

UNINTENTIONAL HOSPITAL-TREATED INJURY IN VICTORIA 2016/17

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Abbreviations

DHHS	Department of Health and Human Services
ED	Emergency Department
VAED	Victorian Admitted Episodes Dataset
VEMD	Victorian Emergency Minimum Dataset

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UNINTENTIONAL HOSPITAL-TREATED INJURY IN VICTORIA 2016/17

This is the seventeenth in a series of regular E-bulletins that provide an overview of the injury profile for Victoria. This edition provides an overview of unintentional hospital-treated injury in 2016/17 utilising two injury surveillance datasets that separately record hospital admissions and Emergency Department (ED) presentations for injury.

The case selection criterion used in this edition remains the same as the previous edition.

SUMMARY RESULTS

There were 122,742 injury cases admitted to Victorian hospitals in 2016/17 of which 90% were unintentional (n=110,810). At least 405,854 injury cases presented to Victorian EDs, 80% of which were unintentional (n=324,731).

All ages

- The annual rate of injury admissions increased significantly by 4.4% per year over the 10-year period 2007/08 to 2016/17.
- The annual rate of injury ED presentations increased significantly by 1.0% per year over the 10-year period 2007/08 to 2016/17.
- In 2016/17 males were over-represented, accounting for 54% of admissions and 58% of ED presentations.
- Falls were the leading cause of injury, accounting for 47% of admissions and 37% of ED presentations.
- The home was the most common setting for injury among admissions and ED presentations: 26% of hospital admissions and 42% of ED presentations.
- Fracture to upper limb was the most common injury for both admissions and ED presentations (18% and 12%, respectively).

Children (0-14 years)

- In 2016/17, in total 14,372 children were admitted to Victorian hospitals and at least 96,417 presented to Victorian EDs for unintentional injury.
- The annual rate of injury admissions among children aged 0-14 years increased significantly by 4.0% per year over the 10-year period 2007/08 to 2016/17.
- The annual rate of injury ED presentations among children aged 0-14 years increased significantly by 2.1% per year over the 10-year period 2007/08 to 2016/17.
- In 2016/17 males were over-represented, accounting for 61% of admissions and 58% of ED presentations.
- Falls were the leading cause of both injury admissions (48%) and ED presentations (44%).
- Twenty-five percent of hospital admissions and almost half of ED presentations (48%) were for injuries that occurred in the home. Children were also commonly injured in schools and other public buildings (13% of admissions and 14% of ED presentations) and sports and athletics areas (9% each of admissions and ED presentations).
- Fracture to upper limb was the most common injury for both admissions and ED presentations among children (30% and 17%, respectively).

Adolescents and young adults (15-24 years)

- In 2016/17 in total 13,731 adolescents and young adults were admitted to Victorian hospitals and at least 53,054 presented to Victorian EDs for unintentional injury.
- The annual rate of injury admissions among adolescents and young adults increased significantly by 4.0% per year over the 10-year period 2007/08 to 2016/17.
- The annual rate of injury ED presentations among adolescents and young adults remained fairly stable over the 10-year period 2007/08 to 2016/17.
- In 2016/17 males were over-represented, accounting for 71% of admissions and 66% of ED presentations.
- Transport was the leading cause of injury admissions (22%), followed by falls (19%), hit/struck/crush (17%) and cutting and piercing (10%). Among ED presentations falls and hit/struck/crush were the leading cause of injury (26% each), followed by transport and cutting and piercing injuries (9% each).
- Sports and athletics areas (21%) and the road, street and highway (15%) were the most common settings for adolescent and young adult injuries resulting in hospital admission whereas the home (25%) and sports and athletics areas (20%) were the leading settings for injuries resulting in ED presentation.
- Fracture to upper limb was the most common injury among adolescent and young adult hospital admissions (19%), while dislocation, sprain and strain to lower limb was the more common reason for ED presentations (14%).

Adults (25-64 years)

- In 2016/17, in total 44,395 adults were admitted to Victorian hospitals while at least 127,897 presented to Victorian EDs for unintentional injury.
- The annual rate of injury admissions among adults increased significantly by 5.1% per year over the 10-year period 2007/08 to 2016/17.
- The annual rate of injury ED presentations among adults remained fairly stable over the 10-year period 2007/08 to 2016/17.
- Males were over-represented in 2016/17, accounting for 63% of admissions and 60% of ED presentations.
- The leading cause of hospital admissions was falls (29%), followed by transport (20%), cutting and piercing (11%), and hit/struck/crush (10%). Among ED presentations falls were the leading cause of injury (27%), followed by hit/struck/crush (18%), cutting and piercing (11%) and transport (8%).
- Eighteen percent of hospital admissions and 39% of ED presentations were for injuries that occurred in the home. Other major settings for injury were: working for income (14% of admissions and 15% of ED presentations) and road/street/highway (15% of admissions and 9% of ED presentations).
- Fracture to upper limb was the most common injury among adult hospital admissions (17%) while dislocation, sprain and strain to lower limb and open wound to upper limb were the more common reasons for ED presentations (10% each).

Older adults (65 years and older)

- In 2016/17, in total 38,312 older adults were admitted to Victorian hospitals and at least 47,363 presented to Victorian EDs for unintentional injury.
- The age-standardised annual rate of injury admissions among older adults increased significantly by 4.2% per year over the 10-year period 2007/08 to 2016/17.
- The age-standardised annual rate of injury ED presentations among older adults increased significantly by 1.8% per year over the 10-year period 2007/08 to 2016/17.
- In 2016/17 females were over-represented, accounting for 63% of admissions and 58% of ED presentations.
- Falls accounted for more than three-quarters of hospital admissions (78%) and more than half of ED presentations (60%) among older adults.
- Forty-two percent of hospital admissions and more than half of ED presentations (56%) were for injuries that occurred in the home. Other common settings for injuries were residential institutions (17% of admissions and 8% of ED presentations) and the road/street/highway (8% of admissions and 7% of ED presentations).
- Fracture to lower limb was the most common injury among older adult hospital admissions (20%) and among ED presentations (13%).

Table 1: Summary results for 2016/17

	ALL	CHILD (0-14 YEARS)	ADOLESCENTS AND YOUNG ADULTS (15-24 YEARS)	ADULTS (25-64 YEARS)	OLDER ADULTS (65+ YEARS)
Admissions					
n	110,810	14,372	13,731	44,395	38,312
Rate/100,000	1,774.6	1,249.0	1,654.7	1,337.1	4,060.2
Age standardised rate/100,000	1,694.2	1,252.2	1,657.4	1,325.2	3,919.3
Rate change (% per year)	4.4	4.0	4.0	5.1	4.2
% of males	54.4	60.8	70.9	62.5	36.7
Leading cause (%)	Falls (46.8)	Falls (47.7)	Transport (22.3)	Falls (28.8)	Falls (77.5)
Most common setting (%)	Home (25.8)	Home (24.5)	Sports (21.0)	Home (17.9)	Home (42.1)
Most common injury (%)	Fracture upper limb (17.8)	Fracture upper limb (29.6)	Fracture upper limb (18.9)	Fracture upper limb (17.4)	Fracture lower limb (20.0)
% of all serious injury cases (row %)	n/a	1.0	3.0	14.1	81.9
ED presentations					
n	324,731	96,417	53,054	127,897	47,363
Rate/100,000	5,200.5	8,379.5	6,393.6	3,852.1	5,019.4
Age standardised rate/100,000	4,686.3	8,387.4	6,465.5	3,849.8	4,934.8
Rate change (% per year)	1.0	2.1	stable	stable	1.8
% of males	57.9	57.5	66.0	60.4	42.3
Leading cause (%)	Falls (36.8)	Falls (44.3)	Falls (25.8)	Falls (27.1)	Falls (60.1)
Most common setting (%)	Home (41.6)	Home (47.8)	Home (24.6)	Home (38.6)	Home (56.0)
Most common injury (%)	Fracture to upper limb (11.7)	Fracture upper limb (16.7)	Dislocation, sprain and strain to lower limb (14.0)	Dislocation, sprain and strain to lower limb and Open wound to upper limb (9.7 for both)	Fracture lower limb (12.7)

Notes:

- 1) Rate change (% per year) refers to the modelled annual change in rate over 10 years: 2007/18 to 2016/17.
- 2) Red highlighted cells represent an increase and yellow represents no statistically significant change ($p < 0.05$).
- 3) A serious injury is defined as one with an ICD based Injury Severity Score (ICISS) of less than or equal to 0.941 (see Box 1 in Appendix 1 for details).
- 4) Percentage of serious injuries is based solely on hospital admissions as this measure is not available in the ED presentation data.

INTRODUCTION

This E-bulletin provides information on unintentional hospital-treated injury in 2016/17. There were 122,742 injury hospital admissions in Victoria in 2016/17, 90% of which were unintentional (n=110,810). The remaining injury cases were either intentional i.e. self-harm or assault (8%, n=10,038) or of other or undetermined intent (2%, n=1,894). In this same year, there were 405,854 injury cases presenting to Victorian hospital EDs, 80% of which were unintentional (n=324,731), 4% were intentional (self-harm or assault) (n=15,524) and 16% were of other or undetermined intent (n=65,599).

METHOD

Data sources

Hospital admissions data were extracted from the Victorian Admitted Episodes Dataset (VAED) and ED presentations data from the Victorian Emergency Minimum Dataset (VEMD). The VAED records all hospital admissions in public and private hospitals in the state of Victoria and the VEMD records all presentations to Victorian public hospitals with 24-hour emergency departments¹.

Case selection criteria

Cases were selected if the admission (VAED) or presentation (VEMD) date occurred in the financial year 2016/17, if gender was male or female², and if the injury was unintentional (VAED: external cause code in the range V00-X59, VEMD: human intent=1). Hospital admission cases were selected only if the first occurring diagnosis code was a community injury (see Box 2 in Appendix 1) and the episode was an incident (i.e., the case was not a statistical separation from another unit within the same hospital or an inward transfer from another hospital and not a repeat admission for the same injury). ED presentation case selection was restricted to incident cases: return visits and pre-arranged visits were excluded.

In order to minimise the influence of the hospital admission policy change in 2012/13 on the trend in admissions over time, cases that spent the entire episode in the ED were removed from the VAED (See Box 3 in Appendix 1).

For ease of comparison, VEMD causes, where possible, were recoded to match VAED cause groups.

The age groups (0-14, 15-24, 25-64, 65+ years) have been selected to match those in the *National Injury Prevention and Safety Promotion Plan: 2004 – 2014* (National Public Health Partnership, 2004. Canberra: NPHP).

See Appendix 2 for a detailed explanation of the case selection criteria.

Rates and trends analysis

Rates per 100,000 population were calculated for the 10-year period 2007/08 to 2016/17 for the VAED and the VEMD. The denominators used for calculating rates were December population estimates from the Australian Bureau of Statistics (Quarterly Population Estimates by State/Territory, Sex and Age, ABS.Stat, available at <http://stat.data.abs.gov.au>). Age standardisation of rates was carried out using 5-year age groups and the direct method. The standard population used was the Victorian resident population at 30 June, 2001.

Time trends in the rate of admissions/ED presentations were modelled using Poisson models, as the annual number of events as a function of time in years (continuous), age group and gender, with the log of the annual Victorian residential population as offset.

Time trend results are presented as the modelled % change in rate per year, calculated as percentage change = $[e^a - 1] \times 100\%$ where a is the parameter estimate of year, in the Poisson model. A trend was considered to be statistically significant if the p-value of the slope of the regression model was less than 0.05. The analyses were conducted using the PROC GENMOD procedure in SAS V9.4.

For further discussion of data sources and issues, particularly issues relating to the Victorian hospital admission policy change and how this may have influenced admission trends, please refer to Appendix 2.

Note: The terms “admissions” and “presentations” in succeeding sections of this report refer to “injury admissions” and “injury presentations”; results are limited to the State of Victoria.

¹ Currently 38 hospitals contribute to the VEMD (Bass Coast Regional Health was added to the collection in July 2011)

² Intersex cases were excluded in the VAED and VEMD case selection due to data confidentiality concerns related to small numbers.

ALL AGES

An overview of unintentional hospital-treated injury in Victoria during 2016/17 is provided in Table 2. Overall, there were 110,810 admissions and 324,731 presentations.

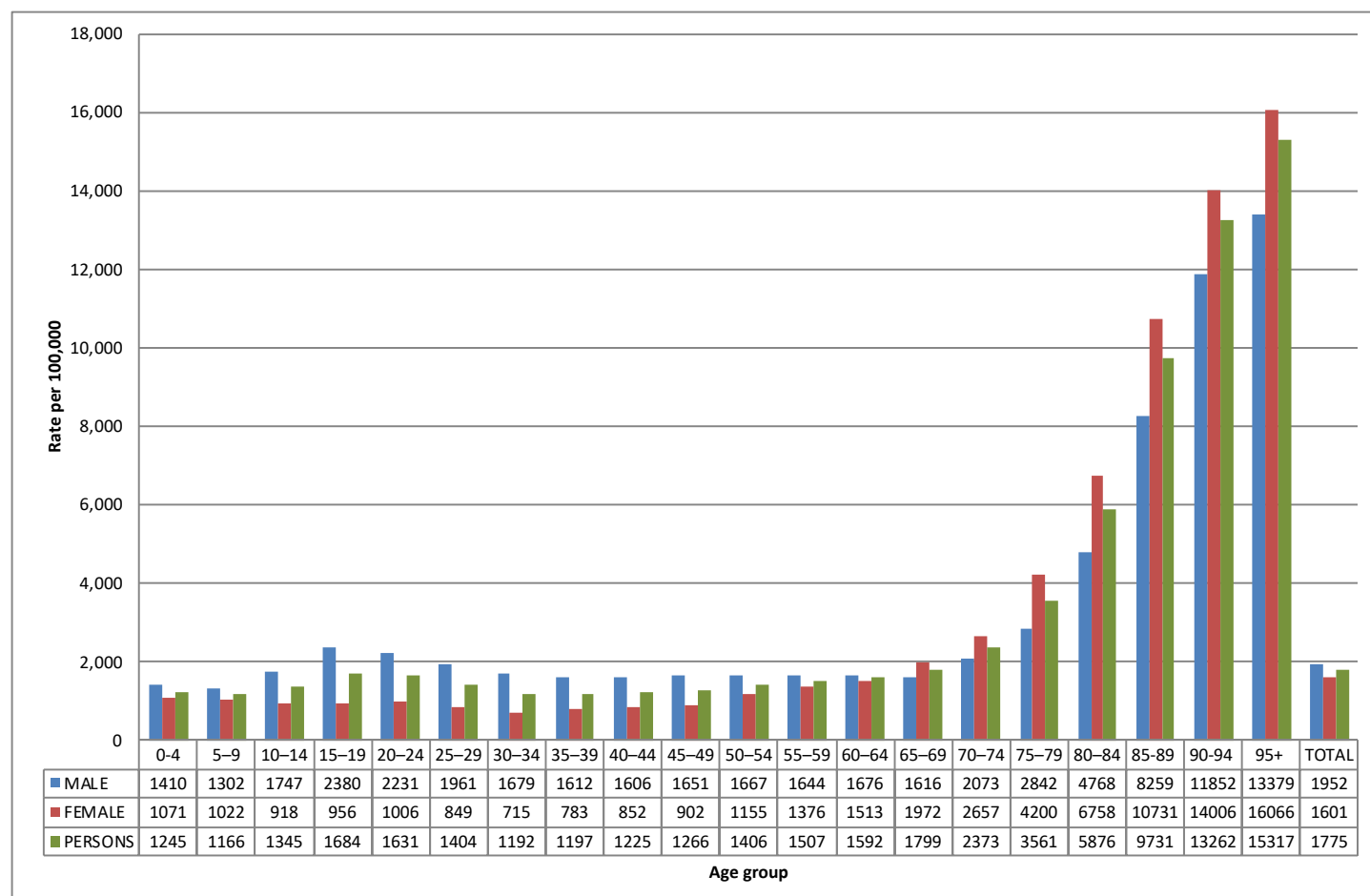
- The annual age standardised hospital admission rate was highest in older adults (3,919.3 per 100,000 population) and lowest in children (1,252.2 per 100,000).
- The annual age standardised ED presentation rate was highest in children (8,387.4 per 100,000 population) and lowest in adults (3,849.8 per 100,000).

