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UNINTENTIONAL (ACCIDENTAL) HOSPITAL-TREATED INJURY

VICTORIA

2014/15

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Abbreviations

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

Unintentional (accidental) hospital-treated injury in Victoria 2014/15

This is the thirteenth in a series of regular E-bulletins that provide an overview of the injury profile for Victoria. This edition provides an overview of unintentional ('accidental') hospital-treated injury in 2014/15 utilising two injury surveillance datasets that separately record hospital admissions and Emergency Department (ED) presentations for injury.

The case selection and format of this edition differs from the ones prior. Three major changes have been made to the injury case selection strategy. They are: (1) adjusting the pre 2012/13 hospital admissions data to correct for the hospital admission policy change in 2012/13; (2) selection of hospital admission injury cases restricted to those with a "community injury" in the principal diagnosis code and (3) subsequent admissions post presentation to the ED are now included in the ED presentations results.

Summary results

There were 96,141 injury cases admitted to Victorian hospitals in 2014/15 of which 90.7% were unintentional. At least 314,961 injury cases presented to Victorian EDs, 80.2% of which were unintentional.

All ages

- The age-standardised annual rate of injury admissions increased significantly by 3.30% per year over the 11-year period 2004/05 to 2014/15.
- The age-standardised annual rate of injury ED presentations increased significantly by 1.20% per year over the 11-year period 2004/05 to 2014/15.
- Males were overrepresented, accounting for 55% of admissions and 58% of ED presentations.
- Falls were the leading cause of injury among admissions and ED presentations, accounting for 47% of admissions and 38% of ED presentations.
- The home was the most common setting for injury among admissions and ED presentations: 26% of hospital admissions and 40% of ED presentations.
- Fracture to upper limb was the most common injury for both admissions and ED presentations (19% and 12%, respectively).

Children (0-14 years)

- 13,185 children were admitted to Victorian hospitals and at least 90,726 presented to Victorian EDs for unintentional injury during 2014/15.
- The age-standardised annual rate of injury admissions among children aged 0-14 years increased significantly by 2.50% per year over the 11-year period 2004/05 to 2014/15.
- The age-standardised annual rate of injury ED presentations among children aged 0-14 years increased significantly by 2.12% per year over the 11-year period 2004/05 to 2014/15.

- Males were overrepresented, accounting for 61% of admissions and 57% of ED presentations.
- Falls were the leading cause of both injury admissions (48%) and ED presentations (46%).
- Twenty-four percent of hospital admissions and almost half of ED presentations (46%) were for injuries that occurred in the home. Children were also commonly injured in schools and other public buildings (12% of admissions and 13% of ED presentations) and sports and athletics areas (10% each of both admissions and ED presentations).
- Fracture to upper limb was the most common injury for both the admissions and ED presentations among children (31% and 17%, respectively).

Adolescents and young adults (15-24 years)

- 12,316 adolescents and young adults were admitted to Victorian hospitals and at least 55,235 presented to Victorian EDs for unintentional injury during 2014/15.
- The age-standardised annual rate of injury admissions among adolescents and young adults increased significantly by 2.77% per year over the 11-year period 2004/05 to 2014/15.
- The age-standardised annual rate of injury ED presentations among adolescents and young adults remained fairly stable over the 11-year period 2004/05 to 2014/15.
- Males were overrepresented, accounting for 74% of admissions and 67% of ED presentations.
- Transport was the leading cause of injury admissions (23%) followed by falls (19%) and hit/struck/crush (16%). Among ED presentations, falls was the leading cause of injury (27%) followed by hit/struck/crush (26%) and transport (10%). Cutting & piercing injuries accounted for around 10% of both admissions and ED presentations.
- Sports and athletics areas (22%) and the road, street and highway (14%) were the most common settings for adolescent and young adult injuries resulting in hospital admission whereas the home (24%) and sports and athletics areas (21%) 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 (20%) while dislocation, sprain & strain to lower limb was the more common reason for ED presentations (15%).

Adults (25-64 years)

- 37,846 adults were admitted to Victorian hospitals while at least 125,221 presented to Victorian EDs for unintentional injury during 2014/15.
- The age-standardised annual rate of injury admissions among adults increased significantly by 3.69% per year over the 11-year period 2004/05 to 2014/15.
- The age-standardised annual rate of injury ED presentations among adults remained fairly over the 11-year period 2004/05 to 2014/15.
- Males were overrepresented, accounting for 63% of admissions and 61% of ED presentations.

- The leading cause of adult hospital-treated injury was falls: 28% of hospital admissions and ED presentations. Other major causes were hit/struck/crush (10% of admissions and 17% of ED presentations), cutting and piercing (11% of admissions and 12% of ED presentations) and transport (20% of admissions and 9% of ED presentations).

- Seventeen percent of hospital admissions and 37% of ED presentations were for injuries that occurred in the home. Other major settings for injury were: working for income (13% of admissions and 15% of ED presentations) and road/street/highway (14% of admissions and 10% of ED presentations).

- Fracture to upper limb was the most common injury among adult hospital admissions (18%) while dislocation, sprain & 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)

- 32,794 older adults were admitted to Victorian hospitals and at least 43,779 presented to Victorian EDs for unintentional injury during 2014/15.

- The age-standardised annual rate of injury admissions among older adults increased significantly by 3.54% per year over the 11-year period 2004/05 to 2014/15.

- The age-standardised annual rate of injury ED presentations among older adults increased significantly by 1.68% per year over the 11-year period 2004/05 to 2014/15.

- Females were overrepresented, accounting for 65% of admissions and 58% of ED presentations.

- Falls accounted for more than three-quarters of hospital admissions (77%) and more than half of ED presentations (62%) among older adults.

- Forty-three percent of hospital admissions and more than half of ED presentations (54%) 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 both admissions and ED presentations).

- Fracture to lower limb was the most common injury among older adult hospital admissions (22%) and among ED presentations (13%).

Table 1: Summary results for 2014/15

	All	Child (0-14 years)	Adolescent (15-24 years)	Adults (25-64 years)	Older adults (65+ years)
Admissions					
n	96,141	13,185	12,316	37,846	32,794
Rate/100,000	1,633.5	1,224.1	1,576.3	1,201.7	3,735.6
Age standardised rate/100,000	1,563.9	1,224.3	1,577.0	1,192.5	3,590.8
Rate change (% per year)	3.3	2.5	2.8	3.7	3.5
% males	54.7	61.2	73.6	63.1	35.4
Leading cause (%)	Falls (46.5)	Falls (48.2)	Transport (22.5)	Falls (28.4)	Falls (77.3)
Most common setting (%)	Home (25.6)	Home (23.8)	Sports (22.0)	Home (17.3)	Home (42.7)
Most common injury (%)	Fracture upper limb (18.7)	Fracture upper limb (30.6)	Fracture upper limb (20.3)	Fracture upper limb (18.4)	Fracture lower limb (22.1)
% of all serious injury cases (row %)	n/a	1.1	3.0	12.8	83.1
ED presentations					
n	314,961	90,726	55,235	125,221	43,779
Rate/100,000	5,351.3	8,422.8	7,069.4	3,976.1	4,987.0
Age standardised rate/100,000	5,411.4	8,432.4	7,109.6	3,985.7	4,882.2
Rate change (% per year)	1.2	2.1	stable	stable	1.7
% males	58.2	57.4	67.0	60.6	41.8
Leading cause (%)	Falls (37.7)	Falls (46.2)	Falls (27.0)	Falls (28.0)	Falls (61.6)
Most common setting (%)	Home (39.7)	Home (45.9)	Home (23.6)	Home (37.3)	Home (54.3)
Most common injury (%)	Fracture to upper limb (11.8)	Fracture upper limb (17.4)	Dislocation, sprain & strain to lower limb (14.7)	Dislocation, sprain & strain to lower limb & Open wound to upper limb (10.3)	Fracture lower limb (13.4)

Notes:

1) Rate change (% per year) refers to the average change in age standardised rate over 11 years: 2004/5 to 2014/15.
2) Red highlighted cells represent an increase and yellow represents no significant change.
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 2014/15. There were 105,959 injury hospital admissions in Victoria in 2014/15 (excluding complications of surgical and medical care, adverse effects of drugs in therapeutic use and late effects of injury), 90.7% of which were unintentional (n=96,141). The remaining injury cases were either intentional i.e. self-harm or assault (7.7%, n=8,110) or of other or undetermined intent (1.6%, n=1,708). In this same year, there were 392,512 injury cases presenting to Victorian hospital EDs, 80.2% of which were unintentional (n=314,961), 4% were intentional (self-harm or assault) (n=15,576) and 15.8% were of other or undetermined intent (n=61,975).

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 departments[1].

Case selection criteria

Cases were selected if the admission (VAED) or presentation (VEMD) date occurred in the financial year 2014/15, 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 2) and the case was not a statistical separation from another unit within the same hospital or an inward transfer from another hospital. 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 time trends in admissions, cases that spent the entire episode in the ED have been removed from the VAED (see Box 3 in Appendix 2).

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+) have been selected to match those in the *National Injury Prevention and Safety Promotion Plan: 2004 - 2014* (NIPSPP Plan).

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

Rates and trends analysis

Rates per 100,000 population have been calculated for the 11-year period 2004/05 to 2014/15 for the VAED and the VEMD[2]. The denominators used for calculating rates from were December population estimates from the Australian Bureau of Statistics. 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.

[1] Currently 39 hospitals contribute to the VEMD (Bass Coast Regional Health was added to the collection in July 2011)
[2] The selection of the particular time period 2004/05-2014/15 is because the number of hospitals contributing to the VEMD has largely been consistent since 2004/05.

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:

$$percentage\ change = [e^{\alpha} - 1] \times 100\%$$

where α 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 refer to Appendix 2 (page 39).

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

All ages

Table 2 provides an overview of unintentional hospital-treated injury in Victoria during 2014/15. Overall, there were 96,141 admissions and 255,031 ED presentations.

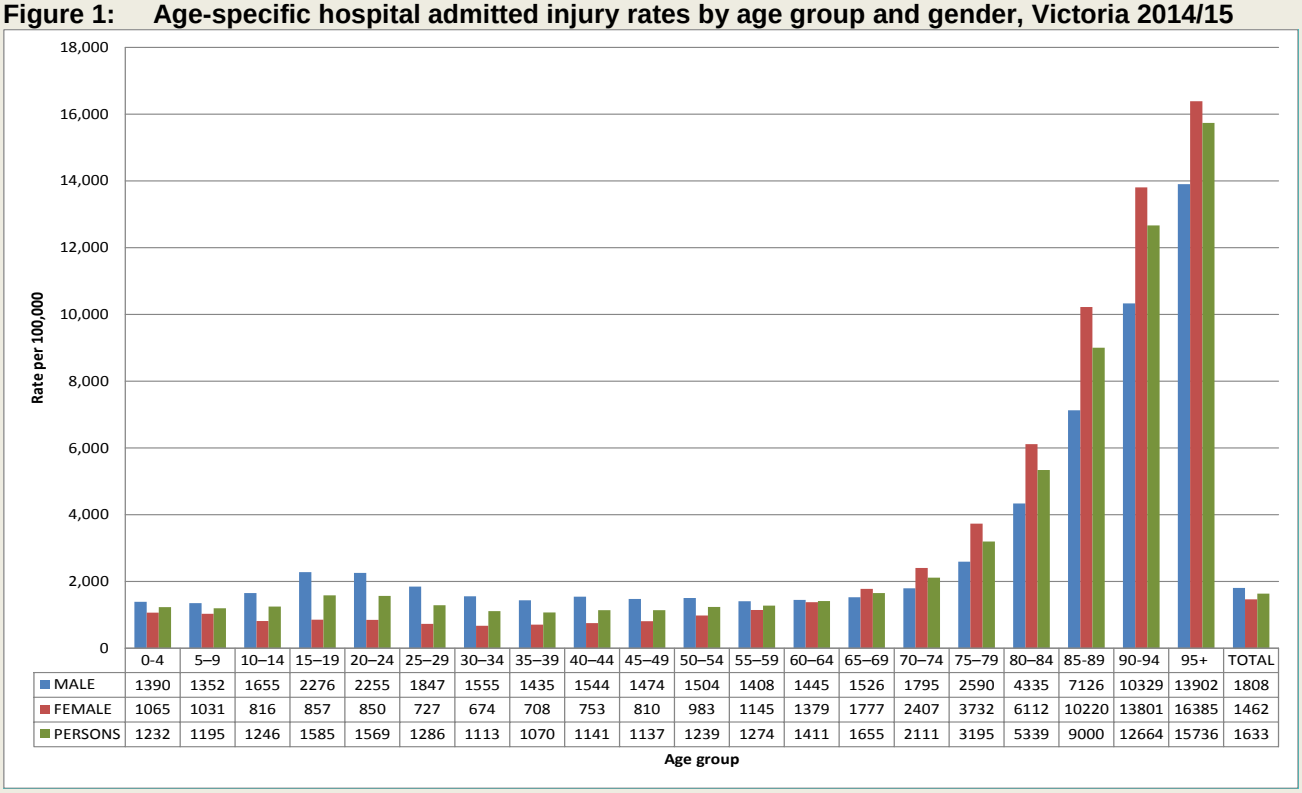
- The hospital admission rate was highest in older adults (3,735.6 per 100,000) and lowest in adults (1,201.7 per 100,000).
- The ED presentation rate was highest in children (8,422.8 per 100,000) and lowest in adults (3,976.1 per 100,000).

Table 2: Hospital treated injury frequency, age-specific and standardised rates by broad age group, Victoria 2014/15.

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	13,185	1,224.1	1,224.3	90,726	8,422.8	8,432.4
Adolescents and young adults 15-24 years	12,316	1,576.3	1,577.0	55,235	7,069.4	7,109.6
Adults 25-64 years	37,846	1,201.7	1,192.5	125,221	3,976.1	3,985.7
Older adults 65+ years	32,794	3,735.6	3,590.8	43,779	4,987.0	4,882.2
All	96,141	1,633.5	1,563.9	314,961	5,351.3	5,411.4

Figure 1 shows hospital admission injury rates by age and gender for Victoria in 2014/15. 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 to age 65 years.

