MONASH University
Injury Research Institute

Victorian Injury Surveillance Unit

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UNINTENTIONAL (ACCIDENTAL) HOSPITAL-TREATED INJURY

VICTORIA

2013/14

State Government Victoria Department of Health

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Contents

Unintentional (accidental) hospital-treated injury in Victoria 2013/14

This is the eleventh 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 2013/14 utilising two injury surveillance datasets that separately record hospital admissions and Emergency Department (ED) presentations for injury.

The format of this edition remains the same as the previous (10th) edition but differs from the ones prior to that. Caution should be exercised when interpreting trends as the Victorian hospital admission policy changed in July 2012 (see Box 1).

Box 1: 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 4 hours or more. This has had the effect of reducing the number of admissions recorded on the VAED for the 2012/13 financial year. For this reason VISU suggests caution should be exercised when interpreting potential changes in the number of hospital admissions in 2012/13 and beyond compared with previous years. Trend analysis in this report is only presented for hospital admissions that separate on a date after the admission date (non-same day admissions) as these admissions are less likely to be influenced by the change in admission policy.

Summary results

Overall there were 404,231 hospital-treated injury cases in Victoria in 2013/14 (excluding complications of surgical and medical care, adverse effects of drugs in therapeutic use and late effects of injury), 84.6% of which were unintentional (n=342,144).

All ages

- More than 340,000 Victorians (6 in every 100) were treated in hospital for unintentional injury during 2013/14 (99,395 admissions and 242,749 ED presentations).
- Results of trend analysis throughout this report are only presented for non-same day hospital admissions (those that separate on a date after the admission date) as these admissions are less likely to be influenced by the change in admission policy described in Box 1. The frequency and rate per 100,000 population of unintentional injury hospital admissions (non-same day only) increased significantly over the 16-year period 1998/99-2013/14 by 50.6% and 8.8% respectively.
- Trend analysis for ED presentations is restricted to the 10-year period 2004/05-2013/14 as the hospitals contributing to the collection have largely been consistent since 2004. The frequency of unintentional injury ED presentations increased by 18.5% over the period 2004/05-2013/14 while the rate per 100,000 population remained fairly stable.
- Males were overrepresented accounting for 58% of all hospital-treated injury cases (54% of admissions and 59% of ED presentations).

- Falls were the leading cause of injury for admissions and ED presentations accounting for 38% of all hospital-treated injury cases, followed by hit/struck/crush (17%), cutting and piercing (8%) and transport (7%).

- The home was the most common setting for injury (24% of hospital admissions and 39% of ED presentations).

- Fracture to upper limb was the most common injury for both admissions and ED presentations (17% and 11%).

Children (0-14 years)

- 86,766 Victorian children (8 in every 100) were treated in hospital for unintentional injury during 2013/14 (11,922 admissions and 74,844 ED presentations).

- The frequency and rate per 100,000 population of unintentional injury hospital admissions (non-same day only) decreased significantly over the 16-year period 1998/99-2013/14 by 18.1% and 25.5%, respectively.

- In contrast to the trend among hospital admissions, the frequency of child unintentional injury ED presentations increased by 24% over the 10-year period 2004/05-2013/14 while the rate per 100,000 population increased by 11.3%.

- Males were overrepresented accounting for 58% of all hospital-treated injury cases (61% of admissions and 57% of ED presentations).

- Falls were the leading cause of hospital-treated injury (47%) followed by hit/struck/crush incidents (21%).

- Twenty-two 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 (13% of admissions and 13% of ED presentations) and sports and athletics areas (8% each of both admissions and ED presentations).

- Fracture to upper limb was the most common injury for both the admissions and ED presentations (32% and 16%, respectively) among children.

Adolescents and young adults (15-24 years)

- More than 57,000 Victorian adolescents and young adults (around 8 in every 100) were treated in hospital for unintentional injury during 2013/14 (11,545 admissions and 46,341 ED presentations).

- The frequency of unintentional injury hospital admissions (non-same day only) and ED presentations both increased significantly (hospital admissions by 20.4% over the 16-year period 1998/99-2013/14; ED presentations by 11.3% over the 10-year period 2004/05-2013/14). In contrast unintentional injury hospital admission and ED presentation population rates remained fairly stable.

- Males were overrepresented accounting for 68% of all hospital-treated injury cases (72% of admissions and 67% of ED presentations).

- Falls accounted for 18% of admissions and 27% of ED presentations. Hit/struck/crush also accounted for 27% of ED presentations and 16% of hospital admissions. Transport accounted for 21% of admissions but only 8% of ED presentations. Cutting & piercing injuries accounted for around 10% of both admissions and ED presentations.

- Sports and athletics areas (19%) 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 (20%) were the leading settings for injuries resulting in ED presentation.

- Fracture to upper limb was the most common injury among adolescent hospital admissions (20%) while dislocation, sprain & strain to lower limb was the more common reason for ED presentations (16%).

Adults (25-64 years)

- Around 137,000 Victorian adults (around 4 in every 100) were treated in hospital for unintentional injury during 2013/14 (38,238 admissions and 99,626 ED presentations).

- The frequency and rate of unintentional injury hospital admissions (non-same day only) increased significantly over the 16-year period 1998/99-2013/14 by 57.3% and 20.8% respectively.

- The frequency of unintentional injury ED presentations increased by 14.8% over the period 2004/05-2013/14 while the rate per 100,000 population remained fairly stable.

- Males were overrepresented accounting for 61% of all hospital-treated injury cases (62% of admissions and 60% of ED presentations).

- The leading cause of adult hospital-treated injury was falls: 28% of hospital admissions and 27% of ED presentations. Other major causes were hit/struck/crush (9% of admissions and 19% of ED presentations), cutting and piercing (11% of admissions and 13% of ED presentations) and transport (18% of admissions and 7% of ED presentations).

- Seventeen percent of hospital admissions and 38% of ED presentations were for injuries that occurred in the home. Other major settings for injury were: working for income (13% of admissions and 16% of ED presentations) and road/street/highway (13% of admissions and 9% of ED presentations).

- Fracture to upper limb was the most common injury among adult hospital admissions (16%) while dislocation, sprain & strain to lower limb was the more common reason for ED presentations (12%).

Older adults (65 years and older)

- More than 59,000 Victorian older adults (7 in every 100) were treated in hospital for unintentional injury during 2013/14 (37,690 admissions and 21,938 ED presentations).

- The frequency and rate of unintentional injury hospital admissions (non-same day only) increased significantly over the 16-year period 1998/99-2013/14 by 94.3% and 21.8%, respectively.

- The frequency of unintentional injury ED presentations increased by 37.4% over the period 2004/05-2013/14 while the rate per 100,000 population remained fairly stable.

- Females were overrepresented accounting for 59% of all hospital-treated injury cases (62% of admissions and 55% of ED presentations).

- Falls accounted for almost three-quarters of hospital admissions (71%) and more than half of ED presentations (53%) in this age group.

- Thirty-eight 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 (14% of admissions and 6% of ED presentations), health service areas (8% of admissions) and the road/street/highway (6% of admissions and 7% of ED presentations).

- Fracture to lower limb was the most common injury among older adult hospital admissions (17%) while fracture to upper limb was the more common reason for ED presentations (11%).

Table 1: Summary results

	All	Child (0-14 years)	Adolescent (15-24 years)	Adults (25-64 years)	Older adults (65+ years)
Total hospital treated	342,144	86,766	57,886	137,864	59,628
n in every 100	6	8	8	4	7
% of all serious injury cases	n/a	0.9	2.9	13.3	82.9
Admissions					
n	99,395	11,922	11,545	38,238	37,690
Rate/100,000	1,731.8	1,134.1	1,496.6	1,242.4	4,492.3
Trend frequency (% change)	50.6	18.1	20.4	57.3	94.3
Trend rate (% change)	8.8	25.5	stable	20.8	21.8
% males	54.0	61.3	71.9	61.9	38.3
Leading cause (%)	Falls (45.4)	Falls (47.3)	Transport (21.2)	Falls (27.6)	Falls (71.1)
Most common setting (%)	Home (24.4)	Home (21.5)	Sports (19.0)	Home (16.8)	Home (38.3)
Most common injury (%)	Fracture upper limb (16.5)	Fracture upper limb (31.7)	Fracture upper limb (19.5)	Fracture upper limb (16.3)	Fracture lower limb (17.3)
ED presentations					
n	242,749	74,844	46,341	99,626	21,938
Rate/100,000	4,229.6	7,119.8	6,007.5	3,237.0	2,614.8
Trend frequency (% change)	18.5	24.0	11.3	14.8	37.4
Trend rate (% change)	stable	11.3	stable	stable	stable
% males	59.2	57.3	66.9	60.2	44.6
Leading cause (%)	Falls (35.3)	Falls (46.4)	Falls (27.4)	Falls (26.7)	Falls (53.4)
Most common setting (%)	Home (39.3)	Home (45.9)	Home (24.0)	Home (37.8)	Home (55.6)
Most common injury (%)	Fracture to upper limb (11.3)	Fracture upper limb (15.9)	Dislocation, sprain & strain to lower limb (16.0)	Dislocation, sprain & strain to lower limb (11.5)	Fracture upper limb (10.9)

Notes:

1) Red highlighted cells represent an increase, while blue represents a decrease and yellow represents no significant change.
2) 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 2 in Appendix). Note: Previously, VISU calculated injury severity scores using a standard set of Australian survival risk ratios published in 2003 (Stephenson et al., 2003) and by using all injury diagnoses in a patient's record. For this edition the severity scores have been calculated using Victorian-specific data, only the injury with the highest 'threat-to-life' and they have been adjusted for age (Clapperton et.al, 2014). See Box 2 for additional detail.
3) Percentage of serious injuries is based solely on hospital admissions as this measure is not available with the ED presentation data.