Hospital admission injury rates by age and gender for Victoria in 2016/17 are shown in Figure 1. Age-specific hospital admitted injury rates rose after childhood, were higher in adolescents and young adults than in adults and peaked in older adults. The overall male age-specific hospital admitted injury rate was higher than the female rate in all 5-year age groups up to age 64 years.

Table 2: Hospital treated injury frequency, age-specific and standardised annual rates per 100,000 population, by broad age group, Victoria 2016/17.

AGE GROUP	HOSPITAL ADMISSIONS			ED PRESENTATIONS (INCLUDES SUBSEQUENT ADMISSIONS)		
	n	Rate/100,000	Age standardised rate per 100,000	n	Rate/100,000	Age standardised rate per 100,000
Children 0-14 years	14,372	1,249.0	1,252.2	96,417	8,379.5	8,387.4
Adolescents and young adults 15-24 years	13,371	1,654.7	1,657.4	53,054	6,393.6	6,465.5
Adults 25-64 years	44,395	1,337.1	1,325.2	127,897	3,852.1	3,849.8
Older adults 65+ years	38,312	4,060.2	3,919.3	47,363	5,019.4	4,934.8
All	110,810	1,774.6	1,694.2	324,731	5,200.5	4,686.3

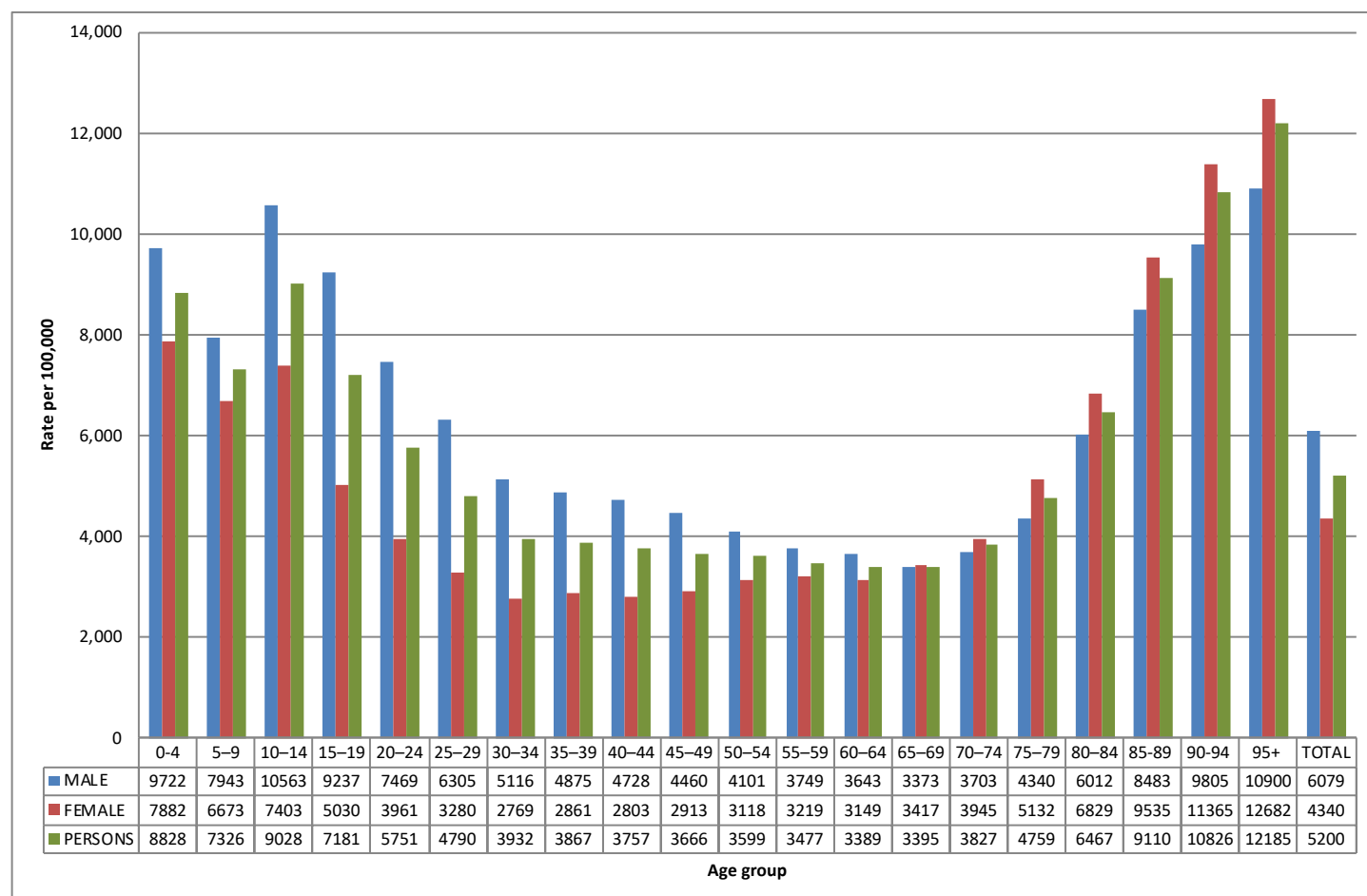
Figure 1: Age-specific hospital admitted injury rates by age group and gender, Victoria 2016/17



ED presentation injury rates by age and gender for Victoria in 2016/17 are shown in Figure 2. Age-specific injury ED presentation rates were high among children (0-9 years) and particularly high among older children (10-14 years); then decreased throughout the adolescent

and adult age groups until age 65 then increased again, peaking at 95 years and over. The overall male age-specific injury ED presentations rate was higher than the female rate in all 5-year age groups up to age 64 years.

Figure 2: Age-specific injury ED presentation rates by age group and gender, Victoria 2016/17



An overview of severity of unintentional injury hospital admissions by age group is provided in Table 3. Serious injury cases are defined using the International Classification of Disease based Injury Severity Score (ICISS) which reflects threat to life (see Box 1 in Appendix 1).

- Adults aged 25-64 years accounted for 40% of unintentional hospital admissions in 2016/17, and older adults aged 65+ accounted for 35% of injury admissions during this period. Children (0-14 years) accounted for 13% of injury admissions and adolescents and young adults (15-24 years) accounted for 12% of injury admissions during 2016/17.

- Older adults aged 65+ years accounted for the majority of serious injury admissions (82%, n=13,078). They also accounted for more than two-thirds of hospital bed-days (68%, 409,193 days).
- Those aged 75-94 years accounted for almost a quarter of all unintentional injury hospital admissions (23%) and were particularly over-represented when serious injuries and bed-days are taken into account (65% and 51%, respectively).

Table 3: Unintentional injury hospital admissions by age group: frequency, serious injury cases and hospital bed days (2016/17)

	FREQUENCY		SERIOUS INJURY CASES		HOSPITAL BED-DAYS	
	n	%	n	%	n	%
0-4	5,006	4.5	72	0.5	6,438	1.1
5-9	4,561	4.1	28	0.2	5,940	1.0
10-14	4,805	4.3	66	0.4	7,361	1.2
0-14	14,372	13.0	166	1.0	17,739	3.3
15-19	6,277	5.7	207	1.3	12,820	2.1
20-24	7,454	6.7	280	1.8	15,812	2.6
15-24	13,731	12.4	487	3.0	28,632	4.7
25-34	12,662	11.4	538	3.4	30,765	5.1
35-44	10,199	9.2	492	3.1	29,414	4.9
45-54	10,729	9.7	557	3.5	36,614	6.0
55-64	10,805	9.8	660	4.1	51,567	8.5
25-64	44,395	40.1	2,247	14.1	148,360	24.5
65-74	10,764	9.7	1,932	12.1	79,303	13.1
75-84	13,107	11.8	4,556	28.5	146,802	24.2
85-94	12,822	11.6	5,843	36.6	164,652	27.2
95+	1,619	1.5	747	4.7	18,436	3.0
65+	38,312	34.6	13,078	81.9	409,193	67.5
Total	110,810	100.0	15,978	100.0	605,924	100.0

TREND

- During the 10-year period 2007/08 to 2016/17, there were on average 82,590 injury admissions and at least 289,664 injury ED presentations per year in Victoria. The average age-standardised annual rates were 1,396 admissions and 5,151 ED presentations per 100,000 population.
- The age-standardised annual rates of injury admissions are shown in Figure 3. The modelled trend in rate showed a statistically significant annual increase of 4.4% [95% CI 3.4 to 5.4%].
- The age-standardised annual rate of injury ED presentations are shown in Figure 4. The modelled trend in rate showed a statistically significant annual increase of 1.0% [95% CI 0.5 to 1.5%].

Figure 3: Trend in injury hospital admission rates per 100,000 population, Victoria 2007/08-2016/17

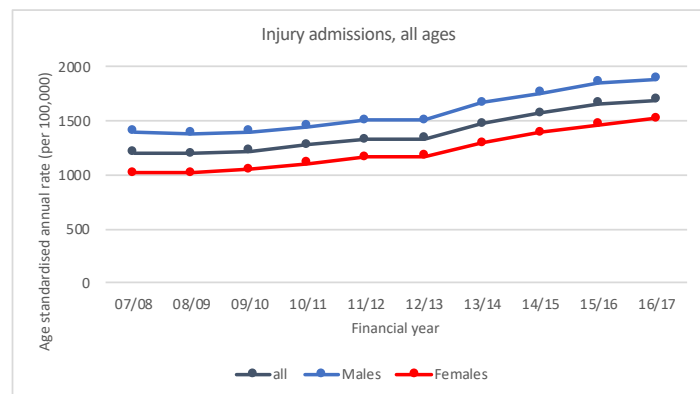
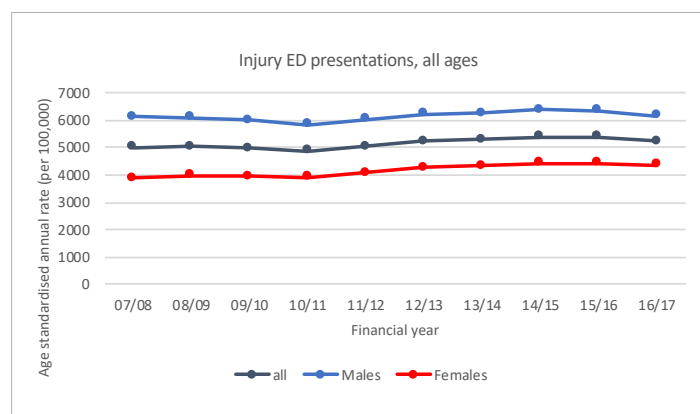


Figure 4: Trend in injury ED presentation rates per 100,000 population, Victoria 2007/08-2016/17



HOSPITAL TREATED INJURY – GENDER AND AGE

- Males were over-represented accounting for 54% of all injury admissions (n= 60,285) and 58% of ED presentations (n=187,785) in Victoria in 2016/17.
- Seventy-five percent (n=82,707) of hospital admissions occurred among persons aged 25 years and older; fifty-four percent of those admitted were aged 25-64 years (n=44,395) and 46% were aged 65 years and above (n= 38,312). Adults aged 25-64 years accounted for 39% of ED presentations (n=127,897).
- Males accounted for more hospital admissions and ED presentations than women in all age groups up to 64 years. However, in the 65 years and older group, females accounted for more hospital admissions and ED presentations than males (Figure 5 and Figure 6).

Figure 5: Injury hospital admissions by gender and age, Victoria 2016/17

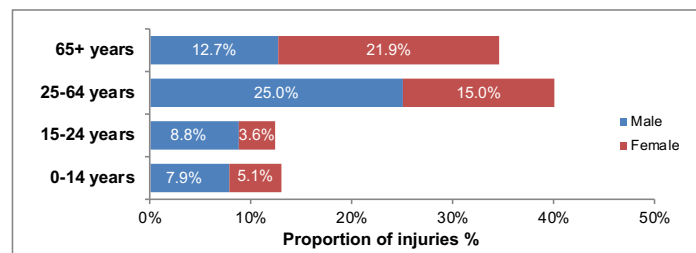
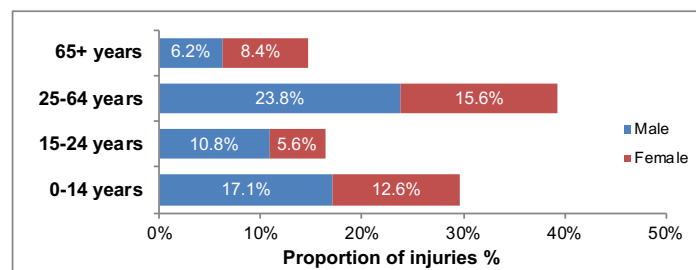


Figure 6: Injury ED presentations by gender and age, Victoria 2016/17



- The age standardised rate of injury hospital admission and ED presentation was higher for males than females: 1,884.8 vs. 1,519.1 per 100,000 for admissions and 6,163.4 vs 4,360.6 per 100,000 for ED presentations.
- The age standardised hospital admission rate per 100,000 population was highest in older adults (3,919.3) and lowest in children (1,252.2). In contrast, the age standardised ED presentation rate per 100,000 population was highest in children (8,387.4) and lowest in adults (3,849.8) (Table 4).

Table 4: Frequency, age-specific and age standardised rates of injury hospital admissions and ED presentations by gender and age, Victoria 2016/17

AGE GROUP	GENDER	HOSPITAL ADMISSIONS			ED PRESENTATIONS		
		n	Rate per 100,000 population	Age standardised rate per 100,000 population	n	Rate per 100,000 population	Age standardised rate per 100,000 population
0-14 years	Male	8,746	1,478.0	1,487.9	55,496	9,378.1	9,403.4
	Female	5,626	1,006.7	1,002.0	40,921	7,322.0	7,309.4
	All	14,372	1,249.0	1,252.2	96,417	8,379.5	8,387.4
15-24 years	Male	9,739	2,298.1	2,305.7	35,024	8,264.5	8,355.4
	Female	3,992	983.2	980.8	18,030	4,440.7	4,493.3
	All	13,731	1,654.7	1,657.4	53,054	6,393.6	6,465.5
25-64 years	Male	27,726	1,694.2	1,688.2	77,255	4,720.7	4,722.2
	Female	16,669	990.0	968.7	50,642	3,007.8	2,991.9
	All	44,395	1,337.1	1,325.2	127,897	3,852.1	3,849.8
65+ years	Male	14,074	3,220.3	2,998.5	20,010	4,578.6	4,428.3
	Female	24,238	4,784.8	4,721.0	27,353	5,399.7	5,370.5
	All	38,312	4,060.2	3,919.3	47,363	5,019.4	4,934.8
All	Male	60,285	1,951.5	1,884.8	187,785	6,078.9	6,163.4
	Female	50,525	1,601.4	1,519.1	136,946	4,340.4	4,360.6
	All	110,810	1,774.6	1,694.2	324,731	5,200.5	5,249.4

LEADING CAUSES OF INJURY

- Four of the five major causes of injury admissions and injury ED presentations were the same (falls, transport, hit/struck/crush injuries, cutting/piercing), but the ranking on frequency of cases was different (Figure 7 and Figure 8).
- The leading cause of both hospital admissions and ED presentations was falls. Falls accounted for 47% (n=51,861) of hospital admissions and 37% (n=119,524) of ED presentations.
- Transport accounted for 14% of admissions (n=15,305) but just 6% of presentations (n=19,330) which indicates that transport injuries were relatively severe.
- Hit/struck/crush injuries accounted for 9% of admissions (n=9,930) but a higher proportion of ED presentations (18%, n=59,899).
- Cutting and piercing injuries accounted for 7% of admissions (n=7,571) and 8% of ED presentations (n=24,963).
- The fifth ranking cause of injury-related admissions was overexertion and/or strenuous movements (3%, n=3,553) whereas for ED presentations it was injuries caused by a foreign body in a natural orifice, e.g. ear, nose, eye (5%, n=14,694).