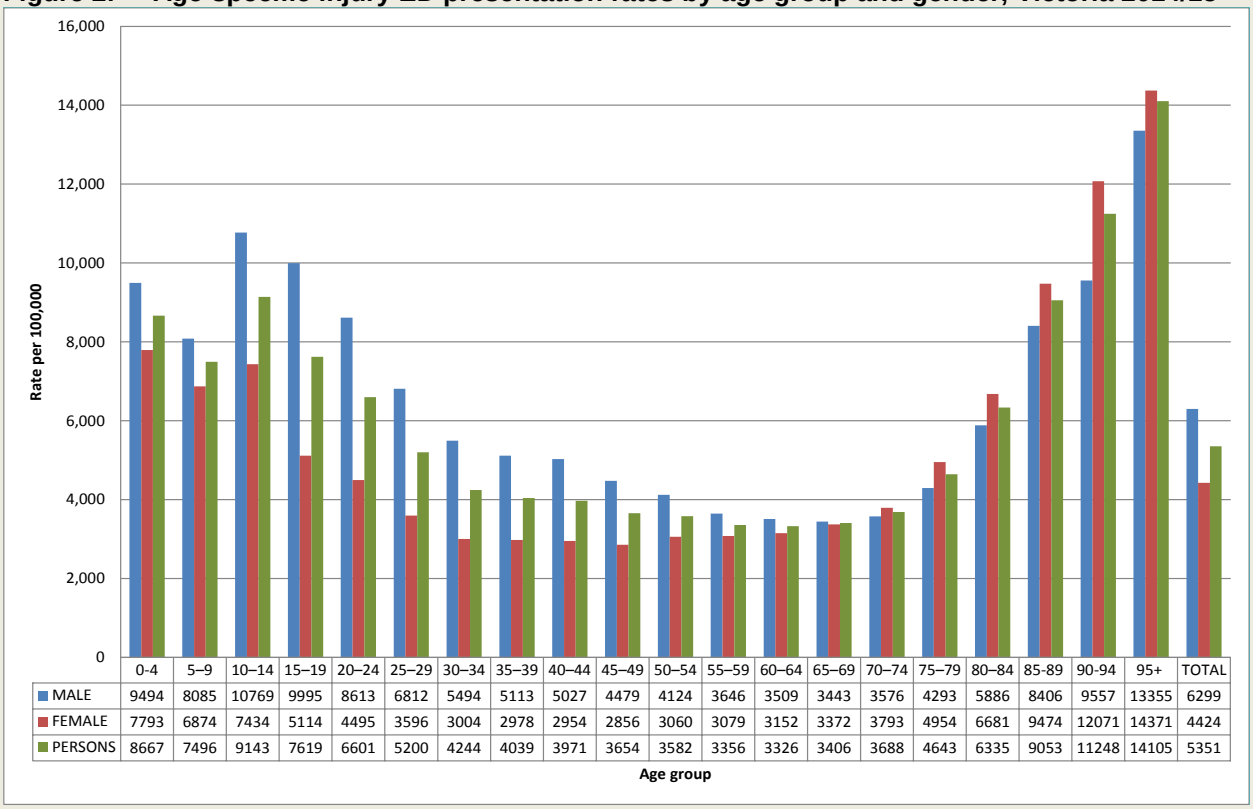
Figure 1: Age-specific hospital admitted injury rates by age group and gender, Victoria 2014/15



	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	85-89	90-94	95+	TOTAL
MALE	1390	1352	1655	2276	2255	1847	1555	1435	1544	1474	1504	1408	1445	1526	1795	2590	4335	7126	10329	13902	1808
FEMALE	1065	1031	816	857	850	727	674	708	753	810	983	1145	1379	1777	2407	3732	6112	10220	13801	16385	1462
PERSONS	1232	1195	1246	1585	1569	1286	1113	1070	1141	1137	1239	1274	1411	1655	2111	3195	5339	9000	12664	15736	1633

Figure 2 shows ED presentation injury rates by age and gender for Victoria in 2014/15. Age-specific injury ED presentation rates were high among children (0-9 years) and highest among older children (10-14 years) and then decreased throughout the adolescent and adult age groups until age 65 when rates increased. The overall male age-specific injury hospital ED presentations rate was higher than the female rate in all 5-year age groups up to age 70 years.

Figure 2: Age-specific injury ED presentation rates by age group and gender, Victoria 2014/15



	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	85-89	90-94	95+	TOTAL
MALE	9494	8085	10769	9995	8613	6812	5494	5113	5027	4479	4124	3646	3509	3443	3576	4293	5886	8406	9557	13355	6299
FEMALE	7793	6874	7434	5114	4495	3596	3004	2978	2954	2856	3060	3079	3152	3372	3793	4954	6681	9474	12071	14371	4424
PERSONS	8667	7496	9143	7619	6601	5200	4244	4039	3971	3654	3582	3356	3326	3406	3688	4643	6335	9053	11248	14105	5351

Table 3 provides an overview of the severity of unintentional injury hospital admissions by age group. 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, page 38).

- Adults aged 25-64 years and older adults aged 65+ each accounted for around 38% of unintentional injury hospital admissions in 2014/15, while children (0-14 years) and adolescents & young adults (15-24 years) each accounted for around 12% of injury admissions.
- Older adults aged 65+ years accounted for more than three quarters of serious injury admissions (83.1%, n=11,985). They also accounted for the majority of hospital bed-days (70%, 421,556 days).
- Those aged 75-94 years accounted for more than a quarter of all unintentional injury hospital admissions (26.5%) and were particularly over-represented when serious injuries and bed-days are taken into account (66.7% and 54.2%, respectively).

Table 3: Unintentional injury hospital admissions by age group: frequency, serious injury cases and hospital bed days (2014/15)

	Frequency		Serious injury cases		Hospital bed-days	
	n	%	n	%	n	%
0-4	4,638	4.3	63	0.4	6,045	1.0
5-9	4,330	3.9	43	0.3	5,747	1.0
10-14	4,217	3.8	47	0.3	6,254	1.0
0-14	**13,185**	**12.0**	**153**	**1.1**	**18,046**	**3.0**
15-19	5,699	5.4	198	1.4	11,687	1.9
20-24	6,617	6.2	242	1.7	15,241	2.5
15-24	**12,316**	**11.6**	**440**	**3.0**	**26,928**	**4.5**
25-34	10,777	10.4	426	3.0	24,859	4.1
35-44	9,020	9.1	437	3.0	26,751	4.4
45-54	9,174	9.4	463	3.2	35,729	5.9
55-64	8,875	9.6	527	3.7	47,999	8.0
25-64	**37,846**	**38.5**	**1,853**	**12.8**	**135,338**	**22.5**
65-74	8,947	10.1	1,730	12.0	78,149	13.0
75-84	11,260	13.5	4,177	28.9	154,132	25.6
85-94	11,265	13.0	5,444	37.7	172,341	28.6
95+	1,322	1.4	634	4.4	16,934	2.8
65+	**32,794**	**37.9**	**11,985**	**83.1**	**421,556**	**70.0**
Total	96,141	100.0	14,431	100.0	601,868	100.0

Trend

- During the 11-year period 2004/05 to 2014/15, there were on average 72,135 injury admissions and at least 274,306 injury ED presentations in Victoria per year. The average age-standardised annual rates per 100,000 population were 1,288 admissions and 5,106 ED presentations.
- The age-standardised annual rate of injury admissions increased by 3.30% per year during the eleven years (Figure 3). The modelled trend in rate showed a statistically significant annual increase of 2.94% [95%CI 2.06 to 3.84%].
- The age-standardised annual rate of injury ED presentations increased by 1.20% per year (Figure 4). The modelled trend in rate showed a statistically significant annual increase of 0.58% [95%CI 0.11 to 1.04%].

Figure 3: Trend in injury hospital admission rates per 100,000 population, Victoria 2004/05-2014/15

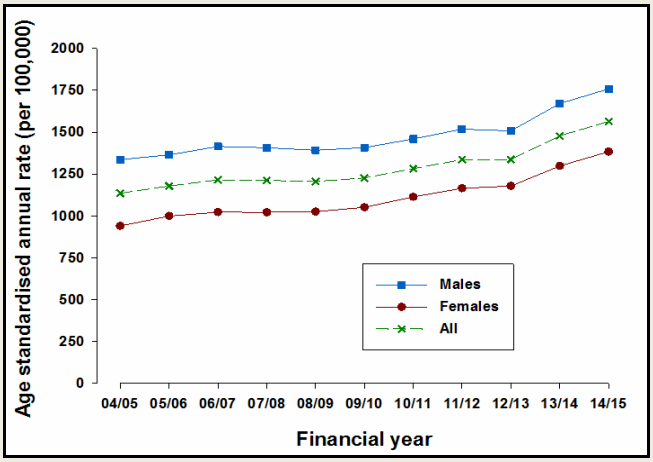
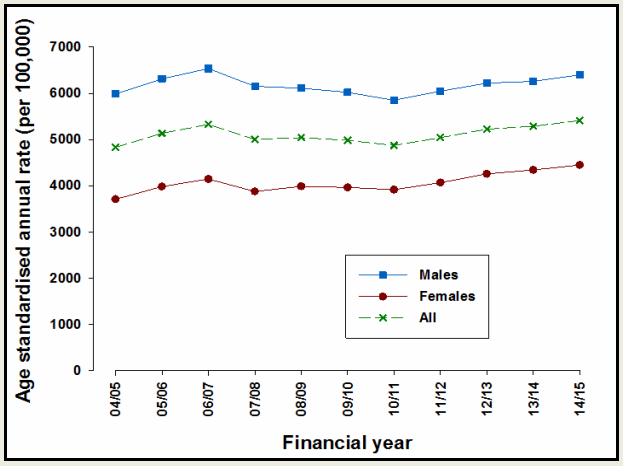


Figure 4: Trend in injury ED presentation rates per 100,000 population, Victoria 2004/05-2014/15



Hospital treated injury - gender and age

- Males were overrepresented accounting for 55% of all injury admissions (n= 52,630) and 58% of ED presentations (n=183,327) in Victoria in 2014/15.
- Seventy-four percent (n=70,640) of hospital admissions occurred among persons aged 25 years and older; around half of those admitted were aged 25-64 years (n=37,846) and the other half were aged 65 years and older (n= 32,794). Adults aged 25-64 years accounted for 40% of ED presentations (n=125,221).
- Males accounted for more hospital admissions and ED presentations than women in all age groups, except the 65 years and older group where females accounted for more hospital admissions and ED presentations (Figure 5 & Figure 6).

Figure 5: Hospital injury admissions by gender and age, Victoria 2014/15

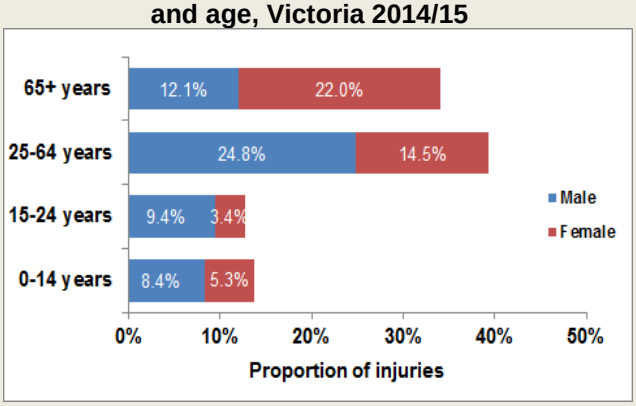
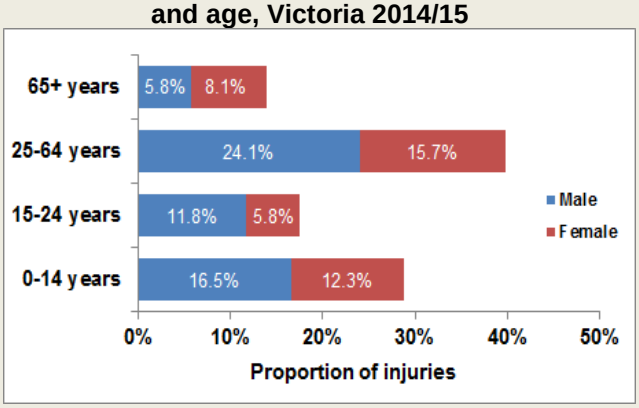


Figure 6: ED injury presentations by gender and age, Victoria 2014/15



- The all ages rates of hospital injury admission and ED presentation was higher for males than females: 1,808.3/100,000 vs. 1,462.4/100,000 for admissions and 6,298.9/100,000 vs 4,424.4/100,000 for ED presentations.
- The age-specific hospital admission rate was highest in older adults (3,735.6 per 100,000 persons) and lowest in adults (1,201.7 per 100,000 persons), whereas the ED presentation rate was highest in children (8,422.8/100,000) and lowest in adults (3,976.1/100,000) (Table 4).

