc poison'g 17	Other unintent 14	Other unintent 14	Falls 15	Falls 15	Other unintent 22	Other unintent 18	Self-inflicted 21	Self-inflicted 13
5	Inflicted by another 4	Fires, burns, scalds 2	Drown'g 6	Drown'g 9	Inflicted by another 18	Inflicted by another 17	Inflicted by another 23	Inflicted by another 27	Inflicted by another 17	Falls 17	Drown'g 10	Falls 12	Acc poison'g 6	Inflicted by another 6	Acc poison'g 4	Drown'g 5	Fires, burns, scalds 6	Fires, burns, scalds 7
6	Undeter-mined 2	Falls 1	Acc poison'g 3	Inflicted by another 9	Drown'g 13	Drown'g 16	Drown'g 13	Drown'g 11	Drown'g 12	Inflicted by another 13	Falls 7	Acc poison'g 7	Drown'g 5	Acc poison'g 5	Fires, burns, scalds 4	Fires, burns, scalds 3	Acc poison'g 4	Acc poison'g 4
7	Falls 1	Self-inflicted 1	Falls 1	Fires, burns, scalds 1	Falls 8	Undeter-mined 5	Falls 8	Undeter-mined 5	Falls 6	Drown'g 6	Inflicted by another 6	Inflicted by another 5	Inflicted by another 5	Drown'g 4	Drown'g 2	Acc poison'g 2	Drown'g 3	Inflicted by another 2
8	Self-inflicted 0	Acc poison'g 0	Fires, burns, scalds 0	Undeter-mined 1	Undeter-mined 4	Falls 4	Undeter-mined 5	Falls 3	Fires, burns, scalds 2	Undeter-mined 2	Fires, burns, scalds 2	Fires, burns, scalds 2	Fires, burns, scalds 2	Fires, burns, scalds 3	Inflicted by another 2	Inflicted by another 1	Inflicted by another 2	Drown'g 1
9	Acc poison'g 0	Undeter-mined 0	Undeter-mined 0	Falls 0	Fires, burns, scalds 2	Fires, burns, scalds 3	Fires, burns, scalds 4	Fires, burns, scalds 3	Undeter-mined 2	Fires, burns, scalds 1	Undeter-mined 1	Undeter-mined 0	Undeter-mined 0	Undeter-mined 2	Undeter-mined 1	Undeter-mined 0	Undeter-mined 0	Undeter-mined 0

^a Ranked by number of cases
Cases with unknown age excluded: 5

Table 5.2 Age specific injury death rates^a by cause
Western Australia, 1989–2000

Cause	Age Group														WA Pop				
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69		70-74	75-79	80-84	85+
1989-1994																			
Unintentional																			
Transport	5.3	N/A	5.5	29.9	33.5	23.0	14.9	10.6	10.0	12.3	11.1	10.5	11.3	13.7	16.4	N/A	N/A	N/A	14.7
Other unintentional	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.4
Falls	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	25.1	51.1	220.6	4.1
Accidental poisoning	N/A	N/A	N/A	N/A	N/A	6.5	6.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.7
Drowning	5.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8
Fires, burns, scalds	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.4
Intentional																			
Self-inflicted	N/A	N/A	N/A	12.9	20.8	17.8	18.6	15.6	17.3	14.3	19.2	17.0	14.3	13.1	N/A	N/A	N/A	N/A	12.7
Inflicted by another	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0
Undetermined	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.5
1995-2000																			
Unintentional																			
Transport	5.4	N/A	N/A	26.8	24.5	18.8	13.5	11.8	9.4	9.1	9.3	10.2	14.4	15.1	12.2	18.5	N/A	N/A	12.9
Other unintentional	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	111.3	4.8
Falls	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	29.7	62.8	4.6
Accidental poisoning	N/A	N/A	N/A	N/A	4.8	9.1	7.4	6.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.4
Drowning	5.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.7
Fires, burns, scalds	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.5
Intentional																			
Self-inflicted	N/A	N/A	N/A	10.8	24.4	26.1	22.1	18.5	17.3	13.7	14.6	11.8	10.7	N/A	N/A	N/A	N/A	N/A	13.4
Inflicted by another	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.6
Undetermined	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.3

^a Age specific rates per 100,000 population

N/A: Not applicable, number of cases too small for reliable rates to be calculated

Table 5.3 Number of injury deaths by cause and age group
 Western Australia, 1989-2000

Cause	1989-1994														WA Pop				
	Age Group																		
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	
Unintentional																			
Transport	40	27	41	231	268	185	124	85	76	75	53	42	42	45	41	34	27	12	1,448
Other unintentional	13	14	10	14	27	30	30	26	20	25	19	13	14	13	16	17	17	21	339
Falls	1	0	1	8	5	6	6	5	6	13	4	5	11	17	28	47	61	180	404
Accidental poisoning	3	0	2	15	24	52	54	35	23	9	11	16	9	4	3	1	2	1	264
Drowning	41	9	6	9	15	11	8	10	18	10	8	5	4	7	5	3	4	1	174
Fires, burns, scalds	1	2	0	0	2	6	2	2	1	1	1	2	0	6	1	5	3	8	43
Intentional																			
Self-inflicted	0	0	2	100	166	143	155	125	131	87	92	68	53	43	35	29	14	10	1,253
Inflicted by another	14	11	2	19	27	17	21	28	10	14	7	7	5	2	4	2	4	1	195
Undetermined	0	0	1	4	8	8	5	4	4	5	3	0	5	0	1	1	0	1	50
All injury causes	113	63	65	400	542	458	405	320	289	239	198	158	143	137	134	139	132	235	4,170
Percentage ^a	2.7%	1.5%	1.6%	9.6%	13.0%	11.0%	9.7%	7.7%	6.9%	5.7%	4.7%	3.8%	3.4%	3.3%	3.2%	3.3%	3.2%	5.6%	1,00%
	1995-2000																		
	Age Group														WA Pop				
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	
Unintentional																			
Transport	41	30	33	213	204	161	114	104	79	71	60	50	58	54	37	41	34	24	1,408
Other unintentional	16	6	16	17	25	27	30	36	42	33	14	14	19	19	22	18	42	128	524
Falls	1	1	1	0	8	4	8	3	6	17	7	12	15	15	34	56	89	220	497
Accidental poisoning	0	0	3	26	40	78	63	54	46	17	14	7	6	5	4	2	4	4	373
Drowning	45	9	6	9	13	16	13	11	12	6	10	16	5	4	2	5	3	1	186
Fires, burns, scalds	8	2	0	1	2	3	4	3	2	1	2	2	2	3	4	3	6	7	55
Intentional																			
Self-inflicted	0	1	9	86	203	223	187	163	146	107	94	58	43	38	39	31	21	13	1,462
Inflicted by another	4	8	8	9	18	17	23	27	17	13	6	5	5	6	2	1	2	2	173
Undetermined	2	0	0	1	4	5	5	5	2	2	1	0	0	2	1	0	0	0	30
All injury causes	117	57	76	362	517	534	447	406	352	267	208	164	153	146	145	157	201	399	4,708
Percentage	2.5%	1.2%	1.6%	7.7%	11.0%	11.3%	9.5%	8.6%	7.5%	5.7%	4.4%	3.5%	3.2%	3.1%	3.1%	3.3%	4.3%	8.5%	100%

a Percentage: Number of deaths due to all injury causes in specified age group (eg 0-4) and specified period (eg 1989-1994) divided by number of deaths due to all injury causes for WA population in same period
 Cases with unknown age excluded: 6 (1989-1994), 5 (1995-2000)
 Adverse event cases not included: 53 (1989-1994), 67 (1995-2000)

**Table 5.4 Rate^a and rate ratio^b for injury deaths by cause, sex, indigenous status and area of residence
Western Australia, 1989-2000**

Cause	Sex		Indigenous status			Area of residence			
	Males	Females	Rate ratio	Indigenous	Non indigenous	Rate ratio	Rural	Metropolitan	Rate ratio
1989-1994									
Unintentional				51.3	13.4	3.8	21.8	11.2	1.9
Transport	21.7	8.0	2.7	N/A	2.8	N/A	5.3	2.8	1.9
Other unintentional	5.4	1.6	3.4	N/A	1.7	N/A	5.3	4.2	1.3
Falls	5.1	3.9	1.3	N/A	2.5	N/A	2.1	2.8	0.8
Accidental poisoning	3.8	1.5	2.5	N/A	1.6	N/A	2.5	1.4	1.8
Drowning	2.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fires, burns, scalds	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Intentional									
Self-inflicted	21.1	4.6	4.6	N/A	12.4	N/A	13.3	12.5	1.1
Inflicted by another	2.1	1.9	1.1	20.9	1.4	14.9	3.0	1.5	2.0
Undetermined	N/A	N/A	N/A	N/A	0.5	N/A	N/A	N/A	N/A
1995-2000									
Unintentional				43.0	11.4	3.8	21.1	9.5	2.2
Transport	19.5	6.9	2.8	17.1	2.8	6.0	6.1	4.0	1.5
Other unintentional	6.3	2.9	2.1	N/A	1.6	N/A	4.8	4.1	1.2
Falls	5.2	3.6	1.4	N/A	3.1	N/A	2.9	3.5	0.8
Accidental poisoning	5.1	1.8	2.9	N/A	1.4	N/A	2.3	1.3	1.7
Drowning	2.6	0.9	3.0	N/A	N/A	N/A	N/A	N/A	N/A
Fires, burns, scalds	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Intentional									
Self-inflicted	21.7	5.2	4.2	27.1	12.1	2.2	15.9	12.3	1.3
Inflicted by another	1.9	1.2	1.6	N/A	1.2	N/A	2.2	1.3	1.7
Undetermined	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

^a Age standardised rate per 100,000 population, standardised with 1991 Australian population

^b Rate ratio: Rate for 'at risk group' (eg males) for specified cause (eg transport) and specified period (eg 1989-1994) divided by rate for comparison group (eg females) for same cause and period
N/A: Not applicable, number of cases too small for reliable rates to be calculated

Table 5.5 Number of injury deaths by cause, sex and year
 Western Australia, 1989-2000

Cause	Males									Females								
	1989	1990	1991	1992	1993	1994	Total	% Male	1989	1990	1991	1992	1993	1994	Total			
1989-1994																		
Unintentional	204	173	171	158	187	170	1,063	73.3%	63	64	54	76	65	65	387			
Transport	52	40	43	35	45	40	255	74.8%	14	15	13	12	17	15	86			
Other unintentional	29	39	24	30	29	33	184	45.5%	38	42	29	35	36	40	220			
Falls	10	38	28	26	43	44	189	71.6%	7	9	12	10	12	25	75			
Accidental poisoning	27	18	26	24	19	24	138	78.9%	3	3	10	9	6	6	37			
Drowning	5	6	2	3	5	7	28	65.1%	1	4	3	3	2	2	15			
Fires, burns, scalds																		
Intentional																		
Self-inflicted	160	174	165	163	177	190	1,029	82.1%	25	44	42	46	40	27	224			
Inflicted by another	19	13	11	17	23	21	104	53.1%	10	15	15	18	15	19	92			
Undetermined	5	12	11	4	1	1	34	68.0%	2	1	8	4	0	1	16			
All injury causes	511	513	481	460	529	530	3,024	72.4%	163	197	186	213	193	200	1,152			
1995-2000																		
Cause	1995	1996	1997	1998	1999	2000	Total	% Male	1995	1996	1997	1998	1999	2000	Total			
Unintentional	161	217	160	171	182	149	1,040	73.8%	62	66	57	63	62	59	369			
Transport	49	40	49	50	65	72	325	61.9%	15	23	9	20	60	73	200			
Other unintentional	41	55	37	49	27	24	233	46.9%	44	53	62	56	29	20	264			
Falls	26	19	29	78	68	57	277	74.3%	10	12	12	16	26	20	96			
Accidental poisoning	27	27	24	16	29	18	141	75.4%	7	10	7	5	10	7	46			
Drowning	4	6	8	8	2	4	32	58.2%	6	2	9	3	2	1	23			
Fires, burns, scalds																		
Intentional																		
Self-inflicted	182	174	199	241	196	186	1,178	80.6%	37	48	51	49	45	54	284			
Inflicted by another	25	15	18	13	18	19	108	62.1%	14	7	11	14	10	10	66			
Undetermined	1	1	1	12	4	1	20	64.5%	0	0	1	9	0	1	11			
All injury causes	516	554	525	638	591	530	3,354	71.2%	195	221	219	235	244	245	1,359			
TOTAL	1,409	1,462	1,409	1,462	1,462	1,462	1,462	1,462	1,409	1,462	1,409	1,462	1,462	1,462	1,462			

a Percentage: Number of injury deaths for males for specified cause (eg transport) and specified period (eg 1989-1994) divided by total number of deaths for males and females combined for same cause and period

Adverse event cases not included: 53 (1989-1994), 67 (1995-2000)

Table 5.6 Number of injury deaths by cause, indigenous status and year
 Western Australia, 1989-2000

Cause	1989-1994										1995-2000																				
	Indigenous					Non indigenous					Indigenous					Non indigenous															
	1989	1990	1991	1992	1993	1994	Total	% Indigenous	1989	1990	1991	1992	1993	1994	Total	1995	1996	1997	1998	1999	2000	Total	% Indigenous	1995	1996	1997	1998	1999	2000	Total	
Unintentional	15	16	18	24	29	20	122	8.5%	247	220	205	210	219	214	1,315	199	258	191	194	208	179	1,229	9.4%	199	258	191	194	208	179	1,356	
Transport	3	8	5	5	6	9	36	10.6%	63	47	51	42	56	46	305	58	56	33	58	111	131	469	8.0%	58	56	33	58	111	131	469	510
Other unintentional	4	0	1	1	4	4	14	3.5%	62	81	52	64	61	69	389	82	103	91	101	55	43	475	3.7%	82	103	91	101	55	43	493	
Falls	1	3	1	0	6	4	15	5.7%	16	44	39	36	49	64	248	31	31	37	83	83	67	332	6.7%	31	31	37	83	67	332	356	
Accidental poisoning	0	2	5	4	3	3	17	9.9%	28	19	30	28	22	27	154	30	34	25	19	28	18	154	12.5%	30	34	25	19	28	18	176	
Drowning	2	2	0	1	0	0	5	11.6%	4	8	5	5	7	9	38	8	7	14	11	2	4	46	14.8%	8	7	14	11	2	4	54	
Fires, burns, scalds																															
Intentional																															
Self-inflicted	7	3	3	4	10	8	35	2.8%	176	215	203	205	207	209	1,215	207	209	233	253	213	203	1,318	6.2%	207	209	233	253	213	203	1,405	
Inflicted by another	9	4	7	8	10	10	48	25.1%	20	24	19	26	26	28	143	33	20	23	21	22	17	136	17.6%	33	20	23	21	22	17	165	
Undetermined	0	1	1	1	0	0	3	6.3%	7	11	18	6	1	2	45	1	1	2	19	3	2	28	0.0%	1	1	2	19	3	2	28	
All injury causes	41	39	41	48	68	58	295	7.1%	623	669	622	622	648	668	3,852	649	719	671	759	725	664	4,187	7.8%	649	719	671	759	725	664	4,543	

a Percentage: Number of injury deaths for indigenous people for specified cause (eg transport) and specified period (eg 1989-1994) divided by total number of deaths for indigenous and non indigenous people combined for same cause and period
 Unknown indigenous status cases excluded: 29 (1989-1994), 170 (1995-2000)
 Adverse event cases not included: 53 (1989-1994), 67 (1995-2000)

Table 5.7 Number of injury deaths by cause, area of residence and year
Western Australia, 1989-2000

Cause	1989-1994										1995-2000												
	Rural					Metropolitan					Rural					Metropolitan							
	1989	1990	1991	1992	1993	1994	Total	% Rural	1989	1990	1991	1992	1993	1994	Total	1989	1990	1991	1992	1993	1994	Total	
Unintentional	86	71	75	90	111	84	517	38.3%	161	150	132	129	128	132	832	1,349							
Transport	22	16	27	20	22	20	127	38.5%	42	37	28	25	38	33	203	330							
Other unintentional	21	12	9	19	15	18	94	23.5%	45	68	44	46	48	55	306	400							
Falls	5	7	6	5	13	13	49	18.8%	12	39	33	31	42	55	212	261							
Accidental poisoning	12	8	12	14	9	9	64	38.6%	16	10	23	18	15	20	102	166							
Drowning	3	3	2	3	3	2	16	37.2%	3	7	3	3	4	7	27	43							
Fires, burns, scalds																							
Intentional																							
Self-inflicted	46	58	45	52	47	56	304	24.6%	138	158	158	153	166	160	933	1,237							
Inflicted by another	12	11	9	9	20	12	73	39.2%	14	16	14	26	15	28	113	186							
Undetermined	1	4	4	2	0	1	12	25.5%	5	7	15	6	1	1	35	47							
All injury causes	208	190	189	214	240	215	1,256	31.3%	436	492	450	437	457	491	2,763	4,019							
1989-1994										1995-2000													
Cause	Rural					Metropolitan					Rural					Metropolitan							
	1995	1996	1997	1998	1999	2000	Total	% Rural	1995	1996	1997	1998	1999	2000	Total	1995	1996	1997	1998	1999	2000	Total	
Unintentional	88	92	84	77	85	86	512	39.6%	116	167	114	140	135	109	781	1,293							
Transport	30	27	21	17	27	33	155	30.3%	31	32	36	51	97	110	357	512							
Other unintentional	21	18	25	28	13	8	113	23.2%	63	87	72	75	41	36	374	487							
Falls	7	4	15	9	20	20	75	20.5%	29	26	25	83	73	55	291	366							
Accidental poisoning	12	15	8	4	12	11	62	36.7%	19	21	17	11	26	13	107	169							
Drowning	1	2	10	4	2	3	22	41.5%	9	6	7	7	2	0	31	53							
Fires, burns, scalds																							
Intentional																							
Self-inflicted	55	69	68	80	65	55	392	27.6%	160	148	180	194	168	180	1,030	1,422							
Inflicted by another	12	7	13	8	8	9	57	34.1%	26	14	15	18	19	18	110	167							
Undetermined	0	0	1	1	1	1	4	14.3%	1	1	1	17	3	1	24	28							
All injury causes	226	234	245	228	233	226	1,392	31.0%	454	502	467	596	564	522	3,105	4,497							

a Percentage: Number of injury deaths for rural residents for specified cause (eg transport) and specified period (eg 1989-1994) divided by total number of deaths for rural and metropolitan residents combined for same cause and period
 Interstate or overseas visitor cases excluded: 158 (1989-1994), 216 (1995-2000)
 Adverse event cases not included: 53 (including 1 unknown area of residence) (1989-1994), 67 (1995-2000)

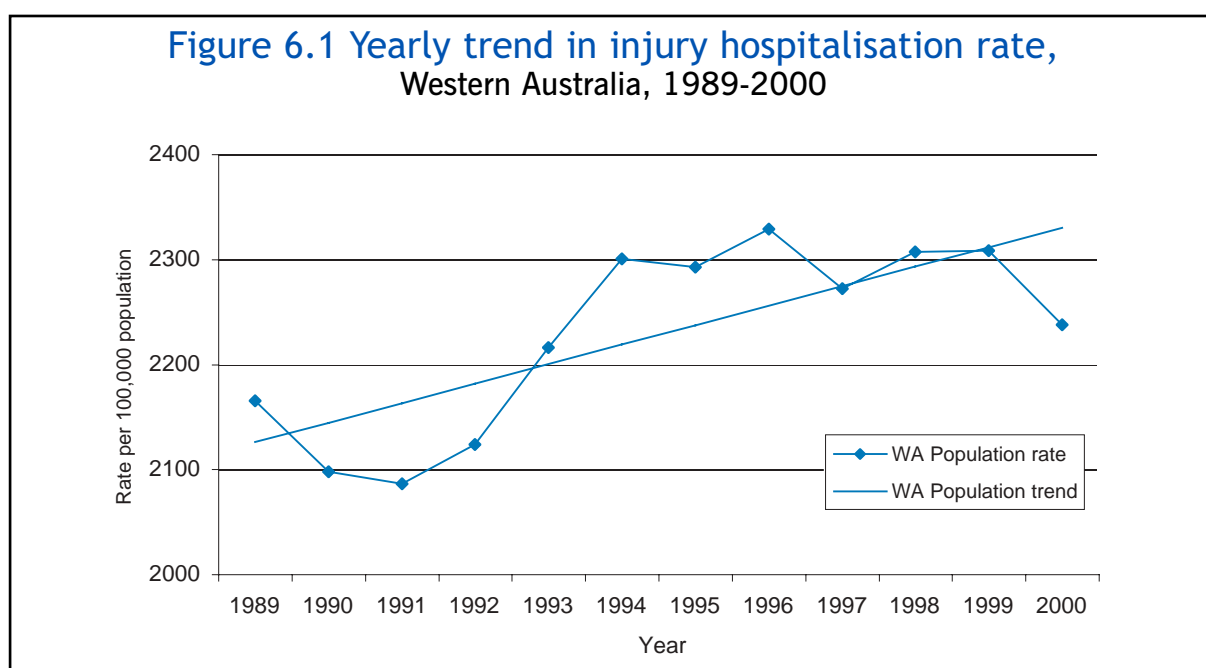
6. INJURY HOSPITALISATIONS - TRENDS AND COMPARATIVE RISK

6.1 Western Australian population

The findings on trends in injury hospitalisation rates, based on age standardised hospitalisation rates, should be regarded as preliminary until the effect of changes in hospital admission recording practices has been investigated.

In Western Australia, the age standardised injury hospitalisation rate was 2283.9 per 100,000 population in the current review period, compared to 2167.3 per 100,000 population in the previous review period (Table 6.1). The rate increased significantly between 1989 and 2000 (by 3%, $p = 0.004$; percentage derived from Table 6.1) (Figure 6.1).

The total number of injury hospitalisations was 246,519 in the current review period compared to 210,879 in the previous review period (Table 6.1). The annual average number of injury hospitalisations was 41,086 per year between 1995 and 2000, compared to 35,146 per year between 1989 and 1994 (averages derived from Table 6.1).

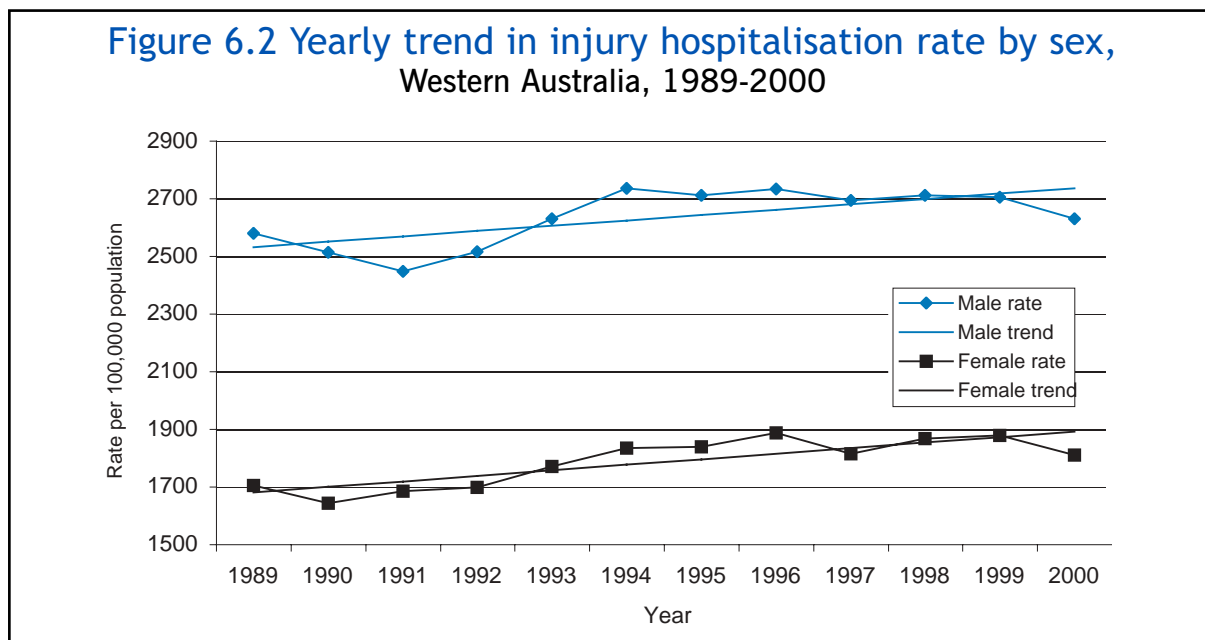


6.2 Males and females

In the current review period, the age standardised injury hospitalisation rate was 2,685.7 per 100,000 population for males, compared to 1,845.8 per 100,000 population for females (Table 6.2). The rate increased significantly for males and females between 1989 and 2000 (by 2%, $p = 0.02$ for males, and by 6%, $p = 0.0009$ for females; percentages derived from Table 6.2) (Figure 6.2).

Compared to females, the risk of injury hospitalisation was 1.5 times higher for males in both the current and previous review periods (Table 6.2). Males accounted for slightly more than half the injury hospitalisations (Table 6.3) while comprising only

half the Western Australian population in the current and previous review periods (Tables A5.1 and A5.2, Appendix 1). For males, the average number of injury hospitalisations was 23,865 per year between 1995 and 2000, compared to 20,884 per year between 1989 and 1994 (averages derived from Table 6.3).

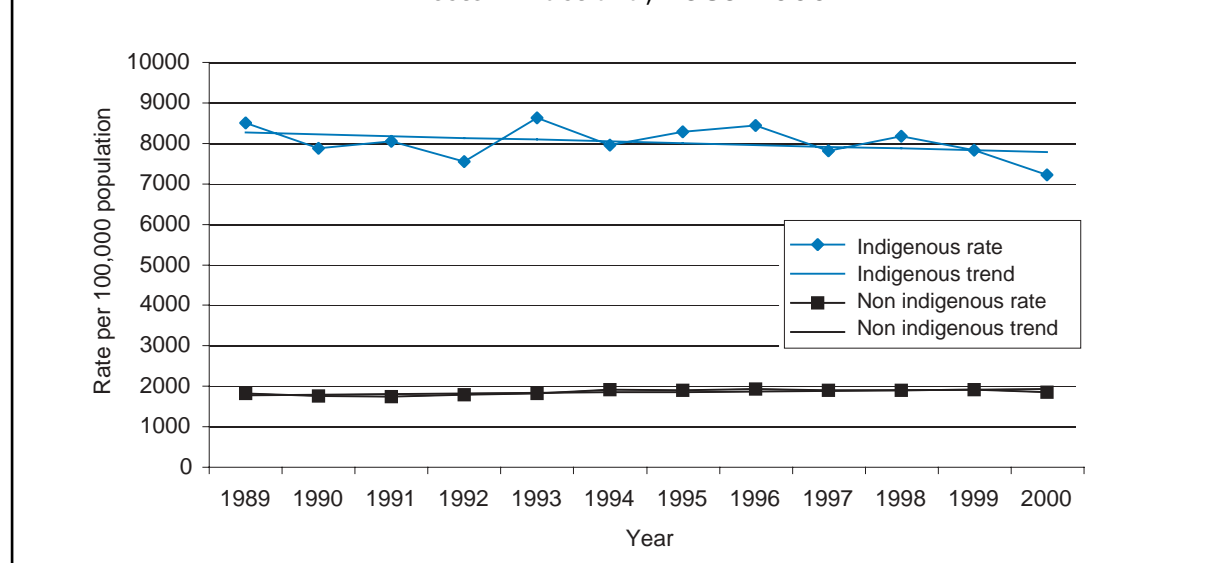


6.3 Indigenous and non indigenous people

In the current review period, the age standardised injury hospitalisation rate for indigenous people was 7,917.8 per 100,000 population, compared to 1,886.8 per 100,000 population for non indigenous people (Table 6.2). The rate did not change significantly for indigenous people between 1989 and 2000 ($p = 0.2$) (Figure 6.3). For non indigenous people, the rate increased significantly in the same period (by 2%, $p = 0.006$; percentage derived from Table 6.2).

Compared to non indigenous people, the risk of injury hospitalisation was 4.2 times higher for indigenous people in the current review period, and 4.5 times higher in the previous review period (Table 6.2). Indigenous people accounted for more than 9% of injury hospitalisations (Table 6.3) while comprising only approximately 3% of the Western Australian population in the current and previous review periods (Tables A5.1 and A5.2, Appendix 1). For indigenous people, the average number of injury hospitalisations was 3,775 per year between 1995 and 2000, compared to 3,410 per year between 1989 and 1994 (averages derived from Table 6.3).

Figure 6.3 Yearly trend in injury hospitalisation rate by indigenous status, Western Australia, 1989-2000



6.4 Rural and metropolitan residents

In the current review period, the age standardised injury hospitalisation rate for rural residents was 3,282.2 per 100,000 population, compared to 1,926.7 per 100,000 population for metropolitan residents (Table 6.2). The rate did not change significantly for rural residents between 1989 and 2000 ($p = 0.8$) (Figure 6.4). For metropolitan residents, the rate increased significantly in this period (by 13%, $p = 0.0001$; percentage derived from Table 6.2).

Compared to metropolitan residents, the risk of injury hospitalisation was 1.7 times higher for rural residents in the current review period and 1.8 times higher in the previous review period (Table 6.2). Rural residents accounted for approximately one third of injury hospitalisations (Table 6.3) while comprising less than one quarter of the Western Australian population in both review periods (Tables A5.1 and A5.2, Appendix 1). For rural residents, the average number of injury hospitalisations was 13,584 per year in the current review period, compared to 12,655 per year in the previous review period (averages derived from Table 6.3).

Figure 6.4 Yearly trend in injury hospitalisation rate by area of residence, Western Australia, 1989-2000

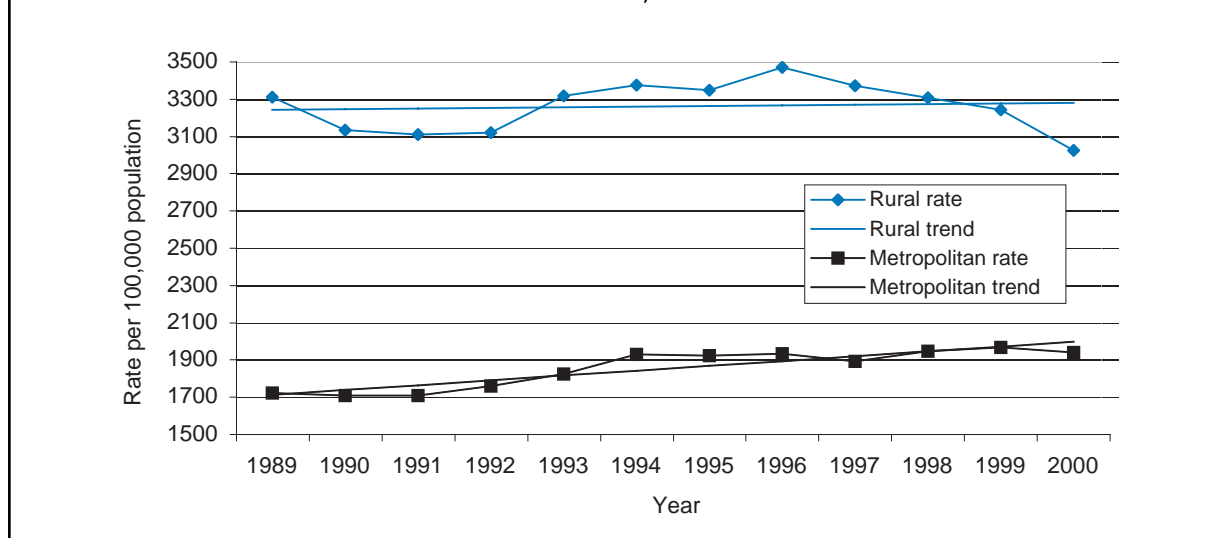


Table 6.1 Rate^a of injury hospitalisation by year
Western Australia, 1989-2000

Year	Rate	Number
1989-1994		
1989	2,165.2	33,850
1990	2,097.7	33,421
1991	2,086.4	33,671
1992	2,123.2	34,688
1993	2,215.2	36,632
1994	2,300.1	38,617
1989-1994	2,167.3	210,879
1995-2000		
1995	2,292.3	39,282
1996	2,324.2	40,621
1997	2,260.2	40,257
1998	2,292.7	41,654
1999	2,300.2	42,609
2000	2,236.1	42,096
1995-2000	2,283.9	246,519

^a Age standardised rate per 100,000 population, standardised with 1991 Australian population
Adverse event cases included: 35,820 (1989-1994), 48,984 (1995-2000)

**Table 6.2 Injury hospitalisation rate^a and rate ratio^b by year, sex, indigenous status and area of residence
Western Australia, 1989-2000**

Year	Sex		Indigenous status			Area of residence			
	Males	Females	Rate ratio	Indigenous	Non indigenous	Rate ratio	Rural	Metropolitan	Rate ratio
1989-1994									
1989	2,578.4	1,703.8	1.5	8,497.4	1,811.5	4.7	3,310.9	1,719.5	1.9
1990	2,512.4	1,643.7	1.5	7,871.0	1,753.1	4.5	3,132.5	1,706.6	1.8
1991	2,446.6	1,685.4	1.5	8,036.2	1,735.1	4.6	3,108.5	1,708.0	1.8
1992	2,514.4	1,696.9	1.5	7,545.2	1,776.2	4.2	3,119.4	1,759.6	1.8
1993	2,628.2	1,769.2	1.5	8,615.5	1,820.2	4.7	3,315.9	1,823.2	1.8
1994	2,735.5	1,833.6	1.5	7,949.4	1,909.2	4.2	3,374.7	1,927.2	1.8
1989-1994	2,573.5	1,724.3	1.5	8,085.4	1,803.0	4.5	3,230.1	1,777.4	1.8
1995-2000									
1995	2,710.0	1,839.1	1.5	8,272.8	1,889.3	4.4	3,348.3	1,923.1	1.7
1996	2,725.1	1,884.6	1.4	8,420.8	1,918.8	4.4	3,463.0	1,929.2	1.8
1997	2,676.3	1,807.0	1.5	7,797.6	1,876.1	4.2	3,357.3	1,880.3	1.8
1998	2,689.0	1,860.7	1.4	8,156.4	1,884.9	4.3	3,293.8	1,930.1	1.7
1999	2,692.8	1,874.6	1.4	7,816.6	1,902.0	4.1	3,232.7	1,957.2	1.7
2000	2,627.4	1,808.0	1.5	7,181.3	1,852.0	3.9	3,019.9	1,938.5	1.6
1995-2000	2,685.7	1,845.8	1.5	7,917.8	1,886.8	4.2	3,282.2	1,926.7	1.7

a Age standardised rate per 100,000 population, standardised with 1991 Australian population

b Rate ratio: Age standardised rate for 'at risk group' (eg males) for specified year (eg 1989) divided by age standardised rate for comparison group (eg females) for same year

**Table 6.3 Number of injury hospitalisation by year, sex, indigenous status and area of residence
Western Australia, 1989-2000**

Year	Sex			Indigenous status			Area of residence					
	Males	Females	Total	% ^a Male	Indigenous	Non indigenous	Total	% Indigenous	Rural	Metropolitan	Total	% Rural
1989-1994												
1989	20,422	13,428	33,850	60.3%	3,434	30,416	33,850	10.1%	12,947	20,185	33,132	39.1%
1990	20,144	13,277	33,421	60.3%	3,237	30,184	33,421	9.7%	12,261	20,510	32,771	37.4%
1991	19,830	13,841	33,671	58.9%	3,340	30,331	33,671	9.9%	12,214	20,839	33,053	37.0%
1992	20,518	14,170	34,688	59.2%	3,184	31,504	34,688	9.2%	12,264	21,841	34,105	36.0%
1993	21,598	15,034	36,632	59.0%	3,670	32,962	36,632	10.0%	12,981	23,027	36,008	36.1%
1994	22,792	15,825	38,617	59.0%	3,597	35,020	38,617	9.3%	13,265	24,797	38,062	34.9%
1989-1994	125,304	85,575	210,879	59.4%	20,462	190,417	210,879	9.7%	75,932	131,199	207,131	36.7%
1995-2000												
1995	23,012	16,270	39,282	58.6%	3,702	35,580	39,282	9.4%	13,265	25,371	38,636	34.3%
1996	23,586	17,035	40,621	58.1%	3,858	36,763	40,621	9.5%	13,932	25,988	39,920	34.9%
1997	23,584	16,673	40,257	58.6%	3,668	36,589	40,257	9.1%	13,729	25,821	39,550	34.7%
1998	24,118	17,536	41,654	57.9%	3,957	37,697	41,654	9.5%	13,792	27,019	40,811	33.8%
1999	24,575	18,034	42,609	57.7%	3,838	38,771	42,609	9.0%	13,774	27,979	41,753	33.0%
2000	24,319	17,777	42,096	57.8%	3,630	38,466	42,096	8.6%	13,014	28,205	41,219	31.6%
1995-2000	143,194	103,325	246,519	58.1%	22,653	223,866	246,519	9.2%	81,506	160,383	241,889	33.7%

^a Percentage: Number of injury hospitalisations for specified 'at risk group' (eg male) for specified year (eg 1989) divided by total number of injury hospitalisations for combined group (eg males and females) for same year

Interstate or overseas visitor cases excluded: 3748 (1989-1994), 4630 (1995-2000)

Adverse event cases included: 35,820 (1989-1994), 48,984 (1995-2000)

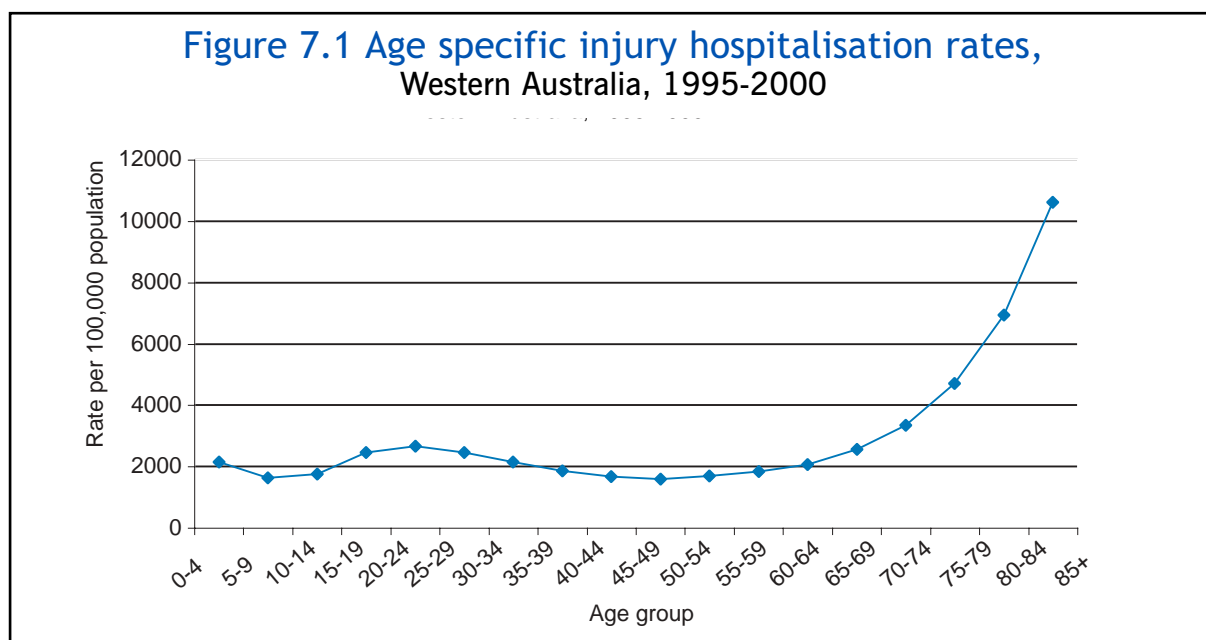
7. INJURY HOSPITALISATIONS - DISTRIBUTION BY AGE

7.1 Distribution of injury hospitalisations by age

The findings on age specific injury hospitalisation rates should be regarded as preliminary until the effect of changes in hospital admission recording practices has been investigated.