Figure 7: Injury hospital admissions by cause, Victoria 2016/17

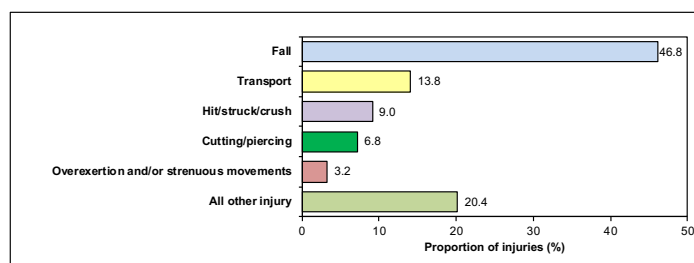
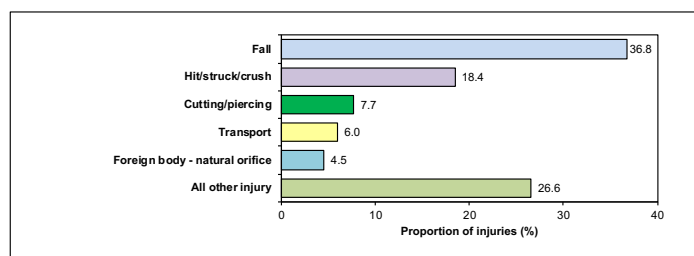


Figure 8: Injury ED presentations by cause, Victoria 2016/17



Note: "Other specified" and "unspecified" cases were included in the 'all other injuries' category regardless of their ranking.

MAJOR INJURY TYPE
(BODY SITE AND NATURE OF INJURY)

Figure 9 and Figure 10 show the five most common specific injury types for hospital admissions and ED presentations.

- Fracture to the upper limb accounted for 18% (n=19,716) of hospital admissions and 12% (n=38,037) of ED presentations.
- Fracture to the lower limb was the second most common type of injury requiring hospital admission (13%, n=14,596).
- Dislocations, sprains and strains to the lower limb (9%, n= 28,967) and upper limb (8%, n=25,267) were common among ED presentations.
- Fracture to the trunk accounted for 6% of admissions (n=7,144).
- Open wounds to the head/face/neck accounted for 6% of admissions (n=6,662) and 6% of ED presentations (n=19,532). Open wounds to the upper limb accounted for 6% of admissions (n=6,213) and 7% of ED presentations (n=21,310).

Figure 9: Major injury type, hospital admissions, Victoria, 2016/17

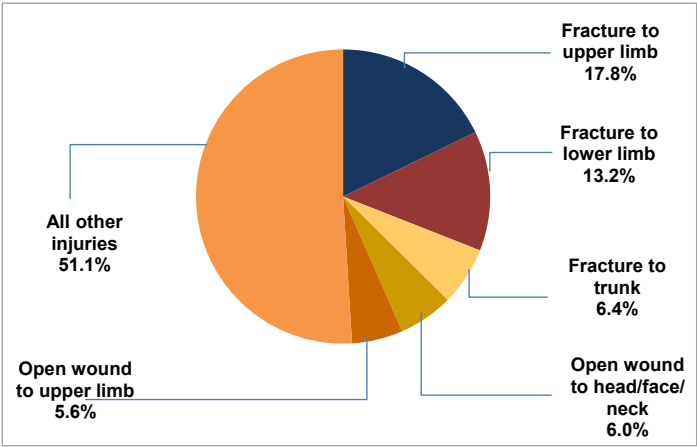
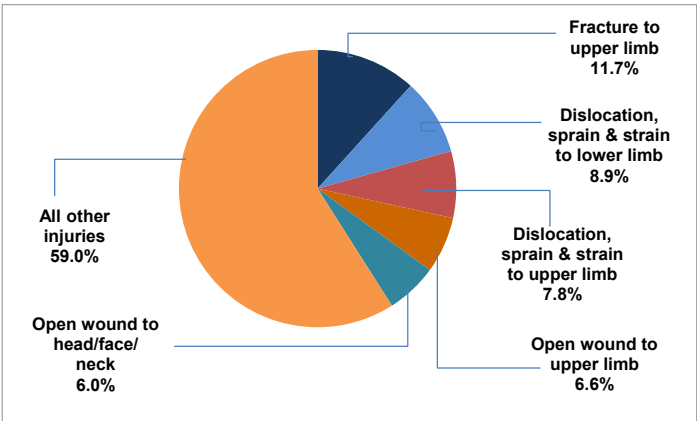


Figure 10: Major injury type, ED presentations Victoria 2016/17



SETTING

- In 2016/17, 26% (n=28,593) of all injuries requiring hospital admission and 42% (n=135,027) of injuries resulting in ED presentation occurred in the home.
- Injuries also commonly occurred on roads/streets/highways (11% of admissions and 7% of ED presentations), while working for income (7% of admissions and 8% of ED presentations) and in sports settings (7% of admissions and 8% of ED presentations). Around 6% of admissions resulted from injuries that occurred in residential institutional settings (Figure 11 and Figure 12).

Figure 11: Injury hospital admissions by setting, Victoria 2016/17

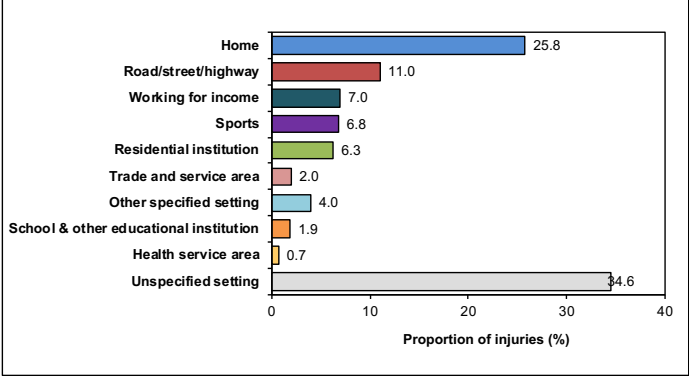


Figure 12: Injury ED presentations by setting, Victoria 2016/17

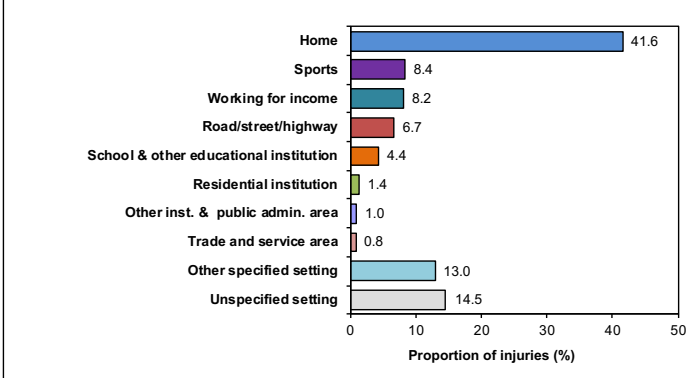


TABLE 5: RANKING OF CAUSES OF INJURY HOSPITAL ADMISSIONS BY AGE GROUPS

RANK	AGE GROUPS (YEARS)												
	0-4yrs	5-9yrs	10-14yrs	15-19yrs	20-24yrs	25-34yrs	35-44yrs	45-54yrs	55-64yrs	65-74yrs	75-84yrs	85-94yrs	95+yrs
1	fall 2,364 47.2%	fall 2,543 55.8%	fall 1,947 40.5%	fall 1,301 20.7%	transport 1,797 24.1%	transport 2,964 23.4%	fall 2,322 22.8%	fall 3,298 30.7%	fall 4,897 45.3%	fall 6,749 62.7%	fall 10,263 78.3%	fall 11,214 87.5%	fall 1,473 91.0%
2	hit/struck/crush 830 16.6%	hit/struck/crush 684 15.0%	hit/struck/crush 891 18.5%	transport 1,268 20.2%	fall 1,236 16.6%	fall 2,330 18.4%	transport 2,172 21.3%	transport 2,192 20.4%	transport 1,564 14.5%	transport 1,015 9.4%	unspec. unintentional 693 5.3%	unspec. unintentional 525 4.1%	unspec. unintentional 58 3.6%
3	unspec. unintentional 325 6.5%	transport 358 7.8%	transport 725 15.1%	hit/struck/crush 1,229 19.6%	unspec. unintentional 1,235 16.6%	unspec. unintentional 1,916 15.1%	unspec. unintentional 1,494 14.6%	unspec. unintentional 1,408 13.1%	unspec. unintentional 1,250 11.6%	unspec. unintentional 965 9.0%	transport 682 6.6%	transport 304 2.4%	hit/struck/crush 30 1.9%
4	cutting/piercing 296 5.9%	cutting/piercing 270 5.9%	unspec. unintentional 513 10.7%	unspec. unintentional 1,102 17.6%	hit/struck/crush 1,133 15.2%	hit/struck/crush 1,737 13.7%	cutting/piercing 1,219 12.0%	cutting/piercing 1,083 10.1%	cutting/piercing 863 8.0%	cutting/piercing 475 4.4%	hit/struck/crush 333 2.5%	hit/struck/crush 226 1.8%	transport 18 1.1%
5	foreign body 287 5.7%	unspec. unintentional 243 5.3%	cutting/piercing 217 4.5%	cutting/piercing 516 8.2%	cutting/piercing 857 11.5%	cutting/piercing 1,520 12.0%	hit/struck/crush 1,063 10.4%	hit/struck/crush 833 7.8%	hit/struck/crush 599 5.5%	hit/struck/crush 342 3.2%	ovext./ stren.mmts 331 2.5%	ovext./ stren.mmts 170 1.3%	poisoning 15 0.9%
6	poisoning 284 5.7%	foreign body 183 4.0%	ovext./ stren.mmts 151 3.1%	ovext./ stren.mmts 258 4.1%	ovext./ stren.mmts 293 3.9%	ovext./ stren.mmts 569 4.5%	ovext./ stren.mmts 517 5.1%	nat./envir./animals 532 5.0%	nat./envir./animals 458 4.2%	ovext./ stren.mmts 339 3.1%	cutting/piercing 197 1.5%	poisoning 103 0.8%	ovext./ stren.mmts 6 0.4%
7	nat./envir./animals 190 3.8%	nat./envir./animals 145 3.2%	nat./envir./animals 133 2.8%	nat./envir./animals 164 2.6%	poisoning 248 3.3%	nat./envir./animals 492 3.9%	nat./envir./animals 444 4.4%	ovext./ stren.mmts 490 4.6%	ovext./ stren.mmts 384 3.6%	nat./envir./animals 290 2.7%	poisoning 174 1.3%	nat./envir./animals 77 0.6%	fires/burns/scalds 5 0.3%
8	transport 170 3.4%	poisoning 37 0.8%	other spec. unintentional 75 1.6%	other spec. unintentional 139 2.2%	nat./envir./animals 209 2.8%	poisoning 334 2.6%	poisoning 274 2.7%	poisoning 238 2.2%	foreign body 251 2.3%	foreign body 191 1.8%	nat./envir./animals 168 1.3%	foreign body 66 0.5%	foreign body * *
9	fires/burns/scalds 154 3.1%	fires/burns/scalds 34 0.7%	foreign body 68 1.4%	poisoning 120 1.9%	other spec. unintentional 154 2.1%	machinery 221 1.7%	machinery 232 2.3%	machinery 204 1.9%	poisoning 187 1.7%	poisoning 162 1.5%	foreign body 131 1.0%	cutting/piercing 55 0.4%	choking/suffoc. * *
10	choking/suffoc. 43 0.9%	ovext./ stren.mmts 32 0.7%	fires/burns/scalds 34 0.7%	foreign body 70 1.1%	machinery 122 1.6%	fires/burns/scalds 205 1.6%	fires/burns/scalds 148 1.5%	foreign body 175 1.6%	machinery 180 1.7%	machinery 115 1.1%	fires/burns/scalds 55 0.4%	fires/burns/scalds 37 0.3%	cutting/piercing * *
11	drowning 19 0.4%	other spec. unintentional 13 0.3%	poisoning 27 0.6%	machinery 47 0.7%	fires/burns/scalds 87 1.2%	foreign body 165 1.3%	foreign body 143 1.4%	fires/burns/scalds 117 1.1%	fires/burns/scalds 90 0.8%	fires/burns/scalds 69 0.6%	other spec. unintentional 31 0.2%	other spec. unintentional 23 0.2%	nat./envir./animals * *
12	machinery 17 0.3%	machinery 9 0.2%	machinery 10 0.2%	fires/burns/scalds 45 0.7%	foreign body 57 0.8%	other spec. unintentional 154 1.2%	other spec. unintentional 133 1.3%	other spec. unintentional 117 1.1%	other spec. unintentional 60 0.6%	other spec. unintentional 31 0.3%	machinery 25 0.2%	choking/suffoc. 12 0.1%	machinery * *
13	ovext./ stren.mmts 14 0.3%	drowning * *	explosions/firearms 8 0.2%	drowning 9 0.1%	explosions/firearms 16 0.2%	explosions/firearms 41 0.3%	explosions/firearms 15 0.1%	choking/suffoc. 20 0.2%	choking/suffoc. 11 0.1%	choking/suffoc. * *	choking/suffoc. * *	machinery * *	other spec. unintentional * *
14	other spec. unintentional 8 0.2%	choking/suffoc. * *	choking/suffoc. * *	explosions/firearms * *	drowning 10 0.1%	choking/suffoc. 7 0.1%	choking/suffoc. 14 0.1%	explosions/firearms * *	explosions/firearms 6 0.1%	explosions/firearms * *	explosions/firearms * *	drowning * *	drowning * *
15	explosions/firearms 0 0.0%	explosions/firearms 0 0.0%	drowning * *	choking/suffoc. * *	choking/suffoc. 0 0.0%	drowning 7 0.2%	drowning 9 0.1%	drowning * *	drowning 5 0.0%	drowning 0 0.0%	drowning 0 0.0%	explosions/firearms 0 0.0%	explosions/firearms 0 0.0%
All	5,006	4,561	4,805	6,277	7,454	12,662	10,199	10,729	10,805	10,764	13,107	12,822	1,619

*Small numbers have been suppressed due to data confidentiality concerns.