Table 4: Frequency, age-specific and age standardised rates of injury hospital admissions and ED presentations by gender and age, Victoria 2014/15

Age group	Sex	Hospital admissions			ED presentations		
		n	Rate per 100,000 persons	Age standardised rate per 100,000 persons	n	Rate per 100,000 persons	Age standardised rate per 100,000 persons
0-14 years	Male	8,073	1,460.3	1467.1	52,078	9,420.1	9448.8
	Female	5,112	975.0	968.2	38,648	7,371.2	7359.8
	All	13,185	1,224.1	1224.3	90,726	8,422.8	8432.4
15-24 years	Male	9,065	2,265.0	2265.8	37,021	9,250.1	9305.6
	Female	3,251	853.1	853.3	18,214	4,779.3	4803.3
	All	12,316	1,576.3	1577.0	55,235	7,069.4	7109.6
25-64 years	Male	23,891	1,537.7	1535.7	75,914	4,886.0	4906.6
	Female	13,955	874.6	855.3	49,307	3,090.1	3079.8
	All	37,846	1,201.7	1192.5	125,221	3,976.1	3985.7
65+ years	Male	11,601	2,873.5	2697.5	18,314	4,536.3	4391.3
	Female	21,193	4,469.7	4363.5	25,465	5,370.7	5300.6
	All	32,794	3,735.6	3590.8	43,779	4,987.0	4882.2
All	Male	52,630	1,808.3	1758.0	183,327	6,298.9	6400.0
	Female	43,511	1,462.4	1383.8	131,634	4,424.4	4447.7
	All	96,141	1,633.5	1563.9	314,961	5,351.3	5411.4

Leading causes of injury

- Four of the five major causes of hospital injury admissions and ED presentations were the same (falls, transport, hit/struck/crush injuries, cutting/piercing), but the ranking on frequency of cases was different (Figure 7 & Figure 8).
- The leading cause of both hospital admissions and ED presentations was falls. Falls accounted for 47% (n=44,748) of hospital admissions and 38% (n=118,858) of ED presentations.
- Transport accounted for 14% of admissions (n=13,149) but just 7% of presentations (n=21,489) which indicates that transport injuries were more severe than injuries from other causes.
- Hit/struck/crush injuries accounted for 9% of admissions (n=8,507) but a higher proportion of ED presentations (18%, n=57,215).
- Cutting and piercing injuries accounted for 7% of admissions (n=6,848) and 8% of ED presentations (n=26,292).
- The fifth ranking cause of hospital admissions was overexertion and/or strenuous movements related injury (3%, n=3,184) whereas for ED presentations it was injuries caused by a foreign body in a natural orifice e.g. ear, nose, eye (4%, n=13,082).

Figure 7: Hospital injury admissions by cause, Victoria 2014/15

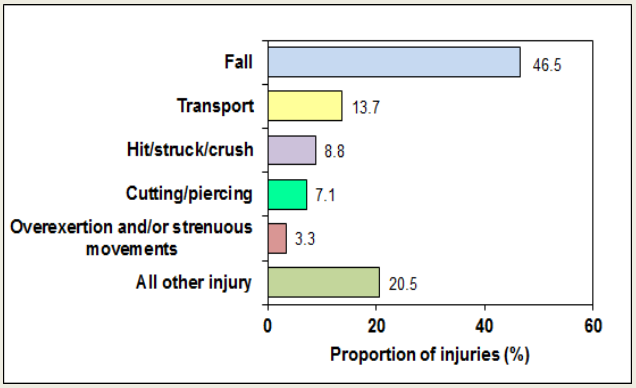
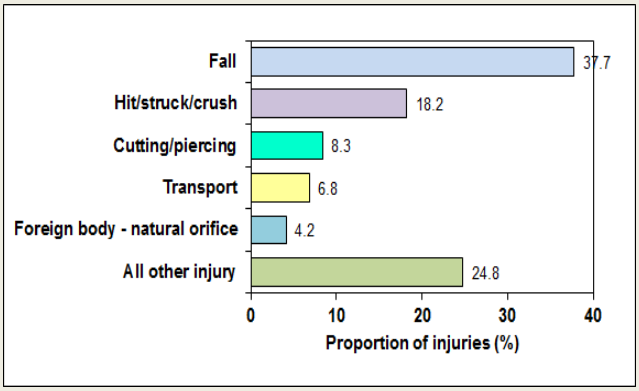


Figure 8: ED injury presentations by cause, Victoria 2014/15



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

- Fracture to the upper limb accounted for 19% (n=17,957) of hospital admissions and 12% (n=37,111) of ED presentations.
- Fracture to the lower limb was the second most common type of injury requiring hospital admission (14%, n=13,609).
- Dislocations, sprains and strains to the lower limb (9%, n= 29,541) and upper limb (8%, n=26,304) were common among ED presentations.
- Fracture to the trunk and open wounds to the head/face/neck each accounted for 6% of hospital admissions (n=5,973 and n=5,445); open wound to upper limb and head/face/neck each accounted for 7% (n=22,170 and n=20,797) of ED presentations.

Figure 9: Major injury type, hospital admissions, Victoria 2014/15

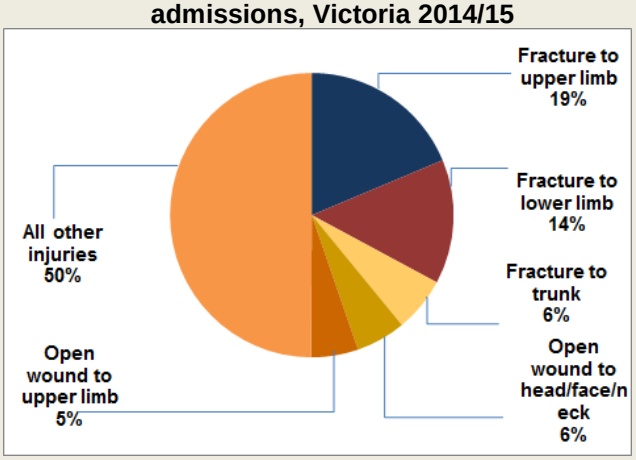
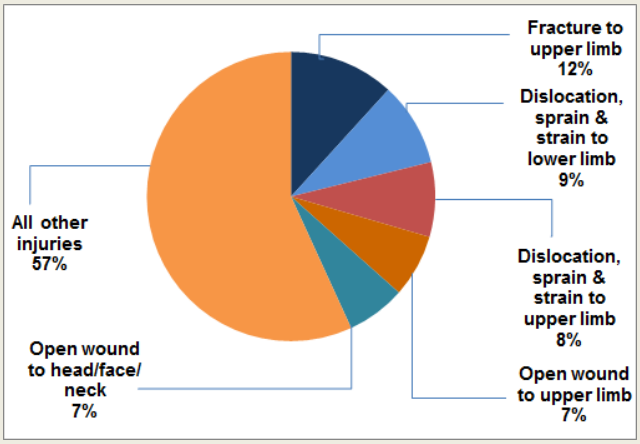


Figure 10: Major injury type, ED presentations Victoria 2014/15



Setting

- Twenty-six percent (n=24,639) of all injuries requiring hospital admission and 39% (n=95,486) of injuries resulting in ED presentation occurred in the home.
- Persons were also commonly injured on roads/streets/highways (11% of admissions and 7% of ED presentations), while working for income (7% of admissions and 9% of ED presentations) and in sports and athletics areas (7% of admissions and 9% of ED presentations). Around 6% of admissions resulted from injuries that occurred in residential institutional settings (Figure 11 & Figure 12).

Figure 11: Hospital injury admissions by setting, Victoria 2014/15

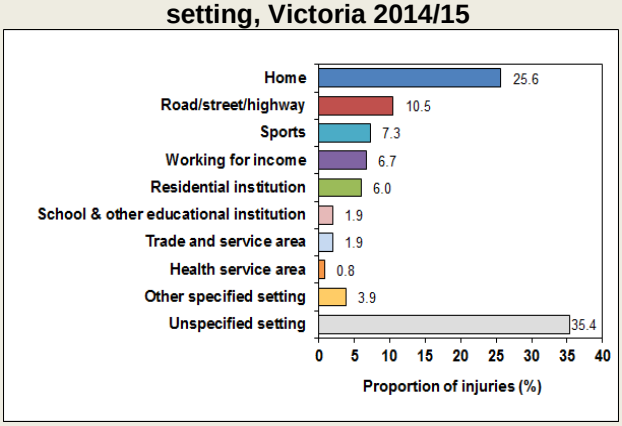


Figure 12: ED injury presentations by setting, Victoria 2014/15

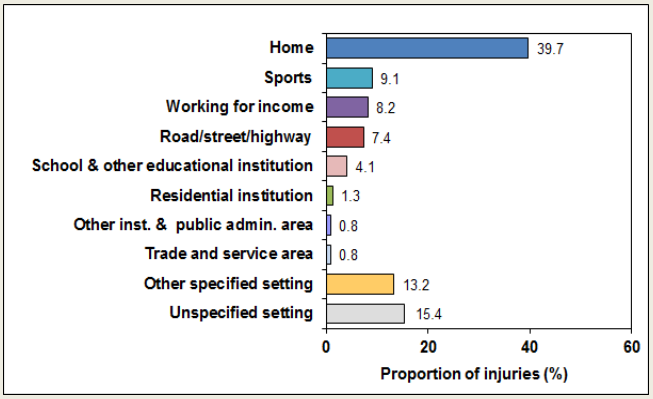


Table 5: Ranking of causes of injury hospital admissions by age groups

Rank	Age groups (years)												
	0-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65-74	75-84	85-94	95+
1	fall 2,205 47.5%	fall 2,459 56.8%	fall 1,697 40.2%	transport 1,234 21.7%	transport 1,535 23.2%	transport 2,340 21.7%	transport 2,034 22.5%	fall 2,750 30.0%	fall 3,985 44.9%	fall 5,497 61.4%	fall 8,840 78.5%	fall 9,808 87.1%	fall 1,209 91.5%
2	hit/struck/crush 763 16.5%	hit/struck/crush 615 14.2%	hit/struck/crush 756 17.9%	fall 1,154 20.2%	fall 1,147 17.3%	fall 1,985 18.4%	fall 2,012 22.3%	transport 1,834 20.0%	transport 1,255 14.1%	transport 846 9.5%	unspec. unintent. 622 5.5%	unspec. unintent. 512 4.5%	unspec. unintent. 39 3.0%
3	unspec. unintent. 295 6.4%	transport 382 8.8%	transport 688 16.3%	hit/struck/crush 1,053 18.5%	unspec. unintent. 1,043 15.8%	unspec. unintent. 1,717 15.9%	unspec. unintent. 1,284 14.2%	unspec. unintent. 1,235 13.5%	unspec. unintent. 1,034 11.7%	unspec. unintent. 823 9.2%	transport 576 5.1%	transport 266 2.4%	hit/struck/crush 20 1.5%
4	cutting/ piercing 276 6.0%	unspec. unintent. 244 5.6%	unspec. unintent. 441 10.5%	unspec. unintent. 991 17.4%	hit/struck/crush 967 14.6%	hit/struck/crush 1,430 13.3%	cutting/ piercing 1,077 11.9%	cutting/ piercing 946 10.3%	cutting/ piercing 734 8.3%	cutting/ piercing 434 4.9%	ovrext./ stren.mmts 255 2.3%	hit/struck/crush 203 1.8%	ovrext./ stren.mmts 11 0.8%
5	foreign body 270 5.8%	cutting/ piercing 205 4.7%	cutting/ piercing 205 4.9%	cutting/ piercing 501 8.8%	cutting/ piercing 835 12.6%	cutting/ piercing 1,423 13.2%	hit/struck/crush 893 9.9%	hit/struck/crush 710 7.7%	hit/struck/crush 547 6.2%	ovrext./ stren.mmts 312 3.5%	hit/struck/crush 246 2.2%	ovrext./ stren.mmts 159 1.4%	transport 11 0.8%
6	poisoning 231 5.0%	nat./envir./ animals 136 3.1%	ovrext./ stren.mmts 129 3.1%	ovrext./ stren.mmts 215 3.8%	ovrext./ stren.mmts 312 4.7%	ovrext./ stren.mmts 517 4.8%	ovrext./ stren.mmts 493 5.5%	nat./envir./ animals 440 4.8%	nat./envir./ animals 371 4.2%	hit/struck/crush 304 3.4%	cutting/ piercing 172 1.5%	poisoning 92 0.8%	foreign body 8 0.6%
7	fires/burns/ scalds 183 3.9%	foreign body 134 3.1%	nat./envir./ animals 95 2.3%	nat./envir./ animals 120 2.1%	nat./envir./ animals 183 2.8%	nat./envir./ animals 384 3.6%	nat./envir./ animals 375 4.2%	ovrext./ stren.mmts 416 4.5%	ovrext./ stren.mmts 319 3.6%	nat./envir./ animals 250 2.8%	nat./envir./ animals 153 1.4%	nat./envir./ animals 63 0.6%	machinery 7 0.5%
8	transport 148 3.2%	fires/burns/ scalds 47 1.1%	foreign body 92 2.2%	poisoning 108 1.9%	poisoning 171 2.6%	poisoning 248 2.3%	poisoning 251 2.8%	machinery 208 2.3%	foreign body 183 2.1%	foreign body 159 1.8%	poisoning 152 1.3%	foreign body 57 0.5%	poisoning 7 0.5%
9	nat./envir./ animals 146 3.1%	ovrext./ stren.mmts 32 0.7%	other spec. unintent. 57 1.4%	foreign body 100 1.8%	other spec. unintent. 138 2.1%	machinery 211 2.0%	machinery 200 2.2%	poisoning 207 2.3%	machinery 155 1.7%	poisoning 118 1.3%	foreign body 111 1.0%	cutting/ piercing 38 0.3%	choking/ suffoc. * *
10	choking/suffoc. 40 0.9%	other spec. unintent. 26 0.6%	fires/burns/ scalds 24 0.6%	other spec. unintent. 98 1.7%	machinery 113 1.7%	other spec. unintent. 185 1.7%	foreign body 130 1.4%	foreign body 185 2.0%	poisoning 149 1.7%	machinery 74 0.8%	fires/burns/ scalds 54 0.5%	fires/burns/ scalds 24 0.2%	cutting/ piercing 2 *
11	drow ning 30 0.6%	poisoning 24 0.6%	poisoning 21 0.5%	machinery 62 1.1%	fires/burns/ scalds 84 1.3%	foreign body 156 1.4%	fires/burns/ scalds 127 1.4%	other spec. unintent. 107 1.2%	fires/burns/ scalds 79 0.9%	fires/burns/ scalds 68 0.8%	machinery 41 0.4%	choking/ suffoc. 18 0.2%	nat./envir./ animals * *
12	machinery 20 0.4%	drow ning 12 0.3%	machinery * *	fires/burns/ scalds 43 0.8%	foreign body 65 1.0%	fires/burns/ scalds 149 1.4%	other spec. unintent. 103 1.1%	fires/burns/ scalds 105 1.1%	other spec. unintent. 33 0.4%	other spec. unintent. 28 0.3%	other spec. unintent. 24 0.2%	other spec. unintent. 15 0.1%	other spec. unintent. * *
13	other spec. unintent. 16 0.3%	machinery 7 0.2%	choking/ suffoc. * *	explosions/ firearms 13 0.2%	explosions/ firearms 15 0.2%	explosions/ firearms 21 0.2%	explosions/ firearms 23 0.3%	explosions/ firearms 14 0.2%	choking/ suffoc. 22 0.2%	choking/ suffoc. 25 0.3%	choking/ suffoc. * *	machinery 10 0.1%	fires/burns/ scalds * *
14	ovrext./ stren.mmts * *	choking/ suffoc. * *	drow ning * *	drow ning * *	choking/ suffoc. * *	choking/ suffoc. * *	choking/ suffoc. 13 0.1%	choking/ suffoc. * *	explosions/ firearms * *	explosions/ firearms * *	explosions/ firearms * *	drow ning 0 0.0%	drow ning 0 0.0%
15	explosions/ firearms * *	explosions/ firearms * *	explosions/ firearms * *	choking/ suffoc. * *	drow ning * *	drow ning * *	drow ning 5 0.1%	drow ning * *	drow ning * *	drow ning * *	drow ning 0 0.0%	explosions/ firearms 0 0.0%	explosions/ firearms 0 0.0%
All	4,638	4,330	4,217	5,699	6,617	10,777	9,020	9,174	8,875	8,947	11,260	11,265	1,322