In Western Australia, in the current and previous review periods, age specific injury hospitalisation rates rose in late adolescence and early adulthood, declined during middle age and then rose steeply in old age (Figure 7.1, Table 7.1). Between 1995 and 2000, age specific injury hospitalisation rates were approximately twice, three times and four times higher in the age groups between 75 and 79 years, 80 and 84 years, and 85 years and older, respectively, than for the Western Australian population (Table 7.1).

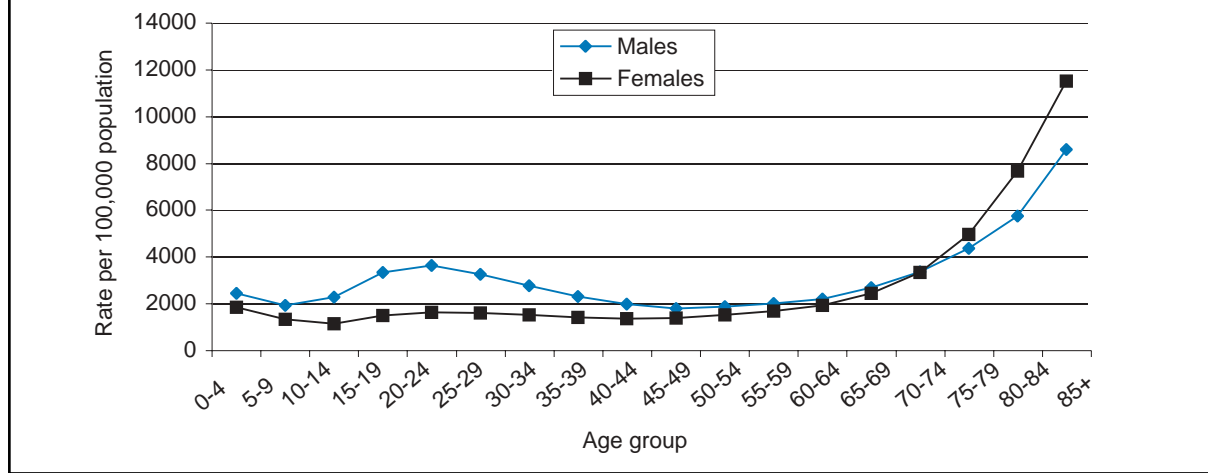
Trends in age specific injury hospitalisation rates were tested for the age groups 20 to 24 years and 70 years and older. The age specific rate of injury hospitalisation did not change significantly for the 70 years and older age group between 1989 and 2000 ($p = 0.12$). However, the rate decreased significantly in the 20 to 24 year age group during this period (by 6%, $p = 0.01$, percentage derived from Table 7.1).



7.2 Distribution of injury hospitalisations by age and sex

In the current review period, for males, age specific injury hospitalisation rates in the age groups between 10 and 29 years were twice as high as for females in the same age groups (Table 7.2, Figure 7.2). For females, age specific injury hospitalisation rates in the 80 years and older age groups were slightly higher than for males in the same age groups.

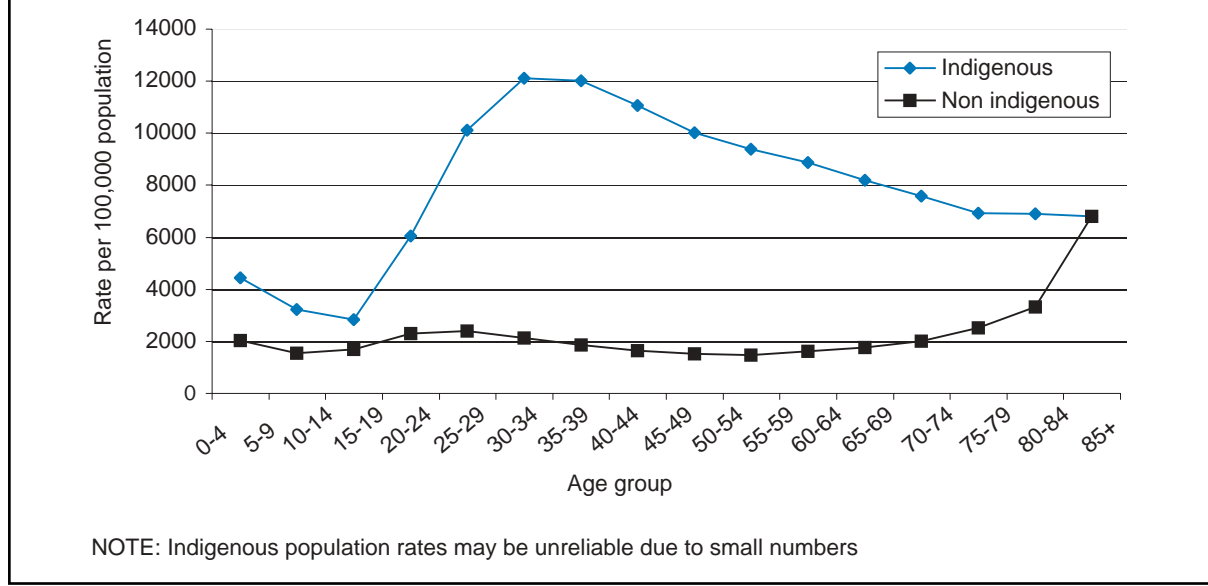
Figure 7.2 Age specific injury hospitalisation rates by sex, Western Australia, 1995-2000



7.3 Distribution of injury hospitalisations by age and indigenous status

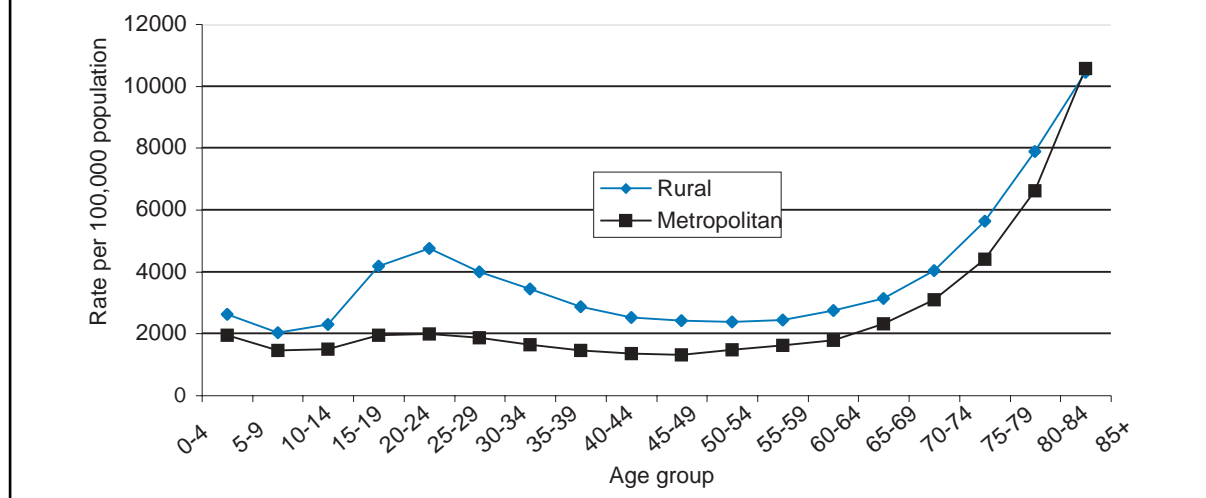
In the current review period, age specific injury hospitalisation rates were more than six times higher for indigenous people in the age groups between 35 and 49 years than for non indigenous people in the same age groups (Figure 7.3, Table 7.2).

Figure 7.3 Age specific injury hospitalisation rates by indigenous status, Western Australia, 1995-2000



7.4 Distribution of injury hospitalisations by age and area of residence

In the current review period, age specific injury hospitalisation rates were more than twice as high for rural residents in the age groups between 15 and 34 years as for metropolitan residents in the same age groups (Figure 7.4, Table 7.2).

Figure 7.4 Age specific injury hospitalisation rates by area of residence, Western Australia, 1995-2000

Table 7.1 Age specific injury hospitalisation rates Western Australia, 1989-2000

Age group	1989–1994			1995–2000		
	Rate ^a	Number	Percentage ^b	Rate	Number	Percentage
0-4	1,926.8	14,607	6.9%	2,154.4	16,389	6.6%
5-9	1,557.7	11,976	5.7%	1,628.3	12,984	5.3%
10-14	1,761.8	13,158	6.2%	1,724.6	13,992	5.7%
15-19	2,645.7	20,446	9.7%	2,441.7	19,390	7.9%
20-24	2,810.1	22,464	10.7%	2,650.6	22,034	8.9%
25-29	2,364.0	18,986	9.0%	2,443.8	20,892	8.5%
30-34	1,882.3	15,672	7.4%	2,147.7	18,167	7.4%
35-39	1,634.3	13,091	6.2%	1,852.2	16,302	6.6%
40-44	1,482.7	11,216	5.3%	1,664.2	14,032	5.7%
45-49	1,474.2	8,983	4.3%	1,583.6	12,369	5.0%
50-54	1,597.7	7,655	3.6%	1,700.2	10,913	4.4%
55-59	1,771.4	7,087	3.4%	1,843.1	9,062	3.7%
60-64	1,973.6	7,327	3.5%	2,059.3	8,269	3.4%
65-69	2,341.2	7,709	3.7%	2,562.2	9,146	3.7%
70-74	3,101.3	7,753	3.7%	3,345.1	10,150	4.1%
75-79	4,287.9	8,018	3.8%	4,705.2	10,413	4.2%
80-84	5,943.6	7,100	3.4%	6,929.4	9,814	4.0%
85+	9,350.3	7,631	3.6%	10,608.0	12,201	4.9%
WA popn	2,137.6	210,879	100%	2,274.0	246,519	100%

a Age specific rates per 100,000 population

b Percentage: Number of injury hospitalisations for specified age group (eg 0-4) and specified period (eg 1989-1994) divided by number of injury hospitalisations for WA population in same period

Adverse event cases included: 35,820 (1989-1994), 48,984 (1995-2000)

**Table 7.2 Age specific injury hospitalisation rates^a by age group, sex, indigenous status and area of residence
Western Australia, 1989-2000**

1989-1994 Age group	Sex		Indigenous status		Area of residence	
	Males	Females	Indigenous	Non indigenous	Rural	Metropolitan
0-4	2,180.5	1,644.2	4,523.4	1,771.5	2,823.0	1,544.7
5-9	1,769.1	1,220.3	3,032.2	1,414.6	2,046.8	1,261.1
10-14	2,063.6	1,155.1	2,854.7	1,560.1	2,409.3	1,324.4
15-19	3,430.9	1,669.9	7,188.8	2,383.2	4,707.6	1,963.6
20-24	3,755.2	1,590.7	10,702.3	2,424.0	5,288.8	1,934.5
25-29	2,983.8	1,426.1	10,280.8	1,955.3	3,801.6	1,645.6
30-34	2,441.1	1,256.1	9,424.0	1,626.4	3,103.7	1,371.1
35-39	1,861.7	1,109.7	8,177.7	1,322.6	2,347.3	1,157.5
40-44	1,624.8	1,034.2	7,622.1	1,206.0	2,096.0	1,061.0
45-49	1,355.0	937.2	6,777.3	1,062.5	1,885.3	915.3
50-54	1,344.7	1,028.7	7,258.8	1,111.2	1,936.7	958.4
55-59	1,599.4	1,274.4	7,216.0	1,366.1	2,112.8	1,203.3
60-64	2,032.5	1,614.3	7,526.2	1,755.0	2,448.1	1,587.3
65-69	2,267.4	2,055.0	5,429.4	2,124.4	2,699.1	1,941.4
70-74	2,389.6	2,704.1	6,170.6	2,529.0	3,067.5	2,368.1
75-79	3,135.9	4,000.4	7,853.2	4,743.6	4,430.3	3,384.4
80-84	3,835.4	5,737.1	*	*	5,501.5	4,836.7
85+	5,223.0	7,280.3	*	*	7,132.9	6,468.6
WA popn	2,524.2	1,746.1	7,464.6	1,985.4	3,125.7	1,764.5
1995–2000						
0-4	2,443.5	1,849.2	4,428.5	2,025.1	2,622.7	1,946.5
5-9	1,922.5	1,334.0	3,229.6	1,545.1	2,028.1	1,456.5
10-14	2,312.0	1,155.9	2,852.1	1,694.5	2,324.5	1,525.3
15-19	3,367.9	1,497.8	6,069.0	2,308.9	4,195.6	1,954.8
20-24	3,638.8	1,628.8	10,130.2	2,401.2	4,755.2	2,001.3
25-29	3,267.8	1,605.2	12,106.0	2,135.4	4,015.7	1,865.3
30-34	2,777.7	1,521.7	12,033.4	1,858.7	3,456.3	1,644.2
35-39	2,304.0	1,405.7	11,089.6	1,629.5	2,868.1	1,467.8
40-44	1,976.3	1,356.0	10,022.0	1,502.0	2,525.3	1,358.5
45-49	1,778.1	1,386.0	9,386.5	1,464.3	2,415.0	1,312.8
50-54	1,880.4	1,509.5	8,858.8	1,605.9	2,383.1	1,471.3
55-59	2,010.5	1,666.5	8,192.8	1,760.5	2,446.1	1,616.6
60-64	2,191.2	1,926.4	7,567.3	1,992.3	2,754.2	1,786.6
65-69	2,693.4	2,435.3	6,917.3	2,515.5	3,136.6	2,321.9
70-74	3,349.1	3,344.0	6,941.9	3,320.1	4,027.7	3,095.0
75-79	4,372.1	4,960.5	6,790.1	6,785.3	5,634.6	4,400.5
80-84	5,740.1	7,659.4	*	*	7,895.9	6,614.0
85+	8,596.3	11,520.8	*	*	10,441.4	10,566.9
WA popn	2,627.4	1,916.1	7,262.8	2,126.4	3,181.4	1,937.6

^a Age specific rate per 100,000 population

* Note: Rates not calculated for indigenous and non indigenous people in age groups 80-84 and 85+ because population data was not available

Table 7.3 Number of injury hospitalisations by age group, sex, indigenous status and area of residence Western Australia, 1989-2000						
1989-1994	Sex		Indigenous status		Area of residence	
Age group	Males	Females	Indigenous	Non indigenous	Rural	Metropolitan
0-4	8,533	6,074	1,858	12,749	6,005	8,465
5-9	7,240	4,736	1,306	10,670	4,589	7,228
10-14	8,600	4,558	1,104	12,054	5,061	7,963
15-19	14,001	6,445	2,279	18,167	7,851	12,317
20-24	16,033	6,431	2,993	19,471	9,208	12,712
25-29	13,016	5,970	2,805	16,181	7,898	10,648
30-34	10,398	5,274	2,315	13,357	6,725	8,626
35-39	8,229	4,862	1,730	11,361	5,224	7,612
40-44	6,869	4,347	1,245	9,971	4,179	6,830
45-49	5,396	3,587	813	8,170	3,225	5,582
50-54	4,478	3,177	617	7,038	2,681	4,825
55-59	4,046	3,041	458	6,629	2,327	4,590
60-64	4,110	3,217	366	6,961	2,167	4,968
65-69	3,997	3,712	208	7,501	2,030	5,469
70-74	3,426	4,327	136	7,617	1,805	5,791
75-79	2,996	5,022	229	22,520	1,820	6,092
80-84	2,062	5,038	*	*	1,505	5,525
85+	1,874	5,757	*	*	1,632	5,956
WA popn	125,304	85,575	20,462	190,417	75,932	131,199
1995–2000						
0-4	9,559	6,830	1,818	14,571	5,577	10,665
5-9	7,832	5,152	1,389	11,595	4,535	8,299
10-14	9,482	4,510	1,095	12,897	4,839	9,013
15-19	13,627	5,763	1,917	17,473	6,973	12,152
20-24	15,461	6,573	2,827	19,207	8,256	13,089
25-29	14,196	6,696	3,300	17,592	8,316	12,017
30-34	11,797	6,370	2,951	15,216	7,468	10,312
35-39	10,156	6,146	2,341	13,961	6,373	9,622
40-44	8,339	5,693	1,634	12,398	5,027	8,730
45-49	7,069	5,300	1,125	11,244	4,125	7,996
50-54	6,255	4,658	753	10,160	3,295	7,400
55-59	5,085	3,977	520	8,542	2,693	6,167
60-64	4,430	3,839	368	7,901	2,438	5,591
65-69	4,747	4,399	265	8,881	2,359	6,540
70-74	4,801	5,349	152	9,998	2,369	7,567
75-79	4,183	6,230	198	32,230	2,315	7,929
80-84	3,089	6,725	*	*	2,159	7,558
85+	3,086	9,115	*	*	2,389	9,736
WA popn	143,194	103,325	22,653	223,866	81,506	160,383

* Note: Indigenous cases in age groups 75-79, 80-84 and 85+ were combined and reported as 75-79 age group to preserve confidentiality

Interstate or overseas visitor cases excluded: 3,748 (1989-1994), 4,630(1995-2000)

Adverse event cases included: 35,820 (1989-1994), 48,984 (1995-2000)

8. INJURY HOSPITALISATIONS - CAUSES

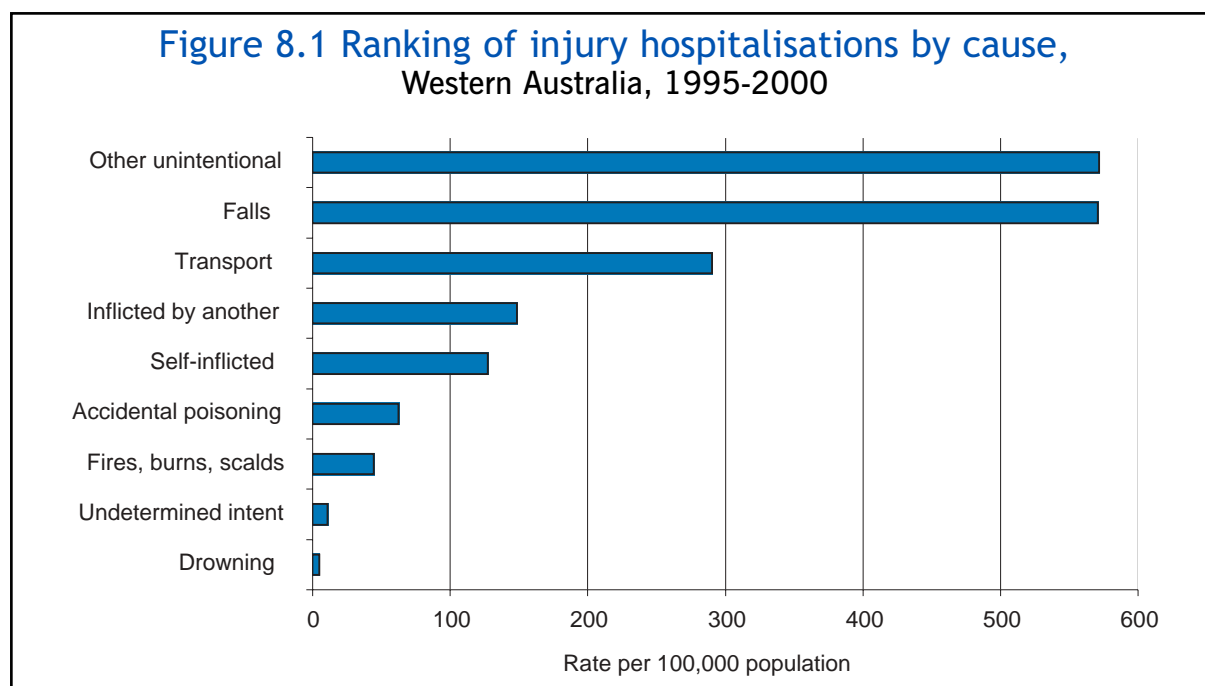
8.1 Ranking of common causes of injury hospitalisation

The findings on ranking of injury hospitalisation causes, based on age standardised hospitalisation rates, should be regarded as preliminary until the effect of changes in hospital admission recording practices has been investigated.

In Western Australia, between 1995 and 2000, the most common causes of injury hospitalisation were 'other unintentional injuries' and falls (Figure 8.1). These two causes ranked almost equally in the current review period, the age standardised hospitalisation rates being 571.3 per 100,000 population for 'other unintentional injuries' and 570.5 per 100,000 population for falls. In the previous review period, 'other unintentional injuries' ranked first by considerably more (Table 8.1). This change in the magnitude of difference between the two causes resulted from a significant decrease in the 'other unintentional injuries' hospitalisation rate (by 17%, $p = 0.03$) and a significant increase in the rate of fall hospitalisation (by 3%, $p = 0.01$; percentages derived from Table 8.1) between 1989 and 2000.

The third, fourth and fifth most common causes of injury hospitalisation, in the current review period, were transport injuries, injuries inflicted by another, and self-inflicted injuries (Figure 8.1). Self-inflicted injuries ranked fourth in the previous review period, but fifth in the current review period (Table 8.1). The change in rank order of self-inflicted injuries and injuries inflicted by another was due to a significant increase in the age standardised rate of injuries inflicted by another between 1989 and 2000 (by 43%, $p = 0.001$; percentage derived from Table 8.1). No significant change occurred in the self-inflicted injury hospitalisation rate ($p = 0.5$).

Figure 8.1 Ranking of injury hospitalisations by cause, Western Australia, 1995-2000



Between 1995 and 2000, falls accounted for approximately one third of injury hospitalisations, and 'other unintentional injuries' for a further one third (Figure 8.2). Transport injuries, injuries inflicted by another, and self-inflicted injuries accounted for 15.7%, 8% and 7% of injury hospitalisations respectively (Table 8.2).

Figure 8.2 Proportion of injury hospitalisations by cause, Western Australia, 1995-2000

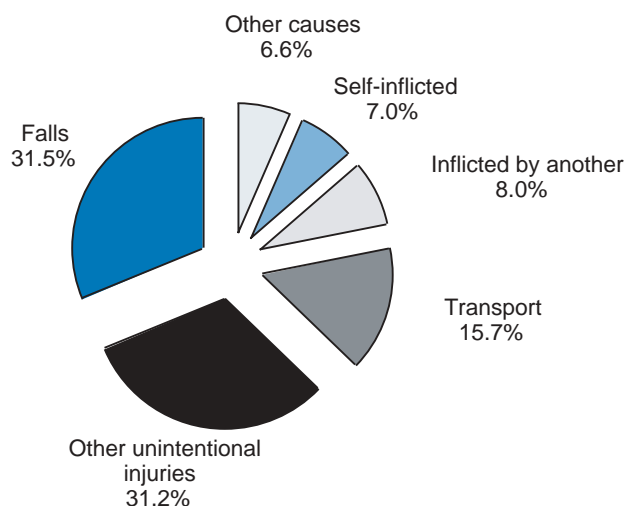


Table 8.1 Rate^a of injury hospitalisation by cause and year
 Western Australia, 1989–2000

Cause	1989-1994										1995-2000									
	1989	1990	1991	1992	1993	1994	1989-1994	1995	1996	1997	1998	1999	2000	1995-2000						
Unintentional	295.0	267.2	274.6	269.5	295.4	301.6	284.0	296.0	298.8	288.8	297.3	286.7	273.4	290.0						
Transport	722.0	643.0	616.1	585.2	560.0	580.1	616.7	553.3	574.5	563.4	547.2	587.3	599.1	571.3						
Other unintentional	543.1	549.0	523.5	532.3	558.7	550.6	543.4	564.3	572.5	575.9	588.3	562.8	559.1	570.5						
Falls	41.6	42.1	39.5	40.2	36.8	37.9	39.7	46.8	59.0	70.3	64.5	67.2	65.4	62.4						
Accidental poisoning	3.8	4.1	4.7	3.9	5.5	10.3	5.4	5.0	4.6	4.4	3.2	5.0	4.8	4.5						
Drowning	55.0	49.3	47.7	41.5	41.8	50.0	47.5	43.8	47.7	47.8	43.6	42.4	41.0	44.4						
Fires, burns, scalds																				
Intentional																				
Self-inflicted	123.1	119.8	120.0	126.6	127.4	132.4	125.0	133.5	134.9	117.2	128.3	124.3	125.8	127.3						
Inflicted by another	96.9	99.7	106.7	116.1	138.5	145.9	117.6	148.8	154.4	146.2	158.5	144.3	138.7	148.4						
Undetermined	5.6	8.7	5.9	4.0	3.1	4.5	5.3	7.4	8.0	6.8	8.4	13.5	19.6	10.7						

^a Age standardised rate per 100,000 population, standardised with 1991 Australian population

Table 8.2 Number of injury hospitalisations by cause and year
 Western Australia, 1989–2000

Cause	1989-1994										1995-2000									
	1989	1990	1991	1992	1993	1994	Total	Percentage ^a	1989	1990	1991	1992	1993	1994	Total	Percentage				
Unintentional	4,735	4,356	4,522	4,474	4,942	5,098	28,127	16.1%	5,088	5,209	5,109	5,356	5,239	5,057	31,058	15.7%				
Transport	11,519	10,468	10,134	9,725	9,408	9,865	61,119	34.9%	9,565	10,088	10,053	9,942	10,852	11,174	61,674	31.2%				
Other unintentional	8,193	8,498	8,253	8,557	9,142	9,193	51,836	29.6%	9,665	10,053	10,344	10,806	10,584	10,761	62,213	31.5%				
Falls	688	706	668	679	627	648	4,016	2.3%	808	1,027	1,238	1,145	1,210	1,186	6,614	3.3%				
Accidental poisoning	63	70	79	67	92	174	545	0.3%	86	81	77	56	90	86	476	0.2%				
Drowning	891	813	793	699	705	854	4,755	2.7%	758	836	851	782	767	751	4,745	2.4%				
Fires, burns, scalds																				
Intentional																				
Self-inflicted	1,983	1,964	1,982	2,107	2,136	2,245	12,417	7.1%	2,300	2,363	2,091	2,336	2,292	2,349	13,731	7.0%				
Inflicted by another	1,571	1,641	1,766	1,938	2,329	2,474	11,719	6.7%	2,559	2,686	2,589	2,855	2,632	2,554	15,875	8.0%				
Undetermined	91	142	97	67	51	77	525	0.3%	127	141	121	152	246	362	1,149	0.6%				
All injury causes	29,734	28,658	28,294	28,313	29,432	30,628	175,059	100%	30,956	32,484	32,473	33,430	33,912	34,280	197,535	100%				

^a Percentage: Number of injury hospitalisations for specified cause (eg transport) and specified period (eg 1989-1994) divided by number of injury hospitalisations due to all injury causes for same period. Adverse event cases not included: 35,820 (1989-1994), 48,984 (1995-2000)

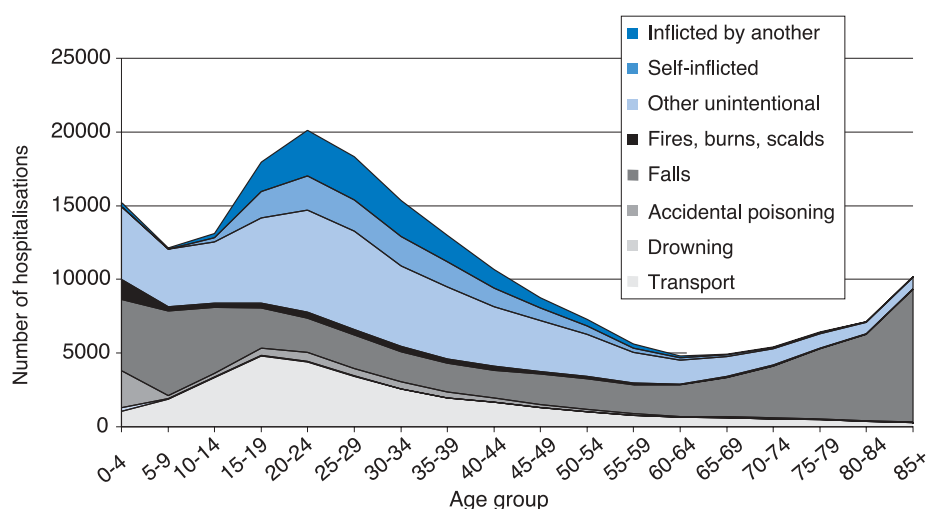
9. INJURY HOSPITALISATIONS - DISTRIBUTION OF CAUSES

9.1 Distribution of causes of injury hospitalisation by age

The findings on distribution of injury hospitalisations by age, based on age specific hospitalisation rates, should be regarded as preliminary until the effect of changes in hospital admission recording practices has been investigated.

The most common cause of injury hospitalisation varies according to age group (Figure 9.1, Table 9.1). In Western Australia, between 1995 and 2000, 'other unintentional injuries' and falls each ranked first at different phases. In early childhood and then again from adolescence to late middle age 'other unintentional injuries' were the most common cause; in older childhood and in later years (60 years and older) falls were the most common cause of injury hospitalisation (Table 9.2, Table 9.3).

Figure 9.1 Number of injury hospitalisations by cause and age group, Western Australia, 1995-2000

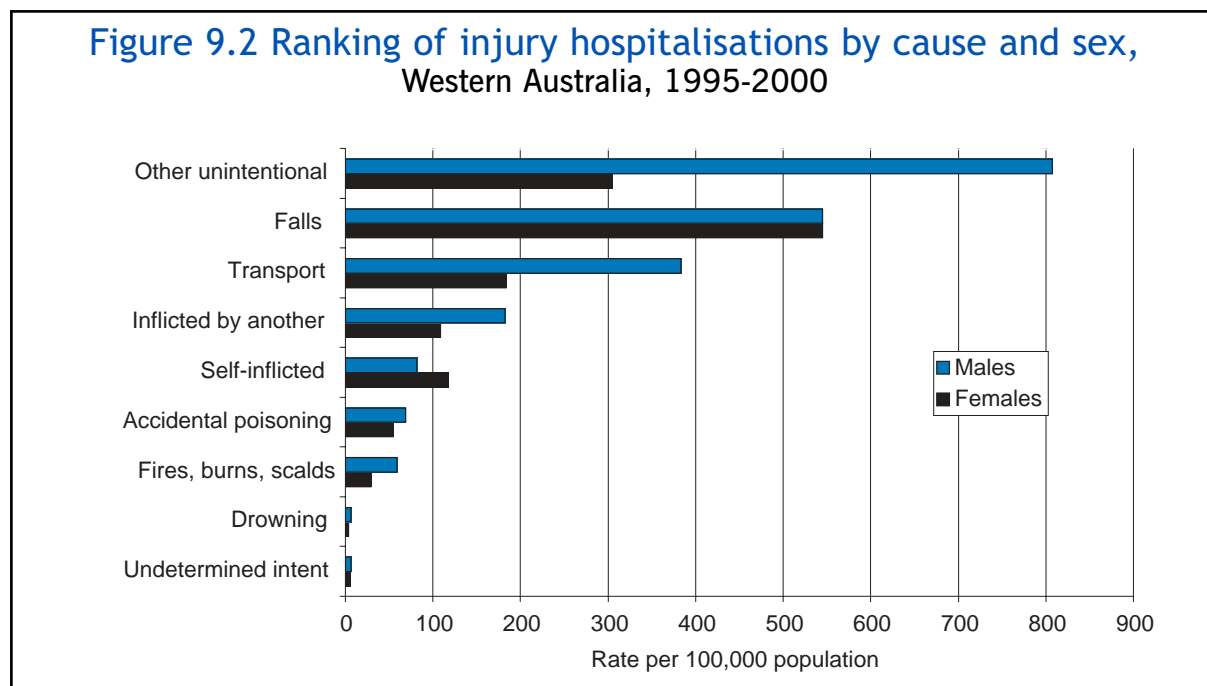


9.2 Distribution of causes of injury hospitalisation by sex

The findings on distribution of injury hospitalisations by sex, based on age standardised injury hospitalisation rates, should be regarded as preliminary until the effect of changes in hospital admission recording practices has been investigated.

In the current review period, compared to females, males were 2.7 times more likely to be hospitalised due to 'other unintentional injuries' and 2.1 times more likely to be hospitalised due to transport injuries, drowning, and fires, burns and scalds (Figure 9.2, Table 9.4). Males were 30% less likely to be hospitalised due to self-inflicted injuries than females. The risk of hospitalisation due to falls was similar for males and females.

In both review periods, males accounted for more than half the hospitalisations due to every cause of injury except falls and self-inflicted injuries (Table 9.5) although they comprised only half of the Western Australian population (Tables A5.1 and A5.2, Appendix 1).



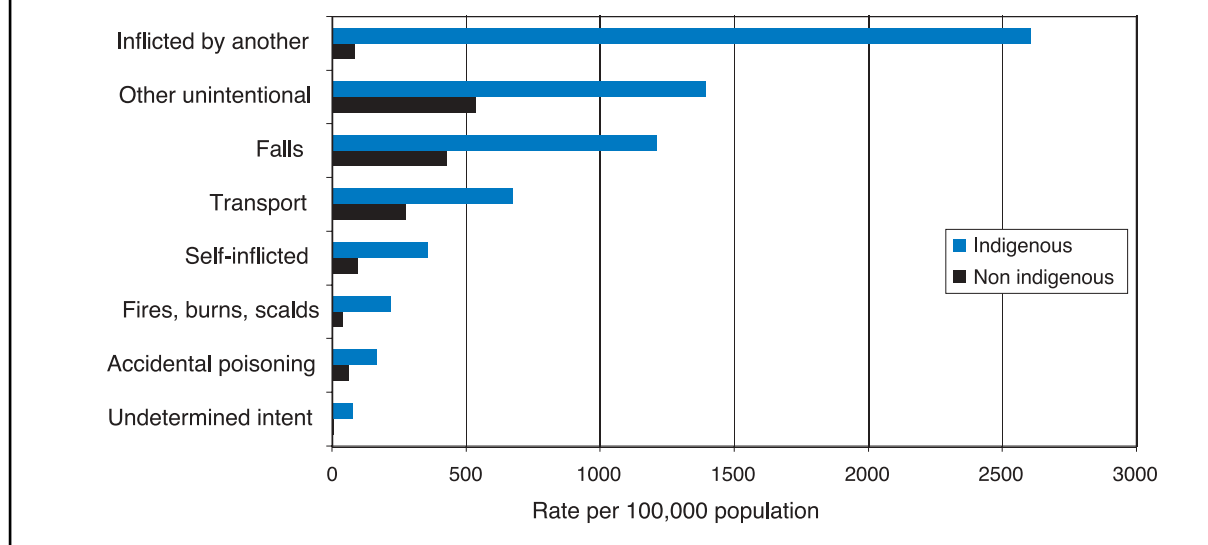
9.3 Distribution of causes of injury hospitalisation by indigenous status

The findings on distribution of injury hospitalisations by indigenous status, based on age standardised injury hospitalisation rates, should be regarded as preliminary until the effect of changes in hospital admission recording practices has been investigated.