TABLE 6: RANKING OF CAUSES OF INJURY ED PRESENTATIONS BY AGE GROUPS

RANK	AGE GROUPS (YEARS)												
	0-4yrs	5-9yrs	10-14yrs	15-19yrs	20-24yrs	25-34yrs	35-44yrs	45-54yrs	55-64yrs	65-74yrs	75-84yrs	85-94yrs	95+yrs
1	fall 14,859 42%	fall 13,907 49%	fall 13,922 43%	fall 7,563 28%	hit/struck/crush 6,165 23%	hit/struck/crush 9,418 22%	fall 7,729 24%	fall 8,447 29%	fall 9,150 38%	fall 8,943 48%	fall 9,886 62%	fall 8,583 75%	fall 1,045 81%
2	hit/struck/crush 5,810 16%	hit/struck/crush 5,645 20%	hit/struck/crush 8,529 26%	hit/struck/crush 7,693 29%	fall 6,131 23%	fall 9,359 22%	hit/struck/crush 6,126 19%	hit/struck/crush 4,617 16%	hit/struck/crush 2,953 12%	other spec.unintent. 2,016 11%	unspec. unintentional. 1,787 11%	unspec. unintentional. 1,050 9%	unspec. unintentional. 92 7%
3	other spec.unintent. 5,110 14%	other spec.unintent. 3,028 11%	other spec.unintent. 3,812 12%	other spec.unintent. 3,302 12%	cutting/piercing 2,982 11%	cutting/piercing 5,138 12%	cutting/piercing 3,720 12%	other spec.unintent. 3,402 12%	unspec. unintentional. 2,614 11%	unspec. unintentional. 2,184 12%	other spec.unintent. 1,342 8%	other spec.unintent. 647 6%	other spec.unintent. 48 4%
4	foreign body 2,694 8%	unspec. unintentional. 1,788 6%	unspec. unintentional. 2,343 7%	unspec. unintentional. 2,365 9%	other spec.unintent. 2,893 11%	other spec.unintent. 4,767 11%	other spec.unintent. 3,752 12%	cutting/piercing 3,147 11%	other spec.unintent. 2,540 11%	hit/struck/crush 1,609 9%	hit/struck/crush 887 6%	hit/struck/crush 400 4%	hit/struck/crush 47 4%
5	unspec. unintentional. 2,625 7%	cutting/piercing 1,274 4%	transport 1,382 4%	transport 2,013 8%	transport 2,555 10%	unspec. unintentional. 4,190 10%	unspec. unintentional. 3,421 11%	unspec. unintentional. 3,245 11%	cutting/piercing 2,299 10%	cutting/piercing 1,339 7%	cutting/piercing 579 4%	transport 209 2%	poisoning 19 1%
6	cutting/piercing 1,248 4%	foreign body 1,116 4%	cutting/piercing 1,128 3%	cutting/piercing 1,886 7%	unspec. unintentional. 2,512 10%	transport 3,894 9%	transport 2,736 9%	transport 2,417 8%	transport 1,568 7%	foreign body 877 5%	transport 510 3%	cutting/piercing 212 2%	foreign body 12 1%
7	fires/burns/scalds 1,216 3%	transport 814 3%	nat./envir./ animals 330 1%	foreign body 596 2%	foreign body 1,070 4%	foreign body 2,388 6%	foreign body 2,021 6%	foreign body 1,725 20%	foreign body 1,323 6%	transport 870 5%	foreign body 361 2%	foreign body 106 1%	cutting/piercing 11 1%
8	nat./envir./ animals 776 2%	nat./envir./ animals 532 2%	foreign body 405 1%	nat./envir./ animals 446 2%	nat./envir./ animals 682 3%	nat./envir./ animals 1,249 3%	nat./envir./ animals 940 3%	nat./envir./ animals 964 11%	nat./envir./ animals 718 3%	nat./envir./ animals 492 3%	nat./envir./ animals 236 1%	nat./envir./ animals 92 1%	transport 8 1%
9	poisoning 593 2%	fires/burns/scalds 338 1%	fires/burns/scalds 230 1%	fires/burns/scalds 403 2%	fires/burns/scalds 582 2%	fires/burns/scalds 977 2%	fires/burns/scalds 733 2%	fires/burns/scalds 556 7%	fires/burns/scalds 334 1%	fires/burns/scalds 181 1%	poisoning 110 1%	poisoning 51 0.4%	nat./envir./ animals * *
10	transport 354 1%	poisoning 125 0.4%	poisoning 96 0.3%	poisoning 336 1%	poisoning 465 2%	poisoning 676 2%	poisoning 508 2%	poisoning 364 4%	machinery 271 1%	poisoning 149 1%	fires/burns/scalds 91 1%	fires/burns/scalds 38 0.3%	fires/burns/scalds * *
11	choking/suffoc. 132 1%	choking/suffoc. 71 0.1%	choking/suffoc. 50 0.2%	machinery 115 0.4%	machinery 209 1%	machinery 418 1%	machinery 361 1%	machinery 314 1%	poisoning 210 1%	machinery 143 1%	machinery 42 0%	machinery 14 0.1%	machinery * *
12	drowning 54 0%	machinery 14 0%	machinery 21 0.1%	choking/suffoc. 36 0.1%	choking/suffoc. 24 0.1%	choking/suffoc. 37 0.1%	choking/suffoc. 46 0.1%	choking/suffoc. 27 0.1%	choking/suffoc. 17 0.1%	choking/suffoc. 14 0.1%	drowning 10 0%	choking/suffoc. * *	choking/suffoc. 0 0%
13	machinery * *	drowning 16 0.1%	drowning * *	drowning 10 0%	drowning 10 0%	drowning 20 0%	drowning * *	drowning * *	drowning * *	drowning 5 0%	choking/suffoc. * *	drowning * *	drowning 0 0%
14	explosions/firearms * *	explosions/firearms 0 0%	explosions/firearms * *	explosions/firearms 5 0.0%	explosions/firearms 5 0.0%	explosions/firearms 12 0.0%	explosions/firearms * *	explosions/firearms * *	explosions/firearms * *	explosions/firearms 0 0%	explosions/firearms * *	explosions/firearms 0 0%	explosions/firearms 0 0%
All	35,489	28,668	32,260	26,769	26,285	42,543	32,112	29,240	24,002	18,822	15,847	11,406	1,288

*Small numbers have been suppressed due to data confidentiality concerns.

CHILDREN (0-14 YEARS)

TREND

- During the 10-year period 2007/08 to 2016/17 there were on average 11,103 injury admissions and 81,022 injury ED presentations per year among children aged up to and including 14 years. Average age-standardised injury rates were 1,060 admissions and 7,740 ED presentations per 100,000 children per year.
- The rate of **injury admissions** among children aged 0-14 years increased during the ten years. The modelled trend in rate showed a statistically significant annual increase of 4.0% [95% CI 2.7 to 5.4%].
- The rate of **injury ED presentations** among children aged 0-14 years increased during the ten years. The modelled trend in rate showed a statistically significant annual increase of 2.1% [95% CI 1.5 to 2.6%].
- The age-specific rates of **injury admissions** and **injury ED presentations** among the age groups 0-4, 5-9 and 10-14 years are shown in Figures 13 and 14, respectively.

Figure 13: Trend in injury hospital admission rates per 100,000 children, Victoria 2007/08-2016/17

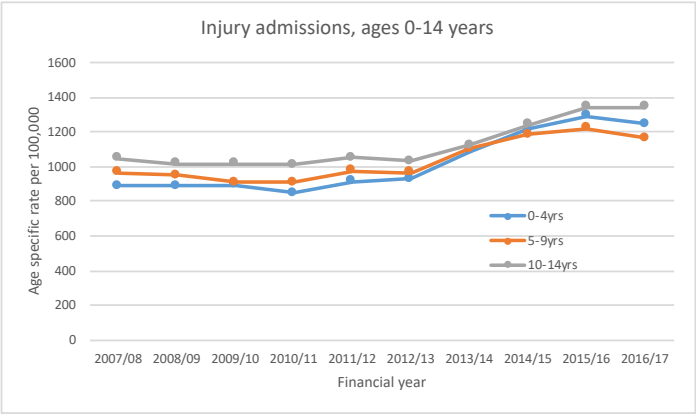
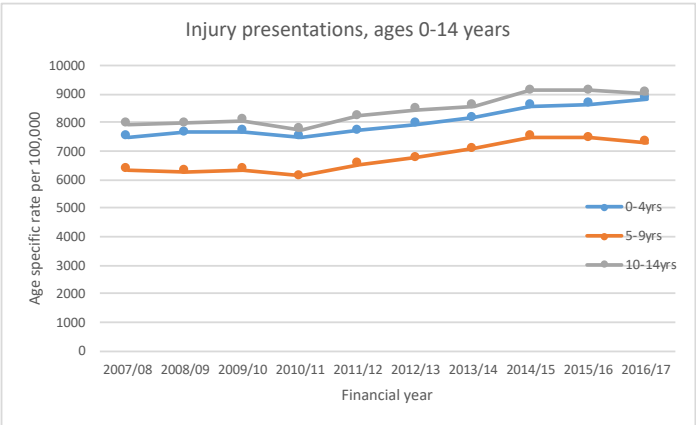


Figure 14: Trend in injury ED presentation rates per 100,000 children, Victoria 2007/08-2016/17



HOSPITAL TREATED INJURY – GENDER AND AGE

- Males were over-represented in child hospital-treated injury cases, accounting for 61% of admissions (n=8,746) and 58% of ED presentations (n=55,496) in 2016/17 (Figure 15 and Figure 16).
- Child injury admissions and ED presentations were fairly evenly distributed across the 5-year age groups.
- Children aged 0-4 years accounted for 35% of child admissions and 37% of child ED presentations.
- Children aged 5-9 years accounted for 32% of child admissions and 30% of child ED presentations.
- Children aged 10-14 years accounted for 33% of child admissions and 33% of child ED presentations.

Figure 15: Child injury hospital admissions by gender and age, Victoria 2016/17

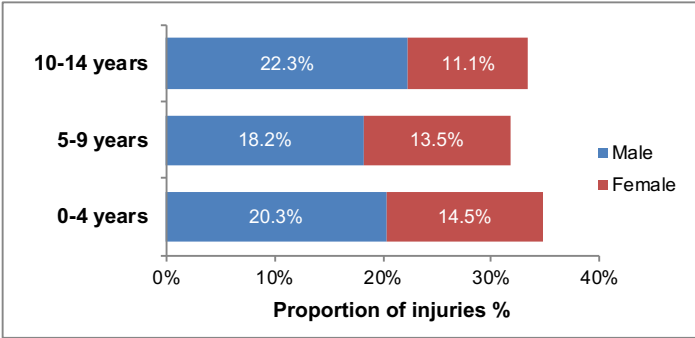
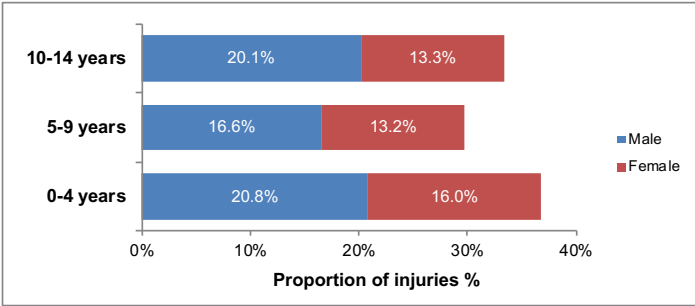


Figure 16: Child injury ED presentations by gender and age, Victoria 2016/17



- Child injury admission and ED presentation rates were higher for males than females: 1,478.0 vs. 1,006.7 per 100,000 population (admissions) and 9,378.1 vs. 7,322.0 per 100,000 population (ED presentations).
- Table 7 shows that age-specific hospital admission rates for children were fairly equal across age groups whereas there was a high rate of ED presentations in the 10-14 age group, followed by the 0-4 age group.

Table 7: Frequency and age-specific rate of injury admissions and ED presentations in children by gender and age, Victoria 2016/17

AGE GROUP	GENDER	HOSPITAL ADMISSIONS		ED PRESENTATIONS	
		n	Rate per 100,000 population	n	Rate per 100,000 population
0-4 years	Male	2,915	1,410.1	20,096	9,721.6
	Female	2,091	1,070.8	15,393	7,882.5
	All	5,006	1,245.3	35,489	8,828.2
5-9 years	Male	2,619	1,301.6	15,985	7,943.1
	Female	1,942	1,021.6	12,685	6,672.8
	All	4,561	1,165.5	28,668	7,326.0
10-14 years	Male	3,212	1,747.3	19,417	10,562.7
	Female	1,593	918.2	12,843	7,402.6
	All	4,805	1,344.7	32,260	9,028.4
All	Male	8,746	1,478.0	55,496	9,378.1
	Female	5,626	1,006.7	40,921	7,322.0
	All	14,372	1,249.0	96,417	8,379.5

LEADING CAUSES OF INJURY

- The five leading causes of injury in children were the same for hospital admissions and ED presentations, although the ranking on frequency of cases was different (Figure 17 and Figure 18).
- The leading cause of child injury admissions and ED presentations was falls, accounting for 48% of hospital admissions (n=6,854) and 44% of ED presentations (n=42,688).
- Hit/struck/crush injuries were the next major cause of injury accounting for 17% of admissions (n=2,405) and 21% of ED presentations (n=19,984).
- Transport accounted for 9% of admissions (n=1,253) and only 3% of ED presentations (n=2,550).
- Foreign body in a natural orifice, e.g. ear, nose, eye injuries, and cutting and piercing related injuries accounted for 4% and 5% of admissions (n=538 and n=783), respectively, and 4% each of ED presentations (n=4,215 and n=3,650).

Figure 17: Child injury hospital admissions by cause, Victoria 2016/17

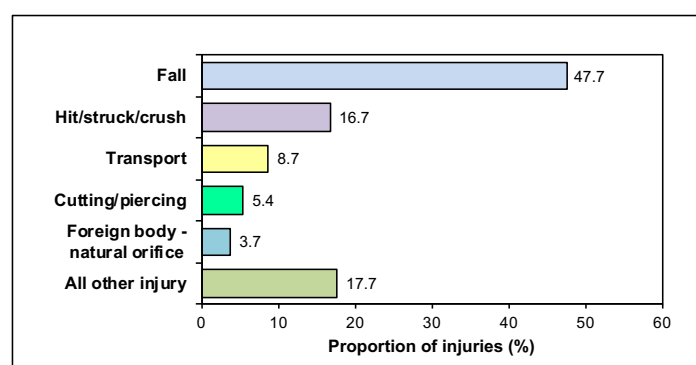
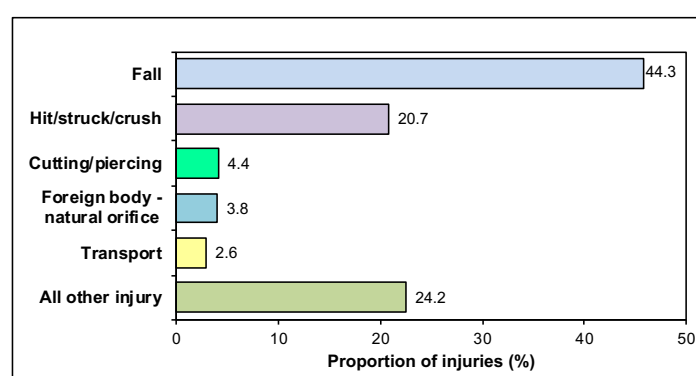


Figure 18: Child injury ED presentations by cause, Victoria 2016/17



Note: 'Other specified' and 'unspecified' cases were included in the 'all other injuries' category regardless of their ranking

MAJOR INJURY TYPE
(BODY SITE AND NATURE OF INJURY)

Figure 19 and Figure 20 show the five most common injury types for child injury admissions and ED presentations.

- Fracture to the upper limb accounted for 30% (n=4,253) of admissions and 17% (n=16,096) of ED presentations.
- Open wounds to the head/face/neck accounted for 12% of admissions (n=1,794) and 11% of ED presentations (n=10,215).
- Other and unspecified injury to head, face or neck was common among hospital admissions (9%, n=1,238), as was intracranial injury (7%, n=968) and fracture to the lower limb (6%, n=805). Other types of injuries were more common among ED presentations, namely dislocations, sprains and strains to the upper limb (10%, n=9,694), and the lower limb (7%, n=6,371) and superficial injury to head/face/neck (8%, n=7,488).

Figure 19: Major injury type, child hospital admissions, Victoria 2016/17

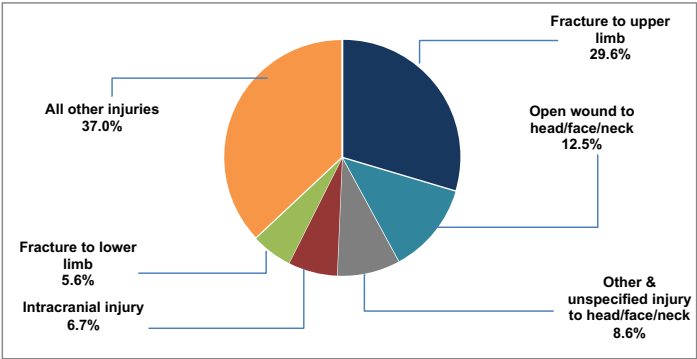
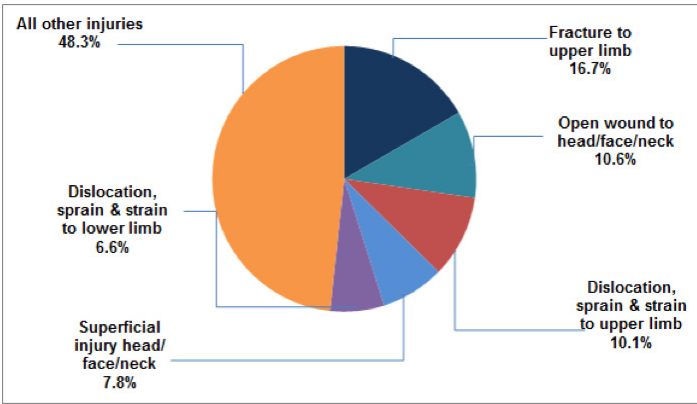


Figure 20: Major injury type, child ED presentations, Victoria 2016/17



SETTING

- Setting where the injury occurred was unspecified in 42% of child injury admissions and 11% of child injury ED presentations
- Twenty-five percent (n=3,516) of all injuries among children requiring hospital admission and 48% (n=46,050) of injuries resulting in ED presentation occurred in the home (Figure 21 and 22).
- Children were also commonly injured in schools and educational settings (13% of admissions and 14% of ED presentations) and sports settings (9% each of both admissions and ED presentations).