Introduction

This E-bulletin provides information on unintentional hospital-treated injury in 2013/14. Overall there were 404,231 hospital-treated injury cases in Victoria in 2013/14 (excluding complications of surgical and medical care, adverse effects of drugs in therapeutic use and late effects of injury), 84.6% of which were unintentional (n=342,144). The remaining injury cases were either intentional i.e. self-harm or assault (4.3%, n=17,464) or of other or undetermined intent (11.0%, n=44,623).

Method

Data selection

Hospital admissions data was extracted from the Victorian Admitted Episodes Dataset (VAED) and ED presentations 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].

Data were selected if the admission (VAED) or presentation (VEMD) date occurred in the financial year 2013/14, if the injury was unintentional (VAED external cause code in the range V00-X59, VEMD human intent=1) and the injured person was Victorian. Transfers within and between hospitals were excluded from the hospital admissions data and injuries that occurred in the context of medical and surgical care (often referred to as complications) were excluded from both datasets. Deaths were excluded from the hospital admissions and ED presentations datasets as injury deaths are covered in separate E-Bulletins. ED presentations that resulted in admission have been excluded from the ED presentations dataset to avoid double counting with the hospital admissions data provided in this edition. Trend data are reported only for cases that have an injury as the principal diagnosis and for admissions for more than one day i.e., excluding same day admissions. The exclusion of same day admissions minimises the influence of admission policy changes across time and between hospitals (see Box 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+) have been selected to match those in the *National Injury Prevention and Safety Promotion Plan: 2004 - 2014* (NIPSPP Plan).

Rates and trends analysis

Rates per 100,000 population have been calculated for the 16-year period 1998/99-2013/14 for hospital admissions data (VAED) and for the 10-year period 2004/05-2013/14 for ED presentations data (VEMD)[2]. The denominators used for calculating rates from 1998/99 – 2012/13 were December population estimates while the 2013/14 rates are based on 2013 June population estimates from the Australian Bureau of Statistics. Rates for trends sections have been age-standardised using 5-year age groups and the direct method. The standard population used was the Victorian resident population at 30 June, 2001.

Trends were determined using a log-linear regression model of the rate data assuming a Poisson distribution of injuries. The statistics relating to the trend curves, slope and intercept, estimated annual percentage change, estimated overall change, 95% confidence intervals around these estimated changes and the p-values, were calculated using the regression model in SAS® 9.2 . A trend was considered to be statistically significant if the p-value of the slope of the regression model was less than 0.05.

For further discussion of data sources and issues refer to Appendix 1 (page 38).

[1] Currently 39 hospitals as Bass Coast Regional Health was added in July 2011

[2] The shorter time period has been selected for ED presentations as the number of hospitals contributing to the VEMD has largely been consistent since 2004/05.

All ages

Table 2 provides an overview of unintentional hospital-treated injury in Victoria during 2013/14. Overall, there were more than 340,000 hospital treated injuries recorded in this period (99,395 admissions and 242,749 ED presentations) giving a rate of 5,961.4 hospital-treated injury cases per 100,000 Victorians.

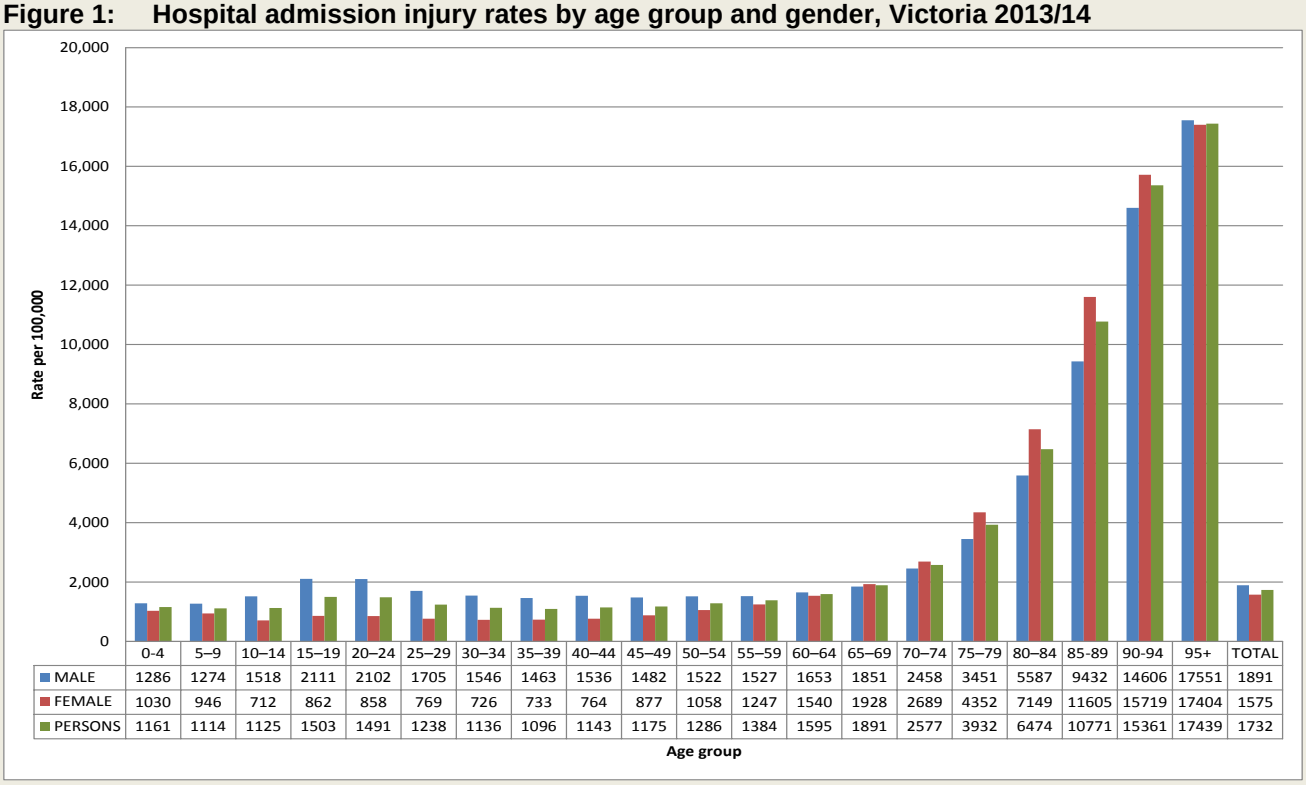
- The hospital admission rate was highest in older adults (4,229.6 per 100,000 persons) and lowest in children (1,134.1 per 100,000 persons).
- The ED presentation rate was highest in children (7,119.8/100,000) and lowest in older adults (2,614.8/100,000).
- Children have the highest overall hospital-treated injury rate (admissions and ED presentations combined, 8,254/100,000), followed by adolescents and young adults (7,504.1/100,000) and older adults (7,107.1/100,000). Adults aged 25-64 years have the lowest hospital-treated injury rate (4,479.4/100,000).

Table 2: Hospital treated injury frequency and rates by broad age group, Victoria 2013/14

	Children 0-14 years		Adolescents and young adults 15-24 years		Adults 25-64 years		Older adults 65+ years		ALL	
	n	Rate / 100,000	n	Rate / 100,000	n	Rate / 100,000	n	Rate / 100,000	n	Rate / 100,000
Admissions	11,922	1,134.1	11,545	1,496.6	38,238	1,242.4	37,690	4,492.3	99,395	1,731.8
ED presentations	74,844	7,119.8	46,341	6,007.5	99,626	3,237.0	21,938	2,614.8	242,749	4,229.6
Hospital-treated	86,766	8,254.0	57,886	7,504.1	137,864	4,479.4	59,628	7,107.1	342,144	5,961.4

Figure 1 shows hospital admission injury rates by age and gender for Victoria in 2013/14. Age-specific injury hospital admission rates rose after childhood, were higher in adolescents and young adults than in adults and peaked in older adults. The overall male age-specific injury hospital admission rate was higher than the female rate in all 5-year age groups to age 65 years.