In the current review period, compared to non indigenous people, indigenous people were 32.4 times more likely to be hospitalised due to injuries inflicted by another and 5.7 times more likely to be hospitalised due to fires, burns and scalds (Figure 9.3, Table 9.4). Rates of hospitalisation for all remaining causes of injury were between two and four times higher for indigenous people than for non indigenous people.

Over the two review periods, indigenous people represented between 5.3% and 47.3% of injury hospitalisations, depending on the cause (Table 9.6), although they represented only approximately 3% of the Western Australian population (Tables A5.1 and A5.2, Appendix 1).

Figure 9.3 Ranking of injury hospitalisations by cause and indigenous status, Western Australia, 1995-2000



9.4 Distribution of causes of injury hospitalisation by area of residence

The findings on distribution of injury hospitalisations by area of residence, based on age standardised injury hospitalisation rates, should be regarded as preliminary until the effect of changes in hospital admission recording practices has been investigated.

In the current review period, compared to metropolitan residents, rural residents were 4.6 times more likely to be hospitalised due to injuries inflicted by another, and approximately twice as likely to be hospitalised due to fires, burns and scalds, transport injuries and ‘other unintentional injuries’ (Figure 9.4, Table 9.4).

In both review periods, rural residents represented between one third and one half of of hospitalisations due to every cause of injury except self-inflicted injury (Table 9.7), although they comprised only one quarter of the Western Australian population (Tables A5.1 and A5.2, Appendix 1).

Figure 9.4 Ranking of injury hospitalisations by cause and area of residence, Western Australia, 1995-2000

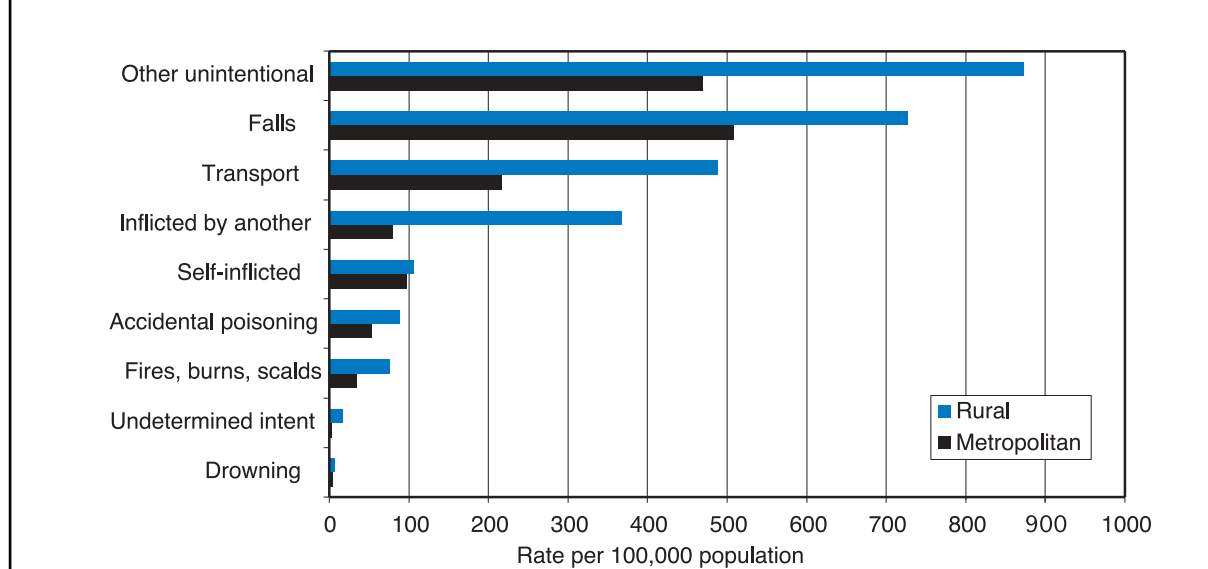


Table 9.1 Number of injury hospitalisations and ranking^a by cause and age group
Western Australia, 1995-2000

Rank	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
1	Other unintent 4,921	Falls 5,720	Falls 4,488	Other unintent 5,765	Other unintent 6,897	Other unintent 6,683	Other unintent 5,479	Other unintent 4,872	Other unintent 4,057	Other unintent 3,464	Other unintent 2,852	Other unintent 2,089	Falls 2,129	Falls 2,653	Falls 3,506	Falls 4,751	Falls 5,838	Falls 8,997
2	Falls 4,801	Other unintent 3,906	Other unintent 4,154	Transp't 4,801	Transp't 4,392	Transp't 3,415	Transp't 2,561	Falls 1,964	Falls 1,886	Falls 2,052	Falls 2,059	Falls 1,962	Other unintent 1,614	Other unintent 1,339	Other unintent 1,090	Other unintent 986	Other unintent 764	Other unintent 742
3	Acc poison'g 2,531	Transp't 1,893	Transp't 3,356	Falls 2,730	Inflicted by another 3,097	Inflicted by another 2,925	Inflicted by another 2,442	Transp't 1,939	Transp't 1,652	Transp't 1,301	Transp't 1,002	Transp't 780	Transp't 634	Transp't 604	Transp't 528	Transp't 481	Transp't 372	Transp't 285
4	Fires, burns, scalds 1,386	Fires, burns, scalds 306	Fires, burns, scalds 311	Inflicted by another 1,989	Falls 2,348	Falls 2,269	Falls 2,060	Inflicted by another 1,804	Self-inflicted 1,265	Self-inflicted 866	Self-inflicted 564	Self-inflicted 301	Self-inflicted 151	Self-inflicted 123	Self-inflicted 90	Self-inflicted 70	Acc poison'g 53	Poison'g 52
5	Transp't 1,062	Acc poison'g 204	Inflicted by another 272	Self-inflicted 1,793	Self-inflicted 2,320	Self-inflicted 2,134	Self-inflicted 1,981	Self-inflicted 1,720	Inflicted by another 1,247	Inflicted by another 702	Inflicted by another 458	Inflicted by another 252	Inflicted by another 129	Acc poison'g 86	Acc poison'g 76	Acc poison'g 61	Fires, burns, scalds 40	Fires, burns, scalds 48
6	Inflicted by another 277	Inflicted by another 65	Self-inflicted 269	Acc poison'g 506	Acc poison'g 612	Acc poison'g 499	Acc poison'g 468	Acc poison'g 400	Acc poison'g 291	Acc poison'g 202	Acc poison'g 170	Acc poison'g 115	Fires, burns, scalds 67	Inflicted by another 71	Fires, burns, scalds 73	Inflicted by another 41	Self-inflicted 40	Self-inflicted 42
7	Drown'g 244	Drown'g 26	Acc poison'g 224	Fires, burns, scalds 329	Fires, burns, scalds 414	Fires, burns, scalds 376	Fires, burns, scalds 334	Fires, burns, scalds 284	Fires, burns, scalds 249	Fires, burns, scalds 170	Fires, burns, scalds 164	Fires, burns, scalds 101	Acc poison'g 64	Fires, burns, scalds 59	Inflicted by another 61	Fires, burns, scalds 34	Inflicted by another 23	Inflicted by another 20
8	Undeter-mined 39	Undeter-mined 17	Undeter-mined 45	Undeter-mined 159	Undeter-mined 161	Undeter-mined 156	Undeter-mined 139	Undeter-mined 145	Undeter-mined 93	Undeter-mined 75	Undeter-mined 30	Undeter-mined 24	Undeter-mined 22	Undeter-mined 17	Undeter-mined 10	Undeter-mined 5	Undeter-mined 5	Undeter-mined 7
9	Self-inflicted 0	Self-inflicted 2	Drown'g 25	Drown'g 26	Drown'g 30	Drown'g 27	Drown'g 15	Drown'g 20	Drown'g 16	Drown'g 13	Drown'g 10	Drown'g 4	Drown'g 8	Drown'g 6	Drown'g 2	Drown'g 1	Drown'g 2	Drown'g 1

^a Ranked by number of cases

Table 9.2 Age specific injury hospitalisation rates^a by cause
Western Australia, 1989–2000

Cause	Age Group														WA Pop					
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69		70-74	75-79	80-84	85+	
1989-1994																				
Unintentional																				
Transport	142.5	131.9	404.9	637.2	563.9	363.2	261.6	196.5	171.7	161.2	162.8	154.7	147.6	152.8	184.8	217.1	274.6	259.8	285.1	
Other unintentional	612.6	478.8	562.6	863.0	997.1	870.3	678.7	576.6	506.2	480.7	478.4	443.4	406.7	362.9	379.2	486.1	610.3	707.0	619.5	
Falls	507.0	676.6	533.9	385.1	337.6	294.5	242.3	230.8	229.5	259.3	321.8	404.9	521.2	709.4	1,122.4	2,000.6	3,423.0	6,753.9	525.4	
Accidental poisoning	312.2	22.6	19.0	N/A	23.9	26.8	13.9	15.5	16.8	11.5	15.0	12.2	13.7	N/A	N/A	23.0	N/A	N/A	40.7	
Drowning	32.1	N/A	N/A	N/A	8.5	9.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.5
Fires, burns, scalds	176.8	38.4	42.4	53.8	59.2	45.3	39.8	30.2	29.3	28.6	29.8	27.5	21.8	20.7	18.8	27.3	33.5	50.2	48.2	
Intentional																				
Self-inflicted	N/A	N/A	59.3	304.1	277.8	236.3	188.3	161.4	126.9	98.5	72.0	56.7	42.6	38.0	33.2	35.8	N/A	49.0	125.9	
Inflicted by another	25.2	8.6	35.2	221.8	319.0	265.1	193.9	147.9	100.7	80.9	62.4	43.5	33.1	21.3	N/A	N/A	N/A	N/A	118.8	
Undetermined	N/A	N/A	N/A	5.0	9.6	10.9	10.1	5.5	5.5	6.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.3	
1995-2000																				
Unintentional																				
Transport	139.6	237.4	413.6	604.6	528.3	399.5	302.8	220.3	195.9	166.6	156.1	158.6	157.9	169.2	174.0	217.3	262.7	247.8	285.6	
Other unintentional	646.9	489.8	512.0	726.0	829.7	781.7	647.7	553.5	481.1	443.5	444.3	424.9	401.9	375.1	359.2	445.5	539.4	645.1	567.2	
Falls	631.1	717.3	553.2	343.8	282.5	265.4	243.5	223.1	223.7	262.7	320.8	399.0	530.2	743.2	1,155.5	2,146.8	4,122.1	7,822.3	572.2	
Accidental poisoning	332.7	25.6	27.6	63.7	73.6	58.4	55.3	45.4	34.5	25.9	26.5	23.4	15.9	24.1	25.0	27.6	37.4	45.2	60.7	
Drowning	32.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.4
Fires, burns, scalds	182.2	38.4	38.3	41.4	49.8	44.0	39.5	32.3	29.5	21.8	25.6	20.5	16.7	16.5	24.1	N/A	28.2	41.7	43.6	
Intentional																				
Self-inflicted	N/A	N/A	33.2	225.8	279.1	249.6	234.2	195.4	150.0	110.9	87.9	61.2	37.6	34.5	29.7	31.6	28.2	36.5	126.3	
Inflicted by another	36.4	8.2	33.5	250.5	372.6	342.1	288.7	205.0	147.9	89.9	71.4	51.3	32.1	19.9	20.1	18.5	N/A	N/A	146.0	
Undetermined	N/A	N/A	5.5	20.0	19.4	18.2	16.4	16.5	11.0	9.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10.6	

^a Age specific rates per 100,000 population

N/A: Not applicable, number of cases too small for reliable rates to be calculated

Table 9.3 Number of injury hospitalisations by cause and age group
Western Australia, 1989-2000

Cause	1989-1994													WA Pop						
	Age Group																			
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+		
Unintentional																				
Transport	1,080	1,783	3,024	4,924	4,508	2,917	2,178	1,574	1,299	982	780	619	548	503	462	406	328	212	28,127	
Other unintentional	4,644	3,681	4,202	6,669	7,971	6,990	5,651	4,619	3,829	2,929	2,292	1,774	1,510	1,195	948	909	729	577	61,119	
Falls	3,844	5,202	3,987	2,976	2,699	2,365	2,017	1,849	1,736	1,580	1,542	1,620	1,935	2,336	2,806	3,741	4,089	5,512	51,836	
Accidental poisoning	2,367	174	142	147	191	215	116	124	127	70	72	49	51	39	38	43	29	22	4,016	
Drowning	243	18	13	28	68	78	33	28	10	4	5	4	2	3	1	5	2	0	545	
Fires, burns, scalds	1,340	295	317	416	473	364	331	242	222	174	143	110	81	68	47	51	40	41	4,755	
Intentional																				
Self-inflicted	0	3	443	2,350	2,221	1,898	1,568	1,293	960	600	345	227	158	125	83	67	36	40	12,417	
Inflicted by another	191	66	263	1,714	2,550	2,129	1,614	1,185	762	493	299	174	123	70	29	26	19	12	11,719	
Undetermined	11	5	37	74	87	81	46	44	52	28	14	16	10	4	3	4	8	1	525	
All injury causes	13,720	11,227	12,428	19,298	20,768	17,037	13,554	10,958	8,997	6,860	5,492	4,593	4,418	4,343	4,417	5,252	5,280	6,417	175,059	
Percentage ^a	7.9%	6.4%	7.1%	11.1%	11.9%	9.8%	7.8%	6.3%	5.2%	3.9%	3.2%	2.6%	2.5%	2.5%	2.5%	3.0%	3.0%	3.7%	100%	
	1995-2000																			
	Age Group																			
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	WA Pop	
Unintentional																				
Transport	1,062	1,893	3,356	4,801	4,392	3,415	2,561	1,939	1,652	1,301	1,002	780	634	604	528	481	372	285	31,058	
Other unintentional	4,921	3,906	4,154	5,765	6,897	6,683	5,479	4,872	4,057	3,464	2,852	2,089	1,614	1,339	1,090	986	764	742	61,674	
Falls	4,801	5,720	4,488	2,730	2,348	2,269	2,060	1,964	1,886	2,052	2,059	1,962	2,129	2,653	3,506	4,751	5,838	8,997	62,213	
Accidental poisoning	2,531	204	224	506	612	499	468	400	291	202	170	115	64	86	76	61	53	52	6,614	
Drowning	244	26	25	26	30	27	15	20	16	13	10	4	8	6	2	1	2	1	476	
Fires, burns, scalds	1,386	306	311	329	414	376	334	284	249	170	164	101	67	59	73	34	40	48	4,745	
Intentional																				
Self-inflicted	0	2	269	1,793	2,320	2,134	1,981	1,720	1,265	866	564	301	151	123	90	70	40	42	13,731	
Inflicted by another	277	65	272	1,989	3,097	2,925	2,442	1,804	1,247	702	458	252	129	71	61	41	23	20	15,875	
Undetermined	39	17	45	159	161	156	139	145	93	75	30	24	22	17	10	5	5	7	1,149	
All injury causes	15,261	12,139	13,144	18,098	20,271	18,484	15,479	13,148	10,756	8,845	7,309	5,628	4,818	4,958	5,436	6,430	7,137	10,194	197,535	
Percentage	7.7%	6.1%	6.7%	9.2%	10.3%	9.4%	7.8%	6.7%	5.4%	4.5%	3.7%	2.8%	2.4%	2.5%	2.8%	3.3%	3.6%	5.2%	100%	

a Percentage: Number of hospitalisations due to all injury causes in specified age group (eg 0-4) and specified period (eg 1989-1994) divided by number of hospitalisations due to all injury causes for WA population in same period
Adverse event cases not included: 35,820 (1989-1994), 48,984 (1995-2000)

**Table 9.4 Rate^a and rate ratio^b for injury hospitalisation by cause, sex, indigenous status and area of residence
Western Australia, 1989-2000**

Cause	Sex		Indigenous status			Area of residence			
	Males	Females	Rate ratio	Indigenous	Non indigenous	Rate ratio	Rural	Metropolitan	Rate ratio
1989-1994									
Unintentional									
Transport	371.3	193.7	1.9	654.9	267.4	2.4	420.9	227.3	1.9
Other unintentional	865.9	357.9	2.4	2,416.4	555.8	4.3	1,107.4	447.5	2.5
Falls	533.1	521.2	1.0	1,381.0	414.6	3.3	726.7	473.4	1.5
Accidental poisoning	45.5	33.8	1.3	93.1	37.2	2.5	69.8	28.0	2.5
Drowning	7.0	3.7	1.9	N/A	5.3	N/A	5.0	5.2	1.0
Fires, burns, scalds	64.1	30.1	2.1	293.9	40.0	7.3	93.0	31.0	3.0
Intentional									
Self-inflicted	105.3	145.8	0.7	390.0	116.6	3.3	121.3	123.8	1.0
Inflicted by another	151.6	82.4	1.8	2,044.4	68.0	30.1	251.9	71.9	3.5
Undetermined	6.8	3.7	1.8	55.0	3.9	14.1	9.4	3.8	2.5
1995-2000									
Unintentional									
Transport	389.6	186.9	2.1	670.3	272.8	2.5	487.1	216.8	2.2
Other unintentional	822.4	310.0	2.7	1,391.9	533.4	2.6	872.6	469.0	1.9
Falls	554.9	555.2	1.0	1,208.6	424.5	2.8	725.7	508.3	1.4
Accidental poisoning	69.7	54.8	1.3	165.7	58.2	2.8	88.6	52.3	1.7
Drowning	6.0	2.9	2.1	N/A	4.3	N/A	6.1	3.7	1.6
Fires, burns, scalds	59.5	28.8	2.1	218.5	38.5	5.7	75.8	33.5	2.3
Intentional									
Self-inflicted	103.0	152.6	0.7	416.9	117.9	3.5	127.2	124.3	1.0
Inflicted by another	185.1	110.3	1.7	2,603.1	80.5	32.4	366.7	79.0	4.6
Undetermined	10.8	10.5	1.0	103.0	8.1	12.7	23.0	6.8	3.4

^a Age standardised rate per 100,000 population, standardised with 1991 Australian population

^b Rate ratio: Rate for 'at risk group' (eg males) for specified cause (eg transport) and specified period (eg 1989-1994) divided by rate for comparison group (eg females) for same cause and period

N/A: Not applicable, number of cases too small for reliable rates to be calculated

Table 9.5 Number of injury hospitalisations by cause, sex and year
Western Australia, 1989-2000

Cause	Males										Females											
	1989	1990	1991	1992	1993	1994	Total	% Male	1989	1990	1991	1992	1993	1994	Total	1989	1990	1991	1992	1993	1994	Total
1989-1994																						
Unintentional																						
Transport	3,103	2,952	2,968	3,043	3,217	3,355	18,638	66.3%	1,632	1,404	1,554	1,431	1,725	1,743	9,489	1,632	1,404	1,554	1,431	1,725	1,743	9,489
Other unintentional	8,109	7,363	7,156	6,855	6,776	7,203	43,462	71.1%	3,410	3,105	2,978	2,870	2,632	2,662	17,657	3,410	3,105	2,978	2,870	2,632	2,662	17,657
Falls	4,118	4,222	4,015	4,192	4,377	4,361	25,285	48.8%	4,075	4,276	4,238	4,365	4,765	4,832	26,551	4,075	4,276	4,238	4,365	4,765	4,832	26,551
Accidental poisoning	384	406	394	402	382	369	2,337	58.2%	304	300	274	277	245	279	1,679	304	300	274	277	245	279	1,679
Drowning	43	50	60	41	64	101	359	65.9%	20	20	19	26	28	73	186	20	20	19	26	28	73	186
Fires, burns, scalds	639	550	526	490	476	580	3,261	68.6%	252	263	267	209	229	274	1,494	252	263	267	209	229	274	1,494
Intentional																						
Self-inflicted	824	858	836	901	926	931	5,276	42.5%	1,159	1,106	1,146	1,206	1,210	1,314	7,141	1,159	1,106	1,146	1,206	1,210	1,314	7,141
Inflicted by another	1,092	1,142	1,177	1,229	1,480	1,549	7,669	65.4%	479	499	589	709	849	925	4,050	479	499	589	709	849	925	4,050
Undetermined	59	79	69	46	33	55	341	65.0%	32	63	28	21	18	22	184	32	63	28	21	18	22	184
All injury causes	18,371	17,622	17,201	17,199	17,731	18,504	106,628	60.9%	11,363	11,036	11,093	11,114	11,701	12,124	68,431	11,363	11,036	11,093	11,114	11,701	12,124	68,431
1995-2000																						
1995-2000																						
Unintentional																						
Transport	3,391	3,511	3,481	3,638	3,576	3,491	21,088	67.9%	1,697	1,698	1,628	1,718	1,663	1,566	9,970	1,697	1,698	1,628	1,718	1,663	1,566	9,970
Other unintentional	7,010	7,404	7,362	7,308	7,778	8,019	44,881	72.8%	2,555	2,684	2,691	2,634	3,074	3,155	16,793	2,555	2,684	2,691	2,634	3,074	3,155	16,793
Falls	4,547	4,631	4,837	5,033	4,922	4,898	28,868	46.4%	5,118	5,422	5,507	5,773	5,662	5,863	33,345	5,118	5,422	5,507	5,773	5,662	5,863	33,345
Accidental poisoning	485	585	697	653	646	684	3,750	56.7%	323	442	541	492	564	502	2,864	323	442	541	492	564	502	2,864
Drowning	64	58	52	33	62	56	325	68.3%	22	23	25	23	28	30	151	22	23	25	23	28	30	151
Fires, burns, scalds	513	557	582	506	540	527	3,225	68.0%	245	279	269	276	227	224	1,520	245	279	269	276	227	224	1,520
Intentional																						
Self-inflicted	920	955	834	992	949	976	5,626	41.0%	1,380	1,408	1,257	1,344	1,343	1,373	8,105	1,380	1,408	1,257	1,344	1,343	1,373	8,105
Inflicted by another	1,715	1,680	1,650	1,760	1,649	1,610	10,064	63.4%	844	1,006	939	1,095	983	944	5,811	844	1,006	939	1,095	983	944	5,811
Undetermined	70	74	53	84	131	178	590	51.3%	57	67	68	68	115	184	559	57	67	68	68	115	184	559
All injury causes	18,715	19,455	19,548	20,007	20,253	20,439	118,417	59.9%	12,241	13,029	12,925	13,423	13,659	13,841	79,118	12,241	13,029	12,925	13,423	13,659	13,841	79,118

a Percentage: Number of injury hospitalisations for males for specified cause (eg transport) and specified period (eg 1989-1994) divided by total number of hospitalisations for males and females combined for same cause and period

Adverse event cases not included: 35,820 (1989-1994), 48,984 (1995-2000)

Table 9.6 Number of injury hospitalisations by cause, indigenous status and year
 Western Australia, 1989-2000

Cause	1989-1994										1995-2000													
	Indigenous					% Indigenous					Non indigenous					Non indigenous								
	1989	1990	1991	1992	1993	1994	Total	% Indigenous	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	Total	TOTAL		
Unintentional							1,870	6.6%	4,456	4,109	4,176	4,182	4,541	4,793								26,257	28,127	
Transport	279	247	346	292	401	305	1,870	6.6%	4,456	4,109	4,176	4,182	4,541	4,793								26,257	28,127	
Other unintentional	1,398	1,181	1,112	881	850	862	6,284	10.3%	10,121	9,287	9,022	8,844	8,558	9,003								54,835	61,119	
Falls	593	587	549	499	549	535	3,312	6.4%	7,600	7,911	7,704	8,058	8,593	8,658								48,524	51,836	
Accidental poisoning	73	58	52	55	57	75	370	9.2%	615	648	616	624	570	573								3,646	4,016	
Drowning	6	5	5	4	9	4	33	6.1%	57	65	74	63	83	170								512	545	
Fires, burns, scalds	140	145	128	132	109	165	819	17.2%	751	668	665	567	596	689								3,936	4,755	
Intentional																								
Self-inflicted	170	173	171	155	195	205	1,069	8.6%	1,813	1,791	1,811	1,952	1,941	2,040								11,348	12,417	
Inflicted by another	559	630	742	909	1,155	1,119	5,114	43.6%	1,012	1,011	1,024	1,029	1,174	1,355								6,605	11,719	
Undetermined	51	31	23	9	11	17	142	27.0%	40	111	74	58	40	60								383	525	
All injury causes	3,269	3,057	3,128	2,936	3,336	3,287	19,013	10.9%	26,465	25,601	25,166	25,377	26,096	27,341								156,046	175,059	
Cause	Indigenous										Non indigenous													
	1995	1996	1997	1998	1999	2000	Total	% Indigenous	1995	1996	1997	1998	1999	2000	Total	TOTAL								
Unintentional							2,156	6.9%	4,686	4,858	4,769	4,972	4,887	4,730								28,902	31,058	
Transport	402	351	340	384	352	327	2,156	6.9%	4,686	4,858	4,769	4,972	4,887	4,730								28,902	31,058	
Other unintentional	737	790	683	717	745	719	4,391	7.1%	8,828	9,298	9,370	9,225	10,107	10,455								57,283	61,674	
Falls	556	573	574	551	567	505	3,326	5.3%	9,109	9,480	9,770	10,255	10,017	10,256								58,887	62,213	
Accidental poisoning	84	79	114	100	112	96	585	8.8%	724	948	1,124	1,045	1,098	1,090								6,029	6,614	
Drowning	5	7	6	9	7	7	41	8.6%	81	74	71	47	83	79								435	476	
Fires, burns, scalds	122	140	123	89	107	116	697	14.7%	636	696	728	693	660	635								4,048	4,745	
Intentional																								
Self-inflicted	195	226	172	244	228	204	1,269	9.2%	2,105	2,137	1,919	2,092	2,064	2,145								12,462	13,731	
Inflicted by another	1,169	1,252	1,244	1,394	1,257	1,190	7,506	47.3%	1,390	1,434	1,345	1,461	1,375	1,364								8,369	15,875	
Undetermined	59	51	34	46	50	52	292	25.4%	68	90	87	106	196	310								857	1,149	
All injury causes	3,329	3,469	3,290	3,534	3,425	3,216	20,263	10.3%	27,627	29,015	29,183	29,896	30,487	31,064								177,272	197,535	

a Percentage: Number of injury hospitalisations for indigenous people for specified cause (eg transport) and specified period (eg 1989-1994) divided by total number of hospitalisations for indigenous and non indigenous people combined for same cause and period

Adverse event cases not included: 35,820 (1989-1994), 48,984 (1995-2000)

Table 9.7 Number of injury hospitalisations by cause, area of residence and year
Western Australia, 1989-2000

Cause	1989-1994										1995-2000												
	Rural					Metropolitan					Rural					Metropolitan							
	1989	1990	1991	1992	1993	1994	Total	% Rural	1989	1990	1991	1992	1993	1994	Total	1989	1990	1991	1992	1993	1994	Total	
Unintentional																							
Transport	1,608	1,436	1,653	1,667	1,853	1,906	10,123	37.3%	2,949	2,739	2,704	2,662	2,926	3,024	17,004	2,998	3,006	2,837	3,017	2,994	2,956	17,808	
Other unintentional	5,520	4,838	4,497	4,174	3,870	3,863	26,762	44.5%	5,783	5,467	5,453	5,417	5,398	5,869	33,387	5,842	6,074	6,184	6,231	6,946	7,337	38,614	
Falls	2,752	2,713	2,568	2,598	2,883	2,775	16,289	32.0%	5,273	5,612	5,542	5,824	6,076	6,302	34,629	6,613	6,890	7,133	7,482	7,302	7,658	43,078	
Accidental poisoning	375	381	312	316	255	299	1,938	48.6%	306	320	354	357	366	343	2,046	423	621	773	738	799	803	4,157	
Drowning	20	25	22	18	24	31	140	26.9%	41	42	55	47	55	141	381	48	55	49	33	53	52	290	
Fires, burns, scalds	475	435	401	342	326	388	2,367	50.8%	398	359	378	343	365	453	2,296	431	458	497	471	437	389	2,683	
Intentional																							
Self-inflicted	448	486	481	432	502	542	2,891	23.7%	1,492	1,448	1,467	1,637	1,609	1,678	9,331	1,708	1,765	1,542	1,747	1,745	1,817	10,324	
Inflicted by another	688	732	868	1,083	1,343	1,402	6,116	53.1%	845	877	876	826	949	1,039	5,412	1,047	1,074	1,044	1,156	1,079	1,072	6,472	
Undetermined	64	43	36	18	25	40	226	44.1%	22	96	59	48	25	36	286	30	45	45	62	139	236	557	
All injury causes	11,950	11,089	10,838	10,648	11,081	11,246	66,852	39.0%	17,109	16,960	16,888	17,161	17,769	18,885	104,772	19,140	19,988	20,104	20,937	21,494	22,320	123,983	
Unintentional																							
Transport	1,917	2,026	2,107	2,101	2,030	1,884	12,065	40.4%	2,998	3,006	2,837	3,017	2,994	2,956	17,808	2,998	3,006	2,837	3,017	2,994	2,956	17,808	
Other unintentional	3,588	3,853	3,684	3,544	3,730	3,653	22,052	36.3%	5,842	6,074	6,184	6,231	6,946	7,337	38,614	5,842	6,074	6,184	6,231	6,946	7,337	38,614	
Falls	2,888	2,984	3,020	3,104	3,051	2,854	17,901	29.4%	6,613	6,890	7,133	7,482	7,302	7,658	43,078	6,613	6,890	7,133	7,482	7,302	7,658	43,078	
Accidental poisoning	374	392	448	383	394	355	2,346	36.1%	423	621	773	738	799	803	4,157	423	621	773	738	799	803	4,157	
Drowning	33	24	23	21	32	30	163	36.0%	48	55	49	33	53	52	290	48	55	49	33	53	52	290	
Fires, burns, scalds	311	367	346	302	316	343	1,985	42.5%	431	458	497	471	437	389	2,683	431	458	497	471	437	389	2,683	
Intentional																							
Self-inflicted	559	559	518	532	500	493	3,161	23.4%	1,708	1,765	1,542	1,747	1,745	1,817	10,324	1,708	1,765	1,542	1,747	1,745	1,817	10,324	
Inflicted by another	1,481	1,572	1,506	1,646	1,497	1,435	9,137	58.5%	1,047	1,074	1,044	1,156	1,079	1,072	6,472	1,047	1,074	1,044	1,156	1,079	1,072	6,472	
Undetermined	95	95	75	90	104	117	576	50.8%	30	45	45	62	139	236	557	30	45	45	62	139	236	557	
All injury causes	11,246	11,872	11,727	11,723	11,654	11,164	69,386	35.9%	19,140	19,988	20,104	20,937	21,494	22,320	123,983	19,140	19,988	20,104	20,937	21,494	22,320	123,983	

a Percentage: Number of injury hospitalisations for rural residents for specified cause (eg transport) and specified period (eg 1989-1994) divided by total number of hospitalisations for rural and metropolitan residents combined for same cause and period

Interstate or overseas visitor cases excluded: 3,748 (1989-1994), 4,630 (1995-2000)

Adverse event cases not included: 35,820 (including 313 unknown area of residence) (1989-1994), 48,984 (including 464 unknown area of residence) (1995-2000)

10. INTENTIONAL INJURIES

10.1 Intentional injuries – a measure of violence in the community

This chapter provides an overview of intentional injury deaths and hospitalisations, including self-inflicted injuries and injuries inflicted by another. Tables 10.1.1 to 10.5.2 present data on intentional injuries from the review. The findings on intentional injury hospitalisation rates should be regarded as preliminary until the effect of changes in hospital admission recording practices has been investigated.

Self-inflicted injuries, and those inflicted by another person, are collectively referred to as ‘intentional injuries’ and both evolve from the same underlying cause—violence. The World Health Organisation defines ‘violence’ more broadly than just ‘intentional injuries’. Its definition includes injuries that do not lead to hospitalisation or death as well as those that do; actions that have the potential to cause injuries as well as those that actually cause injuries; and harm that is only threatened, as well as harm that is actually done (Krug, Dahlberg, Mercy, Zwi and Lozano, 2002, p5). The data on intentional injuries presented here do not cover all components of the World Health Organisation definition. Nevertheless, they do provide a measure of the extent of the problem in Western Australia.

The review identified violence as a significant health issue for Western Australia. Between 1995 and 2000, intentional injuries comprised 34.7% of all injury deaths and 15% of injury hospitalisations (Figure 10.1, Figure 10.2). In this period, self-inflicted injuries and those inflicted by another, together accounted for an average of 272 deaths per year and 4,934 hospitalisations per year (averages derived from Tables 10.2.1 and 10.2.2). For intentional injury deaths, self-inflicted injuries were the more common cause. For hospitalisations, injuries inflicted by another were the more common cause (Figure 10.3, Figure 10.4; Table 10.1.1, Table 10.1.2).

Figure 10.1 Proportion of injury deaths by intent, Western Australia, 1995-2000

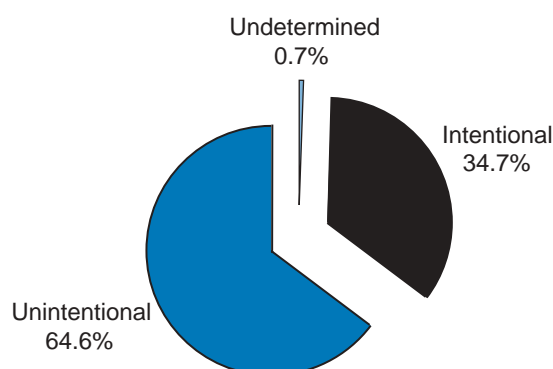


Figure 10.2 Proportion of injury hospitalisations by intent, Western Australia, 1995-2000

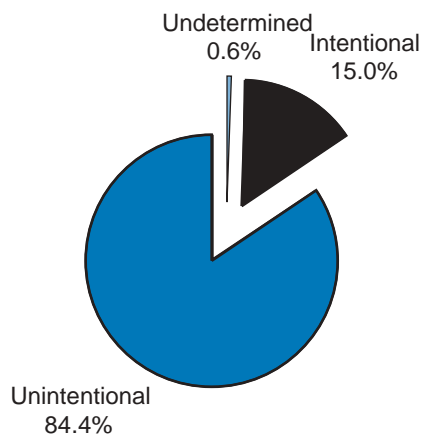


Figure 10.3 Proportion of intentional injury deaths by perpetrator, Western Australia, 1995-2000

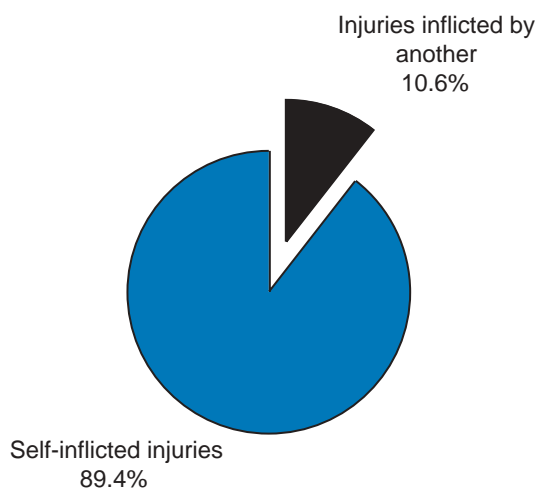


Figure 10.4 Proportion of intentional injury hospitalisations by perpetrator, Western Australia, 1995-2000



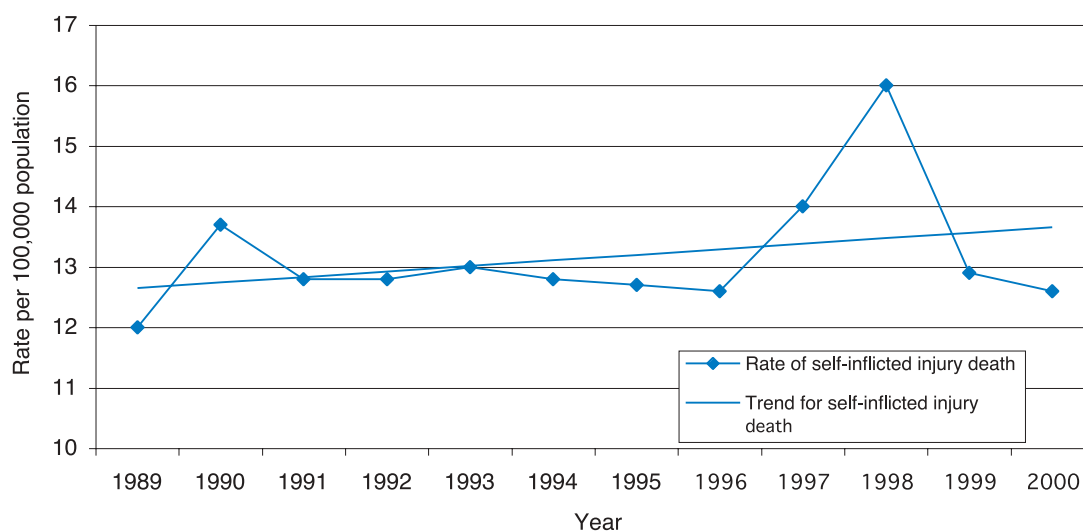
10.2 Self-inflicted injuries – rankings, trends, comparative risk

Self-inflicted injuries ranked second as a cause of injury death, after transport injuries, in the previous review period and first in the current review period (Table 4.1, Figure 4.1). The rise in rank order of self-inflicted injury death was due to a significant decrease in the age standardised rate of transport injury death between 1989 and 2000, rather than an increase in the rate of self-inflicted injury death.