Table 6: Ranking of causes of injury ED presentations by age groups

Rank	Age groups (years)												
	0-4	5-9	10-14	15-19	20-24	25-34	35-44	45-54	55-64	65-74	75-84	85-94	95+
1	fall 14,319 43.9%	fall 13,869 51.1%	fall 13,694 44.3%	fall 8,232 30.1%	fall 6,687 24.0%	fall 9,848 23.2%	fall 8,408 25.8%	fall 8,342 29.8%	fall 8,493 38.3%	fall 8,242 48.3%	fall 9,469 64.4%	fall 8,288 76.5%	fall 967 81.6%
2	hit/struck/crush 5,440 16.7%	hit/struck/crush 5,204 19.2%	hit/struck/crush 8,090 26.1%	hit/struck/crush 7,616 27.8%	hit/struck/crush 6,483 23.3%	hit/struck/crush 9,042 21.3%	hit/struck/crush 5,831 17.9%	hit/struck/crush 4,209 15.1%	hit/struck/crush 2,619 11.8%	other spec. unintent. 1,831 10.7%	unspec. unintent. 1,340 9.1%	unspec. unintent. 852 7.9%	unspec. unintent. 83 7.0%
3	other spec. unintent. 3,980 12.2%	other spec. unintent. 2,475 9.1%	other spec. unintent. 3,396 11.0%	other spec. unintent. 3,114 11.4%	cutting/piercing 3,337 12.0%	cutting/piercing 5,443 12.8%	cutting/piercing 4,004 12.3%	other spec. unintent. 3,192 11.4%	other spec. unintent. 2,379 10.7%	unspec. unintent. 1,646 9.6%	other spec. unintent. 1,176 8.0%	other spec. unintent. 570 5.3%	other spec. unintent. 47 4.0%
4	unspec. unintent. 2,265 6.9%	unspec. unintent. 1,414 5.2%	unspec. unintent. 1,853 6.0%	transport 2,384 8.7%	other spec. unintent. 3,030 10.9%	other spec. unintent. 4,806 11.3%	other spec. unintent. 3,816 11.7%	cutting/piercing 3,159 11.3%	cutting/piercing 2,210 10.0%	hit/struck/crush 1,379 8.1%	hit/struck/crush 814 5.5%	hit/struck/crush 448 4.1%	hit/struck/crush 40 3.4%
5	foreign body 2,069 6.3%	cutting/piercing 1,357 5.0%	transport 1,552 5.0%	cutting/piercing 2,042 7.5%	transport 3,024 10.9%	transport 4,290 10.1%	transport 3,156 9.7%	unspec. unintent. 2,533 9.1%	unspec. unintent. 2,042 9.2%	cutting/piercing 1,305 7.6%	cutting/piercing 568 3.9%	transport 214 2.0%	cutting/piercing 18 1.5%
6	cutting/piercing 1,387 4.3%	foreign body 918 3.4%	cutting/piercing 1,267 4.1%	unspec. unintent. 2,019 7.4%	unspec. unintent. 2,199 7.9%	unspec. unintent. 3,513 8.3%	unspec. unintent. 2,887 8.8%	transport 2,497 8.9%	transport 1,660 7.5%	transport 973 5.7%	transport 522 3.6%	cutting/piercing 195 1.8%	poisoning 8 0.7%
7	fires/burns/ scalds 1,196 3.7%	transport 873 3.2%	nat./envir./ animals 382 1.2%	foreign body 548 2.0%	foreign body 1,022 3.7%	foreign body 2,179 5.1%	foreign body 1,935 5.9%	foreign body 1,802 6.4%	foreign body 1,182 5.3%	foreign body 695 4.1%	foreign body 301 2.0%	foreign body 88 0.8%	foreign body 7 0.6%
8	nat./envir./ animals 834 2.6%	nat./envir./ animals 545 2.0%	foreign body 336 1.1%	fires/burns/ scalds 472 1.7%	nat./envir./ animals 684 2.5%	nat./envir./ animals 1,195 2.8%	nat./envir./ animals 990 3.0%	nat./envir./ animals 876 3.1%	nat./envir./ animals 719 3.2%	nat./envir./ animals 452 2.6%	nat./envir./ animals 227 1.5%	nat./envir./ animals 79 0.7%	transport 6 0.5%
9	poisoning 675 2.1%	fires/burns/ scalds 325 1.2%	fires/burns/ scalds 233 0.8%	nat./envir./ animals 437 1.6%	fires/burns/ scalds 601 2.2%	fires/burns/ scalds 973 2.3%	fires/burns/ scalds 746 2.3%	fires/burns/ scalds 614 2.2%	fires/burns/ scalds 359 1.6%	fires/burns/ scalds 216 1.3%	poisoning 111 0.8%	poisoning 57 0.5%	nat./envir./ animals * *
10	transport 338 1.0%	poisoning 115 0.4%	poisoning 99 0.3%	poisoning 349 1.3%	poisoning 499 1.8%	poisoning 648 1.5%	poisoning 460 1.4%	machinery 353 1.3%	machinery 239 1.1%	poisoning 178 1.0%	fires/burns/ scalds 109 0.7%	fires/burns/ scalds 27 0.2%	drow ning * *
11	choking/suffoc. 55 0.2%	choking/suffoc. 23 0.1%	machinery 21 0.1%	machinery 123 0.4%	machinery 243 0.9%	machinery 442 1.0%	machinery 353 1.1%	poisoning 330 1.2%	poisoning 232 1.0%	machinery 128 0.8%	machinery 56 0.4%	machinery 7 0.1%	fires/burns/ scalds * *
12	drow ning 42 0.1%	machinery 23 0.1%	choking/suffoc. 13 0.0%	choking/suffoc. 31 0.1%	choking/suffoc. 25 0.1%	choking/suffoc. 53 0.1%	choking/suffoc. 39 0.1%	choking/suffoc. 38 0.1%	choking/suffoc. 21 0.1%	choking/suffoc. 11 0.1%	choking/suffoc. * *	choking/suffoc. 5 0.0%	machinery * *
13	machinery * *	drow ning * *	drow ning * *	drow ning 15 0.1%	drow ning * *	drow ning * *	drow ning 14 0.0%	drow ning 10 0.0%	drow ning * *	drow ning * *	drow ning * *	drow ning 0 0.0%	choking/suffoc. 0 0.0%
14	explosions/ firearms * *	explosions/ firearms * *	explosions/ firearms * *	explosions/ firearms 7 0.0%	explosions/ firearms * *	explosions/ firearms * *	explosions/ firearms 9 0.0%	explosions/ firearms 6 0.0%	explosions/ firearms * *	explosions/ firearms * *	explosions/ firearms 0 0.0%	explosions/ firearms 0 0.0%	explosions/ firearms 0 0.0%
All	32,628	27,152	30,946	27,389	27,846	42,446	32,648	27,961	22,166	17,060	14,704	10,830	1,185

Children (0-14 years)

Trend

- During the 11-year period 2004/05 to 2014/15 there were on average 10,114 injury admissions and 75,899 injury ED presentations per year among children aged 14 years or younger. The average age-standardised injury rates were 1,005 admissions and 7,527 ED presentations per 100,000 children per year.
- The age-standardised annual rate of **injury admissions** among children aged 0-14 years increased by 2.50% per year during the eleven years. The modelled trend in rate showed a statistically significant annual increase of 1.78% [95%CI 0.60 to 2.68%].
- The age-standardised rate of **injury ED presentations** among children aged 0-14 years increased by 2.12% per year. The modelled trend in rate showed a statistically significant annual increase of 1.19% [95%CI 0.61 to 1.77%].
- The modelled age-specific rates of **injury admissions** among the age groups 0-4, 5-9 and 10-14 years showed annual increases of 2.3%, 1.6% and 1.5%, respectively (each statistically significant) (age specific rates shown in Figure 13).
- The modelled age-specific rate of **injury ED presentations** among the age groups 0-4, 5-9 and 10-14 years showed annual increases of 0.7% (not significant), 1.6% and 1.5% (both statistically significant), respectively (age specific rates shown in Figure 14).

Figure 13: Trend in injury hospital admission rates per 100,000 children, Victoria 2004/05-2014/15

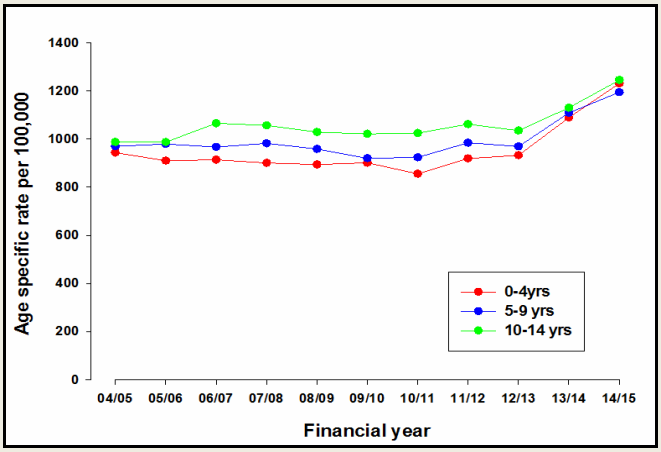
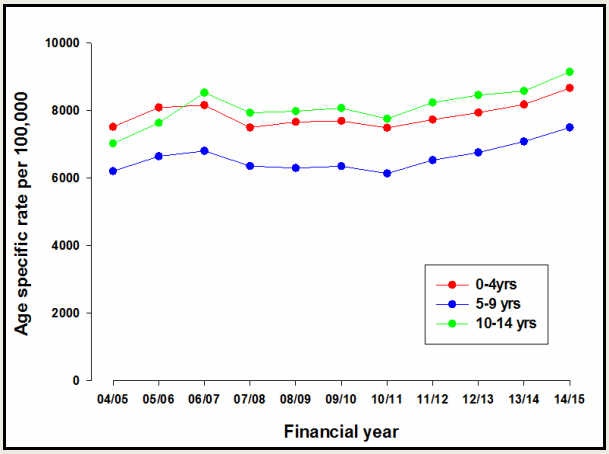


Figure 14: Trend in injury ED presentation rates per 100,000 children, Victoria 2004/05-2014/15



Hospital treated injury - gender and age

- Males were overrepresented in child hospital-treated injury cases, accounting for 61% of hospital admissions (n=8,073) and 57% of ED presentations (n=52,078) in Victoria in 2014/15 (Figure 15 & Figure 16).
- Child injury hospital 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 36% of child ED presentations.
  - Children aged 5-9 years accounted for 33% of child admissions and 30% of child ED presentations.
  - Children aged 10-14 years accounted for 32% of child admissions and 34% of child ED presentations.

Figure 15: Child injury hospital admissions by gender and age, Victoria 2014/15

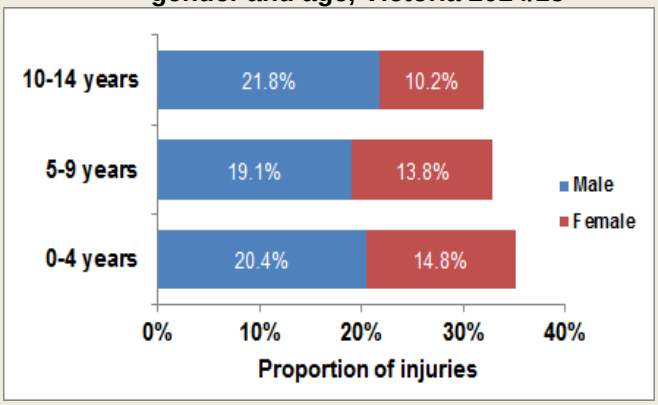
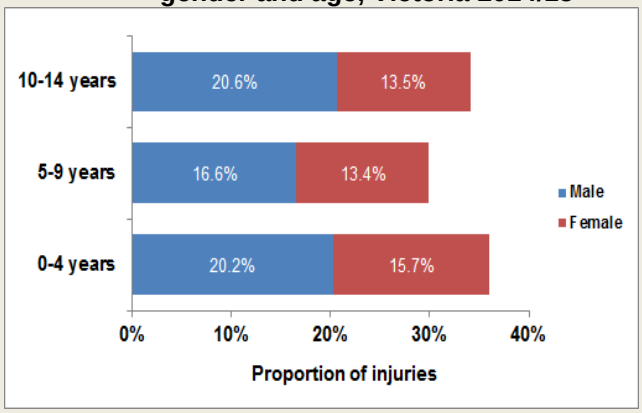


Figure 16: Child injury ED presentations by gender and age, Victoria 2014/15



- The age-specific child hospital injury admission and ED presentation rates were higher for males than females: 1.460.3 vs. 975.0/100,000 (admissions) and 9,420.1 vs. 7,371.2/100,000 (presentations).
- Table 7 shows that age-specific hospital admission rates 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 hospital injury admissions and ED presentations in children by gender and age, Victoria 2014/15

Age group	Sex	Hospital admissions		ED presentations	
		n	Rate per 100,000 persons	n	Rate per 100,000 persons
0-4 years	Male	2,690	1,390.2	18,371	9,494.1
	Female	1,948	1,064.8	14,257	7,792.9
	All	4,638	1,232.0	32,628	8,667.4
5-9 years	Male	2,513	1,351.6	15,031	8,084.6
	Female	1,817	1,030.5	12,121	6,874.4
	All	4,330	1,195.3	27,152	7,495.5
10-14 years	Male	2,870	1,655.0	18,676	10,769.4
	Female	1,347	816.1	12,270	7,434.3
	All	4,217	1,245.9	30,946	9,143.1
All	Male	8,073	1,460.3	52,078	9,420.1
	Female	5,112	975.0	38,648	7,371.2
	All	13,185	1,224.1	90,726	8,422.8

Leading causes of injury

- The five leading causes of hospital injury admissions and ED presentations in children were the same although the ranking on frequency of cases was different (Figure 17 & Figure 18).
- The leading cause of child hospital admissions and ED presentations was falls accounting for 48% (n=6,361) of hospital admissions and 46% (n=41,882) of ED presentations.
- Hit/struck/crush injuries were the next major cause of injury accounting for 16% of admissions (n=2,134) and 21% of ED presentations (n=18,734).
- Transport accounted for 9% of admissions (n=1,218) and only 3% of ED presentations (n=2,763).
- 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=496 & n=686) and 4% each of ED presentations (n=3,323 & n=4,011).