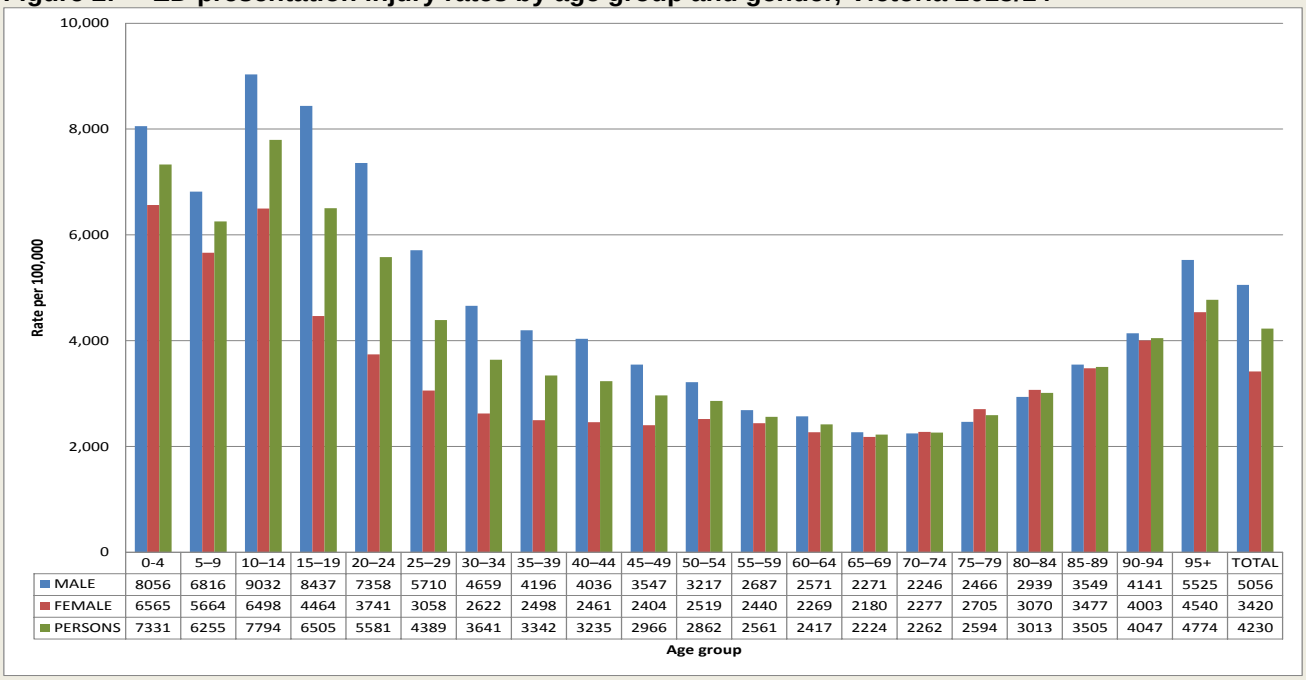
Figure 1: Hospital admission injury rates by age group and gender, Victoria 2013/14



	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	1286	1274	1518	2111	2102	1705	1546	1463	1536	1482	1522	1527	1653	1851	2458	3451	5587	9432	14606	17551	1891
FEMALE	1030	946	712	862	858	769	726	733	764	877	1058	1247	1540	1928	2689	4352	7149	11605	15719	17404	1575
PERSONS	1161	1114	1125	1503	1491	1238	1136	1096	1143	1175	1286	1384	1595	1891	2577	3932	6474	10771	15361	17439	1732

Figure 2 shows ED presentation injury rates by age and gender for Victoria in 2013/14. 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 75 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 to age 70 years.

Figure 2: ED presentation injury rates by age group and gender, Victoria 2013/14

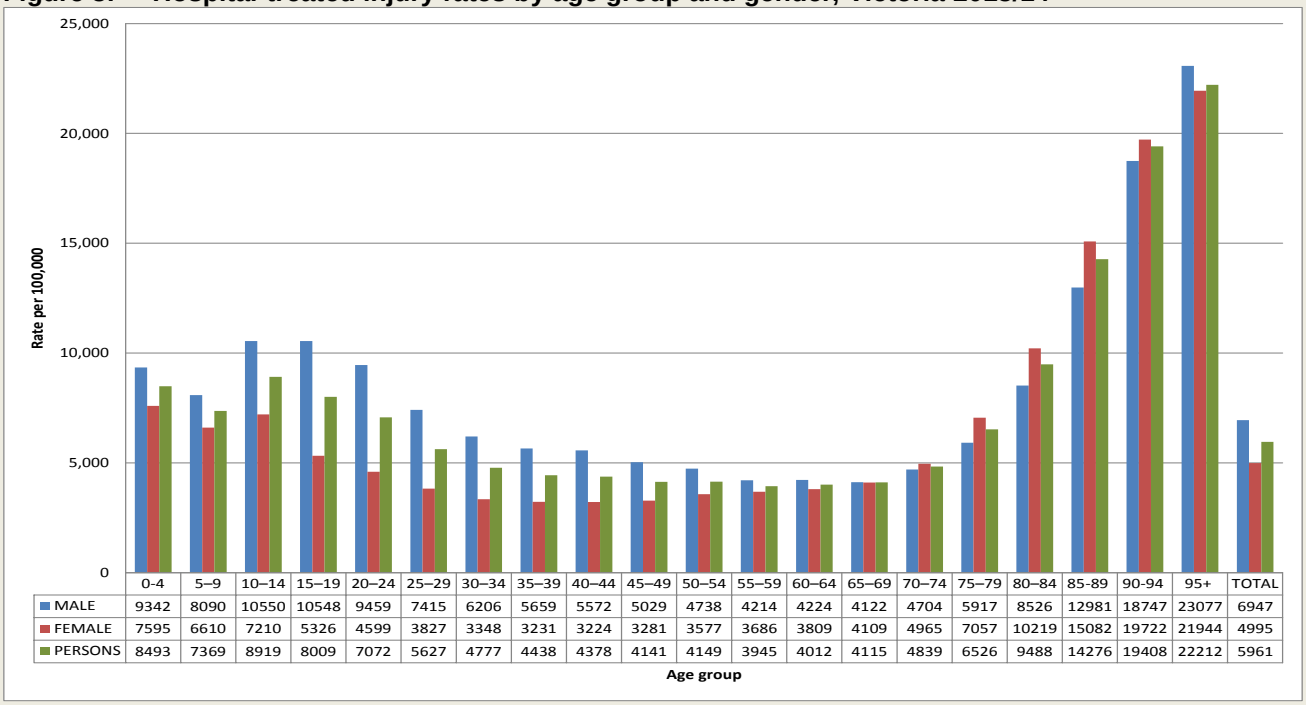


	0-4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85-89	90-94	95+	TOTAL
MALE	8056	6816	9032	8437	7358	5710	4659	4196	4036	3547	3217	2687	2571	2271	2246	2466	2939	3549	4141	5525	5056
FEMALE	6565	5664	6498	4464	3741	3058	2622	2498	2461	2404	2519	2440	2269	2180	2277	2705	3070	3477	4003	4540	3420
PERSONS	7331	6255	7794	6505	5581	4389	3641	3342	3235	2966	2862	2561	2417	2224	2262	2594	3013	3505	4047	4774	4230

Age group

Figure 3 shows hospital-treated injury rates (admissions and ED presentations combined) by age and gender for Victoria in 2013/14. Age-specific hospital-treated injury rates were highest among persons aged 80 years and older and high among children, adolescents and young adults (0-24 years). The overall male age-specific hospital-treated injury rate was higher than the female rate in all 5-year age groups to age 65 years.

Figure 3: Hospital-treated injury rates by age group and gender, Victoria 2013/14



	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	9342	8090	10550	10548	9459	7415	6206	5659	5572	5029	4738	4214	4224	4122	4704	5917	8526	12981	18747	23077	6947
FEMALE	7595	6610	7210	5326	4599	3827	3348	3231	3224	3281	3577	3686	3809	4109	4965	7057	10219	15082	19722	21944	4995
PERSONS	8493	7369	8919	8009	7072	5627	4777	4438	4378	4141	4149	3945	4012	4115	4839	6526	9488	14276	19408	22212	5961

Age group

Table 3 provides an overview of the severity of unintentional injury hospital admissions by age group. Serious injuries are defined using the International Classification of Disease based Injury Severity Score (ICISS) which reflects threat to life *(see Box 2 in Appendix).*

- Adults aged 25-64 years and older adults aged 65+ each accounted for around 40% of unintentional injury hospital admissions in 2013/14, while children (0-14 years) and adolescents & young adults (15-24 years) each accounted for around 12% of injury admissions.
- More than three quarters of serious injury admission occurred among those aged 65 years and older (82.9%, 11,555 serious injuries). Adults 65 years and older also accounted for the majority of hospital bed-days (70.7%, 553,092 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 (67.3% and 54.6%, respectively).