Figure 21: Child injury hospital admissions by setting, Victoria 2016/17

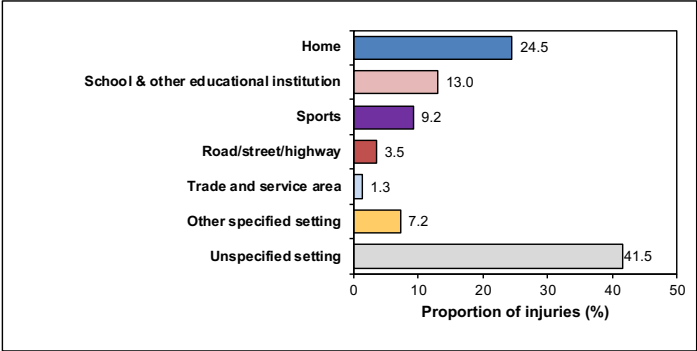
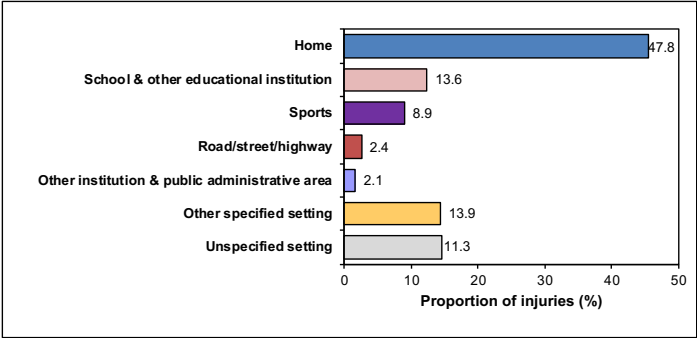


Figure 22: Child injury ED presentations by setting, Victoria 2016/17



ADOLESCENTS AND YOUNG ADULTS (15-24 YEARS)

TREND

- During the 10-year period 2007/08 to 2016/17, there were on average 10,879 injury admissions and 53,057 injury ED presentations per year among adolescents and young adults aged 15-24 years. The average age-standardised injury rates were 1,405 admissions and 6,907 ED presentations per 100,000 adolescents and young adults per year.
- The rate of **injury admissions** among adolescents and young adults increased during the ten years. The modelled trend in rate showed a statistically significant annual increase of 4.0% [95% CI 3.1 to 4.9%].
- The rate of **injury ED presentations** among adolescents and young adults did not change statistically significantly. The modelled trend in rate showed a non-significant annual decrease of -0.2% [95% CI -0.7 to 0.2%].
- The age-specific rates of **injury admissions** and **injury ED presentations** among the age groups 15-19 and 20-24 years are shown in figures 23 and 24, respectively.

Figure 23: Trend in injury hospital admission rates per 100,000 adolescent and young adults, Victoria 2007/08-2016/17

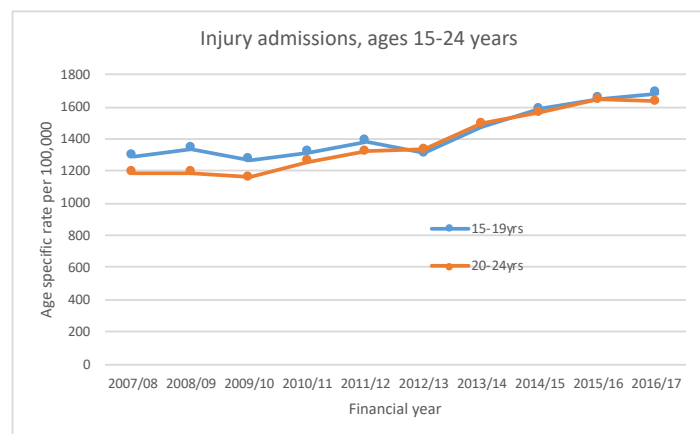
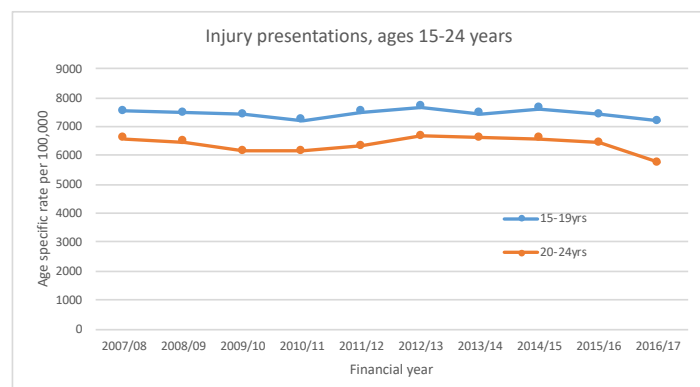


Figure 24: Trend in injury ED presentation rates per 100,000 adolescent and young adults, Victoria 2007/08-2016/17



HOSPITAL TREATED INJURY – GENDER AND AGE

- Males were over-represented in hospital-treated injury cases among adolescents and young adults, accounting for 71% of hospital admissions (n=9,739) and 66% of ED presentations (n=35,024) in 2016/17 (Figure 25 and Figure 26).
- Adolescent and young adult injury hospital admissions and ED presentations were fairly evenly spread across both the 5-year age groups.

Figure 25: Adolescent and young adult hospital admissions by gender and age, Victoria 2016/17

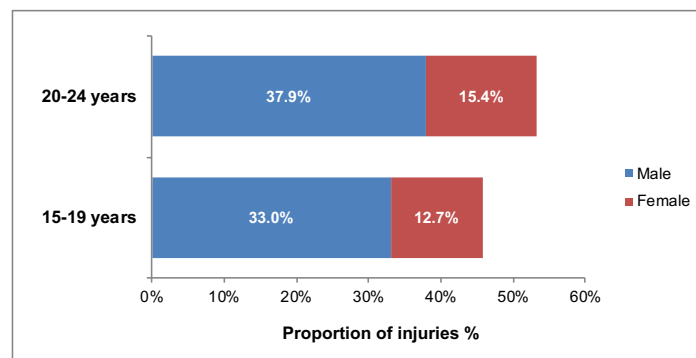
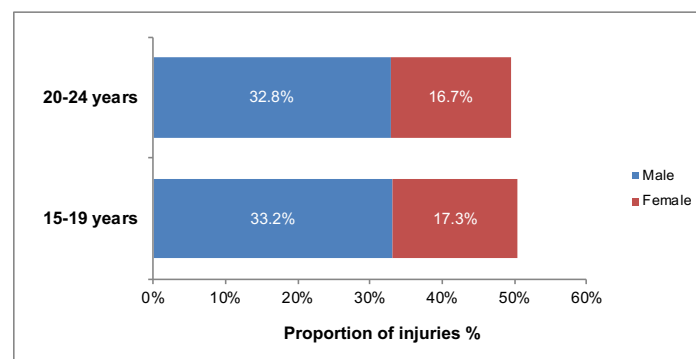


Figure 26: Adolescent and young adult ED presentations by gender and age, Victoria 2016/17



- Among adolescents and young adults, age-specific injury admission and ED presentation rates were higher for males than females: 2,298.1 vs. 983.2 per 100,000 population; 8,264.5 vs. 4,440.7 per 100,000 population (Table 8).
- The admission rates were quite similar across the two 5-year age groups while the ED presentation rate was higher in the 15-19 age group than the 20-24 age group.

Table 8: Frequency and age-specific rate of injury admissions and ED presentations in adolescents and young adults by gender and age, Victoria 2016/17

AGE GROUP	GENDER	HOSPITAL ADMISSIONS		ED PRESENTATIONS	
		n	Rate per 100,000 population	n	Rate per 100,000 population
15-19 years	Male	4,536	2,379.9	17,606	9,237.3
	Female	1,741	955.6	9,163	5,029.6
	All	6,277	1,683.9	26,769	7,181.0
20-24 years	Male	5,203	2,231.2	17,418	7,469.3
	Female	2,251	1,005.7	8,867	3,961.4
	All	7,454	1,631.0	26,285	5,751.3
All	Male	9,739	2,298.1	35,024	8,264.5
	Female	3,992	983.2	18,030	4,440.7
	All	13,731	1,654.7	53,054	6,393.6

LEADING CAUSES OF INJURY

- Four of the five leading causes of adolescent and young adult injury were the same for admissions and ED presentations although the ranking on frequency of cases was different (Figure 27 and Figure 28).
- Transport was the leading cause of adolescent and young adult hospital admissions (22%, n=3,065) but only accounted for 9% of ED presentations (n=4,568).
- Falls was the second most common cause of hospital admissions (19%, n=2,537), and the leading cause of ED presentations (26%, n=13,694) in this age group.
- Hit/struck/crush injuries accounted for 17% of hospital admissions (n=2,362) and 26% of ED presentations (n=13,858).
- Cutting and piercing injuries accounted for 10% of admissions (n=1,373) and 9% of ED presentations (n=4,868).
- The fifth ranking cause of adolescent and young adult hospital admissions was overexertion and strenuous movements (4%, n=551) whereas for ED presentations it was injuries caused by a foreign body in a natural orifice e.g. ear, nose, eye (3%, n=1,666).

Figure 27: Adolescent and young adult injury hospital admissions by cause, Victoria 2016/17

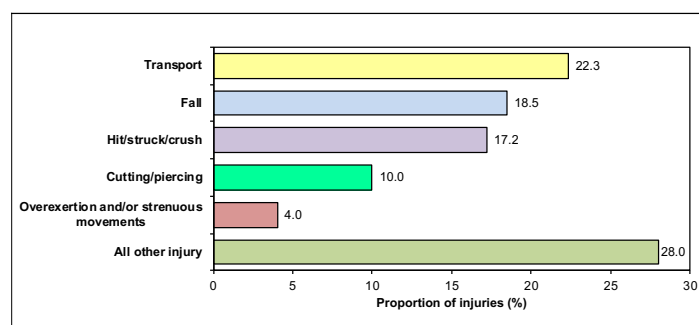
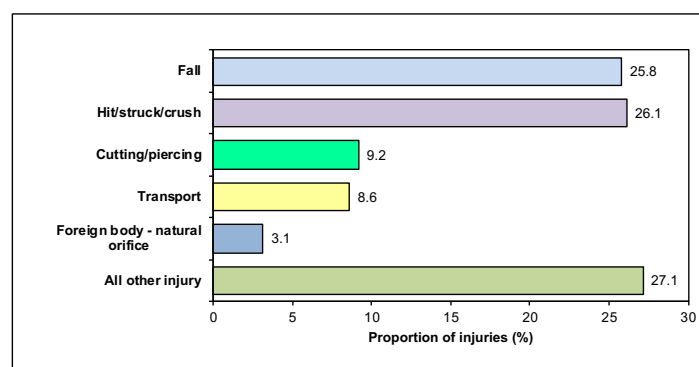


Figure 28: Adolescent and young adult injury ED presentations by cause, Victoria 2016/17



Note: 'Other specified' and 'unspecified' cases were included in the 'all other injuries' category regardless of their ranking.

MAJOR INJURY TYPE (BODY SITE AND NATURE OF INJURY)

- Figure 29 and Figure 30 show the five most common injury types for adolescent and young adult hospital admissions and ED presentations.
- Fracture to the upper limb accounted for 19% (n=2,600) of injury admissions and 10% of ED presentations (n=5,539).
 - Dislocations, sprains and strains to the lower limb (10%, n=1,333) and fractures to the lower limb (9%, n=1,174) were common among admissions.
 - Dislocations, sprains and strains to the lower limb (14%, n=7,417), and the upper limb (10%, n=5,279) and open wounds to the upper limb (8%, n=4,163) were common among ED presentations.

Figure 29: Major injury type, adolescent and young adult hospital admissions, Victoria 2016/17

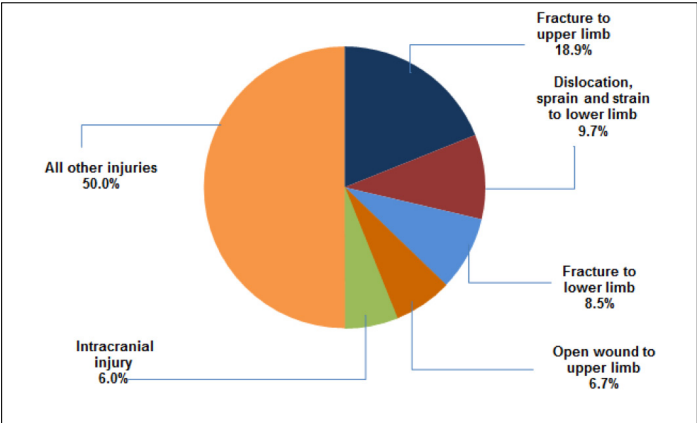
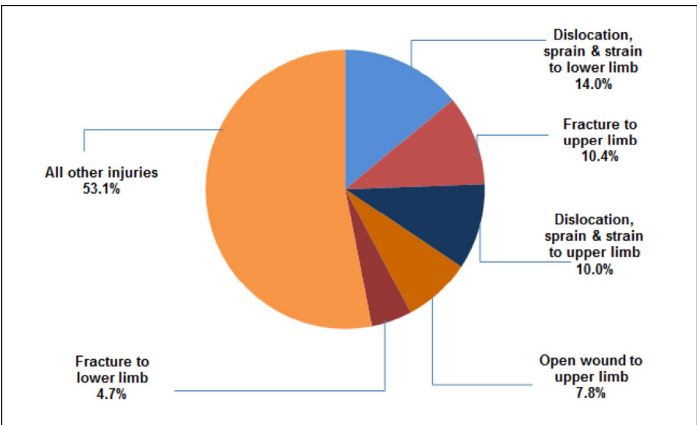


Figure 30: Major injury type, adolescent and young adult ED presentations, Victoria 2016/17



SETTING

- Setting where the injury occurred was unspecified in 40% of adolescent and young adult injury admissions and 14% of ED presentations.
- Sports (21%, n=2,881) and the road, street and highway (15%, n=2,006) settings were the most common places of occurrence resulting in hospital admission (Figure 31). Other common settings were working for income (10%, n=1,357) and the home (7%, n=1,013).
- Among ED presentations, the home (25%, n=13,072) and sports settings (20%, n=10,628) were the most common places of injury occurrence (Figure 32). Other common settings were working for income (12%, n=6,216) and road/street and highway (8%, n=4,414).

Figure 31: Adolescent and young adult injury hospital admissions by setting, Victoria 2016/17

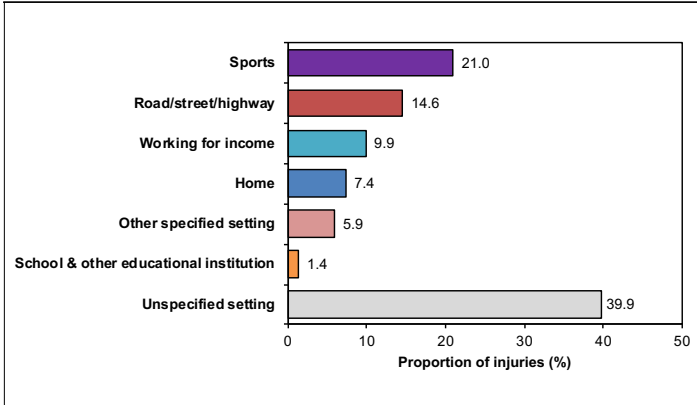
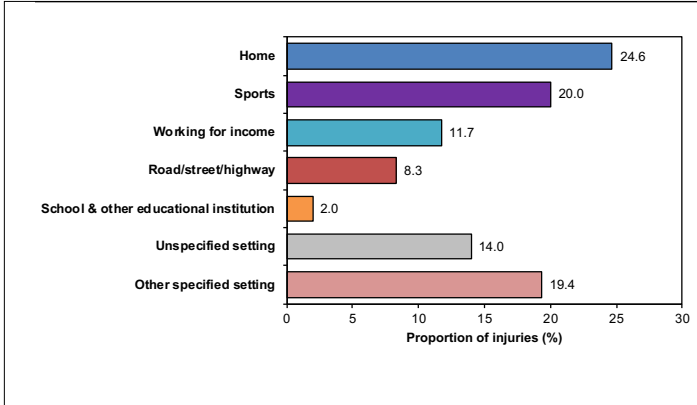


Figure 32: Adolescent and young adult injury ED presentations by setting, Victoria 2016/17



ADULTS (25-64 YEARS)

TREND

- During the 10-year period 2007/08 to 2016/17, there were on average 32,513 injury admissions and 116,892 injury ED presentations per year among adults aged 25-64 years. The average age-standardised injury rates were 1,058 admissions and 3,868 ED presentations per 100,000 adults per year.
- The rate of **injury admissions** among adults increased during the ten years. The modelled trend in rate showed a statistically significant annual increase of 5.1% [95% CI 4.2 to 6.0%].
- The rate of **injury ED presentations** among adults did not change statistically significantly during the ten years. The modelled trend in rate showed a non-significant annual increase of 0.6% [95% CI 0.0 to 1.1%].
- The age-specific rates of **injury admissions** and **injury ED presentations** among the age groups 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, and 60-64 years are shown in figures 33 and 34, respectively.