Figure 17: Child injury hospital admissions by cause, Victoria 2014/15

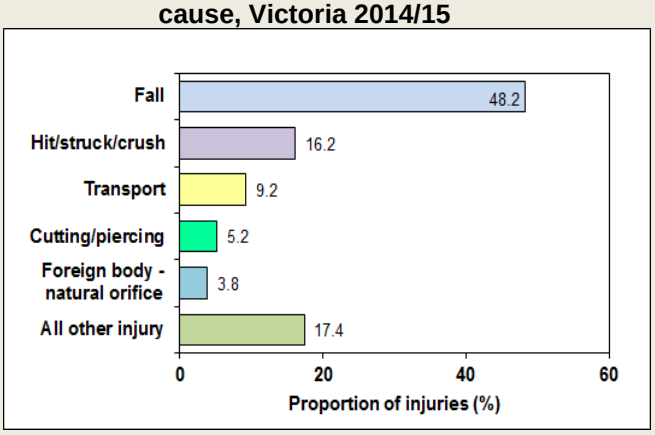
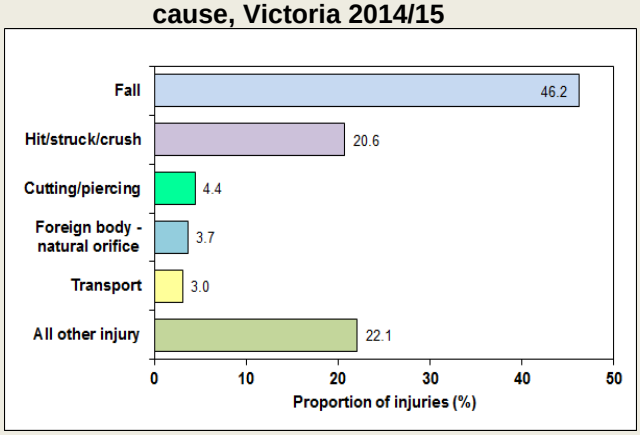


Figure 18: Child injury ED presentations by cause, Victoria 2014/15



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 & Figure 20 show the five major injury types for child hospital injury admissions and ED presentations.

- Fracture to the upper limb accounted for 31% (n=4,040) of child hospital injury admissions and 17% (n=15,741) of ED presentations.
- Open wounds to the head/face/neck accounted for 12% (n=1,632) of admissions and 13% (n=10,946) of ED presentations.
- Fracture to the lower limb (6%, n=782) and intracranial injury (5%, n=722) were common among hospital admissions, whereas dislocations, sprains & strains to the upper limb (12%, n=10,501), and the lower limb (8%, n=6,525) and superficial injury to head/face/neck (7%, n=6,130) were common among ED presentations.

Figure 19: Major injury type, child hospital admissions, Victoria 2014/15

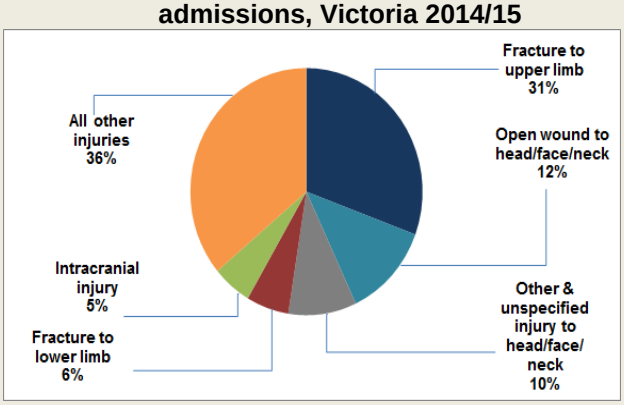
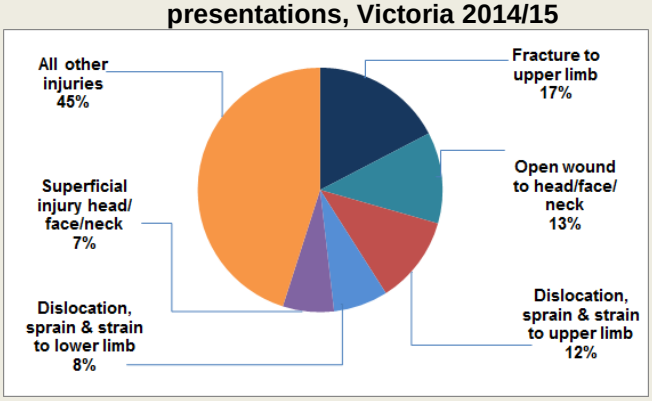


Figure 20: Major injury type, child ED presentations, Victoria 2014/15



Setting

- Twenty-four percent (n=3,133) of all injuries among children requiring hospital admission and 46% (n=41,614) of injuries resulting in ED presentation occurred in the home (Figure 21 & Figure 22).
- Children were also commonly injured in schools and educational settings (12% of admissions and 13% of ED presentations) and sports and athletics areas (10% of admissions and 10% of ED presentations).

Figure 21: Child injury hospital admissions by setting, Victoria 2014/15

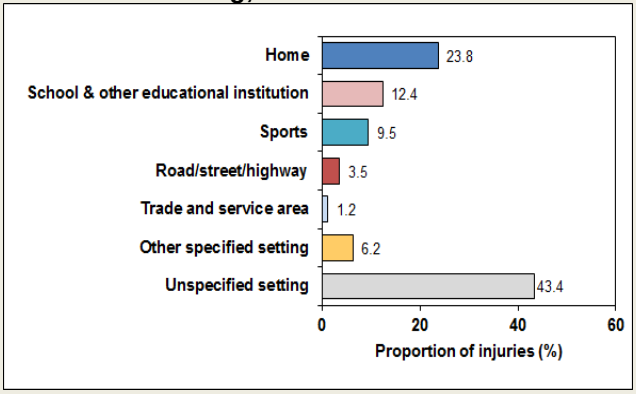
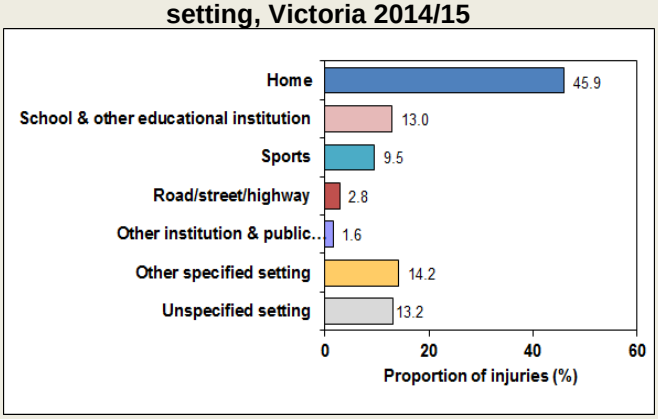


Figure 22: Child injury ED presentations by setting, Victoria 2014/15



Adolescents and young adults (15-24 years)

Trend

- During the 11-year period 2004/05 to 2014/15, there were on average 9,876 injury admissions and 52,038 injury ED presentations per year among adolescents and young adults aged 15-24 years. The average age-standardised injury rates were 1,324 admissions and 7,013 ED presentations per 100,000 adolescents and young adults per year.
- The age-standardised annual rate of **injury admissions** among adolescents and young adults increased by 2.77% per year during the eleven years. The modelled trend in rate showed a statistically significant annual increase of 2.16% [95%CI 1.44 to 2.88%].
- The age-standardised rate of **injury ED presentations** among adolescents and young adults increased by 0.58% per year. The modelled trend in rate showed a non-significant annual *decrease* of -0.07% [95%CI -0.51 to 0.38%].
- The modelled age-specific rates of **injury admissions** among the age groups 15-19 and 20-24 years showed annual increases of 1.8% and 2.5%, respectively (each statistically significant) (age specific rates shown in Figure 23).
- The modelled age-specific rates of **injury ED presentations** among the age groups 15-19 and 20-24 years showed an annual increase of 0.3% (not significant) and a decrease of -0.4% (not significant) respectively (age specific rates shown in Figure 24).

Figure 23: Trend in injury hospital admission rates per 100,000 adolescent & young adults, Victoria 2004/05-2014/15

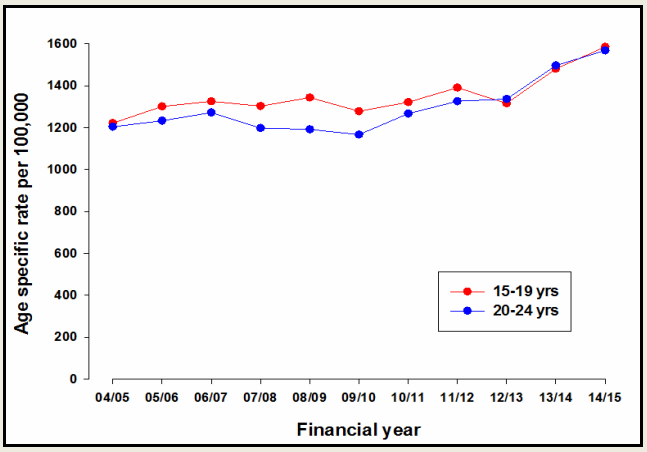
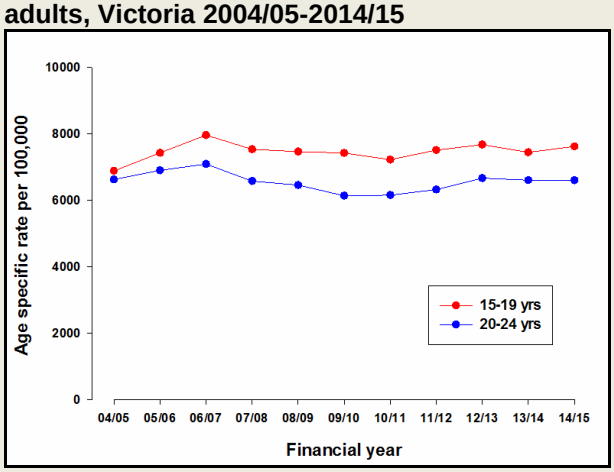


Figure 24: Trend in injury ED presentation rates per 100,000 adolescent & young adults, Victoria 2004/05-2014/15



Hospital treated injury - gender and age

- Males were overrepresented in hospital-treated injury cases among adolescents and young adults, accounting for 74% of hospital admissions (n=9,065) and 67% of ED presentations (n=37,021) in Victoria in 2014/15 (Figure 25 & 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 2014/15

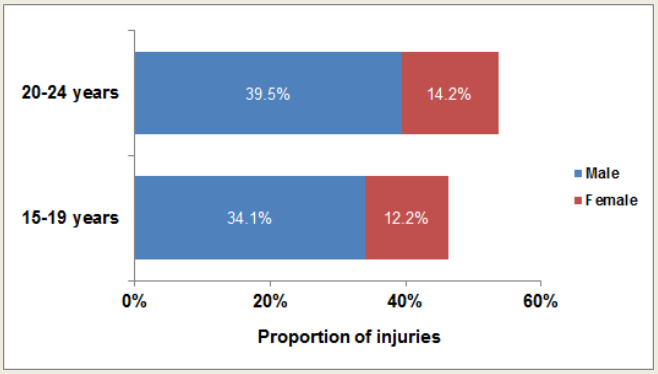
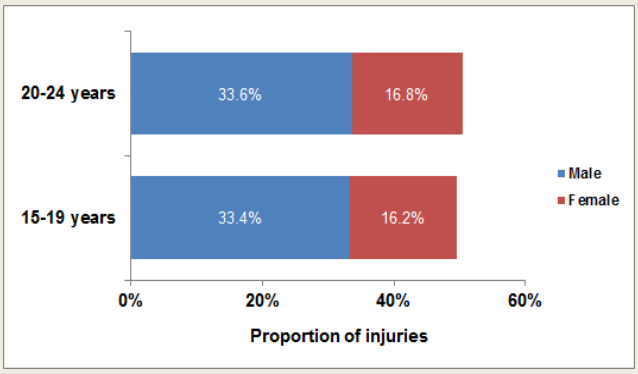


Figure 26: Adolescent and young adult ED presentations by gender and age, Victoria 2014/15



- Among adolescent and young adults, age-specific hospital injury admission and ED presentation rates were higher for males than females: 2,265.0 vs. 853.1/100,000; 9,250.1 vs. 4,779.3 /100,000 (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 hospital injury admissions and ED presentations in adolescents and young adults by gender and age, Victoria 2014/15

Age group	Sex	Hospital admissions		ED presentations	
		n	Rate per 100,000 persons	n	Rate per 100,000 persons
15-19 years	Male	4,200	2,276.5	18,440	9,994.9
	Female	1,499	856.7	8,949	5,114.3
	All	5,699	1,585.4	27,389	7,619.2
20-24 years	Male	4,865	2,255.2	18,581	8,613.2
	Female	1,752	850.0	9,265	4,495.0
	All	6,617	1,568.6	27,846	6,601.0
All	Male	9,065	2,265.0	37,021	9,250.1
	Female	3,251	853.1	18,214	4,779.3
	All	12,316	1,576.3	55,235	7,069.4

Leading causes of injury

- Four of the five leading causes of adolescent and young adult hospital injury admissions and ED presentations were the same although the ranking on frequency of cases was different (Figure 27 & Figure 28).
- Transport was the leading cause of adolescent and young adult hospital admissions (23%, n=2,769) but only accounted for 10% of ED presentations (n=5,408).
- Falls was the second most common cause of hospital admissions (19%, n=2,301), and the leading cause of ED presentations (27%, n=14,919) in this age group.
- Hit/struck/crush injuries accounted for 16% of hospital admissions (n=2,020) and 26% of ED presentations (n=14,099).
- Cutting and piercing injuries accounted for 11% of admissions (n=1,336) and 10% of ED presentations (n=5,379).
- The fifth ranking cause of adolescent and young adult hospital admissions was overexertion and strenuous movements (4%, n=527) whereas for ED presentations it was injuries caused by a foreign body in a natural orifice e.g. ear, nose, eye (3%, n=1,570).