Table 3: Unintentional injury hospital admissions by age group – frequency, serious injuries and hospital bed days (2013/14)

	Frequency		Serious injuries		Hospital bed-days	
	n	%	n	%	n	%
0-4	4,285	4.3	49	0.4	7,662	1.0
5-9	3,896	3.9	26	0.2	6,052	0.8
10-14	3,741	3.8	48	0.3	6,180	0.8
0-14	**11,922**	**12.0**	**123**	**0.9**	**19,894**	**2.5**
15-19	5,349	5.4	180	1.3	13,002	1.7
20-24	6,196	6.2	226	1.6	17,010	2.2
15-24	**11,545**	**11.6**	**406**	**2.9**	**30,012**	**3.8**
25-34	10,309	10.4	376	2.7	30,185	3.9
35-44	9,072	9.1	420	3.0	34,239	4.4
45-54	9,332	9.4	492	3.5	46,309	5.9
55-64	9,525	9.6	571	4.1	68,487	8.8
25-64	**38,238**	**38.5**	**1,859**	**13.3**	**179,220**	**22.9**
65-74	9,997	10.1	1,654	11.9	104,509	13.4
75-84	13,408	13.5	4,162	29.9	209,782	26.8
85-94	12,926	13.0	5,222	37.5	217,308	27.8
95+	1,359	1.4	517	3.7	21,493	2.7
65+	**37,690**	**37.9**	**11,555**	**82.9**	**553,092**	**70.7**
Total	99,395	100.0	13,943	100.0	782,218	100.0

Trend

FREQUENCY

Frequency and rate data for 2013/14 reported here for hospital admissions differ from those reported elsewhere in this report because only non-same day admissions with a principal diagnosis of injury are included in trend calculations.

- The frequency of ALL AGES unintentional injury admissions (excluding same day admissions) increased significantly over the 16-year period from 38,118 in 1998/99 to 51,917 in 2013/14, representing an estimated annual change of 2.6% (2.2% to 2.9%) and an overall increase of 50.6% (41.8% to 58.3%) based on the trend line (Figure 4).
- The frequency of ALL AGES unintentional injury ED presentations increased significantly over the 10-year period from 197,266 in 2004/05 to 242,749 in 2013/14, representing an estimated annual change of 1.7% (1.1% to 2.3%) and an overall increase of 18.5% (11.2% to 25.9%) based on the trend line (Figure 5).

Figure 4: Trend in the frequency of injury hospital admissions, Victoria 1998/99-2013/14

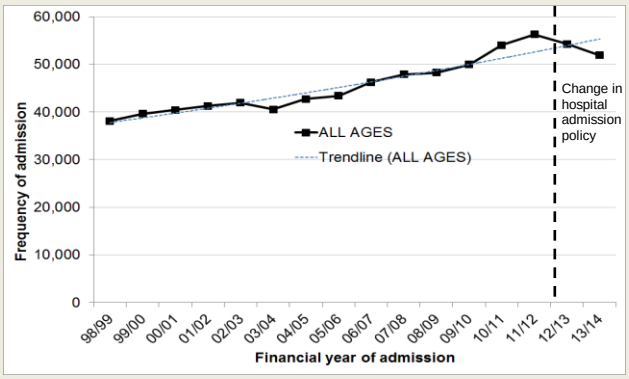
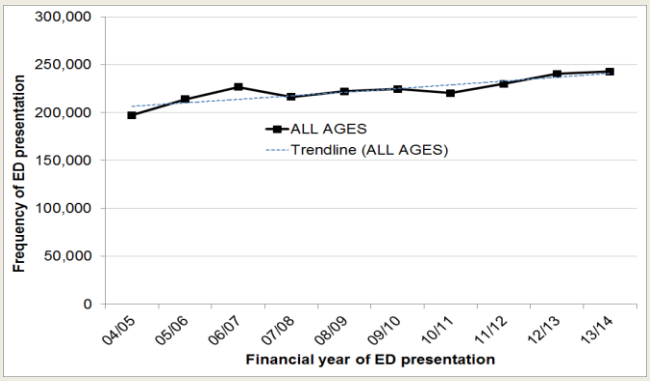


Figure 5: Trend in the frequency of injury ED presentations, Victoria 2004/05-2013/14



RATE

- The ALL AGES unintentional injury admission rate (excluding same day admissions) increased significantly over the 16-year period from 798.7/100,000 in 1998/99 to 809.3/100,000 in 2013/14, representing an estimated annual change of 0.5% (0.2% to 0.8%) and an overall increase of 8.8% (3.5% to 14.4%) based on the trend line (Figure 6).
- The ALL AGES unintentional injury ED presentation rate increased slightly over the 10-year period from 3,985.2/100,000 in 2004/05 to 4,300.4/100,000 in 2013/14. This did not represent a significant change based on the trend line (Figure 7).

Figure 6: Trend in injury hospital admission rates per 100,000 population, Victoria 1998/99-2013/14

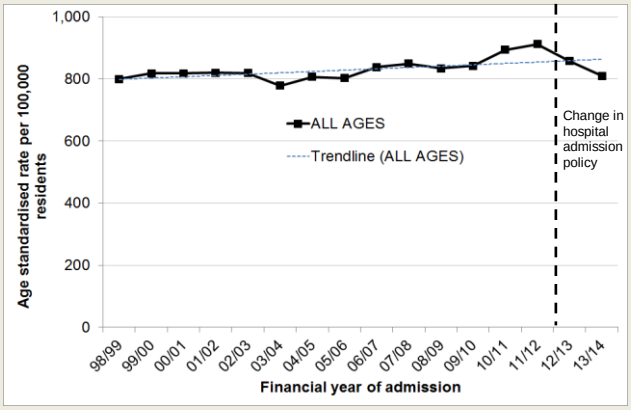
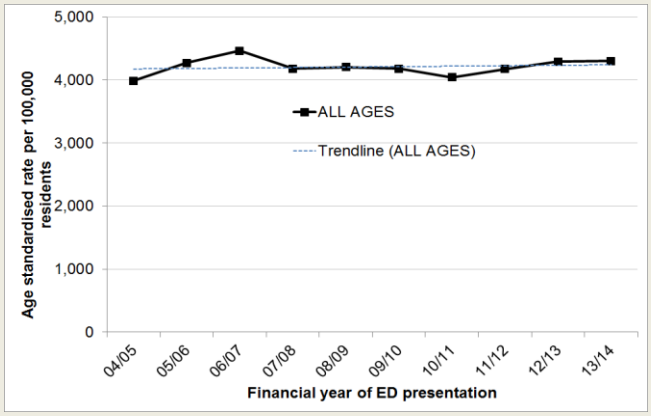


Figure 7: Trend in injury ED presentation rates per 100,000 population, Victoria 2004/05-2013/14



Hospital treated injury - gender and age

- Males were overrepresented accounting for 54% of all admissions (n= 53,722) and 59% of ED presentations (n=143,603) in Victoria in 2013/14.
- Seventy-six percent (n=75,928) of hospital admissions occurred among persons aged 25 years and older, around half of these admissions were aged 25-64 years (n= 38,238) and the other half were aged 65 years and older (n= 37,690). Adults aged 25-64 years accounted for 41% of ED presentations (n=99,626).
- Males accounted for more hospital admissions and ED presentations in all age groups except the 65 years and older group where females accounted for more hospital admissions and ED presentations. (Figure 8 & Figure 9).