Figure 33: Trend in injury hospital admission rates per 100,000 adults, Victoria 2007/08-2016/17

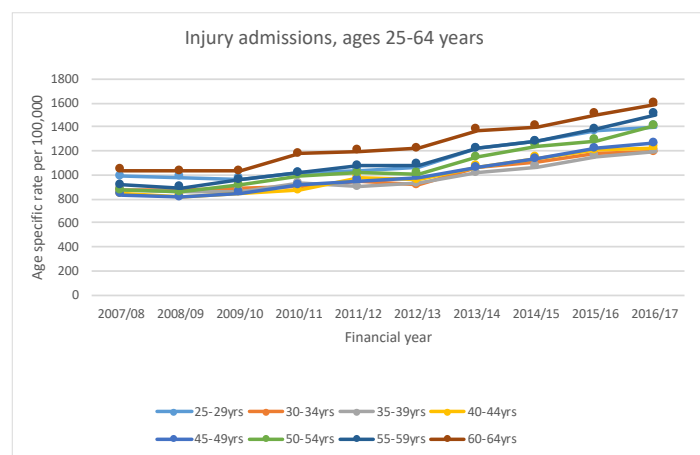
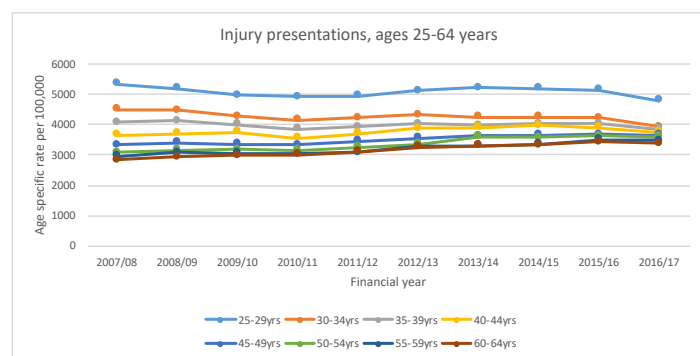


Figure 34: Trend in injury ED presentation rates per 100,000 adults, Victoria 2007/08-2016/17



HOSPITAL TREATED INJURY – GENDER AND AGE

- Males were over-represented in hospital injury data for adults aged 25 to 64 years, accounting for 63% of hospital admissions (n=27,726) and 60% of ED presentations (n=77,255) in 2016/17 (Figure 35 and Figure 36).
- The proportion of injuries was fairly evenly distributed among all age groups for admissions whereas a decrease can be seen with increasing age for ED presentations.

Figure 35: Adult injury hospital admissions by gender and age, Victoria 2016/17

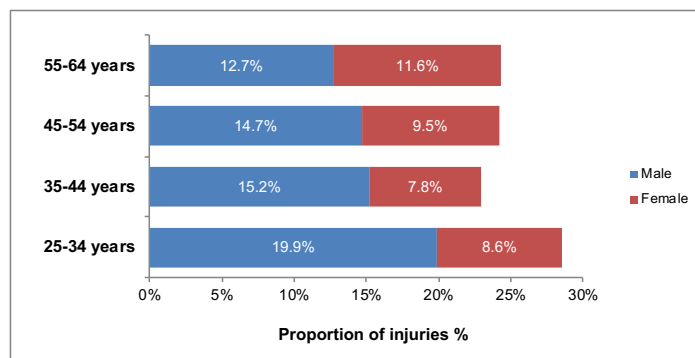
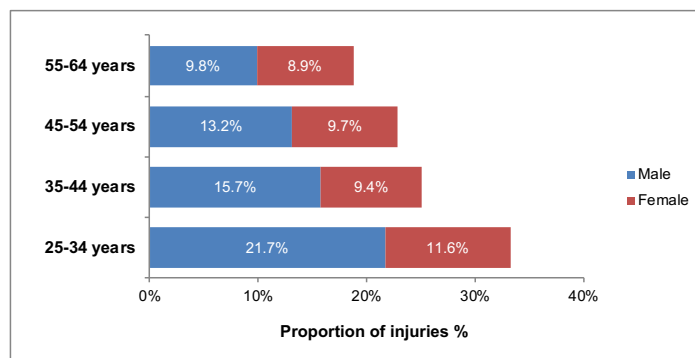


Figure 36: Adult injury ED presentations by gender and age, Victoria 2016/17



- The total age-specific injury admission and ED presentation rates were higher for males compared with females: 1,694.2 vs. 990.0 per 100,000 adults (admissions) and 4,720.7 vs. 3,007.8 per 100,000 adults (presentations).
- Overall rates (male and female combined) were highest in the 55-64 years age group for admissions and the 25-34 years group for ED presentations (Table 9).

Table 9: Frequency and age-specific rate of injury admissions and ED presentations in adults by gender and age, Victoria 2016/17

AGE GROUP	GENDER	HOSPITAL ADMISSIONS		ED PRESENTATIONS	
		n	Rate per 100,000 population	n	Rate per 100,000 population
25-34 years	Male	8,830	1,821.9	27,713	5,718.0
	Female	3,832	781.9	14,830	3,026.0
	All	12,662	1,299.0	42,543	4,364.5
35-44 years	Male	6,742	1,608.7	20,129	4,803.0
	Female	3,457	817.1	11,983	2,832.5
	All	10,199	1,211.1	32,112	3,813.1
45-54 years	Male	6,511	1,658.5	16,828	4,286.4
	Female	4,218	1,023.5	12,412	3,011.7
	All	10,729	1,333.3	29,240	3,633.6
55-64 years	Male	5,643	1,658.8	12,585	3,699.5
	Female	5,162	1,440.3	11,417	3,185.6
	All	10,805	1,546.7	24,002	3,453.9
All	Male	27,726	1,694.2	77,255	4,720.7
	Female	16,669	990.0	50,642	3,007.8
	All	44,395	1,337.1	127,897	3,852.1

LEADING CAUSES OF INJURY

- Four of the five leading causes of adult injury were the same for admissions and ED presentations although the ranking on frequency of cases was different (Figure 37 and Figure 38).
- The leading cause of adult injury admissions and ED presentations was falls, accounting for 29% (n=12,771) of hospital admissions and 27% (n=34,685) of ED presentations.
- Transport accounted for 20% of admissions (n=8,968) but only 8% of ED presentations (n=10,615).
- Cutting and piercing injuries accounted for 11% of both admissions (n=4,685) and ED presentations (n=14,304).
- Hit/struck/crush injuries accounted for just 10% of admissions (n=4,232) but 18% of ED presentations (n=23,114).
- The fifth ranking cause of hospital admissions was overexertion and/or strenuous movements related injury (4%, n=1,960) whereas for ED presentations it was injuries caused by a foreign body in a natural orifice e.g. ear, nose, eye (6%, n=7,457).

Figure 37: Adult injury hospital admissions by cause, Victoria 2016/17

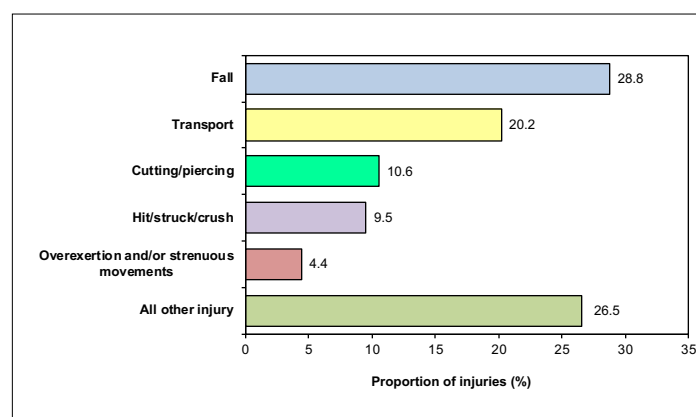
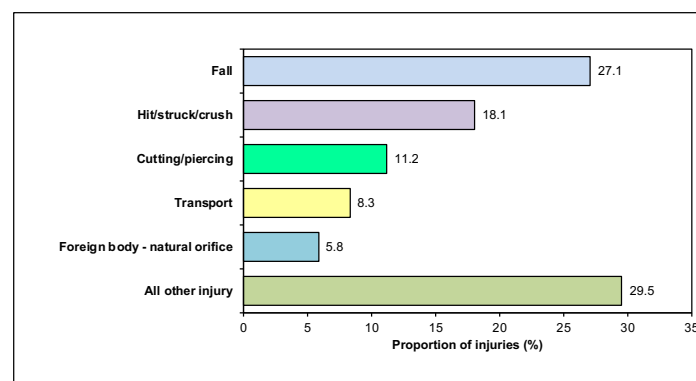


Figure 38: Adult injury ED presentations by cause, Victoria 2016/17



Note: 'Other specified' and 'unspecified' cases were included in the 'all other injuries' category regardless of their ranking

MAJOR INJURY TYPE
(BODY SITE AND NATURE OF INJURY)

Figure 39 and Figure 40 show the five most common injury types for adult hospital admissions and ED presentations.

- Fracture to the upper limb accounted for 17% (n=7,725) of admissions. Fracture to the lower limb was the second most common type of injury requiring hospital admission (11%, n=4,939), followed by open wound to upper limb (8%, n=3,345), dislocations, sprains and strains to lower limb (6%, n=2,521) and fracture to the trunk (5%, n=2,259).
- Open wounds to the upper limb (10%, n=12,451), dislocations, sprains and strains to the lower limb (10%, n=12,374) and fracture to the upper limb (9%, n=11,307) were the most common types of injury among ED presentations.

Figure 39: Major injury type, adult hospital admissions, Victoria 2016/17

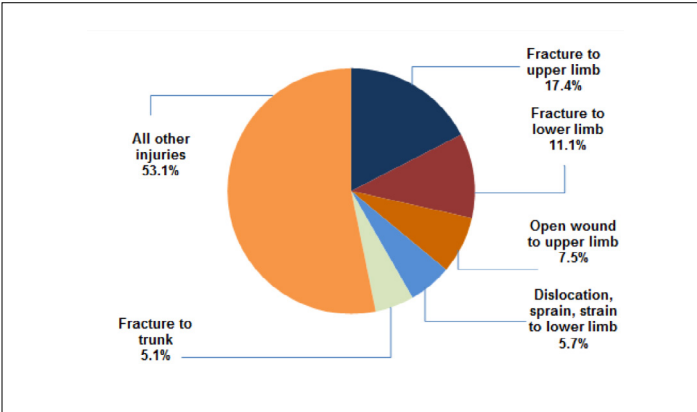
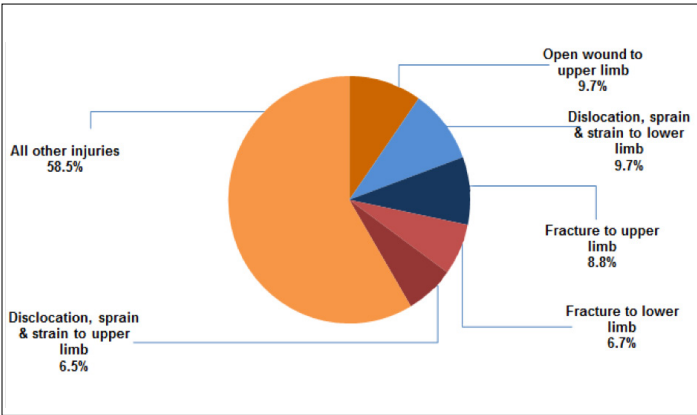


Figure 40: Major injury type, adult ED presentations, Victoria 2016/17



SETTING

- Setting where the injury occurred was unspecified in 40% of adult injury admissions and 17% of adult injury ED presentations.
- Eighteen percent of injuries requiring hospital admission (n=7,942) and 39% of injuries resulting in ED presentation (n=49,401) occurred in the home (Figure 41 and Figure 42).
- Other settings where injuries to adults commonly occurred were:
 - Working for income (14% of admissions (n=6,037) and 15% of ED presentations (n=19,632)
 - Roads, streets and highways (15% of admissions (n=6,680) and 9% of ED presentations (n=11,737)
 - Sports and athletics setting (7% of admissions (n=3,085) and 6% of ED presentations (n=7,826).

Figure 41: Adult injury hospital admissions by setting, Victoria 2016/17

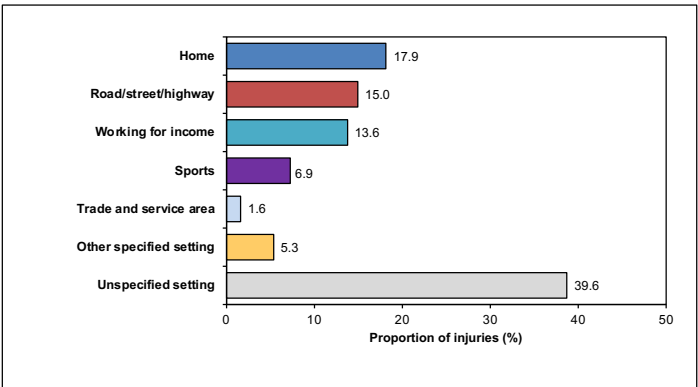
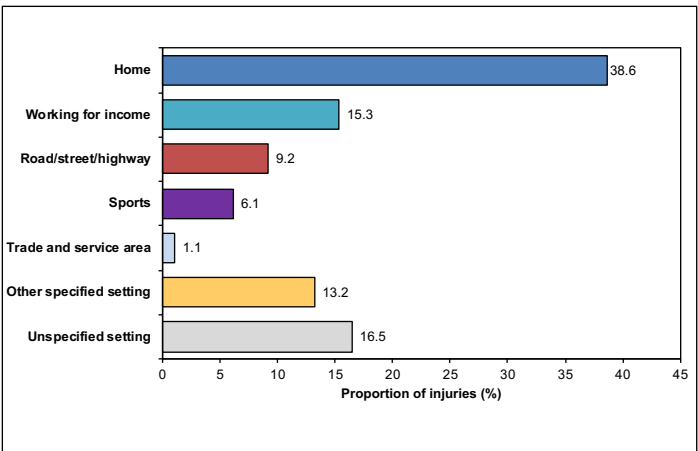


Figure 42: Adult injury ED presentations by setting, Victoria 2016/17



OLDER ADULTS (65 YEARS AND OLDER)

TREND

- During the 10-year period 2007/08 to 2016/17, there were on average 28,096 injury admissions and 38,692 injury ED presentations per year among older adults aged 65 years and above. The average age-standardised injury rates were 3,286 admissions and 4,634 ED presentations per 100,000 older adults per year.
- The rate of **injury admissions** among older adults increased during the ten years. The modelled trend in rate showed a statistically significant annual increase of 4.2% [95% CI 3.8 to 4.6%].
- The rate of **injury ED presentations** among older adults increased during the ten years. The modelled trend in rate showed a statistically significant years increase of 1.8% [95% CI 1.5 to 2.1%].
- The age-specific rates of **injury admissions** and **injury ED presentations** among the age groups 65-69, 70-74, 75-79, 80-84, 85-89, 90-94 and 95+ years are shown in figures 43 and 44, respectively.