Figure 27: Adolescent and young adult injury hospital admissions by cause, Victoria 2014/15

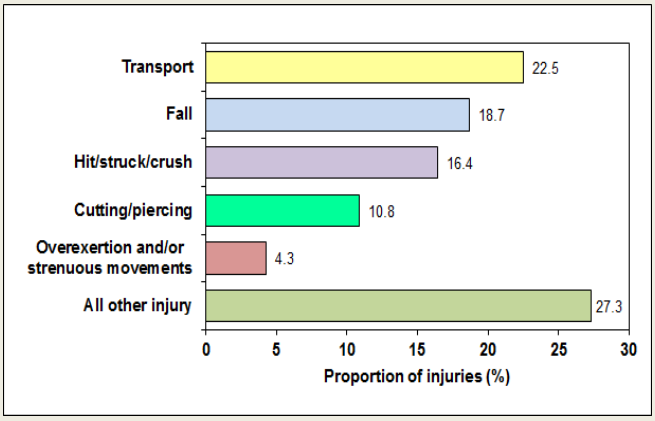
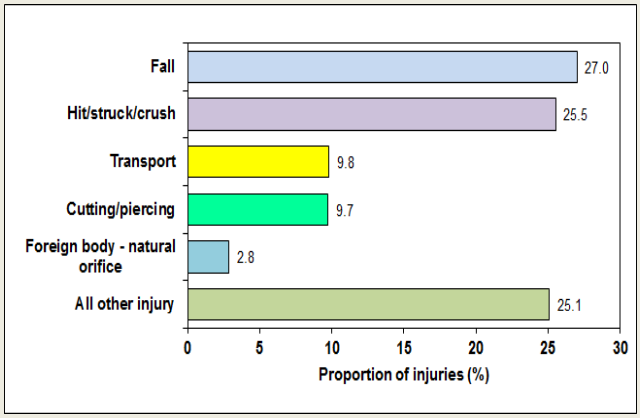


Figure 28: Adolescent and young adult injury ED presentations by cause, Victoria 2014/15



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 & Figure 30 show the five major specific injury types for adolescent and young adult hospital admissions and ED presentations.

- Fracture to the upper limb accounted for 20% (n=2,500) of hospital injury admissions and 10% of ED presentations (n=4,748).
- Fracture to the lower limb (9%, n=1,116) and dislocations, sprains and strains to the lower limb (10%, n=1,184) were common among admissions.
- Dislocations, sprains and strains to the lower limb (15%, n=8,101), and the upper limb (10%, n=5,738) and open wounds to the upper limb (8%, n=4,602) were common among ED presentations.

Figure 29: Major injury type, adolescent and young adult hospital admissions, Victoria 2014/15

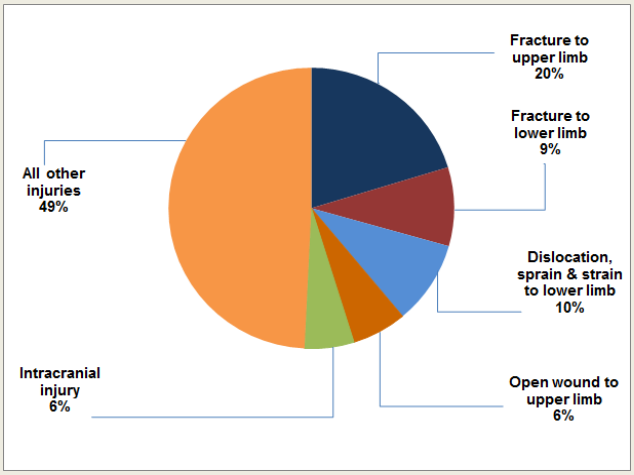
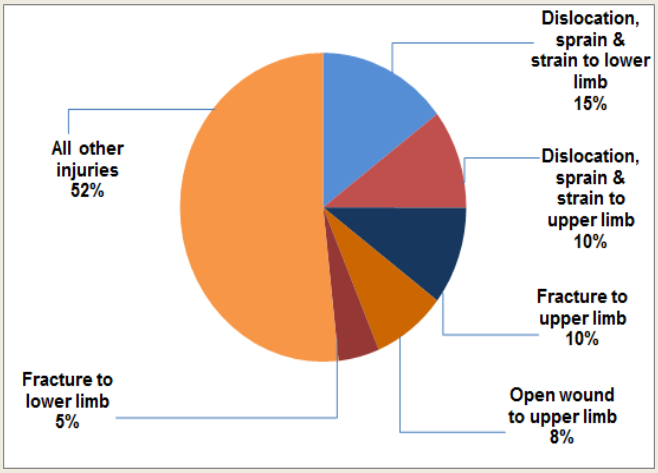


Figure 30: Major injury type, adolescent and young adult ED presentations, Victoria 2014/15



Setting

- Sports (22%, n=2,714) and the road, street and highway (14%, n=1,710) settings were the most common places of occurrence of adolescent and young adult injuries resulting in hospital admission (Figure 31). Other common settings were working for income (10%, n=1,205) and the home (8%, n=960).
- Among ED presentations, the home (24%, n=13,017) and sports settings (21%, n=11,505) were the most common places of injury occurrence (Figure 32). Other common settings were working for income (12%, n=6,375) and road/street and highway (9%, n=4,987).

Figure 31: Adolescent and young adult injury hospital admissions by setting, Victoria 2014/15

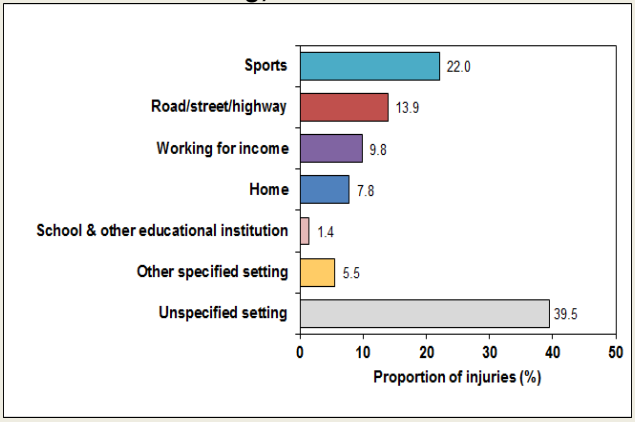
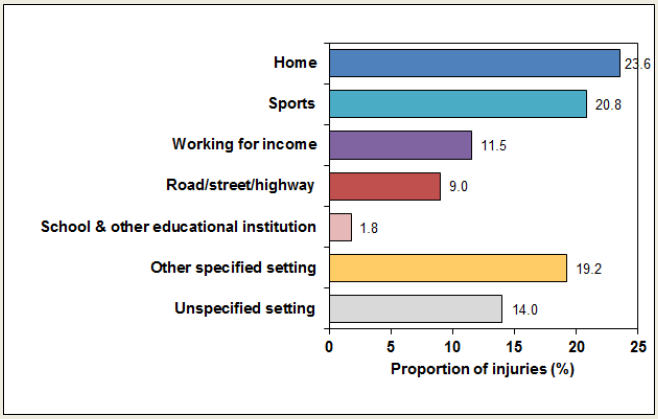


Figure 32: Adolescent and young adult injury ED presentations by setting, Victoria 2014/15



Adults (25-64 years)

Trend

- During the 11-year period 2004/05 to 2014/15, there were on average 28,289 injury admissions and 111,533 injury ED presentations per year among adults aged 25-64 years. The average age-standardised injury rates were 966 admissions and 3,870 ED presentations per 100,000 adults per year.
- The age-standardised annual rate of **injury admissions** among adults increased by 3.69% per year during the eleven years. The modelled trend in rate showed a statistically significant annual increase of 3.38% [95%CI 2.52 to 4.24%].
- The age-standardised rate of **injury ED presentations** among adults increased by 0.68% per year. The modelled trend in rate showed a non-significant annual increase of 0.24% [95%CI -0.31 to 0.79%].
- The modelled age-specific rates of **injury admissions** among the age groups 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, and 60-64 years showed annual increases of 2.2, 2.0, 2.4, 3.7, 4.0, 4.7, 4.1, and 4.4%, respectively (each statistically significant) (age specific rates shown in Figure 33).
- The modelled age-specific rates of **injury ED presentations** showed annual decreases of -0.9% (marginally significant), -1.2% (significant) and -0.5% (not significant), in the age groups 25-29, 30-34, 35-39 years. In the age groups 40-44, 45-49, 50-54, 55-59, and 60-64 years, modelled rates increased statistically significantly by 0.7, 1.1, 1.8, 1.4 and 1.7%, respectively (age specific rates shown in Figure 34).

Figure 33: Trend in injury hospital admission rates per 100,000 adults, Victoria 2004/05-2014/15

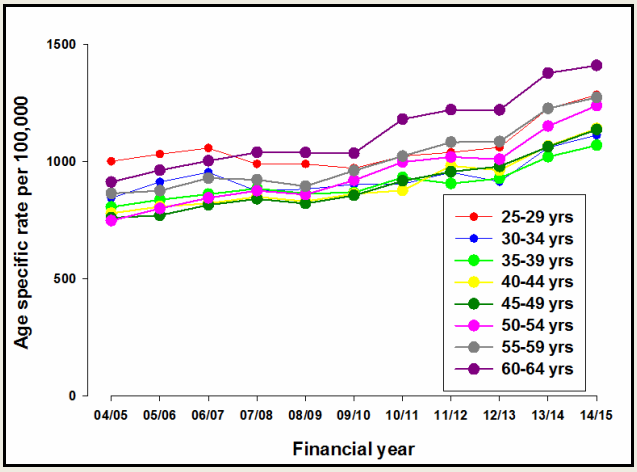
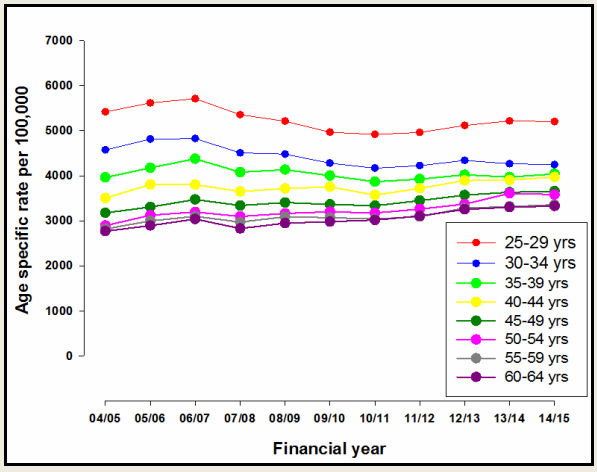


Figure 34: Trend in injury ED presentation rates per 100,000 adults, Victoria 2004/05-2014/15



Hospital treated injury - gender and age

- Males were overrepresented in hospital injury data for adults aged 25 to 64 years, accounting for 63% of hospital admissions (n=23,891) and 61% of ED presentations (n=75,914) in Victoria in 2014/15 (Figure 35 & Figure 36).
- The proportion of injuries was fairly evenly distributed among all age groups for admissions whereas a gradual decrease can be seen with increase in age for ED presentations.