Self-inflicted injuries ranked fourth as a cause of injury hospitalisation in the previous review period, and fifth in the current period (Table 8.1, Figure 8.1). This fall in rank order was due to a significant increase in the age standardised rate of hospitalisation due to injuries inflicted by another during the review period. Age standardised rates of self-inflicted injury death and hospitalisation did not change significantly for the Western Australian population between 1989 and 2000 (deaths, $p = 0.3$; hospitalisations, $p = 0.5$) (Figure 10.5 for deaths, no figure for hospitalisations).

Between 1995 and 2000, the risk of death due to self-inflicted injuries was 4.2 times higher for males, 2.2 times higher for indigenous people, and 1.3 times higher for rural residents than for females, non indigenous people and metropolitan residents, respectively (Table 5.4). The risk of hospitalisation due to self-inflicted injuries was 30% lower for males than females, 3.5 times higher for indigenous people than non indigenous people, and similar for rural and metropolitan residents (Table 9.4).

Figure 10.5 Yearly trend in self-inflicted injury death rate, Western Australia, 1989-2000



10.3 Self-inflicted injuries – common methods

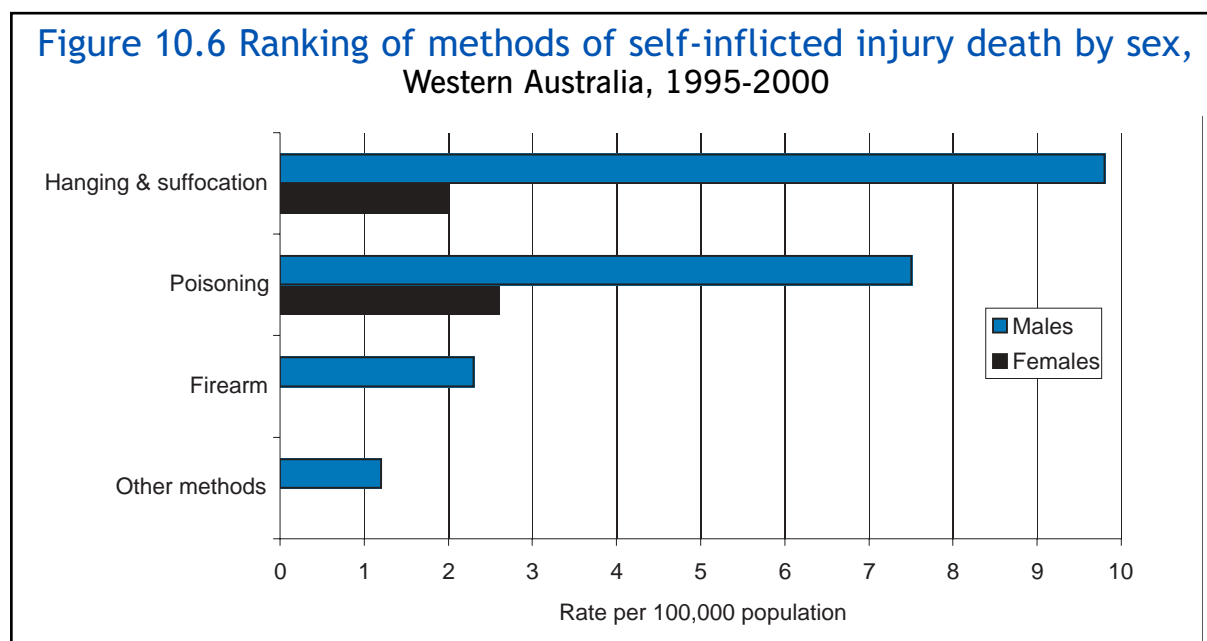
For death due to self-inflicted injuries, the most common methods were hanging or suffocation, and poisoning (Figure 10.6, Table 10.1.1). Between 1989 and 2000, the age standardised rate of death due to self-inflicted hanging or suffocation increased significantly (by 74%, $p = 0.0001$; percentage derived from Table 10.1.1).

For hospitalisation due to self-inflicted injuries the most common method was poisoning (Table 10.1.2, Table 10.2.2). Pharmaceuticals accounted for 93.5% of hospitalisations due to self-inflicted poisoning (Table 10.2.3). The specific pharmaceuticals commonly involved in self-inflicted poisoning hospitalisations, and the

combinations of other drugs with which they had been used (eg alcohol), should be investigated.

Between 1995 and 2000, compared to females, males were 4.9 times more likely to die due to self-inflicted hanging or suffocation, and 2.9 times more likely to die due to self-inflicted poisoning (Figure 10.6, Table 10.3.1). Males were, however, 40% less likely than females to be hospitalised due to self-inflicted poisoning (Table 10.3.2).

Figure 10.6 Ranking of methods of self-inflicted injury death by sex, Western Australia, 1995-2000



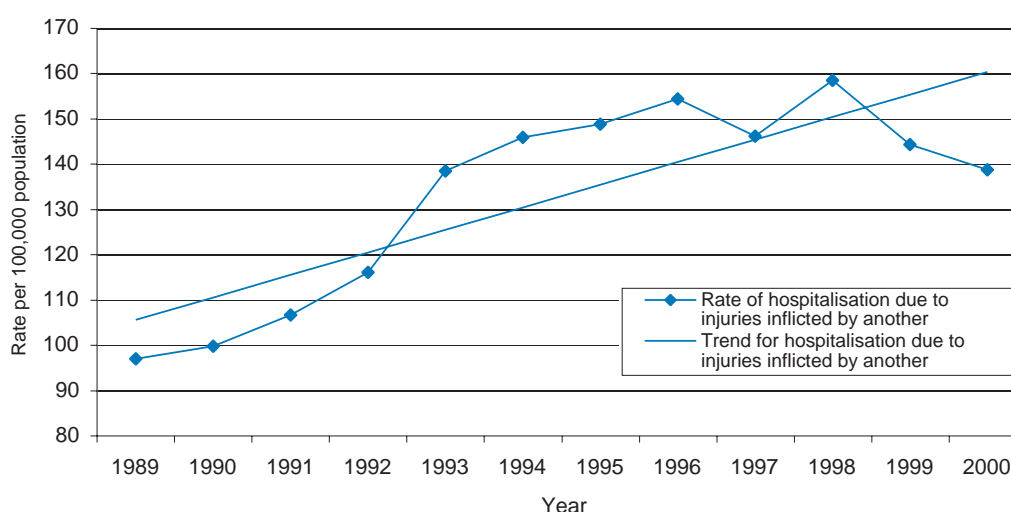
10.4 Injuries inflicted by another – rankings, trends, comparative risk

Injuries inflicted by another ranked sixth as a cause of injury death in the previous review period, and seventh in the current review period (Figure 4.1, Table 4.1). As a cause of hospitalisation they ranked fifth in the previous review period and fourth in the current review period (Figure 8.1, Table 8.1).

The trend in the age standardised rate of death due to injuries inflicted by another could not be assessed because the number of cases in each year was too small to yield a reliable rate. The age standardised rate of hospitalisation due to injuries inflicted by another increased significantly for the Western Australian population between 1989 and 2000 (by 43%, $p = 0.001$; percentage derived from Table 10.1.2) (Figure 10.7).

Between 1995 and 2000, the risk of hospitalisation due to injuries inflicted by another was 1.7 times higher for males, 32.4 times higher for indigenous people and 4.6 times higher for rural residents than for females, non indigenous people and metropolitan residents, respectively (Table 9.4).

Figure 10.7 Yearly trend in hospitalisation rate due to injuries inflicted by another, Western Australia, 1989-2000

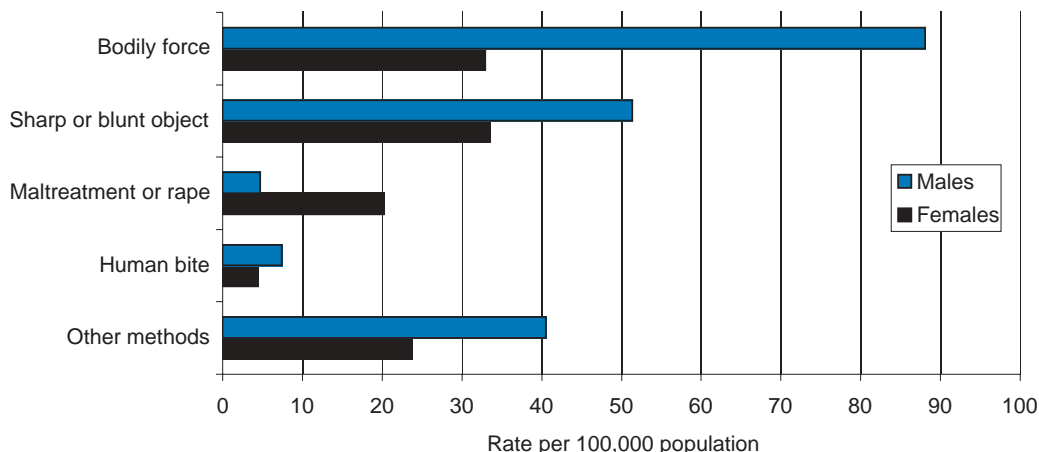


10.5 Injuries inflicted by another – common methods

For death due to injuries inflicted by another, the most common method was use of a sharp or blunt object (Table 10.1.1). For hospitalisation, the most common methods were bodily force and a sharp or blunt object (Figure 10.8, Table 10.1.2). Between 1989 and 2000, there were significant increases in the age standardised rates of hospitalisation due to injuries inflicted by bodily force (by 134%, $p = 0.0009$), sharp or blunt object (by 108%, $p = 0.0001$) and maltreatment or rape (by 450%, $p = 0.0006$; percentages derived from Table 10.1.2).

Between 1995 and 2000, compared to females, the risk of hospitalisation for males was 2.7 times higher for injuries inflicted by bodily force, 1.7 times higher for injuries inflicted by a human bite, and 1.5 times higher for injuries inflicted by a sharp or blunt object (Figure 10.8, Table 10.3.2). Males were, however, 80% less likely than females to be hospitalised due to maltreatment or rape.

Figure 10.8 Ranking of hospitalisations due to injuries inflicted by another, by method and sex, Western Australia, 1995-2000



10.6 Intentional injuries – distribution by age

Young adults were at greatest risk of intentional injuries. Between 1995 and 2000, compared to the Western Australian population, age specific rates of death due to self-inflicted injuries were higher in the age groups between 20 and 44 years (Figure 10.9, Table 10.5.1). Age specific rates of hospitalisation due to injuries inflicted by another were higher in the age groups between 15 and 39 years (Figure 10.10, Table 10.5.2).

Overall, those at greatest risk of intentional injury were aged between 20 and 29 years. Age specific rates of self-inflicted injury death and hospitalisation due to injuries inflicted by another in these age groups were approximately twice those of the Western Australian population (Table 10.5.1, Table 10.5.2). Between 1995 and 2000, in these two age groups, there were an average of 77 intentional injury deaths and 1,746 intentional injury hospitalisations per year (averages derived from Tables 10.5.1 and 10.5.2).

Between 1995 and 2000, each self-inflicted injury death resulted in an average of 35.3 PYLLs and each death due to injuries inflicted by another contributed an average of 38.1 PYLLs, compared to 36.9 PYLLs per death for all causes of injury (Table 4.3).

Figure 10.9 Age specific rates of self-inflicted injury death, Western Australia, 1995-2000

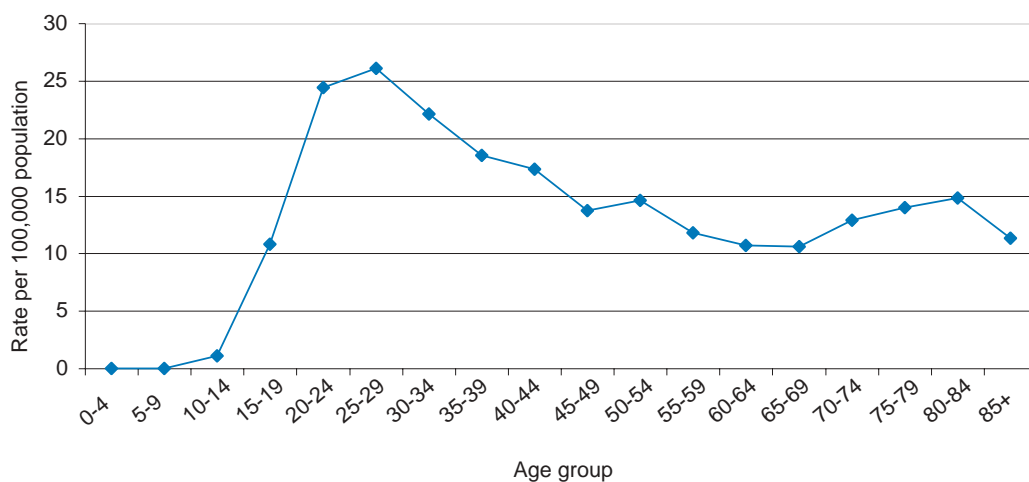


Figure 10.10 Age specific rates of hospitalisation due to injuries inflicted by another, Western Australia, 1995-2000

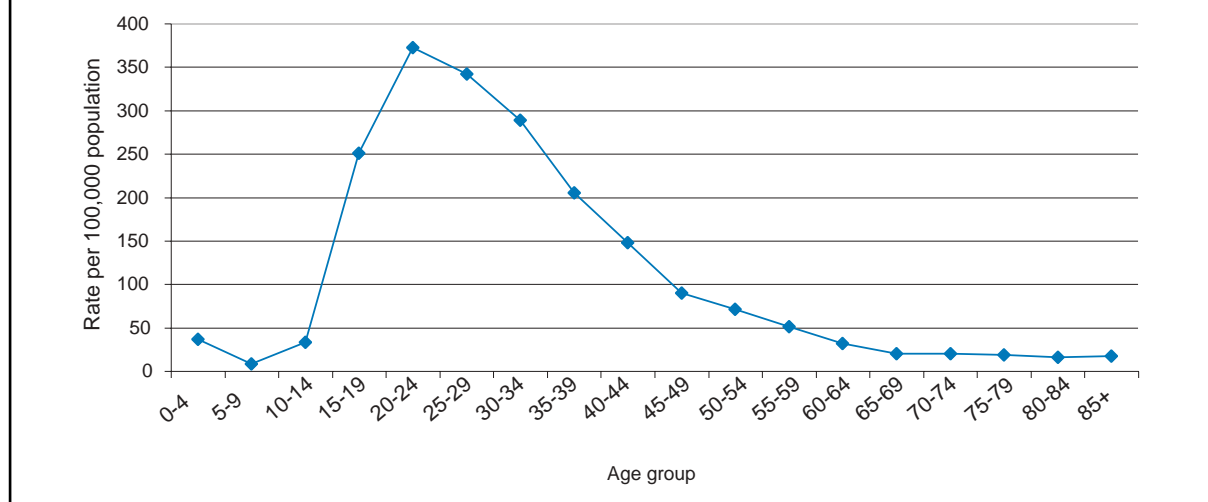


Table 10.1.1 Intentional injury death rate^a by method and year
Western Australia, 1989–2000

Method	1989-1994										1995-2000					
	1989	1990	1991	1992	1993	1994	1989-1994	1995	1996	1997	1998	1999	2000	1995-2000		
Self-inflicted																
Hanging or suffocation	3.5	4.0	3.6	3.8	3.8	4.8	3.9	4.9	5.8	5.5	7.4	5.8	6.1	5.9		
Poisoning	5.2	6.3	5.7	5.8	5.6	4.9	5.6	4.9	4.4	5.6	5.6	4.7	5.1	5.0		
Firearm	N/A	N/A	N/A	N/A	N/A	N/A	2.1	N/A	N/A	N/A	N/A	N/A	N/A	1.2		
Jumping from high place	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.4		
Sharp object	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Other methods	N/A	N/A	N/A	N/A	N/A	N/A	0.8	N/A	N/A	N/A	N/A	N/A	N/A	0.7		
All methods	12.0	13.7	12.8	12.8	13.0	12.8	12.8	12.7	12.6	14.0	16.0	12.9	12.6	13.5		
Inflicted by another																
Bodily force	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Sharp or blunt object	N/A	N/A	N/A	N/A	N/A	N/A	1.1	N/A	N/A	N/A	N/A	N/A	N/A	0.8		
Maltreatment or rape	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Bite from human ^b	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Firearm	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Hanging or strangulation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Other methods	N/A	N/A	N/A	N/A	N/A	N/A	2.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
All methods	N/A	N/A	N/A	N/A	N/A	N/A	2.0	N/A	N/A	N/A	N/A	N/A	N/A	1.6		

^a Age standardised rate per 100,000 population, standardised with 1991 Australian population

^b No equivalent code for this cause in ICD-10

N/A: Not applicable, number of cases too small for reliable rates to be calculated

Table 10.1.2 Intentional injury hospitalisation rate^a by method and year
Western Australia, 1989-2000

Method	1989-1994										1995-2000									
	1989	1990	1991	1992	1993	1994	1989-1994	1995	1996	1997	1998	1999	2000	1995-2000						
Self-inflicted																				
Hanging or suffocation	N/A	N/A	N/A	N/A	N/A	N/A	1.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.4					
Poisoning	108.1	105.7	105.6	111.6	111.0	115.1	109.6	118.0	117.9	101.5	109.4	106.1	108.6	110.2						
Firearm	N/A	N/A	N/A	N/A	N/A	N/A	0.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.4					
Jumping from high place	N/A	N/A	N/A	N/A	N/A	N/A	0.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.7					
Sharp object	10.5	9.2	10.8	10.2	11.7	12.5	10.8	11.7	12.9	10.6	13.4	12.8	12.4	12.3						
Other methods	N/A	3.2	N/A	N/A	N/A	N/A	2.2	N/A	2.4	2.6	2.4	2.7	N/A	2.3						
All methods	123.1	119.8	120.0	126.6	127.4	132.4	125.0	133.5	134.9	117.2	128.3	124.3	125.8	127.3						
Inflicted by another																				
Bodily force	29.3	27.4	31.3	27.1	55.5	54.9	37.7	60.9	56.6	58.0	59.6	61.7	68.7	61.0						
Sharp or blunt object	19.0	19.8	23.8	31.0	39.6	41.0	29.2	42.2	44.6	42.1	46.3	40.5	39.5	42.5						
Maltreatment or rape ^b	2.6	N/A	2.9	N/A	3.0	2.5	2.5	N/A	7.9	13.4	19.6	16.9	14.3	12.4						
Bite from human ^c	3.5	4.3	4.8	6.4	5.5	6.2	5.1	8.4	10.9	6.5	7.1	3.2	c	5.9						
Firearm	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A					
Hanging or strangulation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A					
Other methods	42.1	45.4	43.6	49.8	34.6	40.9	42.7	35.6	34.1	26.0	25.3	21.7	16.0	26.3						
All methods	96.9	99.7	106.7	116.1	138.5	145.9	117.6	148.8	154.4	146.2	158.5	144.3	138.7	148.4						

^a Age standardised rate per 100,000 population, standardised with 1991 Australian population

^b Changes were made to coding of hospital admissions due to this cause in July 1996 and July 1999

^c No equivalent code for this cause in ICD-10-AM

N/A: Not applicable, number of cases too small for reliable rates to be calculated

Table 10.2.1 Number of intentional injury deaths by method and year
 Western Australia, 1989-2000

Method	1989-1994										1995-2000									
	1989	1990	1991	1992	1993	1994	Total	Percentage ^a	1995	1996	1997	1998	1999	2000	Total	Percentage				
Self-inflicted																				
Hanging or suffocation	54	64	59	62	63	81	383	30.6%	84	101	97	134	106	115	637	43.6%				
Poisoning	81	101	93	96	94	84	549	43.8%	84	78	101	102	89	98	552	37.8%				
Firearm	32	31	32	33	37	34	199	15.9%	29	31	19	15	25	12	131	9.0%				
Jumping from high place	4	5	5	1	9	4	28	2.2%	9	4	10	13	6	0	42	2.9%				
Sharp object	1	7	4	1	1	2	16	1.3%	2	6	2	2	4	4	20	1.4%				
Other methods	13	10	14	16	13	12	78	6.2%	11	2	21	24	11	11	80	5.5%				
All methods	185	218	207	209	217	217	1,253	100%	219	222	250	290	241	240	1,462	100%				
Inflicted by another																				
Bodily force	1	2	3	3	5	4	18	9.2%	4	0	7	5	0	4	20	11.5%				
Sharp or blunt object	20	9	10	18	21	21	99	50.5%	20	13	13	10	11	16	83	47.7%				
Maltreatment or rape	0	0	0	2	0	1	3	1.5%	2	1	0	0	0	0	3	1.7%				
Bite from human ^b	0	0	0	1	2	0	3	1.5%	0	0	1	0	b	b	1	0.6%				
Firearm	3	6	6	4	3	7	29	14.8%	2	3	3	2	3	2	15	8.6%				
Hanging or strangulation	2	2	2	1	2	1	10	5.1%	8	1	3	3	1	2	18	10.3%				
Other methods	3	9	5	6	5	6	34	17.3%	3	4	2	7	13	5	34	19.5%				
All methods	29	28	26	35	38	40	196	100%	39	22	29	27	28	29	174	100%				

a Percentage: Number of deaths for specified cause (eg self-inflicted injury), specified method (eg hanging or suffocation) and specified period (eg 1989-1994) divided by number of deaths for all methods for same cause and period

b No equivalent code for this cause in ICD-10

Table 10.2.2 Number of intentional injury hospitalisations by method and year
Western Australia, 1989-2000

Method	1989-1994										1995-2000									
	1989	1990	1991	1992	1993	1994	Total	Percentage ^a	1995	1996	1997	1998	1999	2000	Total	Percentage				
Self-inflicted	30	10	17	18	14	16	105	0.8%	13	14	26	33	30	33	149	1.1%				
Hanging or suffocation	1,741	1,733	1,744	1,857	1,860	1,954	10,889	87.7%	2,035	2,068	1,815	1,997	1,960	2,035	11,910	86.7%				
Poisoning	11	10	6	10	14	13	64	0.5%	12	6	5	5	6	5	39	0.3%				
Firearm	7	6	9	17	14	15	68	0.5%	8	11	11	16	11	13	70	0.5%				
Jumping from high place	170	152	179	170	196	210	1,077	8.7%	201	222	187	240	235	227	1,312	9.6%				
Sharp object	24	53	27	35	38	37	214	1.7%	31	42	47	45	50	36	251	1.8%				
Other methods	1,983	1,964	1,982	2,107	2,136	2,245	12,417	100%	2,300	2,363	2,091	2,336	2,292	2,349	13,731	100%				
Inflicted by another	475	452	518	454	930	928	3,757	32.1%	1,043	980	1,021	1,069	1,121	1,263	6,497	40.9%				
Bodily force	307	325	394	517	668	698	2,909	24.8%	728	777	749	839	745	733	4,571	28.8%				
Sharp or blunt object	43	38	49	27	52	44	253	2.2%	27	138	239	353	305	259	1,321	8.3%				
Maltreatment or rape ^b	56	71	78	106	92	105	508	4.3%	146	191	114	126	58	c	635	4.0%				
Bite from human ^c	8	9	6	3	6	7	39	0.3%	2	5	6	10	6	3	32	0.2%				
Firearm	0	1	1	4	1	1	8	0.1%	1	1	2	4	2	6	16	0.1%				
Hanging or strangulation	682	745	720	827	580	691	4,245	36.2%	612	594	458	454	395	290	2,803	17.7%				
Other methods	1,571	1,641	1,766	1,938	2,329	2,474	11,719	100%	2,559	2,686	2,589	2,855	2,632	2,554	15,875	100%				

a Percentage: Number of hospitalisations for specified cause (eg self-inflicted injury), specified method (eg hanging or suffocation) and specified period (eg 1989-1994) divided by number of hospitalisations for all methods for same cause and period

b Changes were made to coding of hospital admissions due to this cause in July 1996 and July 1999

c No equivalent code for this cause in ICD-10-AM

Table 10.2.3 Number of self-inflicted poisoning hospitalisations by substance and year
Western Australia, 1989-2000

Substance	1989-1994										1995-2000									
	1989	1990	1991	1992	1993	1994	Total	Percentage ^a	1995	1996	1997	1998	1999	2000	Total	Percentage				
Pharmaceuticals	1,680	1,652	1,654	1,747	1,735	1,845	10,313	94.7%	1,907	1,922	1,716	1,892	1,824	1,869	11,130	93.5%				
Other substances	61	81	90	110	125	109	576	5.3%	128	146	99	105	136	166	780	6.5%				
All self-inflicted poisonings	1,741	1,733	1,744	1,857	1,860	1,954	10,889	100%	2,035	2,068	1,815	1,997	1,960	2,035	11,910	100%				

a Percentage of hospitalisations for specified substance (eg pharmaceuticals) and specified period (eg 1989-1994) divided by number of hospitalisations for all self-inflicted poisonings for same period

Table 10.3.1 Rate^a and rate ratio^b for intentional injury death by method
 Western Australia, 1989–2000

Method	1989–1994		1995–2000		Rate ratio
	Males	Females	Males	Females	
Self-inflicted					
Hanging or suffocation		1.1	9.8	2.0	4.9
Poisoning	6.7	2.5	7.5	2.6	2.9
Firearm	8.7	N/A	2.3	N/A	N/A
Jumping from high place	3.9	N/A	N/A	N/A	N/A
Sharp object	N/A	N/A	N/A	N/A	N/A
Other methods	1.1	0.5	1.2	N/A	N/A
All methods	21.1	4.6	21.7	5.2	4.2
Inflicted by another					
Bodily force	N/A	N/A	N/A	N/A	N/A
Sharp or blunt object	1.1	0.9	1.0	N/A	N/A
Maltreatment or rape	N/A	N/A	N/A	N/A	N/A
Bite from human	N/A	N/A	N/A	N/A	N/A
Firearm	N/A	N/A	N/A	N/A	N/A
Hanging or strangulation	N/A	N/A	N/A	N/A	N/A
Other methods	N/A	N/A	N/A	N/A	N/A
All methods	2.1	1.9	1.9	1.2	1.6

^a Age standardised rate per 100,000 population, standardised with 1991 Australian population

^b Rate ratio: Rate for males for specified method (eg hanging or suffocation) and specified period (eg 1989–1994) divided by rate for females for same method and period

N/A: Not applicable, number of cases too small for reliable rates to be calculated

**Table 10.3.2 Rate^a and rate ratio^b for intentional injury hospitalisation by method
Western Australia, 1989–2000**

Method	1989–1994			1995–2000		
	Males	Females	Rate ratio	Males	Females	Rate ratio
Self-inflicted						
Hanging or suffocation						
Poisoning	1.7	N/A	N/A	2.0	0.8	2.5
Firearm	85.1	135.3	0.6	82.4	139.1	0.6
Jumping from high place	1.2	N/A	N/A	N/A	N/A	N/A
Sharp object	0.8	N/A	N/A	0.8	N/A	N/A
Other methods	13.7	8.0	1.7	14.2	10.5	1.4
All methods	2.9	1.4	2.1	2.9	1.7	1.7
Inflicted by another	105.3	145.8	0.7	103.0	152.6	0.7
Bodily force	56.8	17.9	3.2	88.0	32.9	2.7
Sharp or blunt object	35.3	22.9	1.5	51.3	33.4	1.5
Maltreatment or rape	2.3	2.6	0.9	4.7	20.2	0.2
Bite from human	6.6	3.6	1.8	7.4	4.4	1.7
Firearm	N/A	N/A	N/A	N/A	N/A	N/A
Hanging or strangulation	N/A	N/A	N/A	N/A	N/A	N/A
Other methods	49.9	35.3	1.4	33.1	19.3	1.7
All methods	151.6	82.4	1.8	185.1	110.3	1.7

^a Age standardised rate per 100,000 population, standardised with 1991 Australian population

^b Rate ratio: Rate for males for specified method (eg hanging or suffocation) and specified period (eg 1989–1994) divided by rate for females for same method and period

N/A: Not applicable, number of cases too small for reliable rates to be calculated

Table 10.4.1 Number of intentional injury deaths by method and sex
 Western Australia, 1989-2000

Method	1989–1994				1995–2000			
	Males	Females	Total	% ^a Male	Males	Females	Total	% Male
Self-inflicted								
Hanging or suffocation	329	54	383	85.9%	532	105	637	83.5%
Poisoning	427	122	549	77.8%	409	143	552	74.1%
Firearm	187	12	199	94.0%	126	5	131	96.2%
Jumping from high place	17	11	28	60.7%	36	6	42	85.7%
Sharp object	14	2	16	87.5%	14	6	20	70.0%
Other methods	55	23	78	70.5%	61	19	80	76.3%
All methods	1029	224	1253	82.1%	1178	284	1462	80.6%
Inflicted by another								
Bodily force	11	7	18	61.1%	12	8	20	60.0%
Sharp or blunt object	55	44	99	55.6%	56	27	83	67.5%
Maltreatment or rape	1	2	3	33.3%	3	0	3	100.0%
Bite from human	2	1	3	66.7%	0	1	1	0.0%
Firearm	16	13	29	55.2%	9	6	15	60.0%
Hanging or strangulation	2	8	10	20.0%	8	10	18	44.4%
Other methods	17	17	34	50.0%	20	14	34	58.8%
All methods	104	92	196	53.1%	108	66	174	62.1%

^a Percentage: Number of deaths for specified method (eg hanging or suffocation) and specified period (eg 1989-1994) divided by number of deaths for males and females combined for same method and period

Table 10.4.2 Number of intentional injury hospitalisations by method and sex
 Western Australia, 1989-2000

Method	1989–1994				1995–2000			
	Males	Females	Total	% ^a Male	Males	Females	Total	% Male
Self-inflicted								
Hanging or suffocation	85	20	105	81.0%	107	42	149	71.8%
Poisoning	4,264	6,625	10,889	39.2%	4,513	7,397	11,910	37.9%
Firearm	57	7	64	89.1%	38	1	39	97.4%
Jumping from high place	40	28	68	58.8%	44	26	70	62.9%
Sharp object	685	392	1,077	63.6%	765	547	1,312	58.3%
Other methods	145	69	214	67.8%	159	92	251	63.3%
All methods	5,276	7,141	12,417	42.5%	5,626	8,105	13,731	41.0%
Inflicted by another								
Bodily force	2,878	879	3,757	76.6%	4,770	1,727	6,497	73.4%
Sharp or blunt object	1,786	1,123	2,909	61.4%	2,801	1,770	4,571	61.3%
Maltreatment or rape	123	130	253	48.6%	259	1,062	1,321	19.6%
Bite from human	331	177	508	65.2%	404	231	635	63.6%
Firearm	32	7	39	82.1%	27	5	32	84.4%
Hanging or strangulation	5	3	8	62.5%	6	10	16	37.5%
Other methods	2,514	1,731	4,245	59.2%	1,797	1,006	2,803	64.1%
All methods	7,669	4,050	11,719	65.4%	10,064	5,811	15,875	63.4%

^a Percentage: Number of hospitalisations for males for specified method (eg hanging or suffocation) and specified period (eg 1989-1994) divided by number of hospitalisations for males and females combined for same method and period

Age group	Self-inflicted injuries			Injuries inflicted by another		
	Rate ^a	Number	Percentage ^b	Rate	Number	Percentage
0-4	N/A	0	0.0%	N/A	4	2.3%
5-9	N/A	0	0.0%	N/A	8	4.6%
10-14	N/A	9	0.6%	N/A	8	4.6%
15-19	10.8	86	5.9%	N/A	9	5.2%
20-24	24.4	203	13.9%	N/A	18	10.4%
25-29	26.1	223	15.3%	N/A	17	9.8%
30-34	22.1	187	12.8%	N/A	23	13.3%
35-39	18.5	163	11.2%	N/A	27	15.6%
40-44	17.3	146	10.0%	N/A	17	9.8%
45-49	13.7	107	7.3%	N/A	13	7.5%
50-54	14.6	94	6.4%	N/A	6	3.5%
55-59	11.8	58	4.0%	N/A	5	2.9%
60-64	10.7	43	2.9%	N/A	5	2.9%
65-69	N/A	38	2.6%	N/A	6	3.5%
70-74	N/A	39	2.7%	N/A	2	1.2%
75-79	N/A	31	2.1%	N/A	1	0.6%
80-84	N/A	21	1.4%	N/A	2	1.2%
85+	N/A	13	0.9%	N/A	2	1.2%
WA popn	13.6	1,461	100%	1.6	173	100%

a Age specific rates per 100,000 population

b Percentage: Number of hospitalisations for specified cause (eg self-inflicted injury) and specified age group (eg 0-4) divided by number of hospitalisations for WA population for same cause

N/A: Not applicable, number of cases too small for reliable rates to be calculated

Age group	Self-inflicted injuries			Injuries inflicted by another		
	Rate ^a	Number	Percentage ^b	Rate	Number	Percentage
0-4	N/A	0	0.0%	36.4	277	1.7%
5-9	N/A	2	0.0%	8.2	65	0.4%
10-14	33.2	269	2.0%	33.5	272	1.7%
15-19	225.8	1,793	13.1%	250.5	1,989	12.5%
20-24	279.1	2,320	16.9%	372.6	3,097	19.5%
25-29	249.6	2,134	15.5%	342.1	2,925	18.4%
30-34	234.2	1,981	14.4%	288.7	2,442	15.4%
35-39	195.4	1,720	12.5%	205.0	1,804	11.4%
40-44	150.0	1,265	9.2%	147.9	1,247	7.9%
45-49	110.9	866	6.3%	89.9	702	4.4%
50-54	87.9	564	4.1%	71.4	458	2.9%
55-59	61.2	301	2.2%	51.3	252	1.6%
60-64	37.6	151	1.1%	32.1	129	0.8%
65-69	34.5	123	0.9%	19.9	71	0.4%
70-74	29.7	90	0.7%	20.1	61	0.4%
75-79	31.6	70	0.5%	18.5	41	0.3%
80-84	28.2	40	0.3%	N/A	23	0.1%
85+	36.5	42	0.3%	N/A	20	0.1%
WA popn	126.3	13,731	100%	146.0	15,875	100%

a Age specific rates per 100,000 population

b Percentage: Number of hospitalisations for specified cause (eg self-inflicted injury) and specified age group (eg 0-4) divided by number of hospitalisations for WA population for same cause

N/A: Not applicable, number of cases too small for reliable rates to be calculated

11. TRANSPORT INJURIES

11.1 Transport injuries – a decreasing public health issue

The review identified transport injuries as a significant public health issue in Western Australia, accounting for an average of 235 deaths per year and 5,176 hospitalisations per year between 1995 and 2000. Tables 11.1.1 to 11.5.2 present data on transport injuries from the review. The findings on transport injury hospitalisation rates should be regarded as preliminary until the effect of changes in hospital admission recording practices has been investigated.

11.2 Types of transport event

The transport data used in the review were grouped into traffic crashes, non-traffic crashes and other transport events, based on ICD-9 and ICD-10 external causes codes (Table A4, Appendix 1), according to the definitions below:

- Traffic crash: a crash involving a collision with a vehicle or an object, loss of control or rollover of a vehicle, which began and/or terminated on a road or verge designated for public access by vehicles.
- Non-traffic crash: a crash which occurred entirely in any place other than a road designated for public access by vehicles (eg a private driveway), or a crash which occurred on a road designated for public access by vehicles that did not involve a collision with another vehicle or an object, loss of control or rollover of a vehicle (eg falling in the aisle of a bus).
- Other transport event: An event involving railway, water, air or space transport.

The majority of transport injury deaths occurred in traffic crashes (83.7%) (Figure 11.1). However, both traffic and non-traffic crashes contributed almost equally to transport injury hospitalisations (49.8% and 43.6% respectively) (Figure 11.2). Very few deaths and hospitalisations resulted from other transport events.