Figure 8: Hospital admissions by gender and age, Victoria 2013/14

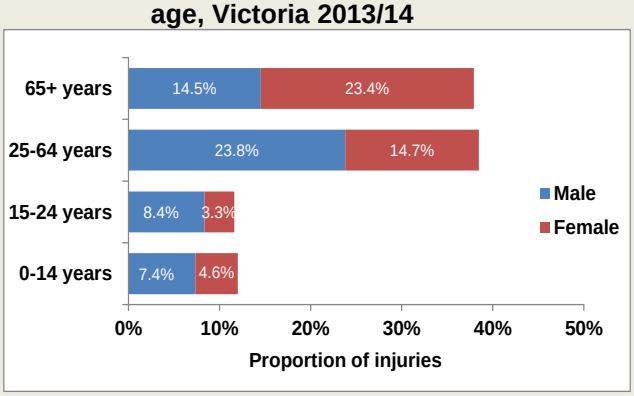
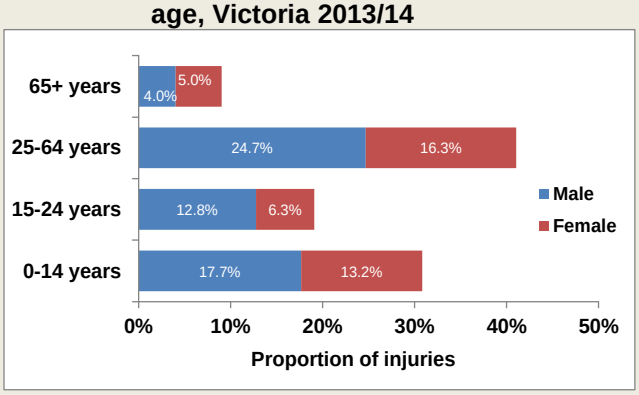


Figure 9: ED presentations by gender and age, Victoria 2013/14



- The all ages rate of hospital admission and ED presentation was higher for males than females (1,891.4/100,000 vs. 1,575.5/100,000 for admissions and 5,055.8/100,000 vs 3,420.0/100,000 for ED presentations).
- The hospital admission rate was highest in older adults (4,492.3 per 100,000 persons) and lowest in children (1,134.1 per 100,000 persons), whereas, the ED presentation rate was highest in children (7,119.8/100,000) and lowest in older adults (2,614.8/100,000) (Table 4).

Table 4: Frequency and rate of injury hospital admissions and ED presentations by gender and age, Victoria 2013/14

Age group	Sex	Hospital admissions		ED presentations	
		n	Rate	n	Rate
0-14 years	Male	7,308	1,355.3	42,876	7,951.6
	Female	4,614	901.2	31,968	6,243.8
	All	**11,922**	**1,134.1**	**74,844**	**7,119.8**
15-24 years	Male	8,303	2,105.9	30,982	7,858.0
	Female	3,242	859.7	15,359	4,072.7
	All	**11,545**	**1,496.6**	**46,341**	**6,007.5**
25-64 years	Male	23,669	1,554.7	59,951	3,937.8
	Female	14,569	936.7	39,675	2,551.0
	All	**38,238**	**1,242.4**	**99,626**	**3,237.0**
65+ years	Male	14,442	3,757.1	9,794	2,547.9
	Female	23,248	5,114.0	12,144	2,671.4
	All	**37,690**	**4,492.3**	**21,938**	**2,614.8**
All	Male	53,722	1,891.4	143,603	5,055.8
	Female	45,673	1,575.5	99,146	3,420.0
	All	**99,395**	**1,731.8**	**242,749**	**4,229.6**

Leading causes of injury

- Four of the five major causes of hospital admissions and ED presentations were the same although the ranking on frequency of cases is different (Figure 10 & Figure 11).
- The leading cause of both hospital admissions and ED presentations was falls. Falls accounted for 45% (n=45,088) of hospital admissions and 35% (n=85,664) of ED presentations.
- Transport accounted for 12% of admissions (n=11,702) but just 6% of presentations (n=13,620) which indicates that transport injuries were more severe than injuries from other causes.
- Hit/struck/crush injuries accounted for 8% of admissions (n=8,151) but a higher proportion of ED presentations (20%, n=49,142).
- Cutting and piercing injuries accounted for 7% of admissions (n=6,673) and 9% of ED presentations (n=22,302).
- The fifth ranking cause of hospital admissions was natural/environmental/animal related injury (3%, n=3,229) whereas for ED presentations it was injuries caused by a foreign body in a natural orifice e.g. ear, nose, eye (5%, n=12,179).

Figure 10: Hospital admissions by cause, Victoria 2013/14

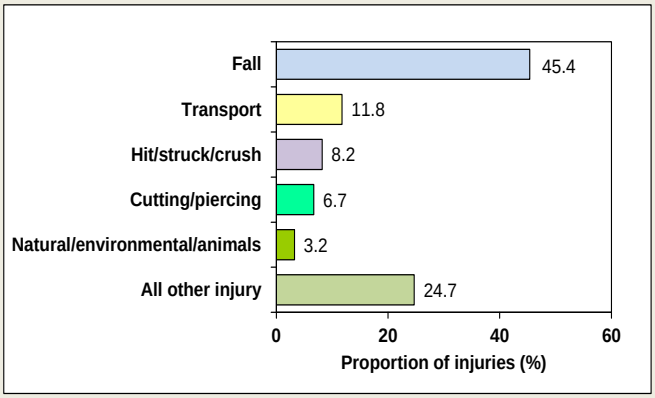
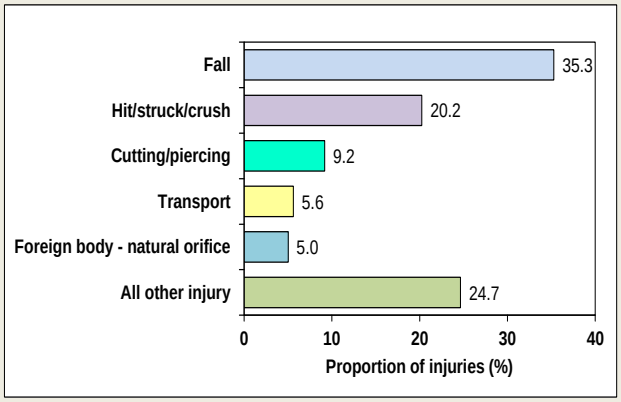


Figure 11: ED presentations by cause, Victoria 2013/14



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 12 & Figure 13 show the five most common specific injury types for hospital admissions and ED presentations.

- Fracture to the upper limb accounted for 16% (n=16,438) of hospital admissions and 11% (n=27,513) ED presentations.
- Fracture to the lower limb was the second most common type of injury requiring hospital admission (12%, n=12,372).
- Dislocations, sprains and strains to the lower limb (11%, n= 26,298) and upper limb (10%, n=23,479) were common among ED presentations.
- Open wounds to the upper limbs and the head/face/neck each accounted for 6% of hospital injury admissions (n=5,710 and n=5,678) and 8% and 7% (n=18,317 and n=17,361) of ED presentations.

Figure 12: Major injury type, hospital admissions, Victoria 2013/14

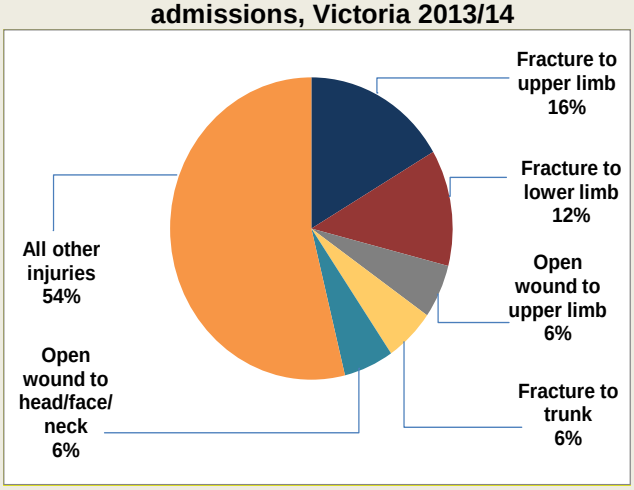
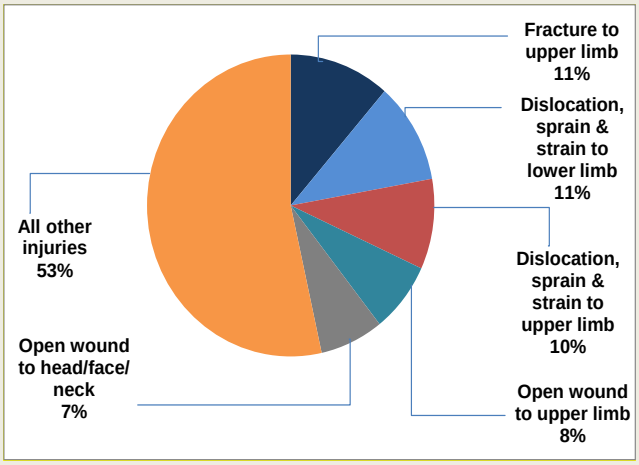


Figure 13: Major injury type, ED presentations Victoria 2013/14



Setting

- Twenty four percent (n=24,292) 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 (9% of admissions and 7% of ED presentations), while working for income (6% of admissions and 9% of ED presentations) and in sports and athletics areas (6% of admissions and 9% of ED presentations). Around 6% of admissions resulted from injuries that occurred in residential institutional settings (Figure 14 & Figure 15).