Figure 35: Adult injury hospital admissions by gender and age, Victoria 2014/15

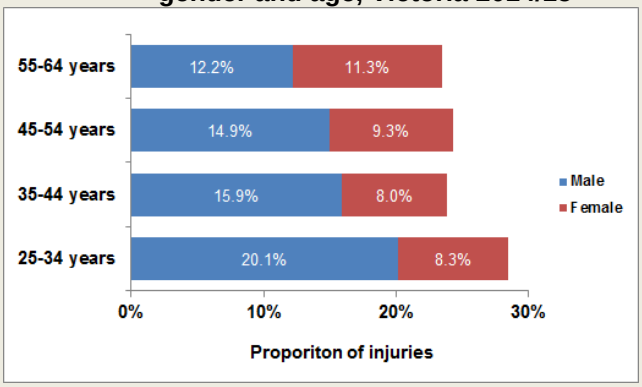
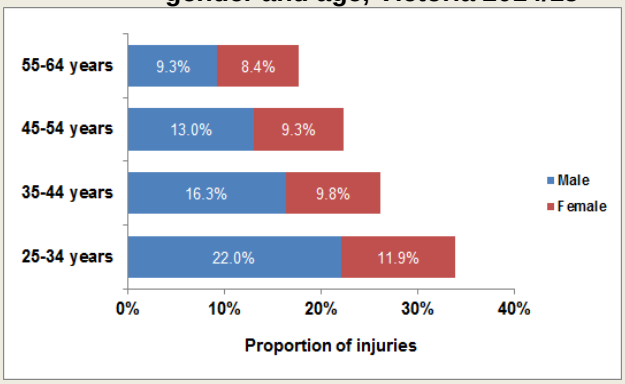


Figure 36: Adult injury ED presentations by gender and age, Victoria 2014/15



- The age-specific hospital injury admission and ED presentation rates were higher for males compared with females: 1,537.7 vs. 874.6 /100,000 adults (admissions) and 4,886.0 vs. 3,090.1 /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 hospital injury admissions and ED presentations in adults by gender and age, Victoria 2014/15

Age group	Sex	Hospital admissions		ED presentations	
		n	Rate per 100,000 persons	n	Rate per 100,000 persons
25-34 years	Male	7,620	1,702.5	27,567	6,159.1
	Female	3,157	700.7	14,879	3,302.5
	All	10,777	1,199.9	42,446	4,726.1
35-44 years	Male	6,000	1,490.6	20,405	5,069.2
	Female	3,020	731.6	12,243	2,965.8
	All	9,020	1,106.3	32,648	4,004.3
45-54 years	Male	5,654	1,489.1	16,341	4,303.8
	Female	3,520	895.7	11,620	2,956.9
	All	9,174	1,187.3	27,961	3,618.8
55-64 years	Male	4,617	1,425.4	11,601	3,581.6
	Female	4,258	1,254.8	10,565	3,113.5
	All	8,875	1,338.2	22,166	3,342.1
All	Male	23,891	1,537.7	75,914	4,886.0
	Female	13,955	874.6	49,307	3,090.1
	All	37,846	1,201.7	125,221	3,976.1

Leading causes of injury

- Four of the five leading causes of adult hospital injury admissions and ED presentations were the same although the ranking on frequency of cases was different (Figure 37 & Figure 38).
- The leading cause of adult hospital admissions and ED presentations was falls accounting for 28% (n=10,732) of hospital admissions and 28% (n=35,091) of ED presentations.
- Transport accounted for 20% of admissions (n=7,463) but only 9% of presentations (n=11,603).
- Cutting and piercing injuries accounted for 11% of admissions (n=4,180) and 12% of ED presentations (n=14,816).
- Hit/struck/crush injuries accounted for just 10% of admissions (n=3,580) but 17% of ED presentations (n=21,701).
- The fifth ranking cause of hospital admissions was overexertion and/or strenuous movements related injury (5%, n=1,745) whereas for ED presentations it was injuries caused by a foreign body in a natural orifice e.g. ear, nose, eye (6%, n=7,098).

Figure 37: Adult injury hospital admissions by cause, Victoria 2014/15

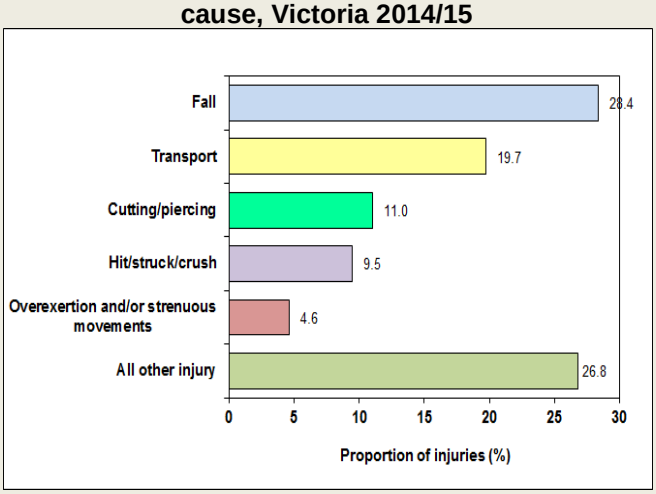
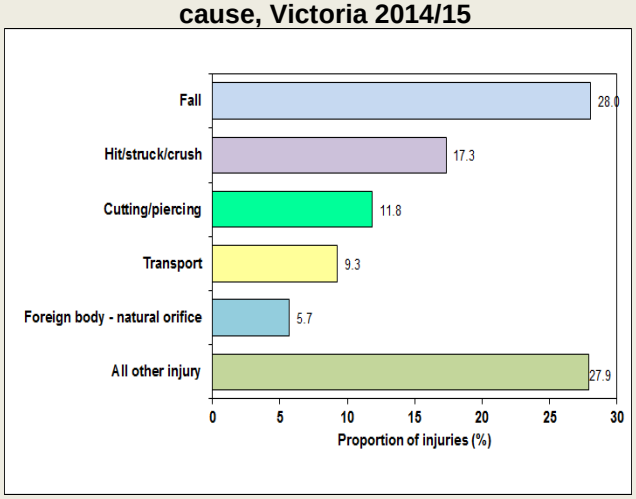


Figure 38: Adult injury ED presentations by cause, Victoria 2014/15



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)

Error! Reference source not found. & Figure 40**Error! Reference source not found.** show the five major specific injury types for adult hospital admissions and ED presentations.

- Fracture to the upper limb accounted for 19% (n=6,982) of adult hospital injury admissions and 9% (n=11,057) of ED presentations.
- Fracture to the lower limb was the second most common type of injury requiring hospital admission (12%, n=4,473) followed by open wound to upper limb (7%, n=2,801) and dislocations, sprains and strains to lower limb and injury to muscle and tendon in upper limb (5% each, n=1,992 & n=1,958).
- Open wounds to the upper limb (10%, n=12,884), dislocations, sprains and strains to the lower limb (10%, n=12,241) and fracture to the upper limb (9%, n=11,057) were the most common types of injury among ED presentations.

Figure 39: Major injury type, adult hospital admissions, Victoria 2014/15

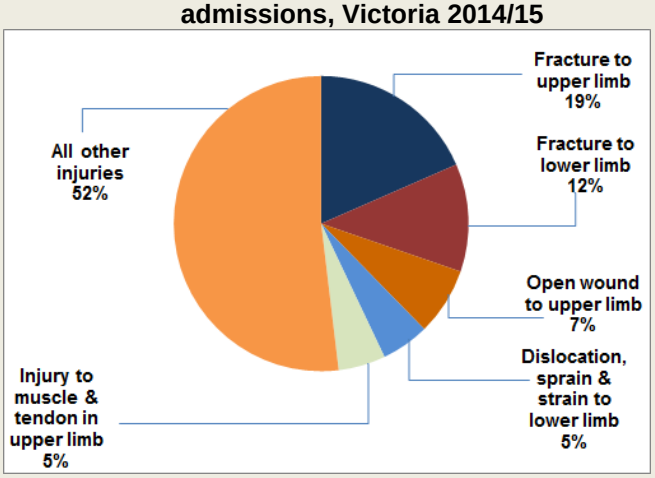
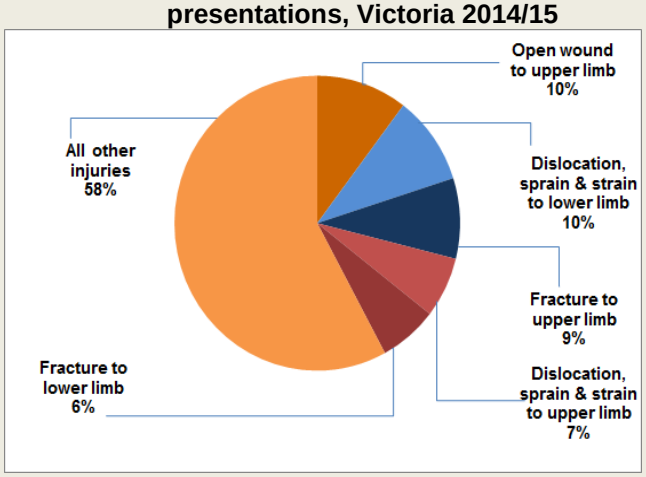


Figure 40: Major injury type, adult ED presentations, Victoria 2014/15



Setting

- Seventeen percent of injuries requiring hospital admission (n=6,539) and 37% of injuries resulting in ED presentation (n=46,657) occurred in the home (Figure 41 & Figure 42).
- Other settings where injuries to adults commonly occurred were:
  - Working for income (13% of admissions (n=4,936) and 15% of ED presentations (n=18,896))
  - Roads, streets and highways (14% of admissions (n=5,465) and 10% of ED presentations (n=12,401))
  - Sports and athletics setting (8% of admissions (n=2,851) and 7% of ED presentations (n=8,164)).

Figure 41: Adult injury hospital admissions by setting, Victoria 2014/15

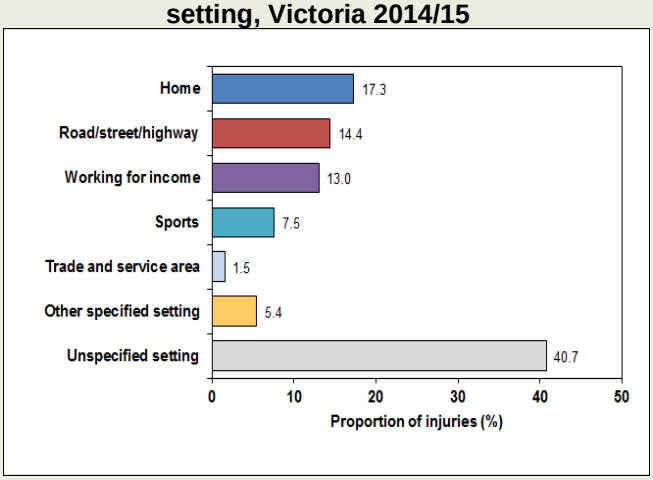
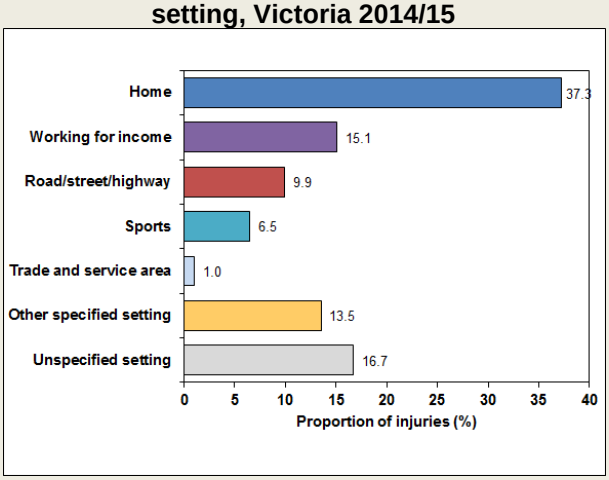


Figure 42: Adult injury ED presentations by setting, Victoria 2014/15



Older adults (65 years and older)

Trend

- During the 11-year period 2004/05 to 2014/15, there were on average 23,855 injury admissions and 34,836 injury ED presentations per year among older adults aged 65 years and above. The average age-standardised injury rates were 3,006 admissions and 4,498 ED presentations per 100,000 older adults per year.
- The age-standardised annual rate of **injury admissions** among older adults increased by 3.54% per year, during the eleven years. The modelled trend in rate showed a statistically significant annual increase of 3.49% [95%CI 3.12 to 3.86%].
- The age-standardised annual rate of **injury ED presentations** among older adults increased by 1.68% per year. The modelled trend in rate showed a statistically significant annual increase of 1.43% [95%CI 1.12 to 1.74%].
- The modelled age-specific rates of **injury admissions** among the age groups 65-69, 70-74, 75-79, 80-84, 85-89, 90-94 and 95+ years showed annual increases of 4.5, 4.0, 3.3, 2.8, 3.4, 2.8 and 3.5%, respectively (each statistically significant) (age specific rates shown in Figure 43).
- The modelled age-specific rates of **injury ED presentations** among the age groups 65-69, 70-74, 75-79, 80-84 and 85-89 years showed significant annual increases of 1.6, 1.6, 1.4, 1.5, and 1.4%, respectively. In the 90-94 and 95+ age groups, the average annual increases of 0.4 and 0.1% (respectively) were not statistically significant (age specific rates shown in Figure 44).

Figure 43: Trend in injury hospital admission rates per 100,000 older adults, Victoria 2004/05-2014/15

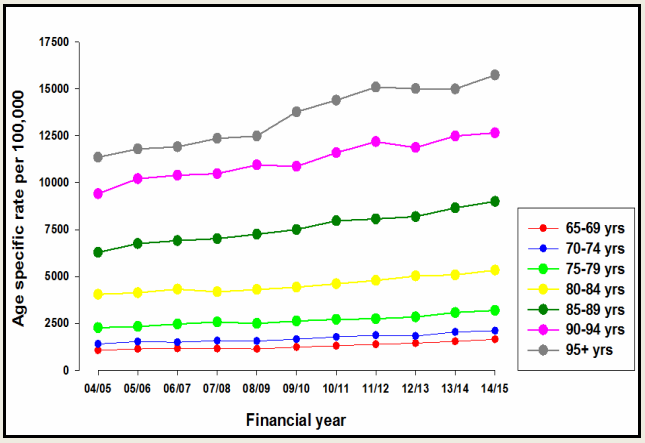
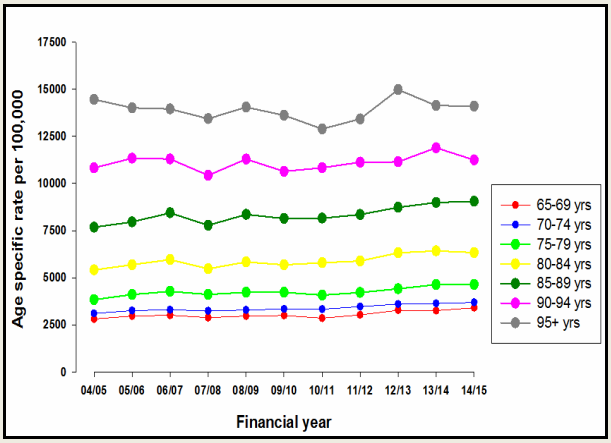


Figure 44: Trend in injury ED presentation rates per 100,000 older adults, Victoria 2004/05-2014/15



Hospital treated injury - gender and age

- Females were overrepresented in hospital injury data for persons aged 65 years and older. They accounted for 65% of hospital admissions (n=21,193) and 58% of ED presentations (n=25,465) in Victoria in 2014/15 (Figure 45 & Figure 46).
- The highest proportion of admissions to hospital occurred among those aged 75-84 and 85-94 years. Persons from the 65-74 group accounted for most of the ED presentations, then the number of ED presentations declined with increasing age beyond 75 years.