Figure 11.1 Proportion of transport injury deaths by transport event type, Western Australia, 1995-2000

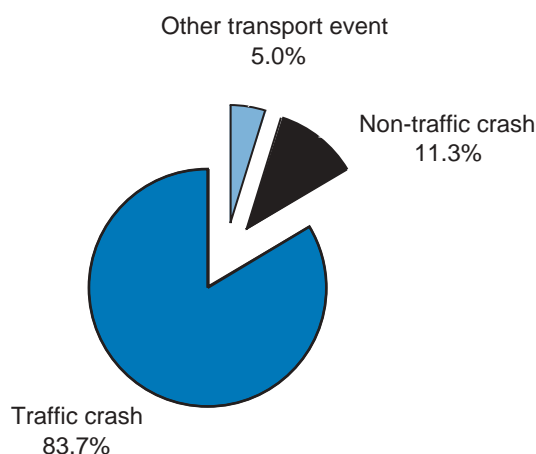
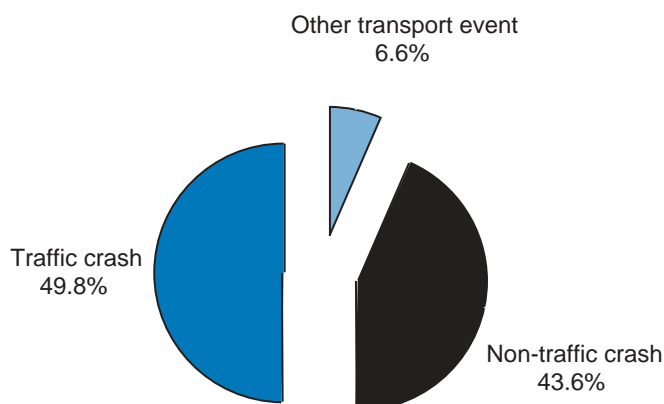


Figure 11.2 Proportion of transport injury hospitalisations by transport event type, Western Australia, 1995-2000

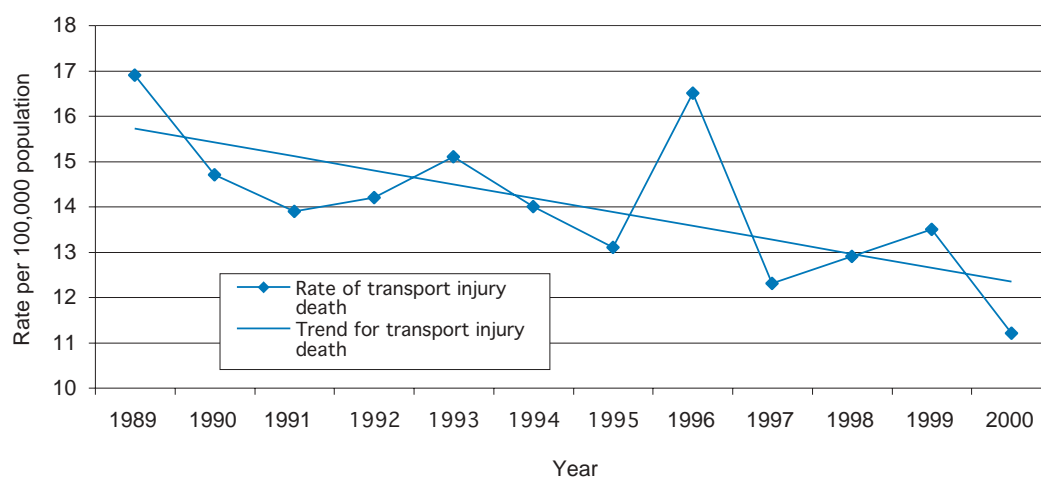


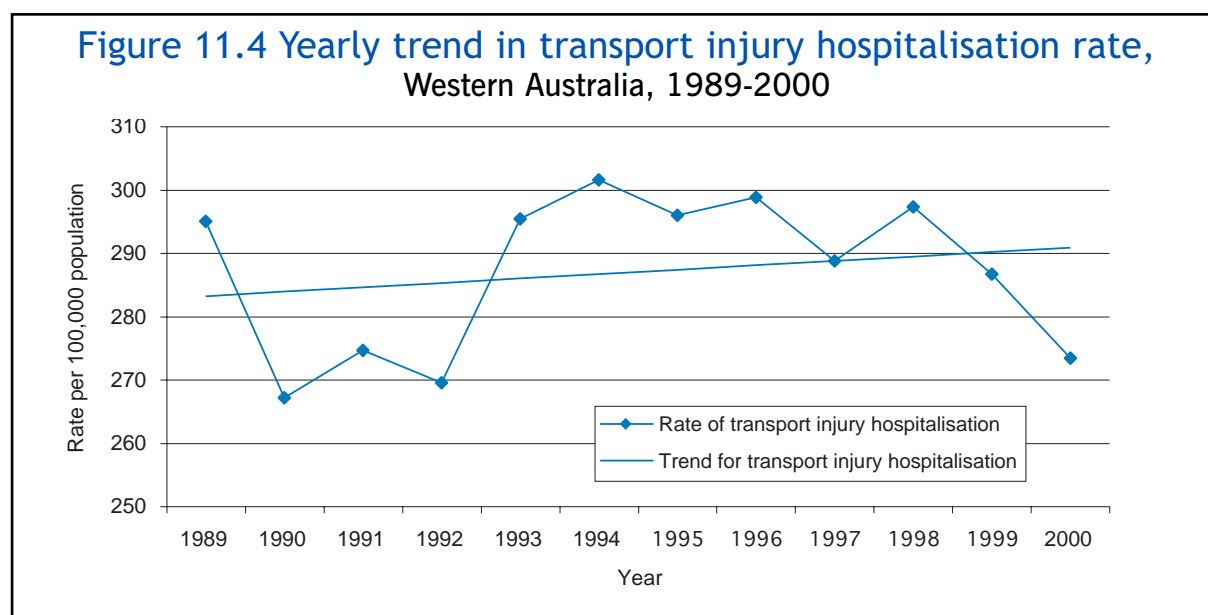
11.3 Transport injuries – rankings, trends, comparative risk

Transport injuries ranked first as a cause of injury death in the previous review period (Table 4.1, Figure 4.1). However, they moved to second rank order in the current review period due to a significant decrease in the age standardised rate of transport injury death between 1989 and 2000 (by 34%, $p = 0.02$; percentage derived from Table 11.1.1) (Figure 11.3).

Transport injuries ranked third as a cause of injury hospitalisation in both review periods (Table 8.1, Figure 8.1). The age standardised rate of transport injury hospitalisation did not change significantly between 1989 and 2000 ($p = 0.5$) (Figure 11.4).

Figure 11.3 Yearly trend in transport injury death rate, Western Australia, 1989-2000





Between 1995 and 2000, the risk of transport injury death was 2.8 times higher for males, 3.8 times higher for indigenous people, and 2.2 times higher for rural residents than for females, non indigenous people and metropolitan residents respectively (Table 5.4). For transport injury hospitalisation, compared to females, non indigenous people and metropolitan residents, the risk was 2.1 times higher for males, 2.5 times higher for indigenous people and 2.2 times higher for rural residents (Table 9.4).

11.4 Transport injuries – common transport user groups and crash types

For traffic and non-traffic crashes, the age standardised rates of both death and hospitalisation were highest for motor vehicle occupants (Figure 11.5, Figure 11.6; Table 11.1.1, Table 11.1.2) although, the age standardised rate of death for motor vehicle occupants in traffic crashes did decrease significantly between 1989 and 2000 (by 47%, $p = 0.02$, percentage derived from Table 11.1.1). For non-traffic crashes, the age standardised rates of hospitalisation were highest for pedal cyclists and motorcyclists (Table 11.1.2).

Although the risk of transport injury was greater for males than females in all road user groups, males were at particularly high risk as pedestrians, pedal cyclists and motorcyclists. Between 1995 and 2000, compared to females, the age standardised rate of transport injury death for pedestrians in traffic crashes was 3.9 times higher for males (Figure 11.5, Table 11.3.1). In the same period, the rate of hospitalisation for male pedal cyclists was 5.7 times higher in traffic crashes and 3.2 times higher in non-traffic crashes, than for females. For male motorcyclists, the hospitalisation rate was 12.1 times higher in traffic crashes and 11.7 times higher in non-traffic crashes than for females (Figure 11.6, Table 11.3.2).

Figure 11.5 Ranking of transport injury death by selected transport user group, transport event type and sex, Western Australia, 1995-2000

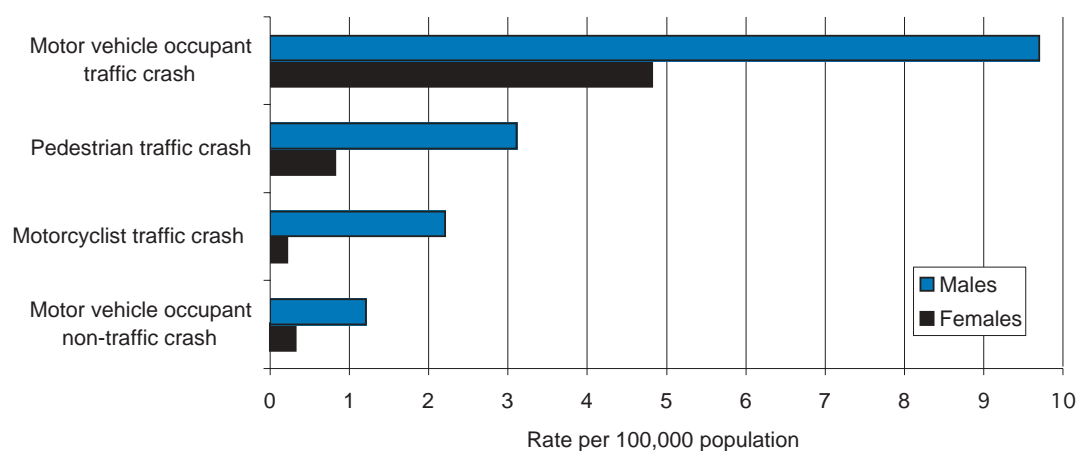
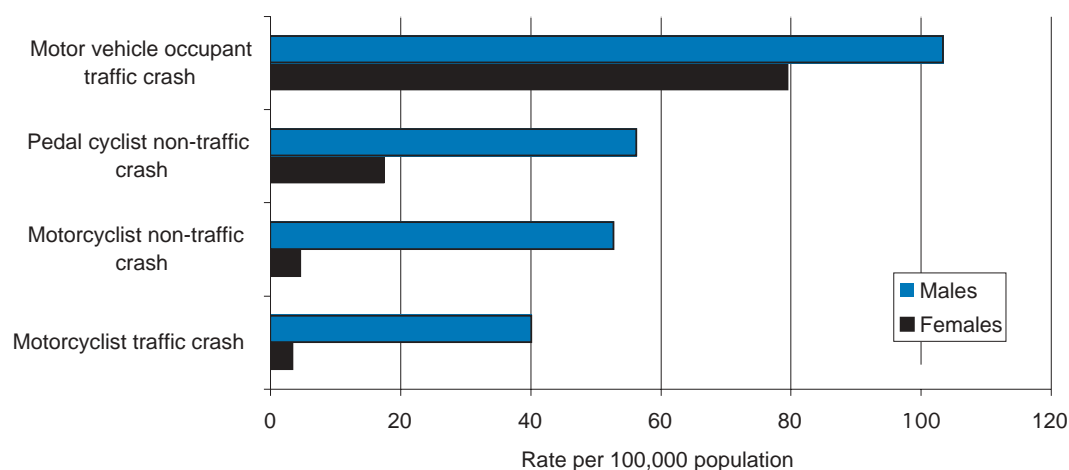


Figure 11.6 Ranking of transport injury hospitalisation by selected transport user group, transport event type and sex, Western Australia, 1995-2000



11.5 Transport injuries – distribution by age

Transport injury deaths and hospitalisations were most common in adolescence and young adulthood. The age specific rates for transport injury death and hospitalisation due to traffic crashes were more than twice as high for the age groups between 15 and 24 years as for the Western Australian population (Figure 11.7, Figure 11.8; Table 11.5.1, Table 11.5.2). In these two age groups, transport injuries resulted in an average of 70 deaths per year and 1,532 hospitalisations per year (averages derived from Tables 11.5.1 and 11.5.2). Between 1995 and 2000, each transport injury death resulted in an average of 39.1 PYLLs, slightly higher than for all injury causes (36.9 PYLLs) (Table 4.3).

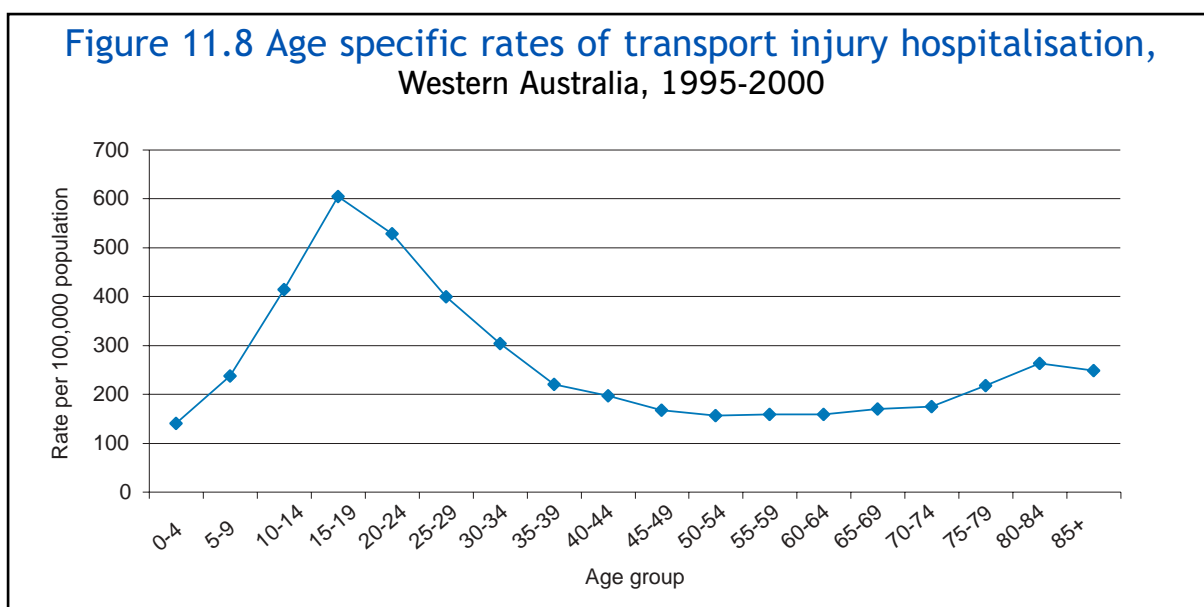
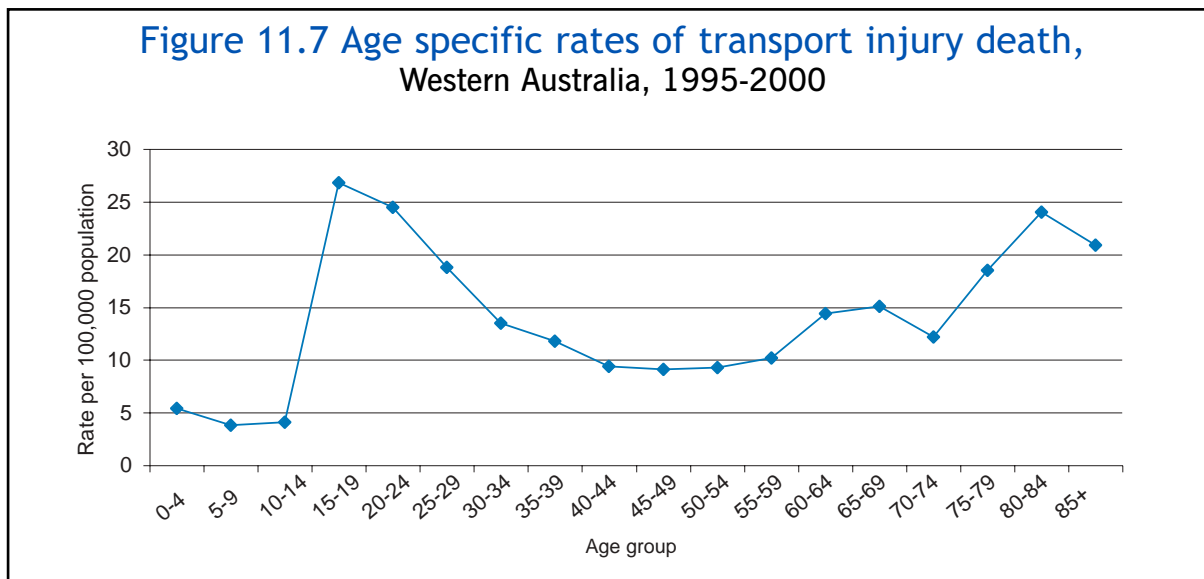


Table 11.1.1 Transport injury death rate^a by transport user group, transport event type and year
Western Australia, 1989-2000

Transport User Group	1989-1994					1995-2000								
	1989	1990	1991	1992	1993	1994	1989-1994	1995	1996	1997	1998	1999	2000	1995-2000
Traffic crash	10.7	8.2	8.0	9.3	8.5	8.9	8.9	9.0	8.7	7.2	7.5	5.5	5.7	7.2
Motor vehicle occupant	N/A	N/A	2.4	N/A	N/A	N/A	1.6	N/A	N/A	N/A	N/A	N/A	N/A	1.2
Motorcyclist	N/A	N/A	N/A	N/A	N/A	N/A	2.0	N/A	2.8	N/A	N/A	N/A	N/A	2.0
Pedestrian	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pedal cyclist	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other road user	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Non-traffic crash	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pedal cyclist	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Motorcyclist	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Motor vehicle occupant	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pedestrian	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other road user	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other transport event ^b	N/A	N/A	N/A	N/A	N/A	N/A	0.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All user groups & event types	16.9	14.7	13.9	14.2	15.2	14.0	14.8	13.1	16.5	12.3	12.9	13.5	11.2	13.2

^a Age standardised rate per 100,000 population, standardised with 1991 Australian population

^b Other transport event types include events involving rail, water, air and space transport

N/A: Not applicable, number of cases too small for reliable rates to be calculated

Table 11.1.2 Transport injury hospitalisation rate^a by transport user group, transport event type and year
Western Australia, 1989–2000

Transport User Group	1989-1994										1995-2000									
	1989	1990	1991	1992	1993	1994	1994	1989-1994	1995	1996	1997	1998	1999	2000	1995-2000					
Traffic crash	78.9	63.4	68.7	73.2	89.5	103.7	79.8	106.8	103.0	100.1	102.0	78.5	60.4	91.4						
Motor vehicle occupant	27.9	26.2	25.4	21.9	25.6	24.0	25.2	24.3	24.1	23.0	23.8	20.6	16.2	22.0						
Motorcyclist	22.1	20.5	18.8	16.1	22.4	21.8	20.3	20.2	19.9	20.0	19.2	15.8	15.2	18.3						
Pedestrian	6.9	6.6	7.8	6.0	5.4	6.4	6.5	5.4	7.2	4.6	6.9	4.4	3.9	5.4						
Pedal cyclist	59.9	53.5	45.9	39.9	28.3	19.8	41.0	13.1	12.4	9.7	8.2	5.4	1.2	8.2						
Other road user																				
Non-traffic crash																				
Pedal cyclist	27.9	29.7	34.4	27.0	30.9	29.9	30.0	31.9	32.9	36.6	38.6	40.3	42.3	37.2						
Motorcyclist	17.5	15.5	16.7	19.2	21.4	18.9	18.2	18.6	24.0	26.7	27.7	35.7	40.7	29.1						
Motor vehicle occupant	8.8	9.2	12.1	11.6	14.1	19.0	12.5	16.4	19.3	17.3	19.3	39.7	49.9	27.3						
Pedestrian	5.8	4.5	4.6	4.3	5.7	4.2	4.9	5.0	5.6	4.3	5.8	6.5	9.1	5.9						
Other road user	19.1	21.2	21.7	26.6	28.6	28.7	24.4	27.7	26.5	27.4	27.9	26.3	22.1	26.3						
Other transport event ^b	20.2	16.9	18.4	23.6	23.6	25.3	21.4	26.7	23.9	19.0	17.9	13.5	12.4	18.8						
All user groups & event types	295.0	267.2	274.6	269.5	295.4	301.6	284.0	296.0	298.8	288.8	297.3	286.7	273.4	290.0						

^a Age standardised rate per 100,000 population, standardised with 1991 Australian population

^b Other transport event types include events involving rail, water, air and space transport

Table 11.2.1 Number of transport injury deaths by transport user group, transport event type and year
Western Australia, 1989-2000

Transport User Group	1989-1994										1995-2000									
	1989	1990	1991	1992	1993	1994	1994	Total	Percentage ^a	1995	1996	1997	1998	1999	2000	Total	Percentage			
Traffic crash																				
Motor vehicle occupant	167	131	128	154	143	149	872	60.1%	153	150	125	135	99	105	767	54.4%				
Motorcyclist	30	30	40	17	27	15	159	11.0%	17	34	19	26	17	17	130	9.2%				
Pedestrian	34	39	19	23	38	41	194	13.4%	29	47	38	30	33	33	210	14.9%				
Pedal cyclist	7	8	8	1	5	5	34	2.3%	4	8	6	5	2	1	26	1.8%				
Other road user	5	1	5	7	3	2	23	1.6%	1	2	5	3	28	8	47	3.3%				
Non-traffic crash																				
Pedal cyclist	0	3	0	0	0	0	3	0.2%	1	3	0	0	1	0	5	0.4%				
Motorcyclist	5	0	2	1	2	1	11	0.8%	0	2	4	2	5	5	18	1.3%				
Motor vehicle occupant	7	2	8	7	4	4	32	2.2%	7	4	3	8	31	28	81	5.7%				
Pedestrian	1	2	3	3	7	4	20	1.4%	1	4	3	7	4	3	22	1.6%				
Other road user	2	5	1	6	6	9	29	2.0%	5	5	2	3	15	3	33	2.3%				
Other transport event ^b	9	16	11	15	17	5	73	5.0%	5	24	12	15	9	5	70	5.0%				
All user groups & event types	267	237	225	234	252	235	1,450	100%	223	283	217	234	244	208	1,409	100%				

a Percentage: Number of deaths for specified transport user group and transport event type (eg motor vehicle occupant, traffic crash) and specified period (eg 1989-1994) divided by number of deaths for all transport user groups and event types for same period

b Other transport event types include events involving rail, water, air and space transport

Table 11.2.2 Number of transport injury hospitalisations by transport user group, transport event type and year

Western Australia, 1989–2000

Transport User Group	1989-1994										1995-2000									
	1989	1990	1991	1992	1993	1994	Total	Percentage ^a	1995	1996	1997	1998	1999	2000	Total	Percentage				
Traffic crash																				
Motor vehicle occupant	1,254	1,021	1,119	1,208	1,485	1,736	7,823	27.8%	1,817	1,776	1,753	1,825	1,432	1,118	9,721	31.3%				
Motorcyclist	453	430	420	363	428	406	2,500	8.9%	417	417	407	427	374	298	2,340	7.5%				
Pedestrian	347	330	305	264	373	368	1,987	7.1%	344	348	351	349	287	281	1,960	6.3%				
Pedal cyclist	113	109	130	101	92	109	654	2.3%	93	126	82	123	83	73	580	1.9%				
Other road user	951	862	747	654	468	332	4,014	14.3%	222	215	170	147	98	23	875	2.8%				
Non-traffic crash																				
Pedal cyclist	461	498	584	458	529	516	3,046	10.8%	560	586	659	703	739	786	4,033	13.0%				
Motorcyclist	288	257	278	321	358	321	1,823	6.5%	319	417	470	493	647	742	3,088	9.9%				
Motor vehicle occupant	138	149	198	192	233	319	1,229	4.4%	282	339	309	347	723	920	2,920	9.4%				
Pedestrian	93	73	76	66	91	70	469	1.7%	79	96	74	102	118	170	639	2.1%				
Other road user	300	342	353	439	473	480	2,387	8.5%	473	455	480	498	479	411	2,796	9.0%				
Other transport event ^b	337	285	312	408	412	441	2,195	7.8%	482	434	354	342	259	235	2,106	6.8%				
All user groups & event types	4,735	4,356	4,522	4,474	4,942	5,098	28,127	100%	5,088	5,209	5,109	5,356	5,239	5,057	31,058	100%				

a Percentage: Number of hospitalisations for specified transport user group and transport event type (eg motor vehicle occupant, traffic crash) and specified period (eg 1989-94) divided by number of hospitalisations for all transport user groups and event types for same period

b Other transport event types include events involving rail, water, air and space transport

**Table 11.3.1 Rate^a and rate ratio^b for transport injury death by transport user group and event type
Western Australia, 1989-2000**

Transport user group	1989–1994			1995–2000		
	Males	Females	Rate ratio	Males	Females	Rate ratio
Traffic crash						
Motor vehicle occupant	12.2	5.7	2.1	9.7	4.8	2.0
Motorcyclist	3.0	N/A	N/A	2.2	N/A	N/A
Pedestrian	2.8	1.2	2.3	3.1	0.8	3.9
Pedal cyclist	N/A	N/A	N/A	N/A	N/A	N/A
Other road user	N/A	N/A	N/A	N/A	N/A	N/A
Non-traffic crash						
Pedal cyclist	N/A	N/A	N/A	N/A	N/A	N/A
Motorcyclist	N/A	N/A	N/A	N/A	N/A	N/A
Motor vehicle occupant	N/A	N/A	N/A	1.2	N/A	N/A
Pedestrian	N/A	N/A	N/A	N/A	N/A	N/A
Other road user	N/A	N/A	N/A	N/A	N/A	N/A
Other transport event ^c	1.4	N/A	N/A	1.1	N/A	N/A
All user groups & event types	21.7	8.0	2.7	19.5	6.9	2.8

a Age standardised rate per 100,000 population, standardised with 1991 Australian population

b Rate ratio: Rate for males for specified transport user group, transport event type (eg motor vehicle occupant, traffic crash) and period (eg 1989-1994) divided by rate for females for same transport user group, event type and period

c Other transport event types include events involving rail, water, air and space transport

N/A: Not applicable, number of cases too small for reliable rates to be calculated

**Table 11.3.2 Rate^a and rate ratio^b for transport injury hospitalisation by transport user group and event type
Western Australia, 1989-2000**

Transport user group	1989–1994			1995–2000		
	Males	Females	Rate ratio	Males	Females	Rate ratio
Traffic crash						
Motor vehicle occupant	90.6	68.8	1.3	103.3	79.4	1.3
Motorcyclist	44.4	5.3	8.4	40.0	3.3	12.1
Pedestrian	25.9	14.6	1.8	23.3	13.3	1.8
Pedal cyclist	10.5	2.4	4.4	9.1	1.6	5.7
Other road user	49.4	32.4	1.5	10.0	6.4	1.6
Non-traffic crash						
Pedal cyclist	42.9	16.6	2.6	56.2	17.3	3.2
Motorcyclist	32.0	3.9	8.2	52.7	4.5	11.7
Motor vehicle occupant	16.5	8.2	2.0	35.4	18.7	1.9
Pedestrian	6.9	2.8	2.5	7.9	4.2	1.9
Other road user	22.6	26.2	0.9	23.9	28.8	0.8
Other transport event ^c	29.7	12.5	2.4	27.9	9.4	3.0
All user groups & event types	371.3	193.7	1.9	389.6	186.9	2.1

a Age standardised rate per 100,000 population, standardised with 1991 Australian population

b Rate ratio: Rate for males for specified transport user group, transport event type (eg motor vehicle occupant, traffic crash) and period (eg 1989-1994) divided by rate for males for same transport user group, event type and period

c Other transport event types include events involving rail, water, air and space transport

Table 11.4.1 Number of transport injury deaths by transport user group, transport event type and sex
Western Australia, 1989-2000

Transport user group	1989-1994				1995-2000			
	Males	Females	Total	% ^a Male	Males	Females	Total	% Male
Traffic crash								
Motor vehicle occupant	597	275	872	68.5%	513	254	767	66.9%
Motorcyclist	153	6	159	96.2%	120	10	130	92.3%
Pedestrian	133	61	194	68.6%	165	45	210	78.6%
Pedal cyclist	24	10	34	70.6%	24	2	26	92.3%
Other road user	15	8	23	65.2%	31	16	47	66.0%
Non-traffic crash								
Pedal cyclist	3	0	3	100.0%	5	0	5	100.0%
Motorcyclist	11	0	11	100.0%	16	2	18	88.9%
Motor vehicle occupant	27	5	32	84.4%	64	17	81	79.0%
Pedestrian	10	10	20	50.0%	15	7	22	68.2%
Other road user	22	7	29	75.9%	26	7	33	78.8%
Other transport event ^b	68	5	73	93.2%	61	9	70	87.1%
All user groups & event types	1,063	387	1,450	73.3%	1,040	369	1,409	74.0%

a Percentage: Number of deaths for males for specified transport user group and transport event type (eg motor vehicle occupant, traffic crash) and specified period (eg 1989-1994) divided by number of deaths for males and females combined for same transport user group, transport event type and period
 b Other transport event types include events involving rail, water, air and space transport

Table 11.4.2 Number of transport injury hospitalisations by transport user group, transport event type and sex
 Western Australia, 1989-2000

Transport user group	1989-1994				1995-2000			
	Males	Females	Total	% ^a Male	Males	Females	Total	% Male
Traffic crash								
Motor vehicle occupant	4,481	3,342	7,823	57.3%	5,499	4,222	9,721	56.6%
Motorcyclist	2,241	259	2,500	89.6%	2,168	172	2,340	92.6%
Pedestrian	1,267	720	1,987	63.8%	1,241	719	1,960	63.3%
Pedal cyclist	534	120	654	81.7%	496	84	580	85.5%
Other road user	2,443	1,571	4,014	60.9%	534	341	875	61.0%
Non-traffic crash								
Pedal cyclist	2,222	824	3,046	72.9%	3,112	922	4,034	77.1%
Motorcyclist	1,630	193	1,823	89.4%	2,847	241	3,088	92.2%
Motor vehicle occupant	820	409	1,229	66.7%	1,913	1,007	2,920	65.5%
Pedestrian	346	135	481	71.9%	430	229	659	65.3%
Other road user	1,140	1,292	2,432	46.9%	1,311	1,527	2,838	46.2%
Other transport event ^b	1,514	624	2,138	70.8%	1,537	506	2,043	75.2%
All user groups & event types	18,638	9,489	28,127	66.3%	21,088	9,970	31,058	67.9%

a Percentage: Number of hospitalisations for males for specified transport user group, transport event type (eg motor vehicle occupant, traffic crash) and specified period (eg 1989-1994) divided by number of hospitalisations for males and females combined for same transport user group, event type and period

b Other transport event types include events involving rail, water, air and space transport

Table 11.5.1 Age specific transport injury death rates
Western Australia, 1995-2000

Age group	Traffic crash			Non-traffic crash			Other transport events ^c		
	Rate ^a	Number	Percentage ^b	Rate	Number	Percentage	Rate	Number	Percentage
0-4	N/A	34	2.9%	N/A	7	4.4%	N/A	0	0.0%
5-9	N/A	25	2.1%	N/A	5	3.1%	N/A	0	0.0%
10-14	N/A	24	2.0%	N/A	8	5.0%	N/A	1	1.4%
15-19	23.9	190	16.1%	N/A	22	13.8%	N/A	1	1.4%
20-24	21.3	177	15.0%	N/A	19	11.9%	N/A	8	11.4%
25-29	14.9	127	10.8%	N/A	21	13.2%	N/A	13	18.6%
30-34	11.3	96	8.1%	N/A	14	8.8%	N/A	4	5.7%
35-39	9.2	81	6.9%	N/A	15	9.4%	N/A	8	11.4%
40-44	8.1	68	5.8%	N/A	6	3.8%	N/A	5	7.1%
45-49	7.6	59	5.0%	N/A	8	5.0%	N/A	4	5.7%
50-54	6.9	44	3.7%	N/A	7	4.4%	N/A	9	12.9%
55-59	9.2	45	3.8%	N/A	2	1.3%	N/A	3	4.3%
60-64	11.5	46	3.9%	N/A	7	4.4%	N/A	5	7.1%
65-69	11.8	42	3.6%	N/A	7	4.4%	N/A	5	7.1%
70-74	N/A	33	2.8%	N/A	2	1.3%	N/A	2	2.9%
75-79	N/A	37	3.1%	N/A	3	1.9%	N/A	1	1.4%
80-84	N/A	27	2.3%	N/A	6	3.8%	N/A	1	1.4%
85+	N/A	24	2.0%	N/A	0	0.0%	N/A	0	0.0%
WA popn	10.8	1,179	100%	1.5	159	100%	0.6	70	100%

a Age specific rates per 100,000 population

b Percentage: Number of deaths for specified age groups (eg 0-4) and transport event type (eg traffic crash) divided by number of deaths for WA population for same transport event type

c Other transport event types include events involving rail, water, air and space transport

N/A: Not applicable, number of cases too small for reliable rates to be calculated

Cases with unknown age excluded: 1 (1995-2000)

Table 11.5.2 Age specific transport injury hospitalisation rates
 Western Australia, 1995–2000

Age group	Traffic crash			Non-traffic crash			Other transport events ^c		
	Rate ^a	Number	Percentage ^b	Rate	Number	Percentage	Rate	Number	Percentage
0-4	48.8	371	2.4%	75.2	572	4.2%	15.6	119	5.8%
5-9	64.6	515	3.3%	158.0	1,260	9.3%	14.8	118	5.8%
10-14	83.0	673	4.3%	293.8	2,384	17.6%	36.9	299	14.6%
15-19	314.2	2,495	16.1%	261.3	2,075	15.3%	29.1	231	11.3%
20-24	306.5	2,548	16.5%	196.4	1,633	12.1%	25.4	211	10.3%
25-29	226.3	1,935	12.5%	149.7	1,280	9.5%	23.4	200	9.8%
30-34	164.4	1,391	9.0%	119.2	1,008	7.4%	19.2	162	7.9%
35-39	118.8	1,046	6.8%	84.2	741	5.5%	17.3	152	7.4%
40-44	105.6	890	5.8%	74.2	626	4.6%	16.1	136	6.7%
45-49	88.3	690	4.5%	63.4	495	3.7%	14.9	116	5.7%
50-54	83.7	537	3.5%	56.6	363	2.7%	15.9	102	5.0%
55-59	93.6	460	3.0%	54.1	266	2.0%	11	54	2.6%
60-64	96.6	388	2.5%	50.1	201	1.5%	11.2	45	2.2%
65-69	108.7	388	2.5%	51.8	185	1.4%	N/A	31	1.5%
70-74	115.0	349	2.3%	52.7	160	1.2%	N/A	19	0.9%
75-79	162.2	359	2.3%	43.4	96	0.7%	N/A	26	1.3%
80-84	182.2	258	1.7%	71.3	101	0.7%	N/A	13	0.6%
85+	159.1	183	1.2%	80.9	93	0.7%	N/A	9	0.4%
WA popn	142.3	15,476	100%	124.5	13,539	100%	18.8	2,043	100%

a Age specific rates per 100,000 population

b Percentage: Number of hospitalisations for specified age group (eg 0-4) and transport event type (eg traffic crash) divided by number of hospitalisations for WA population for same transport event type

c Other transport event types include events involving rail, water, air and space transport

N/A: Not applicable, number of cases too small for reliable rates to be calculated

12. FALLS

12.1 Falls – a burden on the health care system

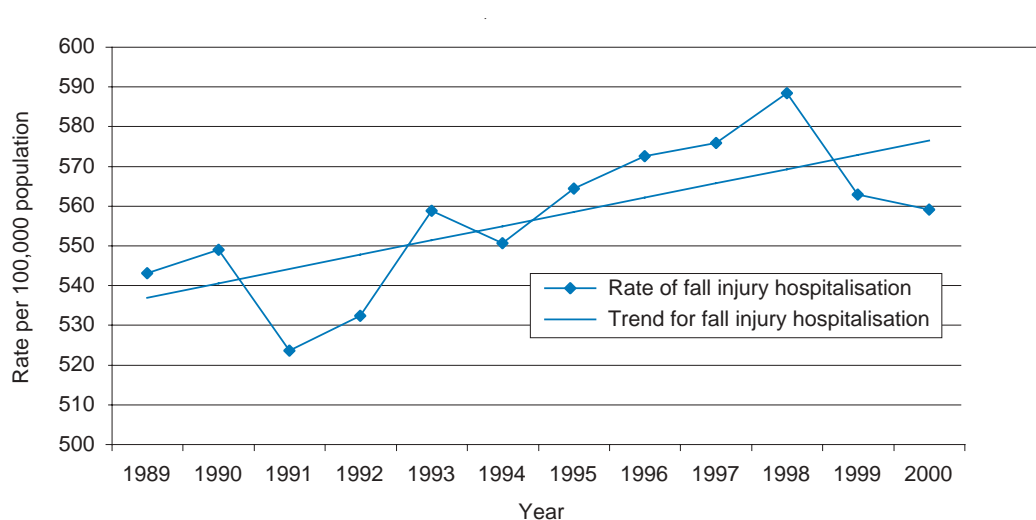
The prevention of falls among older people and children has been a National Health Priority since 1996 (Australian Institute of Health and Welfare, 1996). In Western Australia, between 1995 and 2000, falls were a relatively uncommon cause of injury death, with only one in ten injury deaths, or an average of 83 deaths per year resulting from this cause (Figure 4.2; average derived from Table 4.2). However, in the same period, falls accounted for one in every three injury hospitalisations, or an average of 10,368 hospitalisations per year (Figure 8.2; average derived from Table 8.2). Thus, falls create a considerable burden on the state's health care system. Tables 12.1.1 to 12.5.2 present data on fall injuries from the review. The findings on fall injury hospitalisation rates should be regarded as preliminary until the effect of changes in hospital admission recording practices has been investigated.

12.2 Fall injuries – rankings, trends, comparative risk

Falls ranked third as a cause of injury death in the previous review period and fourth as a cause of injury death in the current review period (Figure 4.1, Table 4.1). This change in rank order was due to a significant increase in the age standardised rate of death due to 'other unintentional injuries' between 1989 and 2000 (Table 4.1). Falls ranked second after 'other unintentional injuries' as a cause of injury hospitalisation in both review periods (Figure 8.1, Table 8.1).

Although the age standardised fall death rate did not change significantly for the Western Australian population between 1989 and 2000 ($p = 0.3$), the rate for fall hospitalisation increased significantly (by 3%, $p = 0.01$; percentage derived from Table 8.1) (Figure 12.1).