Figure 14: Hospital admissions by setting, Victoria 2013/14

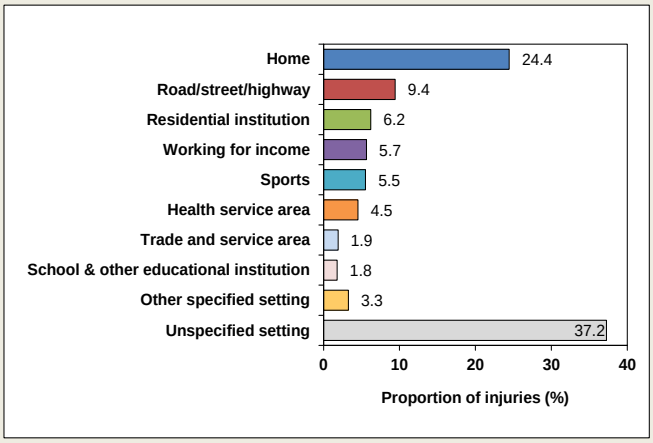


Figure 15: ED presentations by setting, Victoria 2013/14

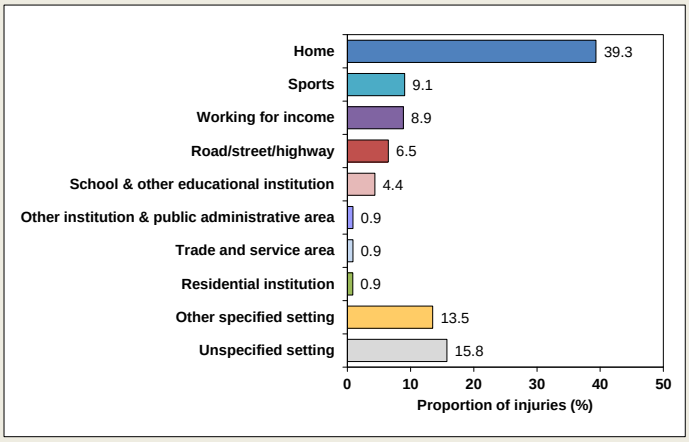


Table 5 Ranking of causes for injuries resulting in hospital admissions and ED presentations, all ages, Victoria 2013/14

AGE GROUP	RANK	ADMISSIONS			PRESENTATIONS		
		CAUSE	n	%	CAUSE	n	%
0-14 years	1	Fall	5,642	47.3	Fall	34,711	46.4
	2	Hit/struck/crush	1,863	15.6	Hit/struck/crush	15,987	21.4
	3	Unspecified unintentional	1,136	9.5	Other specified unintentional	7,990	10.7
	4	Transport	963	8.1	Unspecified unintentional	4,148	5.5
	5	Cutting/piercing	614	5.2	Cutting/piercing	3,544	4.7
	6	Foreign body - natural orifice	498	4.2	Foreign body - natural orifice	3,140	4.2
	7	Natural/environmental/animals	378	3.2	Transport	1,897	2.5
	8	Poisoning	267	2.2	Fires/burns/scalds	1,451	1.9
	9	Fires/burns/scalds	206	1.7	Natural/environmental/animals	1,284	1.7
	10	Overexertion and/or strenuous movements	114	1.0	Poisoning	562	<1
	11	Other specified unintentional	92	<1	Choking/suffocate	58	<1
	12	Choking/suffocate	78	<1	Machinery	50	<1
	13	Drowning/near drowning	33	<1	Drowning/near drowning	*	<1
	14	Machinery	32	<1	Explosions/firearms	*	<1
	15	Explosions/firearms	6	<1	Overexertion & strenuous movements	N/A	N/A
		All	11,922	100.0	All	74,844	100.0
15-24 years	1	Transport	2,452	21.2	Fall	12,690	27.4
	2	Unspecified unintentional	2,132	18.5	Hit/struck/crush	12,386	26.7
	3	Fall	2,104	18.2	Other specified unintentional	5,279	11.4
	4	Hit/struck/crush	1,878	16.3	Cutting/piercing	4,632	10.0
	5	Cutting/piercing	1,229	10.6	Transport	3,748	8.1
	6	Overexertion and/or strenuous movements	451	3.9	Unspecified unintentional	3,359	7.2
	7	Natural/environmental/animals	342	3.0	Foreign body - natural orifice	1,573	3.4
	8	Poisoning	278	2.4	Natural/environmental/animals	915	2.0
	9	Other specified unintentional	218	1.9	Fires/burns/scalds	914	2.0
	10	Fires/burns/scalds	144	1.2	Poisoning	522	1.1
	11	Machinery	135	1.2	Machinery	270	<1
	12	Foreign body - natural orifice	114	1.0	Choking/suffocate	35	<1
	13	Choking/suffocate	40	<1	Drowning/near drowning	13	<1
	14	Explosions/firearms	23	<1	Explosions/firearms	5	<1
	15	Drowning/near drowning	5	<1	Overexertion & strenuous movements	N/A	N/A
		All	11,545	100.0	All	46,341	100.0
25-64 years	1	Fall	10,560	27.6	Fall	26,557	26.7
	2	Transport	6,687	17.5	Hit/struck/crush	18,817	18.9
	3	Unspecified unintentional	6,543	17.1	Cutting/piercing	12,498	12.5
	4	Cutting/piercing	4,045	10.6	Other specified unintentional	12,354	12.4
	5	Hit/struck/crush	3,331	8.7	Unspecified unintentional	8,231	8.3
	6	Natural/environmental/animals	1,708	4.5	Transport	7,267	7.3
	7	Overexertion and/or strenuous movements	1,575	4.1	Foreign body - natural orifice	6,629	6.7
	8	Poisoning	969	2.5	Natural/environmental/animals	2,875	2.9
	9	Machinery	737	1.9	Fires/burns/scalds	2,331	2.3
	10	Foreign body - natural orifice	655	1.7	Poisoning	976	1.0
	11	Other specified unintentional	547	1.4	Machinery	975	1.0
	12	Fires/burns/scalds	503	1.3	Choking/suffocate	81	<1
	13	Choking/suffocate	296	<1	Drowning/near drowning	*	<1
	14	Explosions/firearms	59	<1	Explosions/firearms	*	<1
	15	Drowning/near drowning	23	<1	Overexertion & strenuous movements	N/A	N/A
		All	38,238	100.0	All	99,626	100.0
65+ years	1	Fall	26,782	71.1	Fall	11,706	53.4
	2	Unspecified unintentional	3,632	9.6	Other specified unintentional	2,306	10.5
	3	Transport	1,600	4.2	Hit/struck/crush	1,952	8.9
	4	Hit/struck/crush	1,079	2.9	Unspecified unintentional	1,852	8.4
	5	Natural/environmental/animals	801	2.1	Cutting/piercing	1,628	7.4
	6	Cutting/piercing	785	2.1	Foreign body - natural orifice	837	3.8
	7	Choking/suffocate	749	2.0	Transport	708	3.2
	8	Overexertion and/or strenuous movements	735	2.0	Natural/environmental/animals	437	2.0
	9	Poisoning	541	1.4	Fires/burns/scalds	219	1.0
	10	Foreign body - natural orifice	420	1.1	Poisoning	148	<1
	11	Other specified unintentional	225	<1	Machinery	128	<1
	12	Fires/burns/scalds	187	<1	Choking/suffocate	10	<1
	13	Machinery	145	<1	Drowning/near drowning	*	<1
	14	Drowning/near drowning	*	<1	Explosions/firearms	*	<1
	15	Explosions/firearms	*	<1	Overexertion & strenuous movements	N/A	N/A
		All	37,690	100.0	All	21,938	100.0
All ages	1	Fall	45,088	45.4	Fall	85,664	35.3
	2	Unspecified unintentional	13,443	13.5	Hit/struck/crush	49,142	20.2
	3	Transport	11,702	11.8	Other specified unintentional	27,929	11.5
	4	Hit/struck/crush	8,151	8.2	Cutting/piercing	22,302	9.2
	5	Cutting/piercing	6,673	6.7	Unspecified unintentional	17,590	7.2
	6	Natural/environmental/animals	3,229	3.2	Transport	13,620	5.6
	7	Overexertion and/or strenuous movements	2,875	2.9	Foreign body - natural orifice	12,179	5.0
	8	Poisoning	2,055	2.1	Natural/environmental/animals	5,511	2.3
	9	Foreign body - natural orifice	1,687	1.7	Fires/burns/scalds	4,915	2.0
	10	Choking/suffocate	1,163	1.2	Poisoning	2,208	<1
	11	Other specified unintentional	1,082	1.1	Machinery	1,423	<1
	12	Machinery	1,049	1.1	Choking/suffocate	184	<1
	13	Fires/burns/scalds	1,040	1.0	Drowning/near drowning	72	<1
	14	Explosions/firearms	92	<1	Explosions/firearms	10	<1
	15	Drowning/near drowning	66	<1	Overexertion & strenuous movements	N/A	N/A
		All	99,395	100.0	All	242,749	100.0

Children (0-14 years)

Trend

FREQUENCY

- The frequency of CHILD unintentional injury admissions (excluding same day admissions) decreased significantly over the 16-year period from 6,944 in 1998/99 to 5,244 in 2013/14, representing an estimated annual decrease of 1.2% (-1.6% to -0.9%) and an overall reduction of 18.1% (-23.2% to -12.9%) based on the trend line (Figure 16).
- In contrast, the frequency of CHILD unintentional injury ED presentations increased significantly over the 10-year period from 57,507 in 2004/05 to 74,844 in 2013/14, representing an estimated annual change of 2.2% (1.4% to 2.9%) and an overall increase of 24% (14.8% to 33.3%) based on the trend line (Figure 17).