Figure 45: Older adult injury hospital admissions by gender and age, Victoria 2014/15

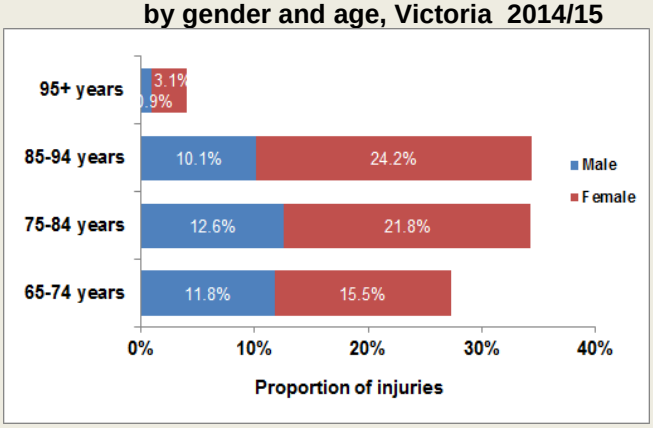
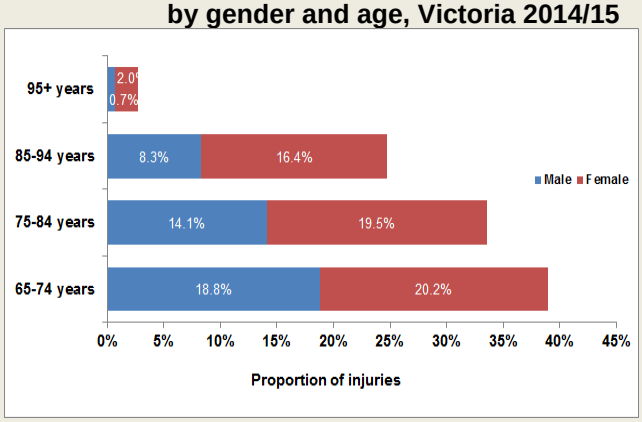


Figure 46: Older adult injury ED presentations by gender and age, Victoria 2014/15



- The age-specific rate of hospital injury admission and ED presentation was higher for females than males: 4,469.7 vs. 2,873.5 /100,000 persons (admissions) and 5,370.7 vs. 4,536.3 /100,000 persons (presentations) (Table 10).
- The rate of admissions and ED presentations increased with increasing age.

Table 10: Frequency and age-specific rate of older adult injury hospital admissions and ED presentations by gender and age, Victoria 2014/15

Age group	Sex	Hospital admissions		ED presentations	
		n	Rate per 100,000 persons	n	Rate per 100,000 persons
65-74 years	Male	3,855	1,640.2	8,224	3,499.0
	Female	5,092	2,047.1	8,836	3,552.2
	All	8,947	1,849.4	17,060	3,526.4
75-84 years	Male	4,116	3,298.7	6,164	4,940.1
	Female	7,144	4,781.0	8,540	5,715.3
	All	11,260	4,106.5	14,704	5,362.5
85-94 years	Male	3,325	7,971.1	3,633	8,709.5
	Female	7,940	11,380.2	7,197	10,315.3
	All	11,265	10,104.7	10,830	9,714.5
95+	Male	305	13,901.5	293	13,354.6
	Female	1,017	16,384.7	892	14,370.9
	All	1,322	15,736.2	1,185	14,105.5
All	Male	11,601	2,873.5	18,314	4,536.3
	Female	21,193	4,469.7	25,465	5,370.7
	All	32,794	3,735.6	43,779	4,987.0

Leading causes of injury

- The leading cause of hospital injury admissions and ED presentations for older adults was falls. Falls accounted for more than three-quarters of hospital admissions (77%, n=25,354) and more than half of ED presentations (62%, n=26,966) in this age group (Figure 47 & Figure 48).
- Transport was the second most common cause of hospital admission (5%, n=1,699) and the cause of 4% of presentations (n=1,715). The second most common cause for ED presentations in this age group was hit/struck/crush (6%, n=2,681).
- The third leading cause of admissions was hit/struck/crush (2%, n=773) whereas for ED presentations it was cutting and piercing (5%, n=2,086).
- Overexertion and/or strenuous movements and cutting and piercing each accounted for 2% of admissions (n=773 & 646) while injuries caused by a foreign body in a natural orifice e.g. ear, nose, eye accounted for 3% (n=1,091) of ED presentations.

Figure 47: Older adult injury hospital admissions by cause, Victoria 2014/15

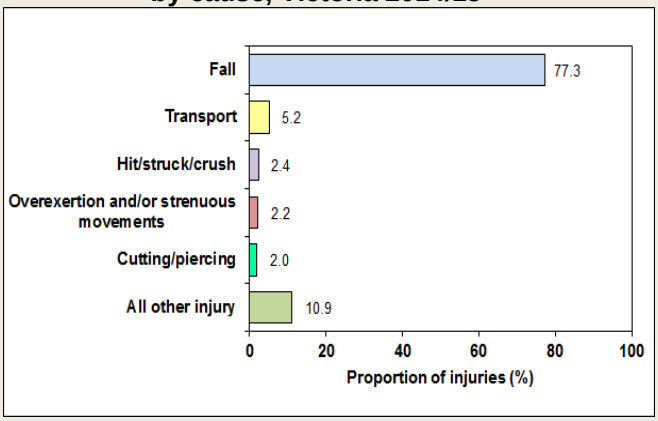
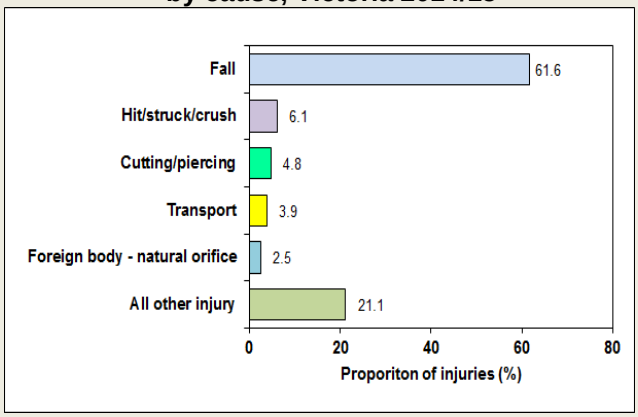


Figure 48: Older adult injury ED presentations by cause, Victoria 2014/15



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 & Figure 50 show the five major specific injury types for older adult hospital admissions and ED presentations.

- Fracture to the lower limb accounted for 22% of hospital injury admissions (n=7,238) and 14% (n=5,856) of ED presentations.
- Fracture to the upper limb accounted for 13% (n=4,435) of hospital admissions and 11% (n=4,649) of ED presentations. Fractures to the trunk were also common among hospital admissions (12%, n=3,879).
- Open wounds to the head/face/neck accounted for 7% (n=2,183) of hospital admissions and 8% (n=2,774) of ED presentations.
- Dislocations, sprains and strains to the lower limb (6%, n=2,674) and open wound to upper limb (5%, n=2,353) were also common among ED presentations.

Figure 49: Major injury type, older adult hospital admissions, Victoria 2014/15

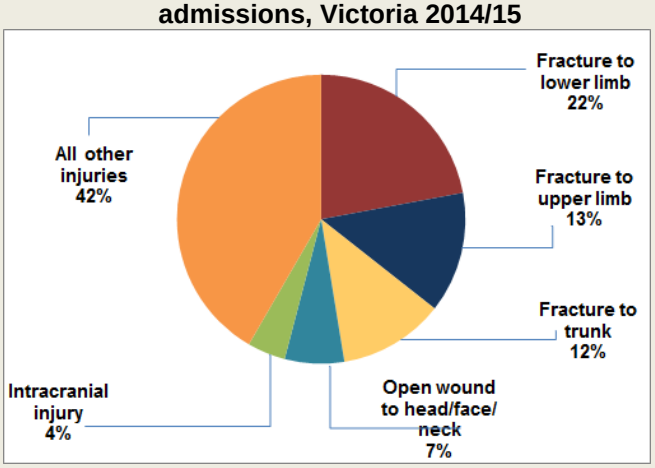
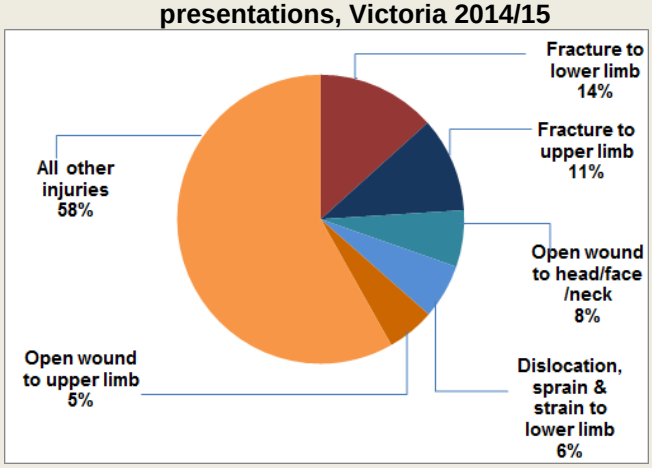


Figure 50: Major injury type, older adult ED presentations, Victoria 2014/15



Setting

- Around 43% of older adult injuries requiring hospital admission (n=14,007) and more than half of injuries resulting in ED presentations (54%, n=23,777) occurred in the home (Figure 51 & Figure 52).
- Other settings where injuries to older adults commonly occurred were:
  - Residential institutions (17% of admissions (n=5,492) and 8% of ED presentations (n=3,275))
  - Trade and service areas (3% of admissions (n=1,001))
  - Roads, streets and highways (8% of admissions (n=2,449) and 8% of ED presentations (n=3,381)).

Figure 51: Older adult injury hospital admissions by setting, Victoria 2014/15

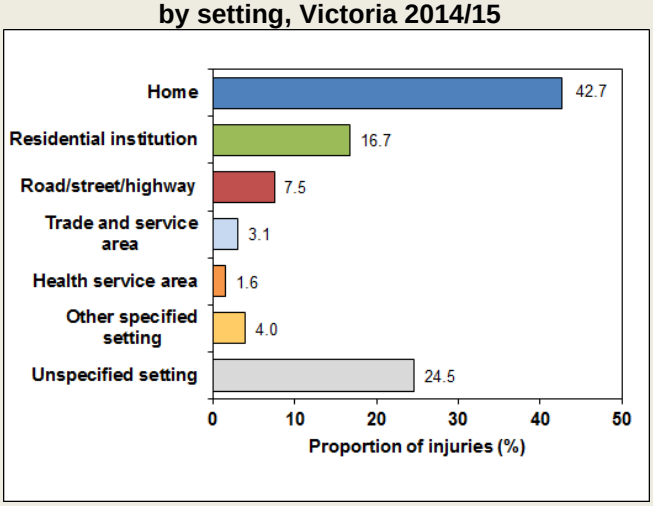
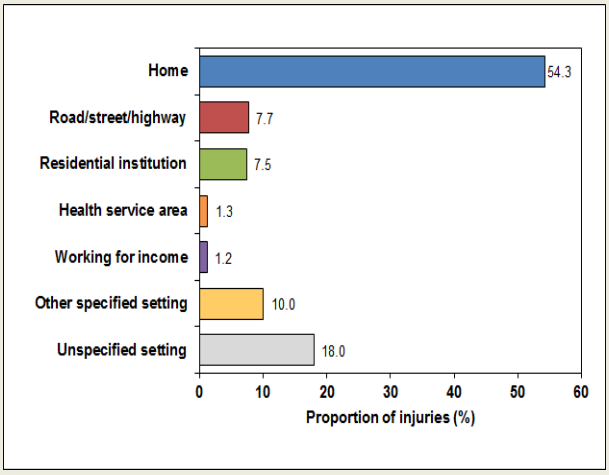


Figure 52: Older adult injury ED presentations by setting, Victoria 2014/15



Appendix 1

VISU definitions

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.

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.

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.

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: Settings definition 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 & 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, cafes/hotels/restaurants, airports, bus/radio/railway/television stations.
(8) 'School & other educational institution' includes injuries occurring in boarding/residential schools, colleges, day nurseries, institutes for higher education/universities, kindergartens.
(9) "Other institution & 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, wilderness.
(12) 'Other specified location' includes injuries occurring in campsites, public place NOS, park NOS, railway line, zoo, parking lot, town camps.
(13) '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 & 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 & Langley J. (2007). Improving the predictive ability of ICD-based injury severity score. Injury Prevention. 14:250-5.
Osler T, Rutledge R, Deis J & 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 & 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 & 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.

Appendix 2

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 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, sex, 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):

- Victorian hospital admissions recorded on the VAED occurring 1 July 2014 to 30 June 2015, coded according to the 8th edition of ICD-10–AM (NCCH, July 2013).
- 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).
- 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.
- VAED cases recorded as not having spent the entire episode in the ED (see Box 2).

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 an 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, 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). Z509 cases were only included if one of the above injury diagnosis codes was also coded in the patient's hospital record.

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' (AIHW 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 and T79). Other injuries occur in the context of surgical and medical care, where they are often referred to as complications – these are not included in this report.

Box 3: Change to 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.

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 39.

Emergency Department presentations for injury are extracted from the VEMD by the Victorian DHHS and are now 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 19th 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 commences (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 were treated entirely within the ED for longer than 4 hours were not considered as admissions (see Box 3).

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

The VEMD data items held by VISU include:

2.1.1 Demographic/administrative items

- **Age, sex, postcode, suburb and local government area of residence**
- **Country of birth, preferred language spoken at home**
- **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 2014 to 30 June 2015 coded according to the Victorian Emergency Minimum Dataset (VEMD) User Manual 19th edition.
- Cases coded as unintentional injury (VEMD human intent=1).
- Incident cases (excludes return visits and pre-arranged visits).