Figure 12.1 Yearly trend in fall injury hospitalisation rate, Western Australia, 1989-2000



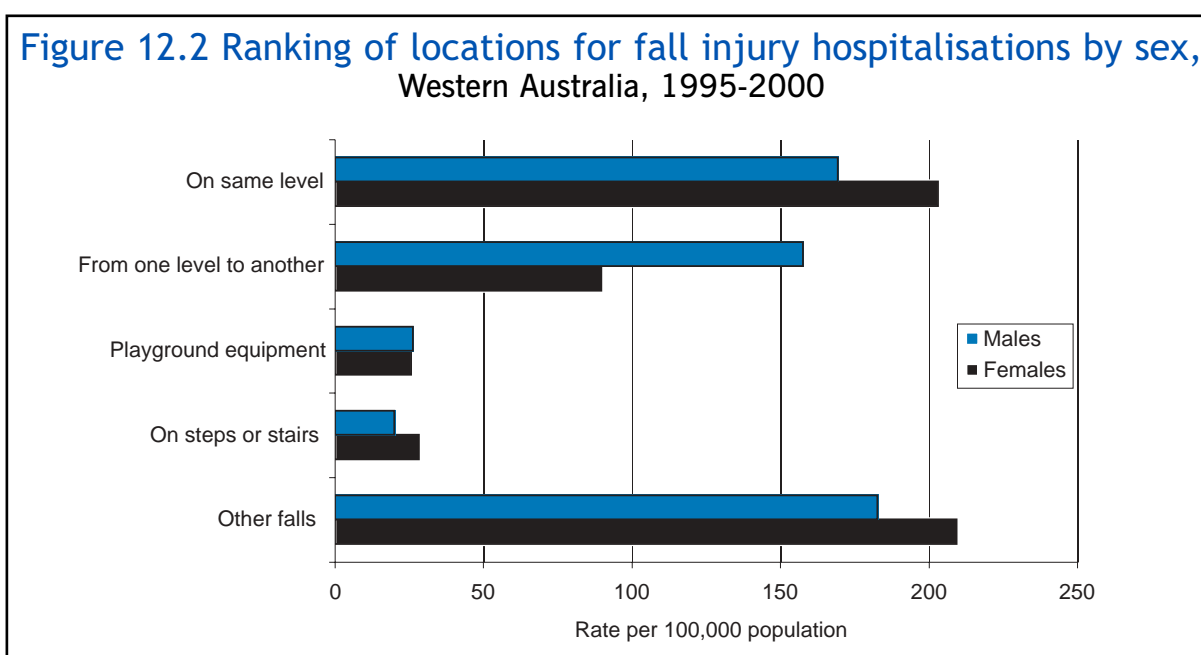
Between 1995 and 2000, the risk of death due to falls was 1.4 times higher for males than females, although the risk of hospitalisation was similar for males and females (Table 5.4, Table 9.4). Rural residents were 1.2 times more likely to die and 1.4 times more likely to be hospitalised due to falls than metropolitan residents (Table 5.4, Table 9.4). Indigenous people were 2.8 times more likely to be hospitalised due to falls than non indigenous people (Table 9.4). A death rate ratio could not be calculated for indigenous people because of the small number of cases (Table 5.4).

12.3 Fall injuries – common locations

For fall deaths and hospitalisations, ‘other locations for falls’ had higher age standardised rates than any specific location (Table 12.1.1, Table 12.1.2). Further investigation of cases coded as ‘other locations for falls’ revealed that 70% of deaths and 33.4% of hospitalisations in this category had been assigned the external cause code E887 ‘fracture, cause unspecified’ (Table A3, Appendix 1). Before ICD-10 and ICD-10-AM were introduced, external cause code E887 was used in cases in which the cause of a fracture was unclear, whether or not the fracture had resulted from a fall. Since ICD-10 and ICD-10-AM were introduced, many such cases have been coded as ‘other unintentional injuries’ resulting in an apparent decrease in the number of fall deaths and hospitalisations after 1999.

Common specific locations for fall deaths could not be identified because the number of cases for each specific location was too small to yield a reliable rate (Table 12.1.1). For hospitalisations, the most common fall locations were ‘on same level’ and ‘from one level to another’ (Table 12.1.2). Between 1989 and 2000, there were significant increases in the age standardised rate of hospitalisation for falls ‘on same level’ (by 256%, $p = 0.0001$) and ‘from one level to another’ (by 73%, $p = 0.0001$; percentages derived from Table 12.1.2).

Overall, the risk of fall hospitalisation was similar for males and females between 1995 and 2000. However, compared to females, the risk of hospitalisation for males as a result of falls ‘from one level to another’ was 1.8 times higher, ‘on same level’ was 20% lower, and ‘on steps and stairs’ was 30% lower (Figure 12.2, Table 12.3.2).



12.4 Fall injuries – distribution by age

Deaths and hospitalisations due to falls were most common in old age. Between 1995 and 2000, age specific rates of fall deaths increased rapidly from 75 years onward. In the 85 years and older age group, the rate of death was 41.6 times higher than for the Western Australian population (rate ratio derived from Table 12.5.1). For fall hospitalisations in the same period, the age specific rate increased rapidly from 65 years of age onward and was 13.7 times higher in the 85 years and older age group than for the Western Australian population (Figure 12.3; rate ratio derived from Table 12.5.2). Between 1995 and 2000, falls resulted in an average of 4,291 hospitalisations per year among people aged 65 years and older (average derived from Table 12.5.2).

Fall hospitalisations were also common among children. Between 1995 and 2000, the age specific rates of fall hospitalisation were slightly higher in the age groups between birth and nine years than in the Western Australian population (Figure 12.3, Table 12.5.2). During that period, falls resulted in an average of 1,753 fall hospitalisations per year among children under ten years of age (average derived from Table 12.5.2).

Between 1995 and 2000, each fall death resulted in an average of 18.9 PYLLs, considerably less than for all injury causes (36.9 PYLLs) (Table 4.3).

Figure 12.3 Age specific rates of fall injury hospitalisation, Western Australia, 1995-2000

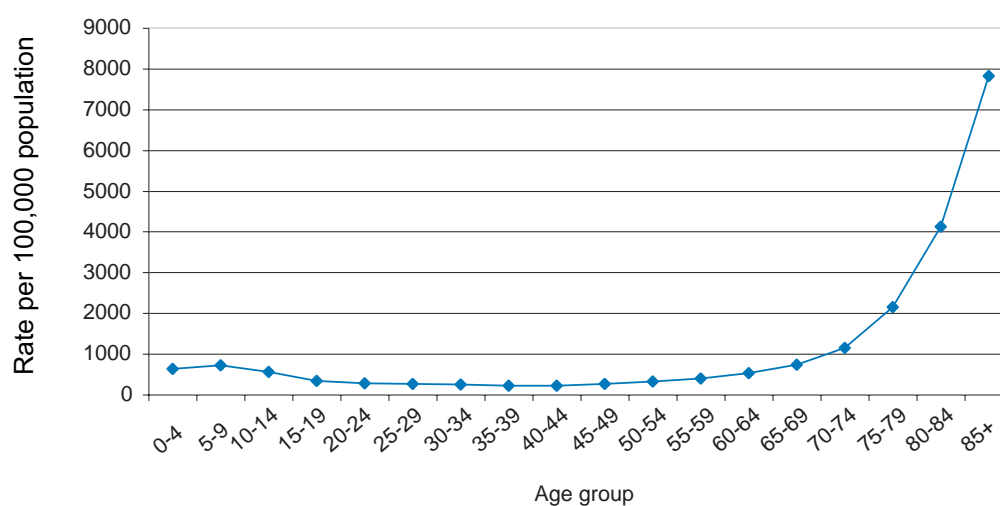


Table 12.1.1 Fall injury hospitalisation rate^a by location and year
Western Australia, 1989–2000

Location	1989-1994					1995-2000								
	1989	1990	1991	1992	1993	1994	1989-1994	1995	1996	1997	1998	1999	2000	1995-2000
On same level	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
From one level to another	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Playground equipment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
On steps or stairs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other locations ^b	3.5	4.7	2.9	3.4	3.3	3.2	3.5	3.9	4.4	4.4	4.7	N/A	N/A	3.3
All locations of falls	5.0	5.7	3.6	4.2	4.0	4.4	4.5	4.8	6.0	5.2	5.4	2.9	2.1	4.3

a Age standardised rate per 100,000 population, standardised with 1991 Australian population

b Deaths which would have been coded as falls using external cause code E887 (fracture, cause unspecified) and included in the 'other locations' category in ICD-9, may have been coded as 'other unintentional injury' deaths after the introduction of ICD-10 in January 1999
N/A: Not applicable, number of cases too small for reliable rates to be calculated

Table 12.1.2 Fall injury hospitalisation rate^a by location and year
Western Australia, 1989–2000

Location	1989-1994					1995-2000								
	1989	1990	1991	1992	1993	1994	1989-1994	1995	1996	1997	1998	1999	2000	1995-2000
On same level	67.3	78.0	93.6	100.1	119.9	134.2	99.7	147.2	175.3	185.2	189.6	211.5	239.7	192.7
From one level to another	75.7	76.8	82.0	87.7	105.8	110.3	90.1	112.0	121.3	127.7	127.9	128.1	131.0	124.9
Playground equipment	18.3	20.8	19.5	23.9	28.9	25.3	22.8	28.9	27.0	21.8	23.5	23.4	30.2	25.8
On steps or stairs	15.1	17.7	16.6	18.6	22.2	23.4	19.0	22.6	23.9	23.6	25.3	24.5	25.9	24.4
Other locations ^b	366.8	355.8	311.9	301.9	281.9	257.4	311.8	253.5	224.9	217.7	222.0	175.3	132.2	202.8
All locations of falls	543.1	549.0	523.5	532.3	558.7	550.6	543.4	564.3	572.5	575.9	588.3	562.8	559.1	570.5

a Age standardised rate per 100,000 population, standardised with 1991 Australian population

b Hospitalisations which would have been coded as falls using external cause code E887 (fracture, cause unspecified) and included in the 'other locations' category in ICD-9-CM, may have been coded as 'other unintentional injury' hospitalisations after the introduction of ICD-10-AM in July 1999

Table 12.2.1 Number of fall injury deaths by location and year
Western Australia, 1989–2000

Location	1989-1994										1995-2000									
	1989	1990	1991	1992	1993	1994	Total	Percentage ^a	1995	1996	1997	1998	1999	2000	Total	Percentage				
On same level	8	2	2	2	2	7	23	5.7%	7	14	4	1	11	4	41	8.2%				
From one level to another	10	10	6	10	10	13	59	14.6%	6	12	10	10	10	11	59	11.9%				
Playground equipment	0	0	0	0	0	0	0	0.0%	0	0	0	0	0	0	0	0.0%				
On steps or stairs	2	3	3	1	0	0	9	2.2%	3	2	0	3	3	0	11	2.2%				
Other locations ^b	47	66	42	52	53	53	313	77.5%	69	80	85	91	32	29	386	77.7%				
All locations of falls	67	81	53	65	65	73	404	100%	85	108	99	105	56	44	497	100%				

a Percentage: Number of deaths for specified location (eg on same level) and specified period (eg 1989-1994) divided by number of deaths for all locations for same period

b Includes 234 (1989-1994) and 257 (1995-2000) cases coded as E887 (fracture cause unspecified). Deaths which would have been coded as falls using external cause code E887 and included in the 'other locations' category in ICD-9 may have been coded as 'other unintentional injury' deaths after the introduction of ICD-10 in January 1999

Table 12.2.2 Number of fall injury hospitalisations by location and year
Western Australia, 1989–2000

Location	1989-1994										1995-2000									
	1989	1990	1991	1992	1993	1994	Total	Percentage ^a	1995	1996	1997	1998	1999	2000	Total	Percentage				
On same level	984	1,176	1,440	1,582	1,927	2,215	9,324	18.0%	2,500	3,060	3,317	3,468	3,984	4,634	20,963	33.7%				
From one level to another	1,182	1,228	1,335	1,450	1,774	1,881	8,850	17.1%	1,943	2,146	2,284	2,336	2,376	2,472	13,557	21.8%				
Playground equipment	307	357	338	418	505	445	2,370	4.6%	514	482	390	423	420	541	2,770	4.5%				
On steps or stairs	222	268	257	296	359	386	1,788	3.4%	382	415	417	460	460	499	2,633	4.2%				
Other locations ^b	5,498	5,469	4,883	4,811	4,577	4,266	29,504	56.9%	4,326	3,950	3,936	4,119	3,344	2,615	22,290	35.8%				
All locations of falls	8,193	8,498	8,253	8,557	9,142	9,193	51,836	100%	9,665	10,053	10,344	10,806	10,584	10,761	62,213	100%				

a Percentage: Number of hospitalisations for specified location (eg on same level) and specified period (eg 1989-1994) divided by number of hospitalisations for all locations for same period

b Includes 13,287 (1989-1994) and 4,014 (1995-2000) cases coded as E887 (fracture cause unspecified). Hospitalisations which would have been coded as falls using external cause code E887 and included in the 'other locations' category in ICD-9-CM may have been coded as 'other unintentional injury' hospitalisations after the introduction of ICD-10-AM in July 1999

**Table 12.3.1 Rate^a and rate ratio^b for fall injury death by location
Western Australia, 1989-2000**

Location	1989–1994			1995–2000		
	Males	Females	Rate ratio	Males	Females	Rate ratio
On same level	N/A	N/A	N/A	N/A	N/A	N/A
From one level to another	1.0	N/A	N/A	0.9	N/A	N/A
Playground equipment	N/A	N/A	N/A	N/A	N/A	N/A
On steps or stairs	N/A	N/A	N/A	N/A	N/A	N/A
Other locations	3.6	3.4	1.1	3.6	3.1	1.2
All locations of falls	5.1	3.9	1.3	5.2	3.6	1.4

a Age standardised rate per 100,000 population, standardised with 1991 Australian population

b Rate ratio: Rate for males for specified location (eg on same level) and specified period (eg 1989-1994) divided by rate for females for same location and period

N/A: Not applicable, number of cases too small for reliable rates to be calculated

**Table 12.3.2 Rate^a and rate ratio^b for fall injury hospitalisation by location
Western Australia, 1989-2000**

Location	1989–1994			1995–2000		
	Males	Females	Rate ratio	Males	Females	Rate ratio
On same level	83.1	108.3	0.8	169.1	203.0	0.8
From one level to another	116.2	61.5	1.9	157.4	89.6	1.8
Playground equipment	23.0	22.6	1.0	26.1	25.4	1.0
On steps or stairs	14.9	21.9	0.7	19.8	28.0	0.7
Other locations	295.9	306.9	1.0	182.5	209.1	0.9
All locations of falls	533.1	521.2	1.0	554.9	555.2	1.0

a Age standardised rate per 100,000 population, standardised with 1991 Australian population

b Rate ratio: Rate for males for specified location (eg on same level) and specified period (eg 1989-1994) divided by rate for females for same location and period

**Table 12.4.1 Number of fall injury deaths by location and sex
Western Australia, 1989-2000**

Location	1989–1994				1995–2000			
	Males	Females	Total	% ^a Male	Males	Females	Total	% Male
On same level	13	10	23	56.5%	28	13	41	68.3%
From one level to another	47	12	59	79.7%	45	14	59	76.3%
Playground equipment	0	0	0	0.0%	0	0	0	0.0%
On steps or stairs	6	3	9	66.7%	8	3	11	72.7%
Other locations	118	195	313	37.7%	152	234	386	39.4%
All locations of falls	184	220	404	45.5%	233	264	497	46.9%

^a Percentage: Number of deaths for males for specified location (eg on same level) and specified period (eg 1989-1994) divided by number of deaths for males and females combined for same location and period

**Table 12.4.2 Number of fall injury hospitalisations by location and sex
Western Australia, 1989-2000**

Location	1989–1994				1995–2000			
	Males	Females	Total	% ^a Male	Males	Females	Total	% Male
On same level	3,867	5,457	9,324	41.5%	8,747	12,216	20,963	41.7%
From one level to another	5,728	3,122	8,850	64.7%	8,481	5,076	13,557	62.6%
Playground equipment	1,227	1,143	2,370	51.8%	1,437	1,333	2,770	51.9%
On steps or stairs	693	1,095	1,788	38.8%	1,022	1,611	2,633	38.8%
Other locations	13,770	15,734	29,504	46.7%	9,181	13,109	22,290	41.2%
All locations of falls	25,285	26,551	51,836	48.8%	28,868	33,345	62,213	46.4%

^a Percentage: Number of hospitalisations for males for specified location (eg on same level) and specified period (eg 1989-1994) divided by number of hospitalisations for males and females combined for same location and period

Table 12.5.1 Age specific fall injury death rates
Western Australia, 1995-2000

Age group	Rate ^a	Number	Percentage ^b
0-4	N/A	1	0.2%
5-9	N/A	0	0.0%
10-14	N/A	1	0.2%
15-19	N/A	0	0.0%
20-24	N/A	8	1.6%
25-29	N/A	4	0.8%
30-34	N/A	8	1.6%
35-39	N/A	3	0.6%
40-44	N/A	6	1.2%
45-49	N/A	17	3.4%
50-54	N/A	7	1.4%
55-59	N/A	12	2.4%
60-64	N/A	15	3.0%
65-69	N/A	15	3.0%
70-74	N/A	34	6.9%
75-79	25.3	56	11.3%
80-84	62.8	89	17.9%
85+	191.3	220	44.4%
WA popn	4.6	496	100%

a Age specific rates per 100,000 population

b Percentage: Number of deaths for specified age group (eg 0-4) divided by number of deaths for WA population

N/A: Not applicable, number of cases too small for reliable rates to be calculated

Cases with unknown age excluded: 1

Table 12.5.2 Age specific fall injury hospitalisation rates
Western Australia, 1995-2000

Age group	Rate ^a	Number	Percentage ^b
0-4	631.1	4,801	7.7%
5-9	717.3	5,720	9.2%
10-14	553.2	4,488	7.2%
15-19	343.8	2,730	4.4%
20-24	282.5	2,348	3.8%
25-29	265.4	2,269	3.6%
30-34	243.5	2,060	3.3%
35-39	223.1	1,964	3.2%
40-44	223.7	1,886	3.0%
45-49	262.7	2,052	3.3%
50-54	320.8	2,059	3.3%
55-59	399.0	1,962	3.2%
60-64	530.2	2,129	3.4%
65-69	743.2	2,653	4.3%
70-74	1,155.5	3,506	5.6%
75-79	2,146.8	4,751	7.6%
80-84	4,122.1	5,838	9.4%
85+	7,822.3	8,997	14.5%
WA popn	572.2	62,213	100%

a Age specific rates per 100,000 population

b Percentage: Number of hospitalisations for specified age group (eg 0-4) divided by number of hospitalisations for WA population

13. ACCIDENTAL POISONING; DROWNING; FIRES, BURNS AND SCALDS

13.1 National Health Priorities

Prevention of accidental poisoning, drowning and fires, burns and scalds (also falls, discussed in Chapter 12) were made National Health Priorities in 1996 (Australian Institute of Health and Welfare, 1996). Accidental poisoning in young children, and drowning in children and young men are also priorities for 2003. Tables 13.1.1 to 13.5.2 present data on accidental poisoning, drowning, and fires, burns and scalds from the review. The findings on injury hospitalisation rates for these three causes should be regarded as preliminary until the effect of changes in hospital admission recording practices has been investigated.

13.2 Accidental poisoning

13.2.1 Accidental poisoning – rankings, trends, comparative risk

Between 1995 and 2000, accidental poisoning ranked fifth as a cause of injury death and sixth as a cause of injury hospitalisation (Figure 4.1, Figure 8.1). In that period, accidental poisoning resulted in an average of 62 deaths per year and 1,102 hospitalisations per year (averages derived from Table 4.2 and Table 8.2).

Trends in death due to accidental poisoning could not be assessed because the number of cases in some previous years was too small to yield a reliable rate (Figure 13.1, Table 13.1.1). The age standardised accidental poisoning hospitalisation rate increased significantly for the Western Australian population between 1989 and 2000 (by 57%, $p = 0.0004$; percentage derived from Table 13.1.2) (Figure 13.2).

Between 1995 and 2000, males were 2.9 times more likely to die, and 1.3 times more likely to be hospitalised due to accidental poisoning than females (Table 5.4, Table 9.4). In the same period, rural residents were 20% less likely to die, but 1.7 times more likely to be hospitalised due to accidental poisoning than metropolitan residents. Indigenous people were 2.8 times more likely to be hospitalised due to accidental poisoning than non indigenous people (Table 9.4). A death rate ratio could not be calculated for indigenous people because the number of cases was too small to yield a reliable rate (Table 5.4).

13.2.2 Accidental poisoning – common causes

Between 1995 and 2000, the most common substances causing accidental poisoning deaths and hospitalisations were pharmaceuticals, and narcotics and hallucinogens (Table 13.1.1, Table 13.1.2). Of the accidental poisoning deaths in that period, pharmaceuticals (excluding narcotics and hallucinogens) accounted for 50.4%, and narcotics and hallucinogens accounted for a further 39.7% (Table 13.2.1). Of accidental poisoning hospitalisations, pharmaceuticals (excluding narcotics and hallucinogens) accounted for 57.7% and narcotics and hallucinogens accounted for a further 11.2% (Table 13.2.2). Between 1989 and 2000, the rate of hospitalisation due to accidental poisoning involving pharmaceuticals (excluding narcotics and hallucinogens) increased significantly (by 95%, $p = 0.0002$; percentage derived from Table 13.1.2).

Further investigation is needed into the specific pharmaceuticals commonly involved in accidental poisoning hospitalisations, and the other drugs they may have been used in combination with (eg alcohol).

13.2.3 Accidental poisonings—distribution by age

Accidental poisoning deaths were most common among young adults, whereas hospitalisations were most common among young children. For death due to accidental poisoning, between 1995 and 2000, compared to the Western Australian population, the age specific rate was 2.7 times higher in the 25 to 29 years age group (rate ratio derived from Table 13.5.1). For hospitalisation, the age specific rate was 5.5 times higher in the birth to four years age group (rate ratio derived from Table 13.5.2).

Each accidental poisoning death resulted in an average of 37.9 PYLLs, compared to 36.9 PYLLs per death for all causes of injury (Table 4.3).

Figure 13.1 Yearly trend in accidental poisoning death rate, Western Australia, 1989-2000

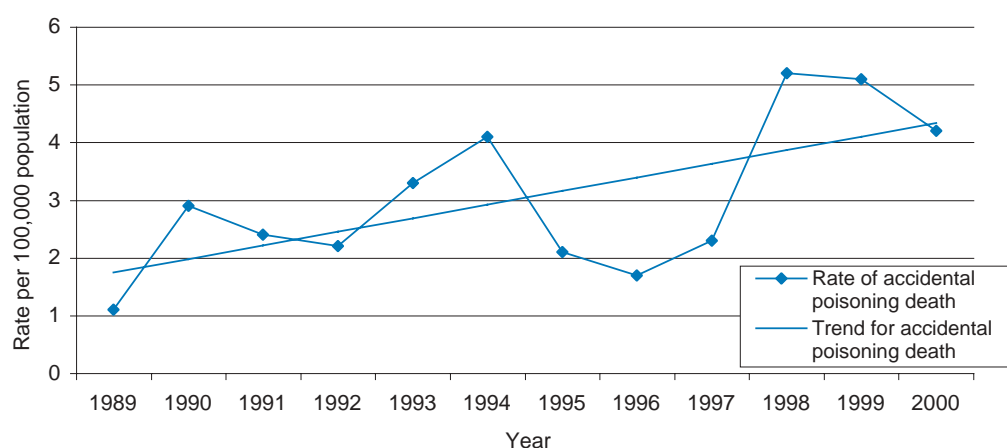
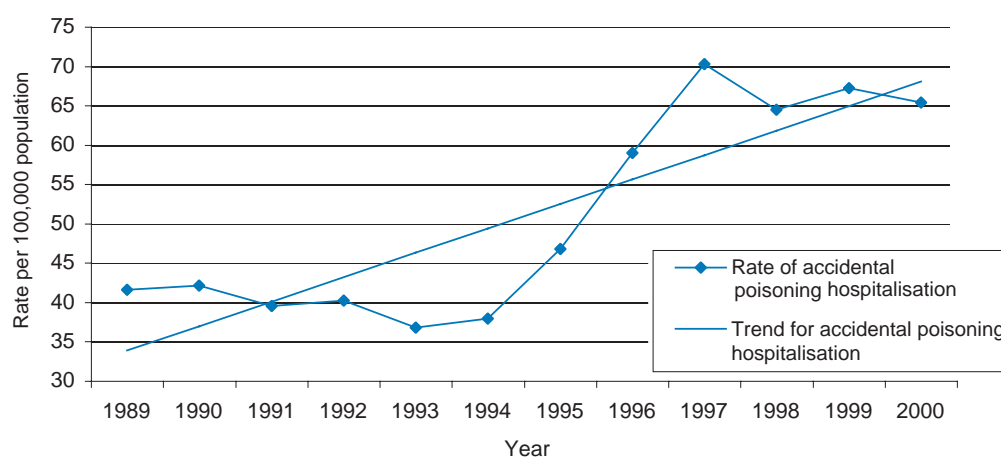


Figure 13.2 Yearly trend in accidental poisoning hospitalisation rate, Western Australia, 1989-2000



13.3 Drowning

13.3.1 Drowning – rankings, trends, comparative risk

Between 1995 and 2000, drowning ranked sixth as a cause of injury death and ninth as a cause of injury hospitalisation (Figure 4.1, Figure 8.1). In that period, drowning resulted in an average of 31 deaths per year and 79 hospitalisations per year (averages derived from Table 4.2 and Table 8.2).

Trends in death due to drowning could not be assessed because the number of cases in each year was too small to yield a reliable rate (Table 13.1.1). Between 1989 and 2000, the age standardised rate of hospitalisation due to drowning did not change significantly for the Western Australian population ($p = 0.9$) (Figure 13.3).

Between 1995 and 2000, males were 3.0 times more likely to die and 2.1 times more likely to be hospitalised due to drowning than females (Table 5.4, Table 9.4). Rural residents were 1.7 times more likely to die and 1.6 times more likely to be hospitalised due to drowning than metropolitan residents. Death and hospitalisation rate ratios could not be calculated for indigenous people because the numbers of cases were too small to yield reliable rates (Table 5.4, Table 9.4).

13.3.2 Drowning – common locations and causes

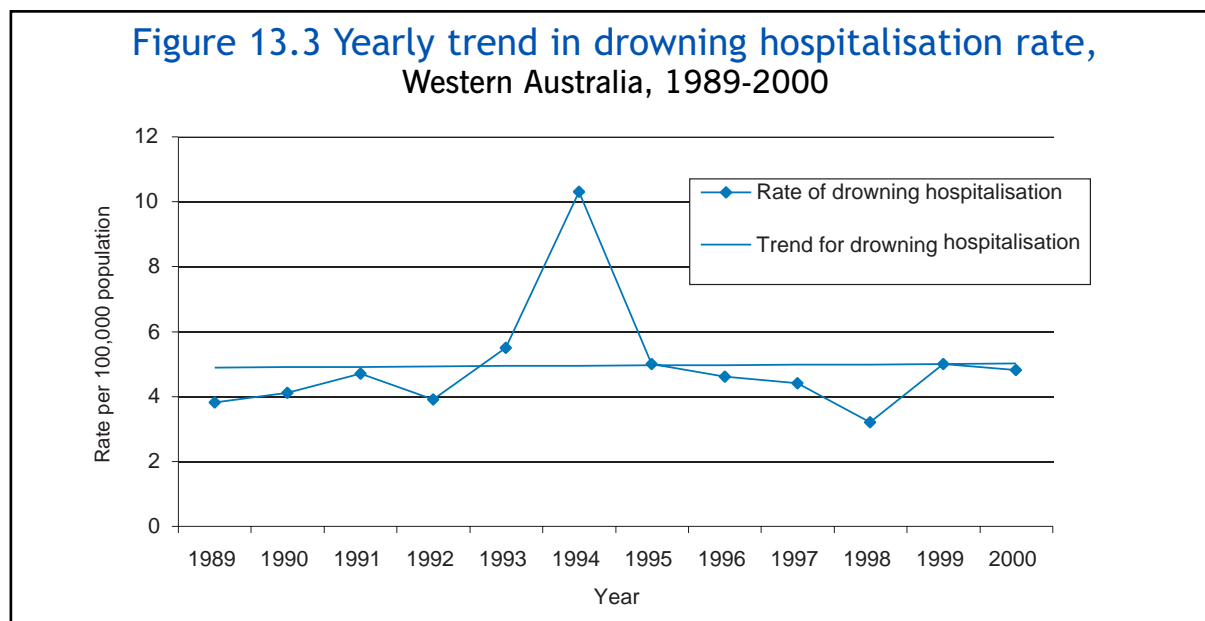
Between 1995 and 2000, the most common location for drowning deaths, accounting for 39.6% of such deaths, was constructed water containers other than swimming pools (Table 13.2.1).

An external cause code for drowning in a swimming pool was introduced for hospitalisation data in July 1996 and for death data in 1998. The trend for swimming pool drownings could not be assessed because the numbers of deaths and hospitalisations in the years since the codes were introduced were too small to yield reliable rates. Between 1998 and 2000, there were a total of 21 deaths and 103 hospitalisations due to drowning in a swimming pool (Table 13.2.1 and Table 13.2.2).

13.3.3 Drowning – distribution by age

Between 1995 and 2000, compared to the Western Australian population, children in the first four years of life were 3.5 times more likely to die and 7.3 times more likely to be hospitalised due to drowning (rate ratios derived from Tables 13.5.1 and 13.5.2).

Each drowning death resulted in an average of 44.8 PYLLs, compared to an average of 36.9 PYLLs per death due to all injury causes (Table 4.3).



13.4 Fires, burns and scalds

13.4.1 Fires, burns and scalds – rankings, trends, comparative risk

Between 1995 and 2000, fires, burns and scalds ranked eighth as a cause of injury death and seventh as a cause of injury hospitalisation (Figure 4.1, Figure 8.1). In that period, fires, burns and scalds resulted in an average of nine deaths per year and 791 hospitalisations per year (averages derived from Table 4.2 and Table 8.2).

Trends in deaths due to fires, burns and scalds could not be assessed because the number of cases each year was too small to yield a reliable rate (Table 13.1.1).

Between 1989 and 2000, the age standardised rate of hospitalisation due to fires, burns and scalds decreased significantly for the Western Australian population (by 25%, $p = 0.04$; percentage derived from Table 13.1.2) (Figure 13.4).

Between 1995 and 2000, the risk of hospitalisation due to fires, burns and scalds was 2.1 times higher for males, 5.7 times higher for indigenous people and 2.3 times higher for rural residents, than for their comparison groups (Table 9.4).

13.4.2 Fires, burns and scalds – common causes

Common causes of death due to fires, burns and scalds could not be determined because the number of cases in each year was too small to yield reliable rates for any specific cause (Table 13.1.1). Between 1995 and 2000, hospitalisation due to fires, burns and scalds resulted mainly from contact with hot objects, fluids, vapours, gases and steam (Table 13.1.2). Between 1989 and 2000, the age standardised rate of hospitalisation due to hot objects, fluids, vapours, gases and steam increased significantly (by 17%, $p = 0.01$; percentage derived from Table 13.1.2).

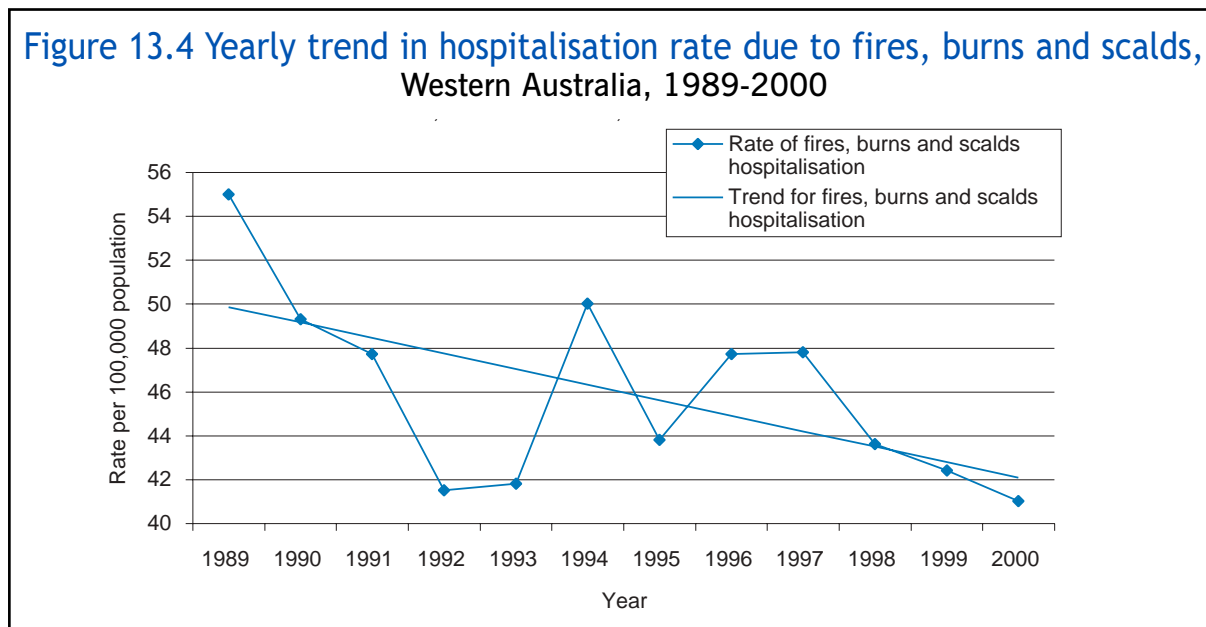
Between 1995 and 2000, compared to females, the risk of hospitalisation for males was 7.0 times higher for burns resulting from ignition of flammable material, and 2.6 times higher for clothing ignition (Table 13.3.2).

13.4.3 Fires, burns and scalds – distribution by age

Age specific death rates for fires, burns and scalds could not be calculated because the number of cases in each age group was too small to yield a reliable rate (Table 13.5.1). Between 1995 and 2000, compared to the Western Australian population, the age specific rate of hospitalisation was 4.2 times higher for children in the first four years of life (Table 13.5.2).

Each death due to fires, burns and scalds resulted in an average of 37.4 PYLLs, compared to an average of 36.9 PYLLs per death due to all injury causes (Table 4.3).