Figure 43: Trend in injury hospital admission rates per 100,000 older adults, Victoria 2007/08-2016/17

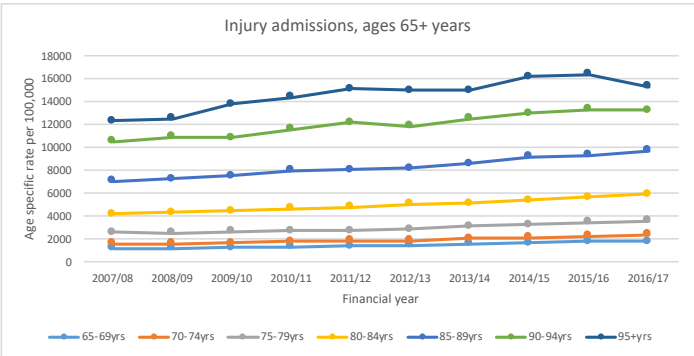
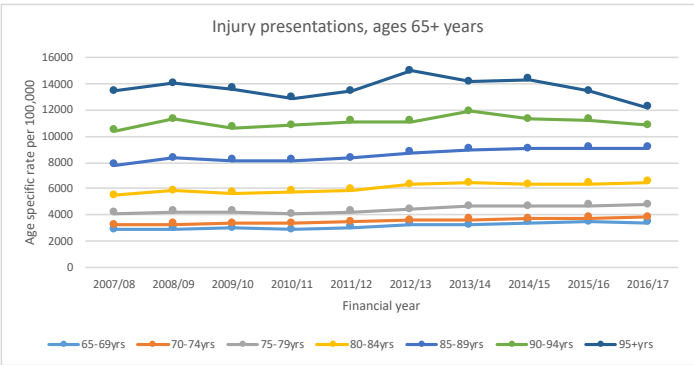


Figure 44: Trend in injury ED presentation rates per 100,000 older adults, Victoria 2007/08-2016/17



HOSPITAL TREATED INJURY – GENDER AND AGE

- Females were over-represented in hospital injury data for persons aged 65 years and older. They accounted for 63% of hospital admissions (n=24,238) and 58% of ED presentations (n=27,353) in 2016/17 (Figure 45 and Figure 46).
- The highest proportion of admissions to hospital occurred among those aged 75-84 and 85-94 years. Persons aged 65-74 years accounted for most of the injury ED presentations among older adults. The number of ED presentations declined with increasing age.

Figure 45: Older adult injury hospital admissions by gender and age, Victoria 2016/17

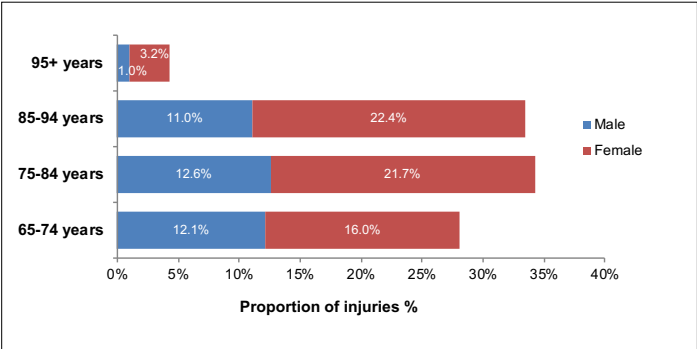
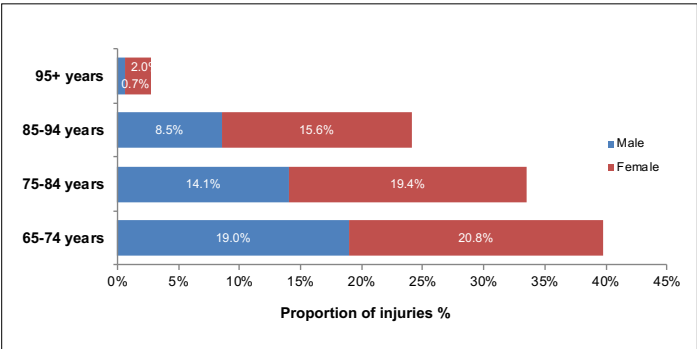


Figure 46: Older adult injury ED presentations by gender and age, Victoria 2016/17



- The overall age-specific rate of injury admission and ED presentation was higher for females than males: 4,784.8 vs. 3,220.3 per 100,000 population (admissions) and 5,399.7 vs. 4,578.6 per 100,000 population (presentations) (Table 10).
- The rate of admissions and ED presentations increased with age among older adults.

Table 10: Frequency and age-specific rate of older adult injury hospital admissions and ED presentations by gender and age, Victoria 2016/17

AGE GROUP	GENDER	HOSPITAL ADMISSIONS		ED PRESENTATIONS	
		n	Rate per 100,000 population	n	Rate per 100,000 population
65-74 years	Male	4,640	1,816.1	8,985	3,704.2
	Female	6,124	2,270.7	9,837	3,809.8
	All	10,764	2,049.6	18,822	3,758.6
75-84 years	Male	4,809	3,615.1	6,666	5,208.1
	Female	8,298	5,295.6	9,181	6,064.7
	All	13,107	4,254.0	15,847	5,672.3
85-94 years	Male	4,231	9,283.6	4,038	9,380.9
	Female	8,591	11,841.7	7,368	10,422.7
	All	12,822	10,854.7	11,406	10,028.4
95+	Male	394	13,378.6	321	13,193.6
	Female	1,225	16,065.6	967	14,696.0
	All	1,619	15,316.9	1,288	14,290.5
All	Male	14,074	3,220.3	20,010	4,578.6
	Female	24,238	4,784.8	27,353	5,399.7
	All	38,312	4,060.2	47,363	5,019.4

LEADING CAUSES OF INJURY

- The leading cause of injury admissions and ED presentations for older adults was falls. Falls accounted for more than three-quarters of hospital admissions (78%, n=29,699) and more than half of ED presentations (60%, n=28,457) in this age group (Figure 47 and Figure 48).
- Transport was the second most common cause of hospital admission (5%, n=2,019) and the cause of 3% of ED presentations (n=1,597). The second most common cause for ED presentations in this age group was hit/struck/crush (6%, n=2,943).
- The third leading cause of admissions was hit/struck/crush (2%, n=931), whereas for ED presentations it was cutting and piercing (5%, n=2,141).
- Overexertion and/or strenuous movements and cutting and piercing each accounted for 2% of admissions (n=846 and 730) while injuries caused by a foreign body in a natural orifice, e.g. ear, nose, eye, accounted for 3% (n=1,356) of ED presentations.

Figure 47: Older adult injury hospital admissions by cause, Victoria 2016/17

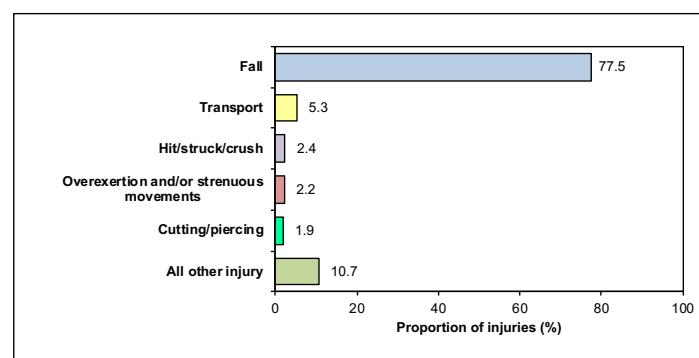
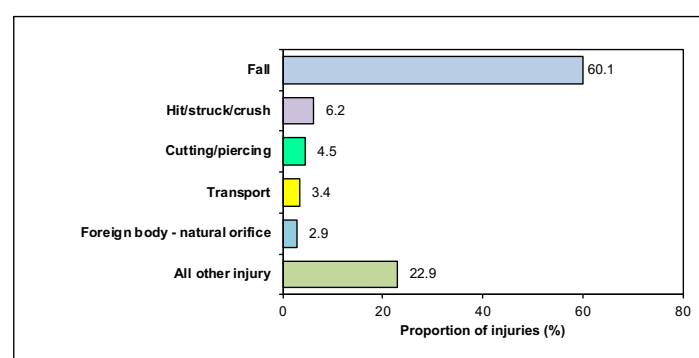


Figure 48: Older adult injury ED presentations by cause, Victoria 2016/17



Note: 'Other specified' and 'unspecified' cases were included in the 'all other injuries' category regardless of their ranking

MAJOR INJURY TYPE
(BODY SITE AND NATURE OF INJURY)

Figure 49 and Figure 50 show the five most common injury types for older adult hospital admissions and ED presentations.

- Fracture to the lower limb accounted for 20% of injury hospital admissions (n=7,678) and 13% (n=6,018) of ED presentations.
- Fracture to the upper limb accounted for 13% (n=5,138) of hospital admissions and 11% (n=5,095) of ED presentations. Fractures to the trunk were also common among hospital admissions (12%, n=4,503).
- Open wounds to the head/face/neck accounted for 8% (n=2,919) of hospital admissions and 6% (n=2,865) of ED presentations.
- Intracranial injuries accounted for 4% (n=1,654) of hospital admissions but were not a major cause of injury among ED presentations.
- Dislocations, sprains and strains to the lower limb (6%, n=2,805) and open wound to upper limb (5%, n=2,462) were also common among ED presentations.

Figure 49: Major injury type, older adult hospital admissions, Victoria 2016/17

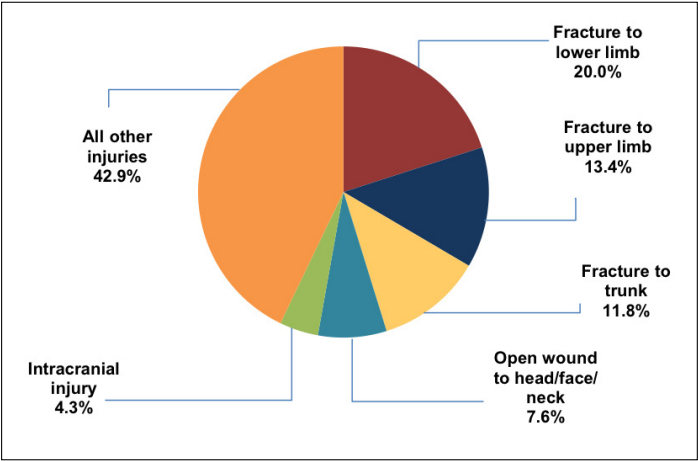
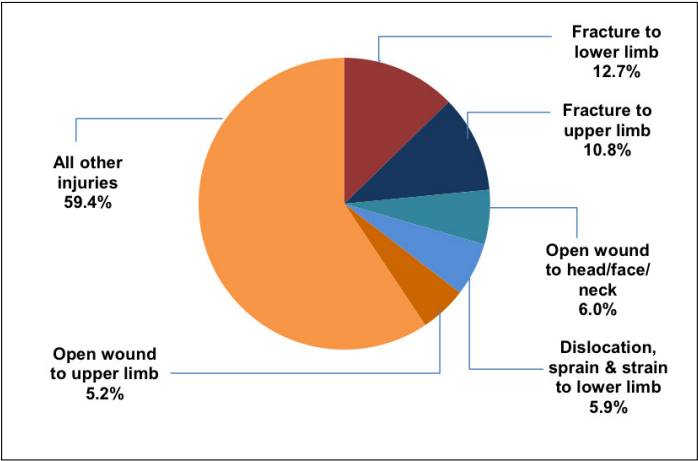


Figure 50: Major injury type, older adult ED presentations, Victoria 2016/17



SETTING

- Setting where the injury occurred was unspecified in 24% of older adult injury admissions and 16% of older adult injury ED presentations.
- Around 42% of older adult injuries requiring hospital admission (n=16,122) and more than half of ED presentations (56%, n=26,504) occurred in the home (Figure 51 and Figure 52).
- Other settings where injuries to older adults commonly occurred were:
 - Residential institutions (17% of admissions (n=6,558) and 8% of ED presentations (n=3,988))
 - Roads, streets and highways (8% of admissions (n=3,017) and 7% of ED presentations (n=3,349))
 - Trade and service areas (3% of admissions (n=1,150)).

Figure 51: Older adult injury hospital admissions by setting, Victoria 2016/17

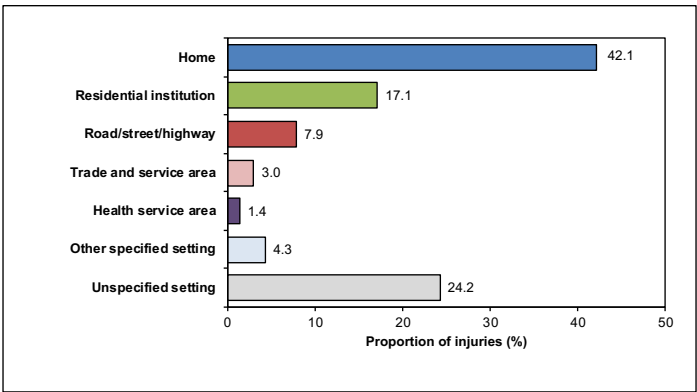
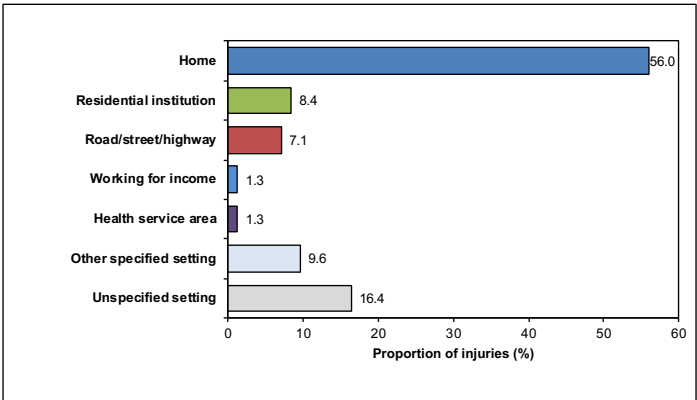


Figure 52: Older adult injury ED presentations by setting, Victoria 2016/17



APPENDIX 1

VISU DEFINITIONS

Injury:

Injury is commonly defined as: 'any unintentional or intentional damage to the body ... caused by acute exposure to physical agents such as mechanical energy, heat, electricity, chemicals, and ionizing radiation interacting with the body in amounts or at rates that exceed the threshold of human tolerance'.

Unintentional injury:

Injuries that are unintended, often described as 'accidents'. We try to avoid using the term 'accidents' as it implies that injuries are random events due to chance.

Intentional injury:

Injuries that are the result of intended acts by people i.e., harm of one person by another (assault, homicide, neglect) or self-harm.

Death:

An injury 'death' is defined as an injury or poisoning by an external cause (transport crash, fall, suicide, drowning etc.) that results in a person dying either in or out of hospital. In Victoria (and in other Australian States and Territories) all deaths by external causes must be reported to the State Coroner.

Hospital admission:

An injury 'hospital admission' is defined as an injury or poisoning that results in the person being admitted to an inpatient bed (a ward, short stay observation unit, emergency medical unit, medical assessment and planning unit, intensive care bed, mental health bed or coronary care unit) and subsequently discharged alive either on the same day (after at least 4 hours from the time patient management commences) or after one or more nights' stay in a hospital bed. Prior to July 2012 this definition included patients who had their entire care within the ED. From July 2012 if the patient's entire care was provided within a designated emergency department or urgent care centre then the patient is no longer classified as an admission.

Emergency department (ED) presentation:

An injury 'emergency department (ED) presentation' is defined as an injury or poisoning that results in a person presenting to a hospital emergency department for treatment who is triaged (assessed for urgency), including those patients who leave before treatment commences.

For the purposes of this E-bulletin, age groups are defined as follows to match those in the National Injury Prevention and Safety Promotion Plan. A child is defined as a person aged 0-14 years, an adolescent and young adult is a person aged 15-24 years, an adult is a person aged 25-64 years and an older adult is a person aged 65 years and above.

BOX 1: DEFINITION OF SETTINGS AND INJURY SEVERITY

Settings definitions

The settings are mutually exclusive. For hospital admissions all settings are defined exclusively by location coding except working for income. Working for income cases are defined by activity code OR compensable status. Further, preference is given to activity so cases with an activity recorded as working for income are defined as working for income and removed from the setting of their location code. For ED presentations text descriptions were also used to identify some settings that were not covered by existing location or activity coding (i.e., area of still water/stream of water/large area of water/beach and forest/desert/other specified countryside).