Figure 16: Trend in the frequency of CHILD injury hospital admissions, Victoria 1998/99-2013/14

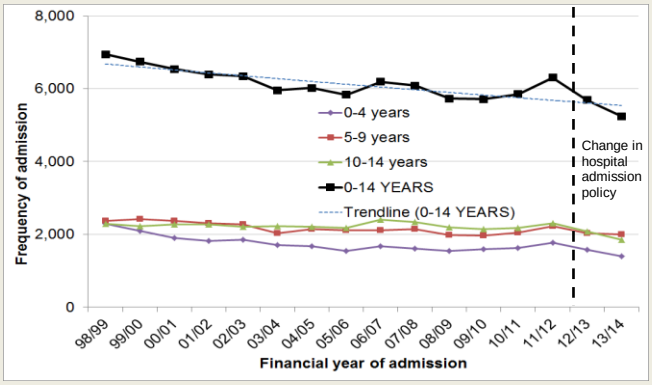
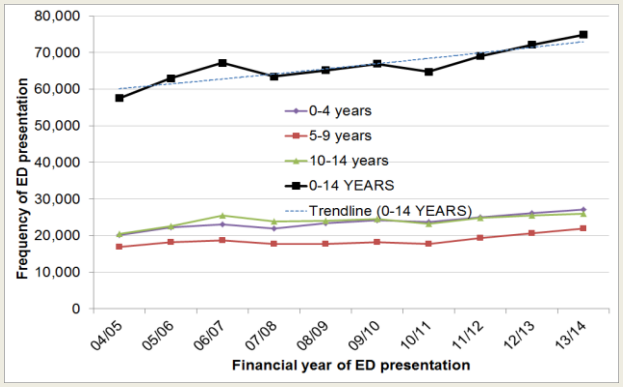


Figure 17: Trend in the frequency of CHILD injury ED presentations, Victoria 2004/05-2013/14



RATE

- The CHILD unintentional injury admission rate (excluding same day admissions) decreased significantly over the 16-year period from 734.1/100,000 in 1998/99 to 504.2/100,000 in 2013/14, representing an estimated annual decrease of 1.8% (-2.2% to -1.5%) and an overall reduction of 25.5% (-30.1% to -21.1%) based on the trend line (Figure 18).
- The CHILD unintentional injury ED presentation rate increased over the 10-year period from 5,999.1/100,000 in 2004/05 to 7,122.6/100,000 in 2013/14 representing an estimated annual increase of 1.1% (0.3% to 1.9%) and an overall increase of 11.3% 2.9% to 20.1%) based on the trend line (Figure 19).

Figure 18: Trend in injury hospital admission rates per 100,000 CHILDREN, Victoria 1998/99-2013/14

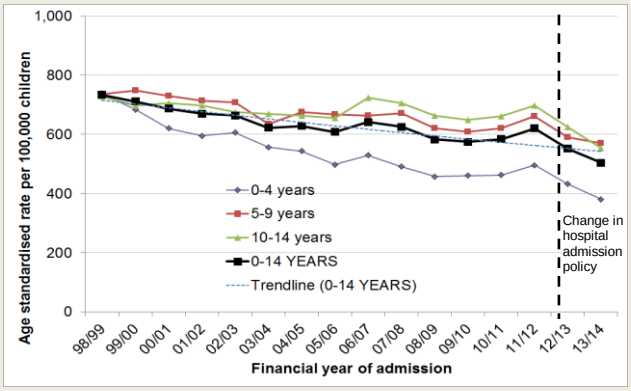
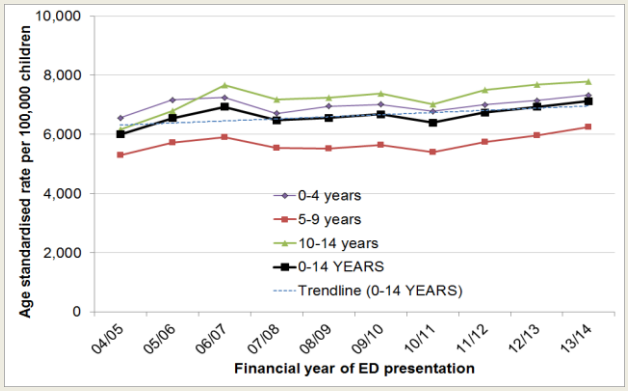


Figure 19: Trend in injury ED presentation rates per 100,000 CHILDREN, Victoria 2004/05-2013/14



Hospital treated injury - gender and age

- Males were overrepresented in child hospital-treated injury cases, accounting for 61% of hospital admissions (n=7,308) and 57% of ED presentations (n=42,876) in Victoria in 2013/14 (Figure 20 & Figure 21).
- Child injury hospital admissions and ED presentations were fairly evenly distributed across the 5-year age groups.
  - Children aged 0-4 years accounted for 36% of child admissions and 36% of child ED presentations.
  - Children aged 5-9 years accounted for 33% of child admissions and 29% of child ED presentations.
  - Children aged 10-14 years accounted for 31% of child admissions and 35% of child ED presentations.

Figure 20: Child hospital admissions by gender and age, Victoria 2013/14

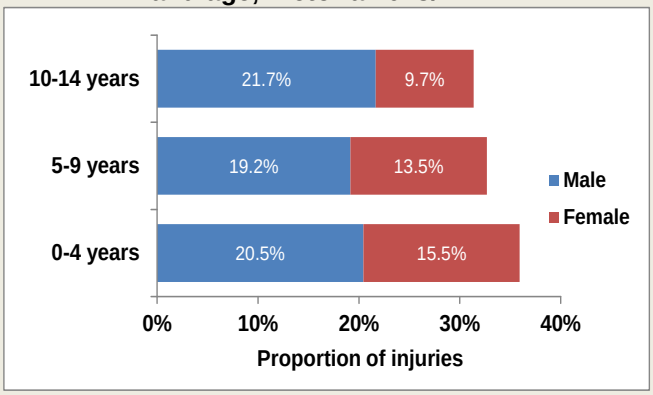
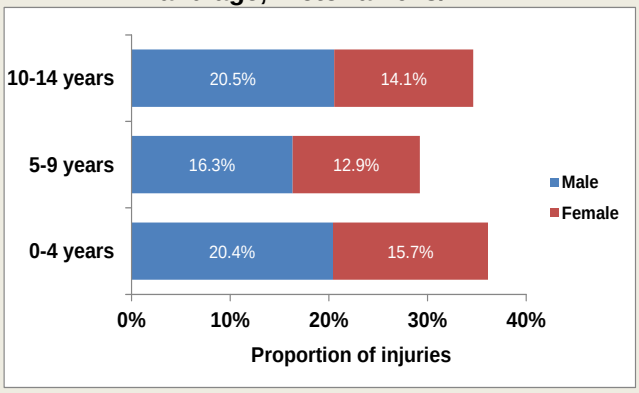


Figure 21: Child ED presentations by gender and age, Victoria 2013/14



- The child hospital admission and ED presentation rates were higher for males than females (1,355.3 & 7,951.6/100,000 vs. 901.2 & 6,243.8/100,000).
- Table 6 shows that hospital admission rates were fairly equal across age groups whereas there was a high rate of ED presentations from the 10-14 age group followed by the 0-4 age group.

Table 6: Frequency and rate of hospital admissions and ED presentations in children by gender and age, Victoria 2013/14

Age group	Sex	Hospital admissions		ED presentations	
		n	Rate	n	Rate
0-4 years	Male	2,439	1,285.9	15,280	8,056.1
	Female	1,846	1,029.8	11,768	6,564.8
	All	**4,285**	**1,161.5**	**27,048**	**7,331.5**
5-9 years	Male	2,285	1,274.0	12,225	6,816.1
	Female	1,611	946.0	9,645	5,663.9
	All	**3,896**	**1,114.3**	**21,870**	**6,254.9**
10-14 years	Male	2,584	1,518.3	15,371	9,031.8
	Female	1,157	712.2	10,555	6,497.7
	All	**3,741**	**1,124.7**	**25,926**	**7,794.2**
All	Male	7,308	1,355.3	42,876	7,951.6
	Female	4,614	901.2	31,968	6,243.8
	All	**11,922**	**1,134.1**	**74,844**	**7,119.8**

Leading causes of injury

- The five leading causes of child hospital admissions and ED presentations in children were the same although the ranking on frequency of cases is different (Figure 22 & Figure 23).
- The leading cause of child hospital admissions and ED presentations was falls accounting for 47% (n=5,642) of child hospital admissions and 46% (n=34,711) of ED presentations.
- Hit/struck/crush injuries were the next major cause of injury accounting for 16% of admissions (n=1,863) and 21% of ED presentations (n=15,987).
- Transport accounted for 8% of admissions (n=963) and only 3% of ED presentations (n=1,897).
- Foreign body in a natural orifice e.g. ear, nose, eye injuries and cutting and piercing related injuries accounted for 4-5% of admissions (n=498 & n=614) and ED presentations (n=3,140 & n=3,544).