Figure 13.4 Yearly trend in hospitalisation rate due to fires, burns and scalds, Western Australia, 1989-2000



**Table 13.1.1 Rate^a of death due to accidental poisoning, drowning and fires, burns and scalds by cause and year
Western Australia, 1989–2000**

Cause	1989-1994										1995-2000					
	1989	1990	1991	1992	1993	1994	1989-1994	1995	1996	1997	1998	1999	2000	1995-2000		
Accidental poisoning																
Pharmaceuticals except narcotics & hallucinogens	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.5	2.9	2.3	1.7		
Narcotics & hallucinogens	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.5	N/A	N/A	1.4		
Alcohol, including beverages	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Petroleum products	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Other substances	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
All substances	N/A	2.9	2.4	N/A	3.3	4.1	2.7	N/A	N/A	2.3	5.2	5.1	4.2	3.4		
Drowning																
Swimming pool ^b																
Other constructed water containers	N/A	N/A	N/A	N/A	N/A	N/A	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Bath tub	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.7		
Sport & recreational ^c	N/A	N/A	N/A	N/A	N/A	N/A	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Other causes/locations	N/A	N/A	N/A	N/A	N/A	N/A	1.8	N/A	N/A	N/A	N/A	N/A	N/A	0.5		
All causes/locations	N/A	N/A	N/A	N/A	N/A	N/A	1.8	N/A	N/A	N/A	N/A	N/A	N/A	1.7		
Fires, burns and scalds																
Hot objects, fluids, vapours, gases & steam	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Ignition of flammable material	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Fire in a building	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Clothing ignition	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Other causes	N/A	N/A	N/A	N/A	N/A	N/A	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
All causes	N/A	N/A	N/A	N/A	N/A	N/A	0.5	N/A	N/A	N/A	N/A	N/A	N/A	0.5		

^a Age standardised rate per 100,000 population, standardised with 1991 Australian population

^b Code for this location introduced into ICD-9-CM in July 1998

^c No equivalent codes for this cause in ICD-10

N/A: Not applicable, number of cases too small for reliable rates to be calculated

Table 13.1.2 Rate^a of hospitalisation due to accidental poisoning, drowning and fires, burns and scalds by cause and year Western Australia, 1989–2000

Cause	1989-1994										1995-2000									
	1989	1990	1991	1992	1993	1994	1989-1994	1995	1996	1997	1998	1999	2000	1995-2000						
Accidental poisoning																				
Pharmaceuticals except narcotics & hallucinogens	19.2	20.8	21.0	19.8	18.0	19.7	19.7	24.5	33.4	41.3	38.3	40.7	37.6	36.1						
Narcotics & hallucinogens	N/A	N/A	N/A	N/A	N/A	N/A	0.9	2.5	4.8	7.5	8.6	8.8	9.4	7.0						
Alcohol, including beverages	N/A	N/A	N/A	N/A	N/A	N/A	0.7	N/A	N/A	N/A	N/A	N/A	N/A	1.7						
Petroleum products	3.0	2.5	2.5	N/A	N/A	N/A	2.2	N/A	N/A	N/A	N/A	N/A	N/A	1.7						
Other substances	18.7	17.1	14.6	16.9	15.4	14.1	16.1	15.9	18.5	17.5	13.9	14.0	15.2	15.8						
All substances	41.6	42.1	39.5	40.2	36.8	37.9	39.7	46.8	59.0	70.3	64.5	67.2	65.4	62.4						
Drowning																				
Swimming pool ^b																				
Other constructed water containers	N/A	N/A	N/A	N/A	N/A	N/A	1.9	N/A	N/A	N/A	N/A	N/A	N/A	1.3						
Bath tub	N/A	N/A	N/A	N/A	N/A	N/A	0.3	N/A	N/A	N/A	N/A	N/A	N/A	0.8						
Sport & recreational ^c	N/A	N/A	N/A	N/A	2.6	7.8	2.4	N/A	N/A	N/A	N/A	N/A	N/A	0.4						
Other causes/locations	N/A	N/A	N/A	N/A	N/A	N/A	0.7	N/A	N/A	N/A	N/A	N/A	N/A	1.1						
All causes/locations	3.8	4.1	4.7	3.9	5.5	10.3	5.4	5.0	4.6	4.4	3.2	5.0	4.8	4.5						
Fires, burns and scalds																				
Hot objects, fluids, vapours,																				
gases & steam	20.0	18.6	23.1	20.3	22.2	27.6	22.0	25.7	29.0	28.4	26.8	25.8	23.5	26.5						
Ignition of flammable material	N/A	N/A	N/A	N/A	N/A	N/A	4.7	N/A	N/A	N/A	N/A	N/A	N/A	5.7						
Fire in a building	N/A	N/A	N/A	N/A	N/A	N/A	1.1	N/A	N/A	N/A	N/A	N/A	N/A	1.5						
Clothing ignition	N/A	N/A	N/A	N/A	N/A	N/A	1.2	N/A	N/A	N/A	N/A	N/A	N/A	1.2						
Other causes	29.0	25.5	17.8	13.3	11.8	13.5	18.4	9.7	10.8	9.6	8.7	8.3	9.3	9.4						
All causes	55.0	49.3	47.7	41.5	41.8	50.0	47.5	43.8	47.7	47.8	43.6	42.4	41.0	44.4						

^a Age standardised rate per 100,000 population, standardised with 1991 Australian population

^b Code for this location introduced into ICD-9-CM in July 1996

^c No equivalent codes for this cause in ICD-10-AM

N/A: Not applicable, number of cases too small for reliable rates to be calculated

Table 13.2.1 Number of deaths due to accidental poisoning, drowning and fires, burns and scalds by cause and year
Western Australia, 1989–2000

Cause	1989-1994										1995-2000									
	1989	1990	1991	1992	1993	1994	Total	Percentage ^a	1995	1996	1997	1998	1999	2000	Total	Percentage				
Accidental poisoning																				
Pharmaceuticals except narcotics & hallucinogens	7	20	25	15	23	39	129	48.9%	12	13	23	44	53	43	188	50.4%				
Narcotics & hallucinogens	3	17	10	17	24	24	95	36.0%	20	14	13	46	32	23	148	39.7%				
Alcohol, including beverages	2	8	3	0	2	1	16	6.1%	1	1	0	0	5	7	14	3.8%				
Petroleum products	0	1	0	1	3	2	7	2.7%	1	0	1	0	1	1	4	1.1%				
Other substances	5	1	2	3	3	3	17	6.4%	2	3	4	4	3	3	19	5.1%				
All substances	17	47	40	36	55	69	264	100%	36	31	41	94	94	77	373	100%				
Drowning																				
Swimming pool ^b																				
Other constructed water containers	16	7	17	21	20	16	97	55.4%	21	22	22	2	13	6	21	11.2%				
Bath tub	0	1	2	2	1	1	7	4.0%	0	5	1	9	0	0	74	39.6%				
Sport & recreational ^c	11	9	6	9	3	13	51	29.1%	12	10	6	4	c	1	10	5.3%				
Other causes/locations	3	4	11	1	1	0	20	11.4%	1	0	2	5	24	18	32	17.1%				
All causes/locations	30	21	36	33	25	30	175	100%	34	37	31	21	39	25	187	100%				
Fires, burns and scalds																				
Hot objects, fluids, vapours, gases & steam	0	0	0	1	0	1	2	4.7%	0	0	1	1	0	1	3	5.5%				
Ignition of flammable material	1	1	0	1	0	0	3	7.0%	0	1	1	0	0	0	2	3.6%				
Fire in a building	2	7	1	3	3	7	23	53.5%	10	4	8	2	1	0	25	45.5%				
Clothing ignition	2	0	3	0	3	0	8	18.6%	0	0	2	2	0	0	4	7.3%				
Other causes	1	2	1	1	1	1	7	16.2%	0	3	5	6	3	4	21	38.1%				
All causes	6	10	5	6	7	9	43	100%	10	8	17	11	4	5	55	100%				

^a Percentage: Number of deaths for specified sub-cause (eg petroleum products) and specified period (eg 1989-1994) divided by all deaths for same cause (eg accidental poisonings) in same period

^b Code for this cause introduced into ICD-9 in July 1996

^c No equivalent codes for this cause in ICD-10

**Table 13.2.2 Number of hospitalisations due to accidental poisoning, drowning and fires, burns and scalds by cause and year
Western Australia, 1989-2000**

Cause	1989-1994										1995-2000									
	1989	1990	1991	1992	1993	1994	Total	Percentage ^a	1995	1996	1997	1998	1999	2000	Total	Percentage				
Accidental poisoning																				
Pharmaceuticals except narcotics & hallucinogens	318	351	355	335	306	336	2,001	49.8%	422	580	726	678	730	683	3,819	57.7%				
Narcotics & hallucinogens	5	15	11	15	15	25	86	2.1%	43	84	132	153	157	170	739	11.2%				
Alcohol, including beverages	8	12	12	11	14	17	74	1.8%	37	17	38	31	38	24	185	2.8%				
Petroleum products	50	43	43	35	30	29	230	5.7%	32	21	32	35	31	32	183	2.8%				
Other substances	307	285	247	283	262	241	1,625	40.5%	274	325	310	248	254	277	1,688	25.5%				
All substances	688	706	668	679	627	648	4,016	100%	808	1,027	1,238	1,145	1,210	1,186	6,614	100%				
Drowning																				
Swimming pool ^b									7		28	28	37	38	138	29.0%				
Other constructed water containers	30	37	37	32	34	29	199	36.5%	31	26	8	4	10	5	84	17.6%				
Bath tub	6	7	4	5	6	8	36	6.6%	10	8	5	5	3	6	37	7.8%				
Sport & recreational ^c	9	8	24	20	43	131	235	43.1%	31	28	24	11	24	c	118	24.8%				
Other causes/locations	18	18	14	10	9	6	75	13.8%	14	12	12	8	16	37	99	20.8%				
All causes/locations	63	70	79	67	92	174	545	100%	86	81	77	56	90	86	476	100%				
Fires, burns and scalds																				
Hot objects, fluids, vapours, gases & steam	326	311	389	345	376	472	2,219	46.7%	444	507	504	478	465	427	2,825	59.5%				
Ignition of flammable material	69	52	73	100	84	93	471	9.9%	102	96	100	98	103	114	613	12.9%				
Fire in a building	15	21	14	12	17	33	112	2.4%	28	25	42	24	27	17	163	3.4%				
Clothing ignition	15	10	23	20	29	25	122	2.6%	14	18	32	25	21	19	129	2.7%				
Other causes	466	419	294	222	199	231	1,831	38.5%	170	190	173	157	151	174	1,015	21.4%				
All causes	891	813	793	699	705	854	4,755	100%	758	836	851	782	767	751	4,745	100%				

a Percentage: Number of hospitalisations for specified sub-cause (eg petroleum products) and specified period (eg 1989-1994) divided by all hospitalisations for same cause (eg accidental poisonings) in same period

b Code for this cause introduced into ICD-9-CM in July 1996

c No equivalent codes for this cause in ICD-10-AM

**Table 13.3.1 Rate^a and rate ratio^b for death due to accidental poisoning, drowning and fires, burns and scalds by cause
Western Australia, 1989-2000**

Cause	1989–1994			1995–2000		
	Males	Females	Rate ratio	Males	Females	Rate ratio
Accidental poisoning						
Pharmaceuticals except narcotics & hallucinogens	1.5	1.1	1.4	2.2	1.3	1.7
Narcotics & hallucinogens	1.5	N/A	N/A	2.3	N/A	N/A
Alcohol, including beverages	N/A	N/A	N/A	N/A	N/A	N/A
Petroleum products	N/A	N/A	N/A	N/A	N/A	N/A
Other substances	N/A	N/A	N/A	N/A	N/A	N/A
All substances	3.8	1.5	2.5	5.1	1.8	2.9
Drowning						
Swimming pool	N/A	N/A	N/A	N/A	N/A	N/A
Other constructed water containers	1.5	N/A	N/A	1.0	N/A	N/A
Bath tub	N/A	N/A	N/A	N/A	N/A	N/A
Sport & recreational	0.9	N/A	N/A	N/A	N/A	N/A
Other causes/locations	N/A	N/A	N/A	N/A	N/A	N/A
All causes/locations	2.7	N/A	N/A	2.6	0.9	3.0
Fires, burns and scalds						
Hot objects, fluids, vapours, gases & steam	N/A	N/A	N/A	N/A	N/A	N/A
Ignition of flammable material	N/A	N/A	N/A	N/A	N/A	N/A
Fire in a building	N/A	N/A	N/A	N/A	N/A	N/A
Clothing ignition	N/A	N/A	N/A	N/A	N/A	N/A
Other causes	N/A	N/A	N/A	N/A	N/A	N/A
All causes	N/A	N/A	N/A	N/A	N/A	N/A

^a Age standardised rate per 100,000 population, standardised with 1991 Australian population

^b Rate ratio: Rate for males for specified sub-cause (eg petroleum products) and specified period (eg 1989-1994) divided by rate for females for same sub-cause and period

N/A: Not applicable, number of cases too small for reliable rates to be calculated

**Table 13.3.2 Rate^a and rate ratio^b for hospitalisation due to accidental poisoning, drowning and fires, burns and scalds by cause
Western Australia, 1989-2000**

Cause	1989–1994			1995–2000		
	Males	Females	Rate ratio	Males	Females	Rate ratio
Accidental poisoning						
Pharmaceuticals except narcotics & hallucinogens	20.4	19.1	1.1	35.9	36.2	1.0
Narcotics & hallucinogens	1.1	N/A	N/A	8.6	5.3	1.6
Alcohol, including beverages	0.9	N/A	N/A	2.1	1.3	1.6
Petroleum products	2.7	1.7	1.6	2.4	1.1	2.2
Other substances	20.4	11.7	1.7	20.7	10.8	1.9
All substances	45.5	33.8	1.3	69.7	54.8	1.3
Drowning						
Swimming pool	N/A	N/A	N/A	1.5	1.1	1.4
Other constructed water containers	2.4	1.4	1.7	1.0	N/A	N/A
Bath tub	N/A	N/A	N/A	N/A	N/A	N/A
Sport & recreational	3.0	1.7	1.8	1.8	N/A	N/A
Other causes/locations	1.1	N/A	N/A	1.4	N/A	N/A
All causes/locations	7.0	3.7	1.9	6.0	2.9	2.1
Fires, burns and scalds						
Hot objects, fluids, vapours, gases & steam	26.7	17.1	1.6	32.2	20.7	1.6
Ignition of flammable material	8.1	1.2	6.8	9.8	1.4	7.0
Fire in a building	1.6	N/A	N/A	2.0	1.1	1.8
Clothing ignition	1.7	N/A	N/A	1.6	0.8	2.0
Other causes	26.0	10.4	2.5	13.8	4.9	2.8
All causes	64.1	30.1	2.1	59.5	28.8	2.1

^a Age standardised rate per 100,000 population, standardised with 1991 Australian population

^b Rate ratio: Rate for males for specified sub-cause (eg petroleum products) and specified period (eg 1989-1994) divided by rate for females for same sub-cause and period

N/A: Not applicable, number of cases too small for reliable rates to be calculated

Table 13.4.1 Number of deaths due to accidental poisoning, drowning and fires, burns and scalds by cause and sex
 Western Australia, 1989–2000

Cause	1989–1994				1995–2000			
	Males	Females	Total	% ^a Male	Males	Females	Total	% Male
Accidental poisoning	77	52	129	59.7%	119	69	188	63.3%
Pharmaceuticals except narcotics & hallucinogens	78	17	95	82.1%	127	21	148	85.8%
Narcotics & hallucinogens	12	4	16	75.0%	11	3	14	78.6%
Alcohol, including beverages	6	1	7	85.7%	4	0	4	100.0%
Petroleum products	16	1	17	94.1%	16	3	19	84.2%
Other substances	189	75	264	71.6%	277	96	373	74.3%
Drowning	N/A	N/A	N/A	N/A	14	7	21	66.7%
Swimming pool	75	22	97	77.3%	53	21	74	71.6%
Other constructed water containers	4	3	7	57.1%	4	6	10	40.0%
Bath tub	42	9	51	82.4%	31	1	32	96.9%
Sport & recreational	17	3	20	85.0%	39	11	50	78.0%
Other causes/locations	138	37	175	78.9%	141	46	187	75.4%
All causes/locations								
Fires, burns and scalds	2	0	2	100.0%	2	1	3	66.7%
Hot objects, fluids, vapours, gases & steam	2	1	3	66.7%	1	1	2	50.0%
Ignition of flammable material	15	8	23	65.2%	15	10	25	60.0%
Fire in a building	3	5	8	37.5%	3	1	4	75.0%
Clothing ignition	6	1	7	85.7%	11	10	21	52.4%
Other causes	28	15	43	65.1%	32	23	55	58.2%
All causes								

^a Percentage: Number of deaths for specified sub-cause (eg petroleum products) and specified period (eg 1989–1994) divided by number of deaths for males and females combined for same sub-cause and period

**Table 13.4.2 Number of hospitalisations due to accidental poisoning, drowning and fires, burns and scalds by cause and sex
Western Australia, 1989-2000**

Cause	1989-1994				1995-2000			
	Males	Females	Total	% ^a Male	Males	Females	Total	% Male
	Accidental poisoning	1,052	949	2,001	52.6%	1,926	1,893	3,819
Pharmaceuticals except narcotics & hallucinogens	55	31	86	64.0%	461	278	739	62.4%
Narcotics & hallucinogens	44	30	74	59.5%	115	70	185	62.2%
Alcohol, including beverages	144	86	230	62.6%	128	55	183	69.9%
Petroleum products	1,042	583	1,625	64.1%	1,120	568	1,688	66.4%
Other substances	2,337	1,679	4,016	58.2%	3,750	2,864	6,614	56.7%
Drowning	N/A	N/A	N/A	N/A	82	56	138	59.4%
Swimming pool	127	72	199	63.8%	55	29	84	65.5%
Other constructed water containers	22	14	36	61.1%	16	21	37	43.2%
Bath tub	152	83	235	64.7%	95	23	118	80.5%
Sport & recreational	58	17	75	77.3%	77	22	99	77.8%
Other causes/locations	359	186	545	65.9%	325	151	476	68.3%
Fires, burns and scalds	1,366	853	2,219	61.6%	1,740	1,085	2,825	61.6%
Hot objects, fluids, vapours, gases & steam	411	60	471	87.3%	538	75	613	87.8%
Ignition of flammable material	79	33	112	70.5%	107	56	163	65.6%
Fire in a building	86	36	122	70.5%	87	42	129	67.4%
Clothing ignition	1,319	512	1,831	72.0%	753	262	1,015	74.2%
Other causes	3,261	1,494	4,755	68.6%	3,225	1,520	4,745	68.0%

^a Percentage: Number of hospitalisations for males for specified sub-cause (eg petroleum products) and specified period (eg 1989-1994) divided by number of hospitalisations for males and females combined for same sub-cause and period

**Table 13.5.1 Age specific rates of death due to accidental poisoning, drowning and fires, burns and scalds
Western Australia, 1995–2000**

Age group	Accidental poisoning			Drowning			Fires, burns and scalds		
	Rate ^a	Number	Percentage ^b	Rate	Number	Percentage	Rate	Number	Percentage
0-4	N/A	0	0.0%	5.9	45	24.2%	N/A	8	15.4%
5-9	N/A	0	0.0%	N/A	9	4.8%	N/A	2	3.8%
10-14	N/A	3	0.8%	N/A	6	3.2%	N/A	0	0.0%
15-19	N/A	26	7.0%	N/A	9	4.8%	N/A	0	0.0%
20-24	4.8	40	10.7%	N/A	13	7.0%	N/A	2	3.8%
25-29	9.1	78	20.9%	N/A	16	8.6%	N/A	3	5.8%
30-34	7.4	63	16.9%	N/A	13	7.0%	N/A	4	7.7%
35-39	6.1	54	14.5%	N/A	11	5.9%	N/A	3	5.8%
40-44	5.5	46	12.3%	N/A	12	6.5%	N/A	2	3.8%
45-49	N/A	17	4.6%	N/A	6	3.2%	N/A	1	1.9%
50-54	N/A	14	3.8%	N/A	10	5.4%	N/A	2	3.8%
55-59	N/A	7	1.9%	N/A	16	8.6%	N/A	2	3.8%
60-64	N/A	6	1.6%	N/A	5	2.7%	N/A	0	0.0%
65-69	N/A	5	1.3%	N/A	4	2.2%	N/A	3	5.8%
70-74	N/A	4	1.1%	N/A	2	1.1%	N/A	4	7.7%
75-79	N/A	2	0.5%	N/A	5	2.7%	N/A	3	5.8%
80-84	N/A	4	1.1%	N/A	3	1.6%	N/A	6	11.5%
85+	N/A	4	1.1%	N/A	1	0.5%	N/A	7	13.5%
WA popn	3.4	373	100%	1.7	186	100%	0.5	52	100%

a Age specific rates per 100,000 population

b Percentage: Number of deaths for specified cause (eg accidental poisoning) and specified age group (eg 0-4) divided by number of deaths for WA population for same cause

Cases with unknown age excluded: 1 due to drowning; 3 due to fires, burns and scalds

N/A: Not applicable, number of cases too small for reliable rates to be calculated

**Table 13.5.2 Age specific rates of hospitalisation due to accidental poisoning, drowning and fires, burns and scalds
Western Australia, 1995–2000**

Age group	Accidental poisoning			Drowning			Fires, burns and scalds		
	Rate ^a	Number	Percentage ^b	Rate	Number	Percentage	Rate	Number	Percentage
0-4	332.7	2,531	38.3%	32.1	244	51.4%	182.2	1,386	29.2%
5-9	25.6	204	3.1%	N/A	26	5.5%	38.4	306	6.4%
10-14	27.6	224	3.4%	N/A	25	5.3%	38.3	311	6.6%
15-19	63.7	506	7.7%	N/A	26	5.5%	41.4	329	6.9%
20-24	73.6	612	9.3%	N/A	30	6.3%	49.8	414	8.7%
25-29	58.4	499	7.5%	N/A	27	5.7%	44.0	376	7.9%
30-34	55.3	468	7.1%	N/A	15	3.2%	39.5	334	7.0%
35-39	45.4	400	6.0%	N/A	20	4.2%	32.3	284	6.0%
40-44	34.5	291	4.4%	N/A	16	3.4%	29.5	249	5.2%
45-49	25.9	202	3.1%	N/A	13	2.7%	21.8	170	3.6%
50-54	26.5	170	2.6%	N/A	10	2.1%	25.6	164	3.5%
55-59	23.4	115	1.7%	N/A	4	0.8%	20.5	101	2.1%
60-64	15.9	64	1.0%	N/A	8	1.7%	16.7	67	1.4%
65-69	24.1	86	1.3%	N/A	6	1.3%	16.5	59	1.2%
70-74	25.0	76	1.1%	N/A	2	0.4%	24.1	73	1.5%
75-79	27.6	61	0.9%	N/A	1	0.2%	N/A	34	0.7%
80-84	37.4	53	0.8%	N/A	2	0.4%	28.2	40	0.8%
85+	45.2	52	0.8%	N/A	0	0.0%	41.7	48	1.0%
WA popn	60.8	6,614	100%	4.4	475	100%	43.6	4,745	100%

^a Age specific rates per 100,000 population

^b Percentage: Number of hospitalisations for specified cause (eg accidental poisoning) and age group (eg 0-4) divided by number of hospitalisations for WA population for same cause
Cases with unknown age excluded: 1 due to drowning

N/A: Not applicable, number of cases too small for reliable rates to be calculated

14. 'OTHER UNINTENTIONAL INJURIES'

14.1 'Other unintentional injuries' – an area for further investigation

The major injury group 'other unintentional injuries' brings together a diverse range of external cause codes (Table A4, Appendix 1). Based on these codes, three sub-groups were created for further analysis—'(unintentionally) hit, struck or crushed' by an inanimate, non-powered object or a person (eg struck by a ball or player during a sporting activity); '(unintentionally) cut or pierced' by an object or instrument other than a power tool or machine (eg by broken glass or knife); and '(unintentional) threat to breathing' by inhalation of food or mechanical suffocation (eg by part of a cradle).

The three sub-groups created for the review accounted for less than half the 'other unintentional injury' cases (Figure 14.1, Figure 14.2). The remaining cases (assigned to the 'other causes' sub-group) included a diverse range of injury-causing events including explosions, electric shocks, being caught in machinery, animal and insect bites and natural events such as landslides (World Health Organisation, 1992). More detailed analysis of the 'other unintentional injuries' major injury group may be warranted as it was the most common cause of injury hospitalisation between 1995 and 2000. Tables 14.1.1 to 14.5.2 present data on 'other unintentional injuries' from the review. The findings on 'other unintentional injury' hospitalisation rates should be regarded as preliminary until the effect of changes in hospital admission recording practices has been investigated.

Figure 14.1 Proportion of 'other unintentional injury' deaths by cause, Western Australia, 1995-2000

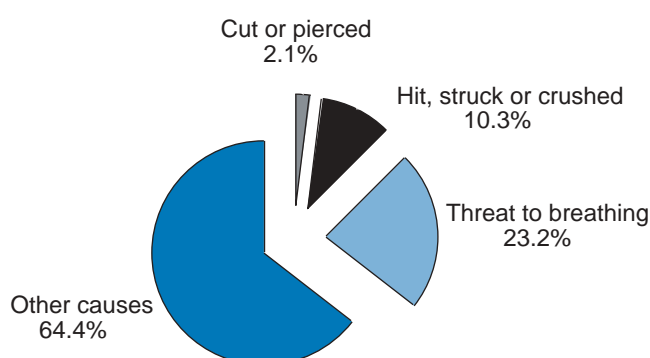
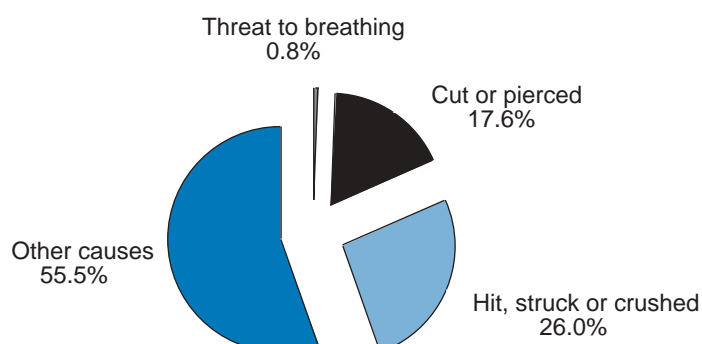


Figure 14.2 Proportion of 'other unintentional injury' hospitalisations by cause, Western Australia, 1995-2000



14.2 'Other unintentional injuries' – rankings, trends, comparative risk

Between 1995 and 2000, 'other unintentional injuries' ranked third as a cause of injury death and first as a cause of injury hospitalisation (Figure 4.1, Figure 8.1). In that period, 'other unintentional injuries' accounted for approximately one in ten injury deaths and one in three injury hospitalisations (Figure 4.2, Figure 8.2).

The age standardised 'other unintentional injury' death rate increased significantly for the Western Australian population between 1989 and 2000 (by 62%, $p = 0.05$; percentage derived from Table 14.1.1) (Figure 14.3). In the same period, the age standardised 'other unintentional injury' hospitalisation rate decreased significantly (by 17%, $p = 0.03$; percentage derived from Table 14.1.2) (Figure 14.4). When ICD-10 and ICD-10-AM were introduced, changes occurred in coding practices for falls and 'other unintentional injuries' which may partly explain these increases and decreases (Table A4, Appendix 1).

Between 1995 and 2000, the risk of death and hospitalisation due to 'other unintentional injuries' was greater for males, indigenous people and rural residents than for females, non indigenous people and metropolitan residents, respectively (Table 5.4, Table 9.4). Indigenous people were at greatest overall risk, being 6.0 times more likely to die, and 2.6 times more likely to be hospitalised due to 'other unintentional injuries' than non indigenous people (Table 5.4 and Table 9.4).

Figure 14.3 Yearly trend in 'other unintentional injury' death rate, Western Australia, 1989-2000

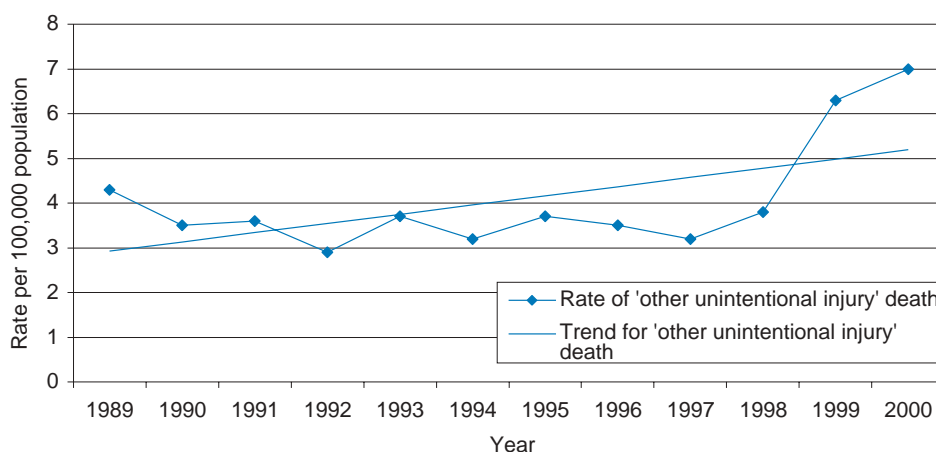
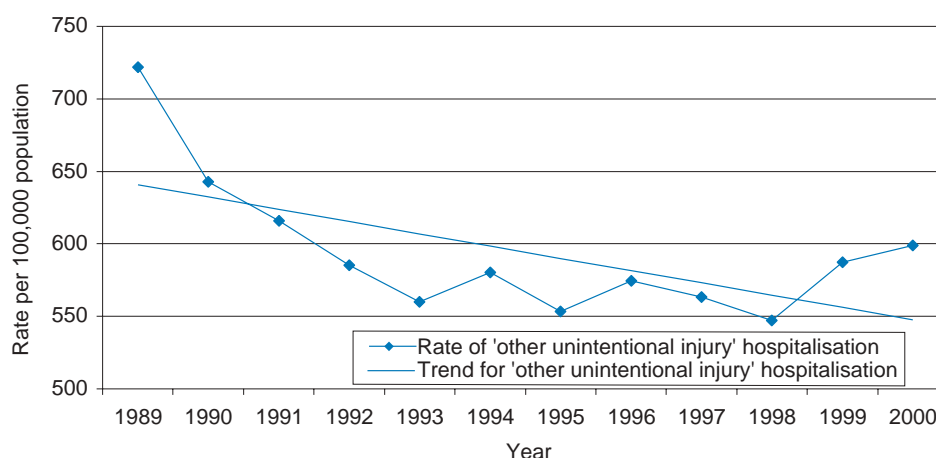


Figure 14.4 Yearly trend in 'other unintentional injury' hospitalisation rate, Western Australia, 1989-2000



14.3 'Other unintentional injuries' – common causes

Between 1995 and 2000, the most common cause of 'other unintentional injury' death was threat to breathing (Table 14.1.1). In the same period, the most common causes of 'other unintentional injury' hospitalisations were being hit, struck or crushed, and cut or pierced (Table 14.1.2). Between 1989 and 2000, significant increases occurred in the age standardised rate of hospitalisation due to being hit, struck or crushed and cut or pierced (by 56%, $p = 0.0002$ and 3%, $p = 0.03$, respectively; percentages derived from Table 14.1.2).

14.4 'Other unintentional injuries' – distribution by age

Age specific 'other unintentional injury' death rates could only be calculated for the age groups 40 to 44 years and 80 years and older because the number of cases in each of the other age groups was too small to yield a reliable rate (Table 14.5.1). Between 1995 and 2000, the risk of 'other unintentional injury' death was 23.2 times higher for those aged 85 years and older than for the Western Australian population (rate ratio derived from Table 14.5.1). Compared to the risk of death due to 'other unintentional injuries', the risk of hospitalisation was distributed more evenly across the lifespan. However, as for most causes of injury hospitalisation, young adults were at greater risk than the Western Australian population (Table 14.5.2).

Each 'other unintentional injury' death resulted in an average of 33.6 PYLLs, compared to an average of 36.9 PYLLs per death due to all injury causes (Table 4.3).

Table 14.1.1 'Other unintentional injury' death rate^a by cause and year
Western Australia, 1989–2000

Cause	1989-1994										1995-2000									
	1989	1990	1991	1992	1993	1994	1989-1994	1995	1996	1997	1998	1999	2000	1995-2000						
Threat to breathing	N/A	N/A	N/A	N/A	N/A	N/A	1.0	N/A	N/A	N/A	N/A	N/A	N/A	1.1						
Hit, struck or crushed	N/A	N/A	N/A	N/A	N/A	N/A	0.5	N/A	N/A	N/A	N/A	N/A	N/A	0.5						
Cut or pierced	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A						
Other causes	N/A	N/A	N/A	N/A	N/A	N/A	1.9	N/A	N/A	N/A	N/A	4.2	5.3	3.0						
All causes of 'other unintentional'	4.3	3.5	3.6	2.9	3.7	3.2	3.5	3.7	3.5	3.2	3.8	6.3	7.0	4.7						

^a Age standardised rate per 100,000 population, standardised with 1991 Australian population

Note: Deaths which would have been coded as 'falls' using external cause code E887 (fracture, cause unspecified) in ICD-9, may have been coded as 'other unintentional injury' deaths after the introduction of ICD-10 in January 1999

N/A: Not applicable, number of cases too small for reliable rates to be calculated

Table 14.1.2 'Other unintentional injury' hospitalisation rate^a by cause and year
Western Australia, 1989–2000

Cause	1989-1994										1995-2000									
	1989	1990	1991	1992	1993	1994	1989-1994	1995	1996	1997	1998	1999	2000	1995-2000						
Threat to breathing	N/A	3.0	N/A	2.7	2.9	4.1	2.9	5.5	6.7	6.4	4.6	3.3	2.2	4.8						
Hit, struck or crushed	93.4	94.3	110.2	114.4	130.2	147.2	115.2	144.4	157.3	154.6	144.0	150.8	146.1	149.6						
Cut or pierced	80.3	74.1	75.7	80.1	91.6	98.9	83.6	106.1	104.5	106.2	108.8	98.8	82.4	101.1						
Other causes	545.8	471.6	428.0	388.0	335.2	329.8	415.0	297.3	306.1	296.2	289.8	334.5	368.4	315.9						
All causes of 'other unintentional'	722.0	643.0	616.1	585.2	560.0	580.1	616.7	553.3	574.5	563.4	547.2	587.3	599.1	571.3						

^a Age standardised rate per 100,000 population, standardised with 1991 Australian population

Note: Hospitalisations which would have been coded as 'falls' using external cause code E887 (fracture, cause unspecified) in ICD-9-CM, may have been coded as 'other unintentional injury' hospitalisations after the introduction of ICD-10-AM in July 1999

N/A: Not applicable, number of cases too small for reliable rates to be calculated

Table 14.2.1 Number of 'other unintentional injury' deaths by cause and year
Western Australia, 1989–2000

Cause	1989-1994										1995-2000									
	1989	1990	1991	1992	1993	1994	Total	Percentage ^a	1995	1996	1997	1998	1999	2000	Total	Percentage				
Threat to breathing	26	20	20	8	10	15	99	29.0%	10	19	14	21	31	27	122	23.2%				
Hit, struck or crushed	11	7	6	6	12	5	47	13.8%	12	11	12	6	8	5	54	10.3%				
Cut or pierced	1	1	2	1	2	1	8	2.3%	1	3	3	1	2	1	11	2.1%				
Other causes	28	27	28	32	38	34	187	54.8%	41	30	29	42	84	112	338	64.4%				
All causes of 'other unintentional'	66	55	56	47	62	55	341	100%	64	63	58	70	125	145	525	100%				

a Percentage: Number of deaths for specified cause (eg threat to breathing) and specified period (eg 1989-1994) divided by number of deaths for all causes of 'other unintentional injury' for same period
Note: Deaths which would have been coded as 'falls' using external cause code E887 (fracture, cause unspecified) in ICD-9, may have been coded as 'other unintentional injury' deaths after the introduction of ICD-10 in January 1999

Table 14.2.2 Number of 'other unintentional injury' hospitalisations by cause and year
Western Australia, 1989–2000

Cause	1989-1994										1995-2000									
	1989	1990	1991	1992	1993	1994	Total	Percentage ^a	1995	1996	1997	1998	1999	2000	Total	Percentage				
Threat to breathing	39	48	34	45	49	69	284	0.5%	94	116	114	82	58	41	505	0.8%				
Hit, struck or crushed	1,514	1,555	1,832	1,915	2,197	2,511	11,524	18.9%	2,493	2,755	2,743	2,600	2,762	2,699	16,052	26.2%				
Cut or pierced	1,296	1,219	1,257	1,336	1,547	1,684	8,339	13.7%	1,834	1,829	1,891	1,971	1,811	1,530	10,866	17.8%				
Other causes	8,670	7,646	7,011	6,429	5,615	5,601	40,972	67.3%	5,144	5,388	5,305	5,289	6,221	6,904	34,251	56.0%				
All causes of 'other unintentional'	11,519	10,468	10,134	9,725	9,408	9,865	60,835	100%	9,565	10,088	10,053	9,942	10,852	11,174	61,169	100%				

a Percentage: Number of hospitalisations for specified cause (eg threat to breathing) and specified period (eg 1989-1994) divided by number of hospitalisations for all causes of 'other unintentional injury' for same period

Note: Hospitalisations which would have been coded as 'falls' using external cause code E887 (fracture, cause unspecified) in ICD-9-CM, may have been coded as 'other unintentional injury' hospitalisations after the introduction of ICD-10-AM in July 1999

**Table 14.3.1 Rate^a and rate ratio^b for 'other unintentional injury' death by cause
Western Australia, 1989-2000**

Cause	1989–1994			1995–2000		
	Males	Females	Rate ratio	Males	Females	Rate ratio
Threat to breathing	1.4	N/A	N/A	1.6	N/A	N/A
Hit, struck or crushed	0.8	N/A	N/A	0.8	N/A	N/A
Cut or pierced	N/A	N/A	N/A	N/A	N/A	N/A
Other causes	3.1	N/A	N/A	3.7	2.1	1.8
All causes of 'other unintentional'	5.4	1.6	3.4	6.3	2.9	2.1

a Age standardised rate per 100,000 population, standardised with 1991 Australian population

b Rate ratio: Rate for males for specified cause (eg threat to breathing) and specified period (eg 1989-1994) divided by rate for females for same cause and period

N/A: Not applicable; number of cases too small for reliable rates to be calculated

**Table 14.3.2 Rate^a and rate ratio^b for 'other unintentional injury' hospitalisation by cause
Western Australia, 1989-2000**

Cause	1989–1994			1995–2000		
	Males	Females	Rate ratio	Males	Females	Rate ratio
Threat to breathing	3.6	2.2	1.6	5.6	4.0	1.4
Hit, struck or crushed	179.2	48.3	3.7	228.6	66.7	3.4
Cut or pierced	119.6	46.3	2.6	148.1	52.2	2.8
Other causes	563.4	261.0	2.2	440.1	187.1	2.4
All causes of 'other unintentional'	865.9	357.9	2.4	822.4	310.0	2.7

a Age standardised rate per 100,000 population, standardised with 1991 Australian population

b Rate ratio: Rate for males for specified cause (eg threat to breathing) and specified period (eg 1989-1994) divided by rate for females for same cause and period

**Table 14.4.1 Number of 'other unintentional injury' deaths by cause and sex
Western Australia, 1989-2000**

Cause	1989–1994				1995–2000			
	Males	Females	Total	% ^a Male	Males	Females	Total	% Male
Threat to breathing	62	37	99	62.6%	83	39	122	68.0%
Hit, struck or crushed	40	7	47	85.1%	46	8	54	85.2%
Cut or pierced	4	4	8	50.0%	8	3	11	72.7%
Other causes	149	38	187	79.7%	188	150	338	55.6%
All causes of 'other unintentional'	255	86	341	74.8%	325	200	525	61.9%

^a Percentage: Number of deaths for specified cause (eg threat to breathing) and specified period (eg 1989-1994) divided by number of deaths for males and females combined for same cause and period

**Table 14.4.2 Number of 'other unintentional injury' hospitalisations by cause and sex
Western Australia, 1989-2000**

Cause	1989–1994				1995–2000			
	Males	Females	Total	% ^a Male	Males	Females	Total	% Male
Threat to breathing	174	110	284	61.3%	294	211	505	58.2%
Hit, struck or crushed	9,123	2,401	11,524	79.2%	12,481	3,571	16,052	77.8%
Cut or pierced	6,057	2,282	8,339	72.6%	8,073	2,793	10,866	74.3%
Other causes	28,108	12,864	40,972	68.6%	24,033	10,218	34,251	70.2%
All causes of 'other unintentional'	43,462	17,657	60,835	71.4%	44,881	16,793	61,169	73.4%

^a Percentage: Number of hospitalisations for males for specified cause (eg threat to breathing) and specified period (eg 1989-1994) divided by number of hospitalisations for males and females combined for same cause and period

**Table 14.5.1 Age specific 'other unintentional injury' death rates
Western Australia, 1995-2000**

Age group	Rate ^a	Number	Percentage ^b
0-4	N/A	16	3.1%
5-9	N/A	6	1.1%
10-14	N/A	16	3.1%
15-19	N/A	17	3.2%
20-24	N/A	25	4.8%
25-29	N/A	27	5.2%
30-34	N/A	30	5.7%
35-39	N/A	36	6.9%
40-44	5.0	42	8.0%
45-49	N/A	33	6.3%
50-54	N/A	14	2.7%
55-59	N/A	14	2.7%
60-64	N/A	19	3.6%
65-69	N/A	19	3.6%
70-74	N/A	22	4.2%
75-79	N/A	18	3.4%
80-84	29.7	42	8.0%
85+	111.3	128	24.4%
WA popn	4.8	524	100%

a Age specific rates per 100,000 population

b Percentage: Number of deaths for specified age group (eg 0-4) divided by number of 'other unintentional injury' deaths for WA population

N/A: Not applicable, number of cases too small for reliable rates to be calculated

Cases with unknown age excluded: 1

**Table 14.5.2 Age specific 'other unintentional injury' hospitalisation rates
Western Australia, 1995-2000**

Age group	Rate ^a	Number	Percentage ^b
0-4	646.9	4,921	8.0%
5-9	489.8	3,906	6.3%
10-14	512.0	4,154	6.7%
15-19	726.0	5,765	9.3%
20-24	829.7	6,897	11.2%
25-29	781.7	6,683	10.8%
30-34	647.7	5,479	8.9%
35-39	553.5	4,872	7.9%
40-44	481.1	4,057	6.6%
45-49	443.5	3,464	5.6%
50-54	444.3	2,852	4.6%
55-59	424.9	2,089	3.4%
60-64	401.9	1,614	2.6%
65-69	375.1	1,339	2.2%
70-74	359.2	1,090	1.8%
75-79	445.5	986	1.6%
80-84	539.4	764	1.2%
85+	645.1	742	1.2%
WA popn	567.2	61,674	100%

a Age specific rates per 100,000 population

b Percentage: Number of hospitalisations for specified age group (eg 0-4) divided by number of 'other unintentional injury' hospitalisations for WA population

15. COMPARISON WITH AUSTRALIAN DEATH RATES AND TRENDS

The review compared injury death rates and trends for Western Australia and Australia using the nearest comparison data available (Australian Institute of Health and Welfare, 1998).