- (1) 'Home' includes injuries occurring in homes, drive-ways, apartments, boarding houses, caravans, farmhouses, swimming pools/tennis courts in private residences.
- (2) 'Sports setting' includes injuries occurring at any sports and athletics area.
- (3) 'Road/street/highway' includes injuries occurring on roadways, sidewalks and cycle-ways next to roads.
- (4) 'Residential institution' includes injuries occurring in prisons, juvenile detention centres, military camps, orphanages, aged care facilities (nursing home/old people's home/retirement village). Most hospitalisations for this setting were for injury occurring in aged care facilities (93%).
- (5) 'Working for income' includes injuries occurring while the person was engaged in paid work or transportation to and from such activities.
- (6) 'Health service area' includes injuries occurring to any person (i.e., patient, visitor) in hospitals, health centres, day procedure centres, hospices, outpatient clinics. Data presented here exclude 'medical injuries' as is normal practice for VISU injury reports. Persons working for income are not included as they are already counted in the working for income setting.
- (7) 'Trade and service area' includes injuries occurring in shops/stores, commercial garages, office buildings, cafés/hotels/restaurants, airports, bus/radio/railway/television stations.
- (8) 'School and other educational institution' includes injuries occurring in boarding/residential schools, colleges, day nurseries, institutes for higher education/universities, kindergartens.
- (9) 'Other institution and public administrative area' includes injuries occurring in buildings (including adjacent grounds) used by the general public such as assembly hall, church, cinema, clubhouse, court house, dancehall, gallery, library, movie house, museum, music hall, opera house, public hall, theatre, youth centre.
- (10) 'Area of still water/ stream of water/ large area of water/ beach' includes injuries occurring at a dam, fen, marsh/swamp, pond, pool, reservoir, brook, canal, creek, river, stream, bay, lake, ocean, sea, foreshore, sand dunes.
- (11) 'Farm' includes injuries occurring in farm buildings/ranches or on land under cultivation, excluding the farm home.

(12) 'Forest/ desert/ other specified countryside' includes injuries occurring in a forest, desert, cave, gorge, mountain, outback, prairie, and wilderness. Note that within this report categories 10, 11 and 12 are included in 'other specified location'.

(13) 'Other specified location' includes injuries occurring in campsites, public place NOS, park NOS, railway line, zoo, parking lot, town camps.

(14) 'Unspecified setting' includes injuries occurring in an unspecified place of occurrence.

Injury severity: definition of 'serious' injury

Each hospital admission record was given an International Classification of Disease (ICD)-based Injury Severity Score (ICISS) (Osler et al, 1996). The ICISS is a score between 0 and 1 and involves estimating probability of death for ICD injury diagnosis codes in a patient's hospital record (Osler et al., 1996). Determining an ICISS score involves calculating a Diagnosis-specific Survival Probability (DSP) for each individual injury diagnosis, using a large sample of injured people. A DSP is the proportion of cases with a certain injury diagnosis in which the patient does not die, or in other words, a given DSP represents the likelihood that a patient will survive a particular injury. Each patient's final ICISS score can be calculated by multiplying the probabilities of surviving each of their injuries individually or by using only the probability of surviving the 'worst' injury. A severity threshold can then be used to classify hospitalisations as either 'serious' or 'non-serious'. VISU considers an injury to be 'serious' if the ICISS is less than or equal to 0.941, this is equivalent to a survival probability of 94.1% or worse – meaning the injured person has a probability of death (when admitted) of at least 5.9% (Davie and Cryer, 2007). For this edition the severity scores have been calculated using DSPs derived using Victorian data. In addition, only the injury with the highest 'threat-to-life' and has been used and the ICISS score has also been adjusted for age (Clapperton et.al, 2014).

Davie G, Cryer C and Langley J. (2007). Improving the predictive ability of ICD-based injury severity score. *Injury Prevention*. 14:250-5.

Osler T, Rutledge R, Deis J and Bedrick E. (1996). ICISS: An International Classification of Disease-9 based Injury Severity Score. *Journal of Trauma: Injury, Infection and Critical Care*. 41:380–388.

Stephenson S, Langley J, Henley G and Harrison J. (2003). Diagnosis-based injury severity scaling: a method using Australian and New Zealand hospital data coded to ICD-10-AM. *Injury research and statistics series*, no. 20, Australian Institute of Health and Welfare, Adelaide.

Clapperton A, D'Elia A and Day L. SERIOUS INJURY IN VICTORIA: PART 1: Development and validation of a severity of injury measure using Victorian administrative data; PART 2: Trends in serious road traffic injury hospitalisations, Victoria, 2000-2012/13. Report to VicRoads, April 2014. Monash Injury Research Institute.

BOX 2: COMMUNITY INJURY

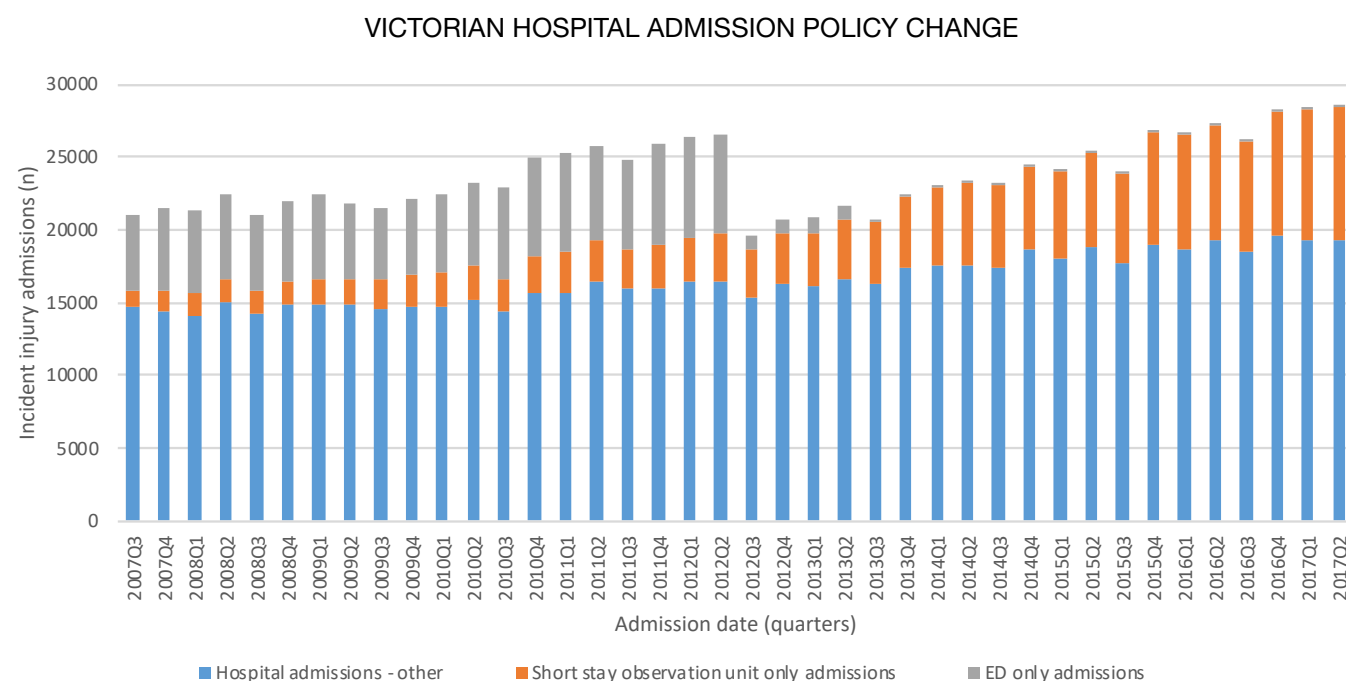
Most injuries occur in settings such as car crashes, inter-personal violence, sporting and recreational activities and work and these can be referred to as 'community injury' (Australian Institute of Health and Welfare 2012). Community injuries are the main subject of this report, so cases selected are specific to those with a community injury in the principal diagnosis code (i.e., ICD-10-AM codes S00-T75 or T79).

BOX 3: VICTORIAN HOSPITAL ADMISSION POLICY

In July 2012 the Victorian Hospital Admission Policy changed significantly so that episodes of care delivered entirely within a designated emergency department or urgent care centre could no longer be categorised as an admission regardless of the amount of time spent in the hospital. Previously, these types of episodes could be categorised as an admission if the length of time in the hospital was four hours or more. This has had the effect of reducing the number of admissions recorded on the VAED post 2012/13 financial year.

In order to minimise the influence of the hospital admission policy change on trends in the admissions data, VAED cases recorded as spending the entire episode in the ED have been removed from the entire time period. This method, however, may result in an overestimation of the increase in admissions over time. Short Stay Observation Unit only admissions have increased substantially before, during and following the admission policy change in 2012, as shown in Figure A1.

Figure A1. Number of injury admissions to Victorian hospitals in 2007/08 to 2016/17. Admissions that were limited to stay in the ED and admissions that were limited to stay in Short Stay Observation Units are shown separately.



VISU DATA SOURCES AND CASE SELECTION

1. Hospital admissions

1.1 Source: Victorian Admitted Episodes Dataset (VAED)

Hospital admission unit record data are annually supplied to VISU by the Victorian Department of Health and Human Services (DHHS). Injury records are identified by VISU as those with an ICD-10-AM injury code (S00-T98) or external cause code (U50-Y98) in any one of the 40 diagnosis codes. The resultant file is cleaned, checked and merged with the VISU-held VAED injury surveillance dataset.

From July 1998, cases recorded on the VAED are coded to **ICD-10-AM**, the WHO International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification. ICD-10-AM has been developed by the National Centre for Classification in Health in Queensland with assistance from clinicians and clinical coders to ensure that the classification is current and appropriate for Australian clinical practice. The Australian Modifications of ICD-10 are generally updated every two years. Up to June 30 1998, cases were coded to **ICD-9-CM**. The external causes chapters of ICD-9-CM and ICD-10-AM describe the causes of injury, poisoning and adverse events (complications of medical and surgical care). Adverse events and sequelae (late effects) of external causes of morbidity and mortality are usually not included in VISU reports.

The VAED data items held by VISU include:

1.1.1 Demographic/administrative items

- **Age, gender, postcode, suburb and local government area of residence**
- **Country of birth**
- **Date of admission, date of separation (discharge) and length of hospital stay** (in days)
- **Separation type (patient destination on discharge from hospital):** separation and transfer to acute hospital /extended care, death, separation to private residence/accommodation, separation and transfer to aged care residential facility, separation and transfer to mental health residential facility etc.

1.1.2 Injury surveillance items

Up to 40 ICD-10-AM codes from any or all of the chapters of the ICD-10-AM manual can currently be assigned to each record. These codes are then used to derive the following injury surveillance variables that are added to the VISU-VAED dataset.

- **Cause of injury** – transport, fall, poisoning etc. [Coded to ICD-10-AM Chapter XX: External Causes of Morbidity and Mortality (V00-Y34)]
- **Place of occurrence** i.e. location of injury – home, road, street or highway etc. [Coded to ICD-10-AM Chapter XX: External Causes of Morbidity and Mortality (Y92.0-Y92.9)]
- **Activity when injured** – sports, leisure, work etc. [Coded to ICD-10-AM Chapter XX: External Causes of Morbidity and Mortality (U50-U73)]
- **Human intent** – unintentional; intentional-assault, neglect, self-harm; undetermined intent. Intent information is derived from the external cause of injury code.
- **Injury diagnosis** i.e. exact injury code – superficial injury of scalp, fracture of neck of femur etc. [Coded to ICD-10-AM Chapter 19, Injury, Poisoning and Consequences of External Cause (S00-T98)].

- **Body region injured** – head, thorax, shoulder, upper arm etc. Body region information is derived from the injury diagnosis variables.
- **Nature of main injury** – open wound, fracture, dislocation/sprain/strain etc. Nature of main injury is derived from the injury diagnosis variables.
- **Comorbidities** – co-occurrence of injury with other diseases and conditions that can happen by chance or because there is some association between them (for example, suicide and mental disorders, drowning or hot water scalds and epilepsy). Co-morbidities are derived from the diagnosis variables (Coded to ICD-10-AM Chapters 1-17).

1.2. Case selection (for this report):

Case selection for incidents

- Victorian hospital admissions recorded on the VAED occurring 1 July 2016 to 30 June 2017, coded according to the 9th edition of ICD-9-AM (NCCH, July 2015).
- Cases with a gender coded as 'intersex' have been removed from this report due to data confidentiality concerns related to small numbers.
- Cases with an external cause of morbidity in ICD-10-AM range V00-X59 (i.e. unintentional section of Chapter XX External causes of morbidity and mortality).
- Cases with a community injury (in ICD 10 AM range S00-T75 or T79) in the first diagnosis code (see Box 2 in Appendix 1).
- Cases coded as unintentional injury (VAED human intent=1).
- Mode of admission has any value except those indicating that transfer from another hospital has occurred or that the record is a 'statistical separation' – a change of care type within a hospital. The aim of these omissions is to reduce over-counting of cases and to provide an estimated incidence of admission.
- Patients admitted for day-treatments for the same injury within a course of 30 days, with an admission type indicating it was a "planned" admission were removed. These included for example procedures such as hyperbaric oxygen therapy and removal of catheters etc.
- VAED cases recorded as not having spent the entire episode in the ED (see Box 3 in Appendix 1).

Case selection for bed-days

Each record in the VAED refers to a single episode of care in a hospital and some injuries result in more than one episode in hospital and therefore more than one VAED record. The VAED does not include information designed to enable the set of records belonging to one injury case to be recognised as such. Hence, there is potential for some incident injury cases to be counted more than once. Therefore for incident estimates, transfers within and between hospitals, as well as rehabilitation cases and those admitted for planned day-treatments, were excluded. The episodes omitted to reduce overestimation of incident cases were, however, included when providing estimates of bed-days.

- Cases with a principal diagnosis as an injury in the ICD-10-AM code range S00-T75.9, T79-T79.9, T89-T98.99 (these codes exclude medical injury) or was one of two relevant rehabilitation codes – Z094 (follow-up examination after treatment of a fracture) or Z509 (care involving use of rehabilitation procedure, unspecified). Cases with rehabilitation codes in the principal diagnosis codes were only included if one of the above injury diagnosis codes was also recorded in the patient's hospital record.

2. Emergency Department Presentations

2.1. Source: Victorian Emergency Minimum Dataset (VEMD)

The Victorian Injury Surveillance System began in the Royal Children's Hospital in 1988. It expanded to adult hospitals over time with a large boost in 1995 when the Department of Human Services absorbed the injury surveillance minimum dataset into the Victorian Emergency Minimum Dataset (VEMD) that collects demographic, administrative and clinical data from public hospitals. From January 2004, VEMD data are collected by all 38 Victorian public hospitals that provide a 24-hour ED service. In July 2011 Bass Coast Regional Health began contributing to the VEMD taking the total contributing hospitals to 38.

Emergency Department presentations for injury are extracted from the VEMD by the Victorian DHHS and are supplied annually in unit record format to VISU. Data for this edition of the E-bulletin were coded to the Victorian Emergency Minimum Dataset (VEMD) User Manual 21st Edition, published by the DHHS. Prior to the hospital admission policy change in 2012/13, the VEMD contained cases that were treated and discharged from the ED within 4 hours from the time patient management commenced (i.e. 'non-admissions') and cases that were defined as 'admissions' according to the Victorian hospital admission policy at the time (cases physically transferred to another unit in the same hospital and those treated entirely within the ED for longer than 4 hours). Post 2012/13 cases that are treated entirely within the ED for longer than 4 hours are not considered as admissions (see Box 3 in Appendix 1).

When the data file is received by VISU, it is cleaned, checked and merged with the VISU-held VEMD injury surveillance dataset.

The VEMD data items held by VISU include:

2.1.1 Demographic/administrative items

- **Age, gender, postcode, suburb and local government area of residence**
- **Country of birth and preferred language**
- **Time and date of presentation to ED**
- **Departure status** (patient destination on discharge from ED i.e. admitted to ward, died within ED, discharged home, discharged to residential care etc.)
- **Referred to on departure** (outpatients, local medical officer i.e. GP, home nursing service, scheduled review in ED etc.)

2.1.2 Injury surveillance items

- **Human intent** (unintentional, assault, self-harm etc.)
- **Cause of injury** (fall, poisoning etc.)
- **Place where injury occurred** i.e. location of injury (home, road, street or highway etc.)
- **Activity when injured** (sports, leisure, work etc.)
- **Nature of main injury**
- **Body region injured**
- **Description of injury event** ('narrative')

2.2 Case selection (for this report)

- Victorian hospital ED presentations recorded on the VEMD occurring 1 July 2016 to 30 June 2017 coded according to the Victorian Emergency Minimum Dataset (VEMD) User Manual 21st edition.
- Cases with a gender coded as 'intersex' have been removed from this report due to data confidentiality concerns related to small numbers.
- Cases coded as unintentional injury (VEMD human intent=1).
- Incident cases (excludes return visits and pre-arranged visits).

Further information

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