The age standardised rates and trends for Western Australia were found to be similar to those for Australia (Table 15.1). The trends presented in Table 15.1 give the impression that Western Australian injury death rates have remained more stable than Australian rates over the decade. This may be because an upward or downward trend was only reported for Western Australia if the change was statistically significant. For the Australian data, trends were reported without reference to their statistical significance.

Table 15.1 Comparison of injury death rates^a and trends^b for Australia and Western Australia
 Australia, 1988–1997; Western Australia, 1989–2000

Cause	Indicator population and age group		Australia		Western Australia	
	Population	Age group	Rate 1997	Trend 1988–1997	Rate 1997	Trend 1989–2000
Self-inflicted injuries	All persons	All ages	14.6	↓	14.0	=
Transport injuries	All persons	All ages	11.0	↓	12.3	↓
Falls	All persons	All ages	5.1	↓	5.2	=
'Other unintentional injuries'	All persons	All ages	3.1	↓	3.2	↑
Accidental poisoning	All persons	All ages	1.7	↑	1.3	↑
Pharmaceuticals only	All persons	All ages	0.2	↓	1.0	=
Other substances only	All persons	All ages	1.8	↓	N/A	N/A
Injuries inflicted by another	All persons	All ages	1.5	↓	N/A	N/A
Drowning	All persons	All ages	0.7	↓	N/A	N/A
Undetermined	All persons	All ages	0.6	↓	N/A	N/A
Fires, burns, scalds	All persons	All ages	40.7	↓	41.8	=
All injury causes	Males	All ages	59.7	↓	60.6	=
	Females	All ages	22.3	↑	22.9	=

Source of Australian data: National Injury Surveillance Unit

^a Age standardised rate per 100,000 population, standardised with the 1991 Australian population

^b Trends for Western Australia only reported if statistically significant at 0.05 level

N/A: Not applicable, numbers too small for reliable rates to be calculated

↑ Significant decrease in age standardised rate; ↓ Significant increase in age standardised rate; = No significant change in age standardised rate

16. ACHIEVING THE NATIONAL HEALTH PRIORITY TARGETS

This review assessed Western Australia's progress towards the National Health Priority targets for 2000 (Table 16.1) (Australian Institute of Health and Welfare, 1996). Western Australia achieved the target set for toddler drowning deaths, with an age specific rate of 1.6 per 100,000 population compared to the set rate of 3.0 per 100,000 population (Table 16.1). The target set for fall deaths among older people was also achieved, with an age specific rate of 22.8 per 100,000 population compared to the target rate of 35.4 per 100,000 population (Table 16.1). Targets for hospitalisation due to these same two causes were not achieved, with age specific rates approximately 1.5 times higher than the set targets.

The review also provided baseline data for assessment of Western Australia's progress on the National Health Priority Areas for 2003 (Table 16.2) (Commonwealth Department of Health and Aged Care, 2001).

Table 16.1 Achievement of National Injury Prevention Priority Targets for 2000
Western Australia, 2000

Cause	Indicator			Target and level	
	Rate ^a	Population	Age group	Australian Target 2000	Western Australian level 2000
Transport	Age standardised death rate	All persons	All ages	10.7	11.2
	Age standardised hospitalisation rate	All persons	All ages	194.0	273.4
	Age specific death rate	Males	15-24 years	23.6	34.9
Drowning	Age specific hospitalisation rate	Males	15-24 years	494.0	745.1
	Age specific death rate	Children	0-4 years	3.0	1.6*
	Age specific hospitalisation rate	Children	0-4 years	20.7	33.5
Accidental poisoning	Age specific hospitalisation rate	Children	0-4 years	242.0	307.3
	Age specific death rate	All persons	65 years & older	35.4	22.8*
	Age specific hospitalisation rate	Children	0-4 years	452.0	677.0
Fires, burns & scalds	Age specific hospitalisation rate	Children	0-4 years	601.0	727.2
	Age specific hospitalisation rate	Males	5-9 years	601.0	718.4
	Age specific hospitalisation rate	Females	65-74 years	980.0	1,124.7
	Age specific hospitalisation rate	Males	75 years & older	2,018.0	2,452.9
	Age specific hospitalisation rate	Females	75 years & older	3,643.0	5,361.8
	Age specific death rate	All persons	55 years & older	1.2	N/A
	Age specific hospitalisation rate	Males	0-4 years	132.0	197.9
All injury causes	Age specific hospitalisation rate	Females	0-4 years	101.0	125.4
	Age standardised death rate	All persons	All ages	33.6	40.7
	Age standardised hospitalisation rate	All persons	All ages	1,371.0	2,237.5
	Death rate ratio ^b	Indigenous males	All ages	2.7	3.4
	Death rate ratio	Indigenous females	All ages	3.5	4.8
	Death rate ratio	Males	All ages	2.1	2.4

Source: National Health Priority Area targets

a All rates per 100,000 population; age standardised rates are standardised with the 1991 Australian population

b Rate ratios are based on age standardised rates

N/A: Not applicable, number of cases too small for reliable rates to be calculated

* Australian target for 2000 achieved or exceeded

Table 16.2 Baselines^a for National Injury Prevention Priorities for 2001–2003
 Western Australia, 1995–2000

Cause	Indicator			Baseline
	Rate ^a	Population	Age group	Western Australia level 1995–2000
Drowning	Age specific death rate	Children	0-4 years	5.9
	Age specific hospitalisation rate	Males	15-34 years	2.3
Accidental poisoning	Age specific hospitalisation rate	Children	0-4 years	32.1
	Age specific hospitalisation rate	Males	15-34 years	4.7
	Age specific hospitalisation rate	Females	0-4 years	188.6
	Age specific hospitalisation rate	Males	0-4 years	144.1
Falls	Age specific death rate	Males	65 years & older	33.5
	Age specific hospitalisation rate	Males	0-4 years	356.0
	Age specific hospitalisation rate	Males	5-9 years	404.8
	Age specific hospitalisation rate	Males	65-69 years	279.6
	Age specific hospitalisation rate	Males	70-74 years	357.2
	Age specific hospitalisation rate	Males	75-79 years	580.6
	Age specific hospitalisation rate	Males	80-84 years	906.6
	Age specific hospitalisation rate	Males	85 years & older	1,593.7
	Age specific death rate	Females	65 years & older	48.5
	Age specific hospitalisation rate	Females	0-4 years	275.1
	Age specific hospitalisation rate	Females	5-9 years	312.5
	Age specific hospitalisation rate	Females	65-69 years	463.6
Age specific hospitalisation rate	Females	70-74 years	798.2	
Age specific hospitalisation rate	Females	75-79 years	1,566.1	
Age specific hospitalisation rate	Females	80-84 years	3,215.5	
Age specific hospitalisation rate	Females	85 years & older	6,228.6	

Source of National Health Priority Areas, 2001–2003

^a No targets were set for the National Injury Prevention Plan Priorities for 2001–2003

^b Rates per 100,000 population

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APPENDIX 1: METHODS

A1 Review parameters

Review period

Western Australian injury death and hospitalisation records were reviewed for the six years from 1995 to 2000 (referred to as ‘the current review period’) and the six years from 1989 to 1994 (referred to as ‘the previous review period’).

Population and groups reviewed

Injury death and hospitalisation records were reviewed for the Western Australian population as a whole, and for Western Australian males, females, indigenous people, non indigenous people, rural residents and metropolitan residents.

The term ‘indigenous people’ is used throughout the report to refer to Aboriginal and Torres Strait Islander peoples. A case was designated ‘indigenous’ if the record stated that they identified as an Aboriginal or Torres Strait Islander person.

A case was designated ‘rural’ or ‘metropolitan’ according to the postcode of residence. Cases who resided in a postcode in the Peel Health Service area were designated ‘metropolitan’ because Peel Health Service was allocated to the metropolitan area by the Department of Health when the review began.

Use of International Classification of Diseases external cause codes

Death and hospitalisation records are coded using the International Classification of Diseases coding scheme (ICD). When death or hospitalisation is due to injury the record is assigned a primary external cause code (also known as an ‘E code’) describing the injury cause (eg fall) and intent (eg unintentional). Hospitalisation records are also assigned a principal diagnosis code and secondary diagnoses codes describing the nature and body part of the injury (eg fracture of the femur). The review used death records that had been assigned an ICD external cause code and hospitalisation records that had been assigned an ICD external cause code and a principal diagnosis code.

External cause codes are not routinely checked for accuracy by the Department of Health so the accuracy of the external cause codes assigned to the records could not be determined. However, some indication of their accuracy can be gained from the results of a Victorian study of external cause code accuracy in a similar set of records. The study found that 16% of a sample of 546 records had inaccuracies, mostly minor (MacIntyre, Ackland and Chandraraj, 1997).

Between 1989 and 2000, the tenth revision of the ICD replaced the ninth revision and new versions and editions of each revision were introduced (World Health Organisation, 1975; World Health Organisation, 1992) (Table A1, Appendix 1). The effects of these changes are noted in the text and table footnotes and should be taken into account when interpreting the review findings.

Definition of 'injury death'

A case was defined as an 'injury death' if the underlying cause of death was an injury as designated by a primary external cause code between E800.00 and E999.99 (excluding E849 and E889) or between V01 and Y89.9 (Table A2, Appendix 1). The second review used the same definition except for the exclusion of E849 and E889 as noted below (Ashwell, Pinder and Thomson, 1996). (The ICD-10 external cause codes V01 to Y89.9 were not in use when the records for the second review were created.)

Definition of 'injury hospitalisation'

A case was defined as an 'injury hospitalisation' if the principal diagnosis for the hospital separation was an injury as designated by a diagnosis code between 800.00 and 999.99 (Chapter 17, ICD-9-CM), or between S00.0 and T98.3 (Chapter XIX, ICD-10-AM), **and** a primary external cause code between E800.00 and E999.99 (excluding E849 and E889), or between V01 and Y89.9, had been assigned to the hospital record (Table A2, Appendix 1). The second review used the same definition except for the exclusion of E849 and E889 as noted below (Ashwell, Pinder and Thomson, 1996). (The ICD-10 external cause codes V01 to Y89.9 were not in use when the records for the second review were created.)

Exclusion of cases

Cases with a primary external cause code of E849, E889, or any code between Y90 and Y98, were excluded from the review (Table A3, Appendix 1). These codes are used to record additional information about a case (eg activity at the time of injury, supplementary factors related to causes of mortality) but do not identify the cause of injury. For the hospitalisations data set, this restriction resulted in the exclusion of 758 cases (36 with E849, 684 with E889 and 38 with Y90 to Y98). This restriction did not result in any cases being excluded from the deaths set. The second review included cases with primary external cause codes E849 and E889 and grouped them with 'other unintentional injuries' (Ashwell, Pinder and Thomson, 1996). (The ICD-10 external cause codes were not in use when the records for the second review were created.)

A2 Grouping of data according to causes of injuries

Major injury groups

Cases were assigned to a 'major injury group' based on external cause codes. The major injury groups were defined according to a framework developed by the Centers for Disease Control and Prevention to identify common causes of injury and relevant prevention strategies (Table A3, Appendix 1). The same major injury groups were used in the second review except for the grouping of accidental poisoning as noted below (Ashwell, Pinder and Thomson, 1996).

Accidental poisoning major injury group

The accidental poisoning major injury groups 'pharmaceuticals' and 'other substances' were combined in the third review because of the small number of cases in the 'other substances' group. In the second review the two groups were kept separate (Ashwell, Pinder and Thomson, 1996).

Adverse events major injury group

Cases in which the injury was caused by 'medical misadventure', 'surgical misadventure', or 'complications of care' were assigned to the 'adverse events' major injury group. In the injury deaths data set, 120 cases were assigned to the adverse

events group, 67 cases in the current review period and 53 cases in the previous review period. In the injury hospitalisations data set, 84,804 cases were assigned to the adverse events group, 48,948 cases in the current review period and 35,856 cases in the previous review period. These cases were included in the analysis of ‘all injury causes’ but were not analysed as a separate major injury group in the third review or the second (Ashwell, Pinder and Thomson, 1996). Further investigation is needed before this major injury group can be analysed in a way that will inform prevention.

Undetermined intent major injury group

Cases in which the intent of the injury was undetermined were assigned to the ‘undetermined intent’ major injury group. These cases were included in ‘all injury causes’ analysis but not analysed as a separate major injury group because the number of cases was too small.

Injury sub-groups

Within the major injury groups, cases were assigned to ‘injury sub-groups’ based on external cause codes. For example, self-inflicted injury cases were assigned to sub-groups based on the method used to inflict the injury (eg firearm). The injury cause sub-group framework was devised specifically for the review to highlight areas for further investigation and intervention (Table A4, Appendix 1).

A3 Data sources

The Injury Research Centre obtained de-identified injury data from the Department of Health. The University of Western Australia’s Human Research Ethics Committee approved the use of the data.

Injury deaths data set

The deaths data set was comprised of records from the Western Australian Mortality Database. This database contains a record of every death occurring in Western Australia and is compiled by the Australian Bureau of Statistics from death certificate information provided by the Western Australian Registrar General’s Office. The deaths data set consisted of all records in the Western Australian Mortality Database in which a person, whether a Western Australian resident or overseas or interstate visitor, had died in Western Australia due to an injury, and the death had been registered between 1 January 1989 and 31 December 2000. There were 9,009 cases in the deaths data set, 4,780 cases in the current review period and 4,229 cases in the previous review period.

Injury hospitalisations data set

The hospitalisations data set was comprised of records from the Western Australian Hospital Morbidity Data System. The database contains a record of every hospital separation (or stay) in Western Australia and is compiled from inpatient summaries completed by medical record coders from patient hospital records. The injury hospitalisations data set consisted of all records in the Hospital Morbidity Data System in which the patient, whether a Western Australian resident or visitor from overseas or interstate, was discharged from a hospital in Western Australia following admission due to an injury, and the date of separation was between 1 January 1989 and 31 December 2000. There were 457,398 cases in the hospitalisation data set, 246,519 cases in the current review period and 210,879 cases in the previous review period.

Limitations of the injury hospitalisations data set

The hospitalisation data set contained a record of every hospital separation between 1989 and 2000 whether or not it related to a new injury case. Changes in the way successive admissions for a single injury episode were recorded during that period may have resulted in artificial changes in hospitalisation rates. For example, a case that was transferred from an acute hospital to a rehabilitation unit for treatment of a hip fracture due to a fall, may have been counted as a single injury hospital separation according to recording practices operating at one point during the review period, but as two separations at a later point. Therefore, the review's findings on injury hospitalisation rates should be regarded as preliminary until the effect of changes in hospital admission recording practices between 1989 and 2000 has been investigated.

Population data

The denominators used to calculate rates of injury death and hospitalisation for the Western Australian population, and for males and females were the Australian Bureau of Statistics annual estimates of the resident population of Western Australia for the years from 1989 to 2000, broken down according to sex (ABS Catalogue 3101.0) (Tables A5.1 and A5.2, Appendix 1).

The denominators used to calculate rates of injury death and hospitalisation for the indigenous population were the Department of Health annual estimates of resident indigenous population for the years from 1989 to 2000. Annual estimates of the non indigenous population were derived by subtracting the Department of Health estimates of resident indigenous population from the Australian Bureau of Statistics annual estimates of the resident population of Western Australia for the years from 1989 to 2000. These estimates were then used as denominators to calculate rates of injury death and hospitalisation for the non indigenous population. The Department of Health annual estimates of resident indigenous population were not available for the age groups above 79 years so rates for the indigenous and non indigenous populations in these age groups could not be calculated.

The denominators used to calculate rates of injury death and hospitalisation for the rural and metropolitan populations were obtained by grouping the Australian Bureau of Statistics annual estimates of the resident population of Western Australia for the years from 1989 to 2000 according to the Department of Health's allocation of postcodes to health zones.

A4 Data analysis

Percentages

Percentages were used to identify groups which accounted for a higher proportion of injury deaths or hospitalisations than would be expected from their representation in the Western Australian population.

'Potential Years of Life Lost'

'Potential years of life lost' (PYLLs) were used to estimate premature loss of life due to specific causes of injury. Potential years of life lost were calculated cumulatively for the current and previous review periods using the life tables method developed by the Health Information Centre at the Department of Health, Western Australia.

Age specific rates

Age specific rates were used to compare the impact of injury death and hospitalisation on different age groups. Cumulative age specific rates were calculated for each five year age group for the current and previous review periods. Age specific rates were not calculated for outcomes with less than 40 cases, because an increase or decrease of only a few cases can result in a relatively large rate increase or decrease, giving a false impression of dramatic change in the rate.

Age standardised rates

Age standardised rates (also known as ‘age adjusted’ rates) were used to compare the impact of injury death and hospitalisation on ‘at risk groups’ (males, indigenous people, and rural residents) with the impact on their comparison groups. Age standardised rates were calculated using the direct method of standardisation and the 1991 Australian population as the standard population. Age standardised rates were calculated for individual years in the review period and cumulatively for the six years of current and previous review periods. Age standardised rates were not calculated for outcomes with less than 40 cases because an increase or decrease of only a few cases can result in a relatively large rate increase or decrease, giving a false impression of dramatic change in the rate.

Trends

Trends in injury deaths and hospitalisations were used to identify injury causes for which the pattern had changed during the review period. Trends were identified by applying simple linear regression to age standardised rates for each year between 1989 and 2000. Increases and decreases were only reported if statistically significant at the 5% level. The percentage by which the rate had changed was calculated by subtracting the rate for 2000 from the rate for 1989 and dividing the result by the rate for 1989.

Rate ratios

Rate ratios were used to measure differences in the impact of injury deaths and hospitalisations on ‘at risk’ groups (males, indigenous people and rural residents) and their comparison groups (females, non indigenous people and rural residents). They were devised by dividing the age standardised rate for the ‘at risk group’ by the rate for the comparison group. Rate ratios were also used to compare the impact of injuries on different age groups. Age rate ratios were devised by dividing the rate for a specified age group by the rate for the Western Australian population.

Rankings

Rankings were used to identify common causes of injury death and hospitalisation. Rankings were devised by arranging the age standardised rates for specific causes of injury death and hospitalisation in descending order.

Table A1 Revisions, versions and editions of the International Classification of Diseases coding scheme used in Western Australia during the review period

Coding Scheme	Revisions, versions and editions	Period of application
Death data	ICD-9 ICD-10	January 1979 – December 1998 January 1999 – present
Hospitalisation data	ICD-9-CM 1st edition ICD-9-CM 1st Australian edition ICD-9-CM 2nd Australian edition ICD-10-AM 1st edition ICD-10-AM 2nd edition	January 1988 – June 1995 July 1995 – June 1996 July 1996 – June 1999 July 1999 – June 2000 July 2000 – June 2002

Table A2 Case definitions for injury death and injury hospitalisation by date, external cause codes and diagnosis codes

Definition of injury death	Date of death ^a	External cause codes	Diagnosis codes
	Between 01/01/1989 and 31/12/1998	E800.00-E999.99 ^b	N/A
	Between 01/01/1999 and 31/12/2000	V01-Y89.9	N/A
Definition of injury hospitalisation	Date of hospital separation	External cause codes	Diagnosis codes
	Between 01/01/1989 and 30/06/1999	E800.00-E999.99	800.00-999.99
	Between 01/07/1999 and 31/12/2000	V01-Y89.9	S00.0-T98.3

a Date of death, not date of registration, was used in the definition of an injury death case

b Excluding E849 and E889

N/A: Not applicable

Table A3 Centers for Disease Control and Prevention major injury grouping framework

Intent and mechanism	ICD-9 External cause codes	ICD-10 External cause codes
Unintentional		
Transport	E800-E848	V01-V99
Drowning	E910	W65-W74
Accidental poisoning by pharmaceuticals	E850-E858	X40-X44
Accidental poisoning by other substances	E860-E869	X45-X49
Falls	E880-E888	W00-W19
Fires, burns and scalds	E890-E899, E924.0, E924.2, E924.8, E924.9	X00-X19
Other unintentional injuries	E900-E909, E911-E923, E924.1, E925-E929	W20-W64, W75-W99, X20-X39, X50-X59, Y85, Y86, Y89.9
Intentional		
Self-inflicted	E950-E959	X60-X84, Y87.0
Inflicted by another	E960-E978, E990-E999	X85-Y09, Y87.1, Y35-Y36, Y89.0, Y89.1
Undetermined intent	E980-E989	Y10-Y34, Y87.2
Adverse events	E870-E879, E930-E949	Y40-Y84, Y88
Exclusions	E849 ^a , E889 ^b	Y90-Y98

Source: National Injury Surveillance Unit

a Place of occurrence: grouped in 'other unintentional injuries' in second review (Ashwell, Pinder and Thomson, 1996)

b Type of sporting activity: grouped in 'other unintentional injuries' in second review (Ashwell, Pinder and Thomson, 1996)

Table A4 Injury sub-grouping framework based on International Classification of Diseases external cause codes			
Intent and cause	Cause sub-group	ICD-9 external cause codes	ICD-10 external cause codes
Unintentional Transport event type	Transport user group		
Traffic crash	Motor vehicle occupant	E810-E816.0, .1 E819.0, .1	V40-V47.4, .5, .6, .7, .9, V48.5, .6, .7, .9 V49.4, .5, .6, .9, V50-V57.4, .5, .6, .7, .9 V58.5, .6, .7, .9, V59.4, .5, .6, .9 V60-V67.4, .5, .6, .7, .9, V68.5, .6, .7, .9 V69.4, .5, .6, .9, V70-V77.4, .5, .6, .7, .9 V78.5, .6, .7, .9, V79.4, .5, .6, .9
	Motorcyclist	E810-E816.2, .3 E819.2, .3	V20-V27.3, .4, .5, .9, V28.4, .5, .9 V29.4, .5, .6, .9, V30-V37.4, .5, .6, .7, .9 V38.5, .6, .7, .9, V39.4, .5, .6, .9
	Pedal cyclist	E810-E816.6 E819.6	V12-V15.3, .4, .5, .9 V19.4, .5, .6
	Pedestrian	E810-E816.7 E819.7	V02-V05.1, .9 V09.2, .3
	Other land transport user	E810-E816.4, .5, .8, .9 E819.4, .5, .8, .9	V81.1, V82.1, V83-V86.0, .1, .2, .3 V87.0, .1, .2, .3, .4, .5, .6, .7, V89.2
Non-traffic crash	Motor vehicle occupant	E817-E818.0, .1 E820-E825.0, .1	V40-V47.0, .1, .2, .3, V48.0, .1, .2, .3, .4 V49.0, .1, .2, .3, .8, V50-V57.0, .1, .2, .3 V58.0, .1, .2, .3, .4, V59.0, .1, .2, .3, .8 V60-V67.0, .1, .2, .3, V68.0, .1, .2, .3, .4 V69.0, .1, .2, .3, .8, V70-V77.0, .1, .2, .3 V78.0, .1, .2, .3, .4, V79.0, .1, .2, .3, .8
	Motorcycle rider and passenger	E817-E818.2, .3 E820-E825.2, .3	V20-V27.0, .1, .2, V28.0, .1, .2, .3, .4, .5, .9 V29.0, .1, .2, .3, .8, V30-V37.0, .1, .2, .3, V38.0, .1, .2, .3, .4, V39.0, .1, .2, .3, .8
	Pedal cyclist	E817-E818.6, E820-E825.6 E826-E829.1	V10-V11 and V16-V18.0, .1, .2, .3, .4, .5, .9 V12-V15 and V19.0, .1, .2, .3, .8, .9
	Pedestrian	E817-E818.7 E820-E825.7 E826-E829.0	V01.0, .1, .9, V02-V05.0 V06.0, .1, .9, V09.0, .1, .3, .9
	Other land transport user	E817-E818.4, .5, .8, .9 E820-E825.4, .5, .8, .9 E826-E829.2, .4, .8, .9	V80.0, .1, .2, .3, .4, .5, .6, .7, .8, .9 V81.0, V82.0, .2, .3, .4, .5, .6, .7, .8, .9 V83-V86.4, .5, .6, .7, .8, .9, V87.8, .9 V88.0, .1, .2, .3, .4, .5, .6, .7, .8, .9, V89.0, .1, .3, .9
Other transport event	Other land transport user	E800-E807 E830-E848	V81.2, .3, .4, .5, .6, .7, .8, .9 V90.0-V94.9, V95.0-V97.9, V98, V99

Table A4 Injury sub-grouping framework based on International Classification of Diseases external cause codes(cont)

Intent and cause	Cause sub-group	ICD-9 external cause codes	ICD-10 external cause codes
Drowning	Swimming pool-related	E910.5,.6 (only hospitalisation data and only from July 1996)	W67, W68
	Bath-tub	E910.4	W65, W66
Accidental poisoning	Sport and recreational activities with and without diving equipment	E 910.1,.2	W73
	Constructed water containers other than pools	E910.8	W69, W70, W74
	Other specified and unspecified including swimming pool-related before July 1996	E910.0.3, E910.7,.9	X40, X41, X43, X44
	Pharmaceuticals except narcotics, hallucinogens and alcohol	E850.3-E854.8 (except E854.1), E855.0-E858.9	X42
Falls	Narcotics and hallucinogens	E850.0,.1,.2, E854.1	X45
	Alcohol including beverages	E860.0,-.9	X46
	Petroleum products and other solvents	E862.0-.9	X47-X49
	Other specified and unspecified	E861.0-.9, E863.0-E866.9, E867, E868.0-E869.9	W00-W03, W18
	On same level	E885, E886.0-.9	W05-W08, W11- W17
	From one level to another, including falls involving objects and equipment (except playground equipment), and falls from ladders, scaffolds and buildings	E881.0,.1, E882, E883.0-.9, E884.1-.9	W09
	From playground equipment	E884.0 (only hospitalisation data, and only from July 1996)	W10
	On steps or stairs	E880.0-.9	W04, W19
	Other specified and unspecified	E887, E888	X10-X19
	Hot objects, fluids, vapours, gases and steam	E924.0,.2,.8,.9	X04
Fires, burns and scalds	Ignition of flammable materials	E894	X00
	Fire in a building	E890.0-.E891.9	X05-X06
	Clothing ignition	E893.0-.9	X01-X03, X08-X09
	Other specified and unspecified	E892, E895-E897, E898.0.1, E899	

Table A4 Injury sub-grouping framework based on International Classification of Diseases external cause codes (cont)				
Intent and cause	Cause sub-group	ICD-9 external cause codes	ICD-10 external cause codes	
Other unintentional injuries	Cutting or piercing	E920.3-.9	W25-W27, W45	
	Hit, struck or crushed	E916, E917.0-.9, E918	W20-W23, W50-W52	
	Threats to breathing	E911, E912, E913.0-.9	W75-W84,	
	Other specified and unspecified including late effects and sequelae	E900.0-E902.9, E903, E904.0-E906.9, E907, E908.0-E909.9, E914-E915, E919.0-E920.2, E921.0-E923.9, E924.1, E925.0-E926.9, E927, E928.0-.9, E929.0-.9	W24, W28-W44, W49-W52, W53-W64, W85-W99, X20-X39, X50-X59, Y85.0-Y85.9, Y86, Y89.9	
	Intentional			
	Self-inflicted	Poisoning	E950.0-E952.9	X60-X69
		Hanging or suffocation	E953.0-.9	X70
		Sharp object	E956	X78
		Jumping from high place	E957.0-.9	X80
		Firearm	E955.0-.9	X72, X73, X74.0-.9
Other specified and unspecified, including late effects and sequelae		E954, E958.0-.9, E959	X71, X75, X76, X77, X79, X81-X84, Y87.0	
Firearm		E965.0-.4	X93, X94, X95.1-.9	
Sharp or blunt object		E966, E968.2	X99, Y00	
Maltreatment or rape		E960.1, E967.0-.9	Y05, Y06.0-.9, Y07.0-.9	
Bodily force		E960.0	Y04	
Inflicted by another	Bite by human	E968.8		
	Hanging or strangulation	E963	X91	
	Other specified and unspecified including late effects and sequelae	E962.0-.9, E965.5-.9, E970-E978, E990-E999, E961, E964, E968.0-.9 (except E968.2,.8), E969	X85-X92 (except X91), X96-X98, Y01-Y03, Y08, Y09, Y35-Y36, Y87.1, Y89.0,.1	
	No sub-groups	E980-E989	Y10-Y34, Y87.2	
	No sub-groups	E870-E879; E930-E949	Y40-Y84, Y88.0-Y88.3	
	Undetermined			
	Adverse events			

**Table A5.1 Western Australian population by age group, sex, indigenous status and area of residence
Western Australia, 1989–1994**

Age group	Males	Females	Total	% ^a Male	Indigenous	Non indigenous	Total	% Indigenous	Rural	Metropolitan	Total	% Rural
0-4	389,638	368,474	758,112	7.7%	43,126	714,986	758,112	7.7%	228,312	529,800	758,112	7.7%
5-9	395,465	373,370	768,835	7.8%	37,410	731,425	768,835	7.8%	223,581	545,254	768,835	7.8%
10-14	384,887	361,947	746,834	7.6%	30,676	716,158	746,834	7.6%	196,294	550,540	746,834	7.6%
15-19	396,939	375,859	772,798	7.8%	28,156	744,642	772,798	7.8%	167,684	605,114	772,798	7.8%
20-24	407,962	391,439	799,401	8.1%	27,351	772,050	799,401	8.1%	186,895	612,506	799,401	8.1%
25-29	405,791	397,337	803,128	8.1%	24,453	778,675	803,128	8.1%	213,727	589,401	803,128	8.1%
30-34	418,364	414,228	832,592	8.4%	20,997	811,595	832,592	8.4%	224,374	608,218	832,592	8.4%
35-39	400,534	400,490	801,024	8.1%	16,050	784,974	801,024	8.1%	203,900	597,124	801,024	8.1%
40-44	387,027	369,422	756,449	7.7%	12,060	744,389	756,449	7.7%	175,391	581,058	756,449	7.7%
45-49	317,283	292,054	609,337	6.2%	8,723	600,614	609,337	6.2%	137,243	472,094	609,337	6.2%
50-54	247,871	231,241	479,112	4.9%	6,849	472,263	479,112	4.9%	110,043	369,069	479,112	4.9%
55-59	203,960	196,119	400,079	4.1%	5,803	394,276	400,079	4.1%	91,285	308,794	400,079	4.1%
60-64	187,293	183,949	371,242	3.8%	4,564	366,678	371,242	3.8%	82,749	288,493	371,242	3.8%
65-69	160,229	169,048	329,277	3.3%	2,833	326,444	329,277	3.3%	67,896	261,381	329,277	3.3%
70-74	113,144	136,848	249,992	2.5%	2,014	247,978	249,992	2.5%	48,491	201,501	249,992	2.5%
75-79	77,994	108,998	186,992	1.9%	3,054	385,007	388,061	3.9%	35,037	151,955	186,992	1.9%
80-84	45,026	74,431	119,457	1.2%	*	*	*	*	21,880	97,577	119,457	1.2%
85+	25,437	56,175	81,612	0.8%	*	*	*	*	14,652	66,960	81,612	0.8%
Six year total Proportion of population	4,964,844	4,901,429	9,866,273	100%	274,119	9,592,154	9,866,273	100%	2,429,434	7,436,839	9,866,273	100%
	50.3%	49.7%		100%	2.8%	97.2%		100%	24.6%	75.4%		100%

Source: For population data by sex and area of residence: ABS Catalogue 3101.0

 Source: For indigenous and non indigenous population data: Department of Health, Western Australia
 a Percentage: Total for specified age group (eg 0-4) divided by six year total for population

* Note: Data for indigenous people in age groups 75-79, 80-84 and 85+ were combined and presented as 75-79 age group to preserve confidentiality

**Table A5.2 Western Australian population by age group, sex, indigenous status and area of residence
Western Australia, 1995–2000**

Age group	Males	Females	Total	% ^a Male	Indigenous	Non indigenous	Total	% Indigenous	Rural	Metropolitan	Total	% Rural
0-4	391,324	369,409	760,733	7.0%	41,075	719,658	760,733	7.0%	212,718	548,015	760,733	7.0%
5-9	409,311	388,088	797,399	7.3%	43,071	754,328	797,399	7.3%	224,251	573,148	797,399	7.3%
10-14	416,747	394,585	811,332	7.5%	38,673	772,659	811,332	7.5%	210,064	601,268	811,332	7.5%
15-19	408,176	385,955	794,131	7.3%	31,702	762,429	794,131	7.3%	166,817	627,314	794,131	7.3%
20-24	426,983	404,288	831,271	7.6%	27,966	803,305	831,271	7.6%	174,103	657,168	831,271	7.6%
25-29	436,260	418,632	854,892	7.9%	27,284	827,608	854,892	7.9%	207,757	647,135	854,892	7.9%
30-34	426,004	419,871	845,875	7.8%	24,565	821,310	845,875	7.8%	216,677	629,198	845,875	7.8%
35-39	442,015	438,139	880,154	8.1%	21,155	858,999	880,154	8.1%	222,552	657,602	880,154	8.1%
40-44	422,757	420,434	843,191	7.8%	16,334	826,857	843,191	7.8%	199,380	643,811	843,191	7.8%
45-49	398,295	382,754	781,049	7.2%	11,996	769,053	781,049	7.2%	171,059	609,990	781,049	7.2%
50-54	333,009	308,846	641,855	5.9%	8,500	633,355	641,855	5.9%	138,431	503,424	641,855	5.9%
55-59	252,969	238,702	491,671	4.5%	6,347	485,324	491,671	4.5%	110,136	381,535	491,671	4.5%
60-64	202,263	199,287	401,550	3.7%	4,863	396,687	401,550	3.7%	88,557	312,993	401,550	3.7%
65-69	176,283	180,677	356,960	3.3%	3,831	353,129	356,960	3.3%	75,209	281,751	356,960	3.3%
70-74	143,412	160,017	303,429	2.8%	2,204	301,225	303,429	2.8%	58,843	244,586	303,429	2.8%
75-79	95,698	125,612	221,310	2.0%	2,916	475,039	477,955	4.4%	41,103	180,207	221,310	2.0%
80-84	53,814	87,814	141,628	1.3%	*	*	*	*	27,356	114,272	141,628	1.3%
85+	35,899	79,118	115,017	1.1%	*	*	*	*	22,880	92,137	115,017	1.1%
Six year total proportion of population	5,471,219	5,402,228	10,873,447	100%	312,482	10,560,965	10,873,447	100%	2,567,893	8,305,554	10,873,447	100%
	50.3%	49.7%		100%	2.9%	97.1%		100%	23.6%	76.4%		100%

Source: For population data by sex and area of residence: ABS Catalogue 3101.0

 Source: For indigenous and non indigenous population data: Department of Health, Western Australia
 a Percentage: Total for specified age group (eg 0-4) divided by six year total for population

* Note: Data for indigenous people in age groups 75-79, 80-84 and 85+ were combined and presented as 75-79 age group to preserve confidentiality