Figure 22: Child hospital admissions by cause, Victoria 2013/14

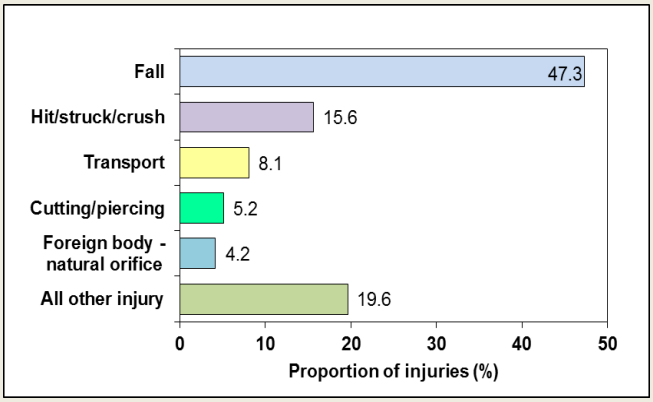
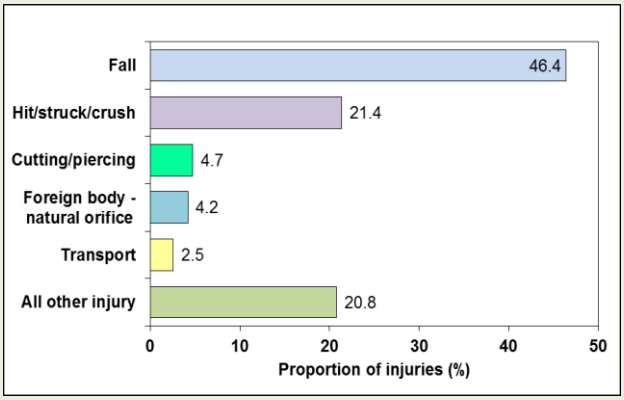


Figure 23: Child ED presentations by cause, Victoria 2013/14



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 24 & Figure 25 show the five major injury types for child hospital admissions and presentations.

- Fracture to the upper limb accounted for 31% (n=3,779) of child hospital injury admissions and 16% (n=11,910) of ED presentations.
- Open wounds to the head/face/neck accounted for 12% (1,416) of child hospital injury admissions and 13% (n=9,539) of ED presentations.
- Fracture to lower limb and open wound to upper limb accounted for 6% (n=682) and 5% (n=599) each of hospital admissions for children while dislocations, sprains & strains to upper limb and the lower limb and superficial injury to head/face/neck accounted for 12% (n=9,424), 8% (n=5,869) and 7% (n=5,241) respectively for ED presentations in children.

Figure 24: Major injury type, child hospital admissions, Victoria 2013/14

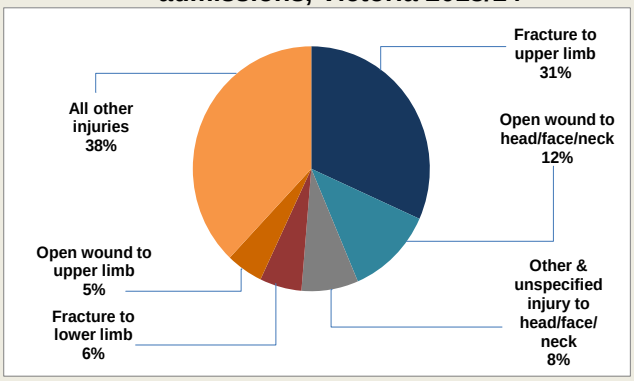
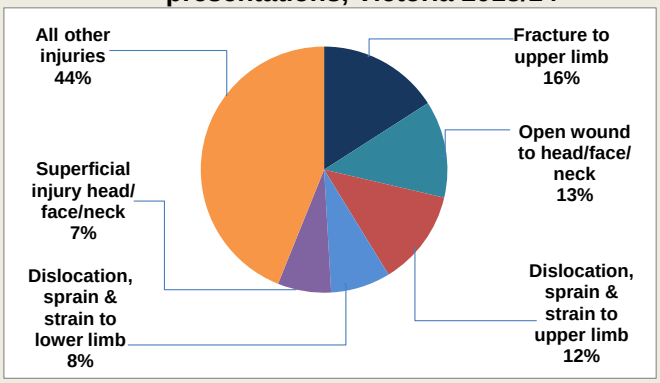


Figure 25: Major injury type, child ED presentations, Victoria 2013/14



Setting

- Twenty-two percent (n=2,566) of all injuries requiring hospital admission and 46% (n=34,324) of injuries resulting in ED presentation occurred in the home (Figure 26 & Figure 27).
- Children were also commonly injured in schools and educational settings (13% of admissions and 13% of ED presentations) and sports and athletics areas (8% of admissions and 8% of ED presentations).

Figure 26: Child hospital admissions by setting, Victoria 2013/14

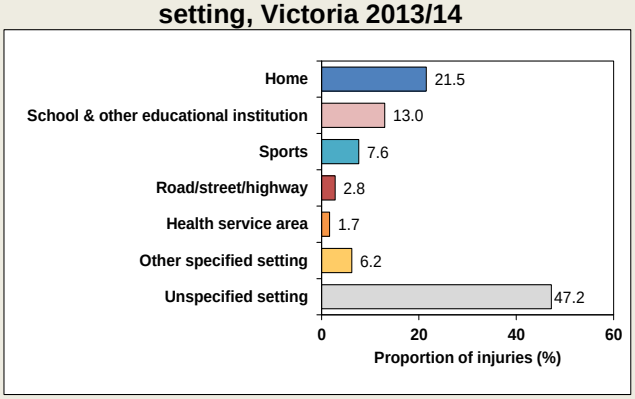


Figure 27: Child ED presentations by setting, Victoria 2013/14

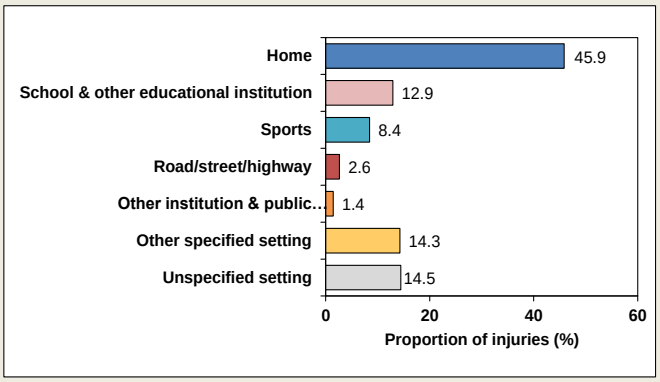


Table 7 Ranking of causes for injuries resulting in hospital admissions and ED presentations, children aged 0-14 years, Victoria 2013/14

AGE GROUP	RANK	Admissions			Presentations		
		Cause	n	%	Cause	n	%
0-4 years	1	Fall	1,963	45.8	Fall	12,100	44.7
	2	Hit/struck/crush	676	15.8	Hit/struck/crush	4,551	16.8
	3	Unspecified unintentional	355	8.3	Other specified unintentional	3,270	12.1
	4	Foreign body - natural orifice	289	6.7	Foreign body - natural orifice	1,901	7.0
	5	Cutting/piercing	212	4.9	Unspecified unintentional	1,622	6.0
	6	Poisoning	207	4.8	Cutting/piercing	1,249	4.6
	7	Natural/environmental/animals	173	4.0	Fires/burns/scalds	1,012	3.7
	8	Fires/burns/scalds	154	3.6	Natural/environmental/animals	594	2.2
	9	Transport	136	3.2	Poisoning	439	1.6
	10	Choking/suffocate	54	1.3	Transport	253	<1
	11	Drowning/near drowning	20	<1	Choking/suffocate	36	<1
	12	Machinery	20	<1	Machinery	17	<1
	13	Other specified unintentional	17	<1	Drowning/near drowning	*	<1
	14	Overexertion and/or strenuous movements	*	<1	Explosions/firearms	*	<1
	15	Explosions/firearms	*	<1	Overexertion & strenuous movements	N/A	N/A
		All	4,285	100.0	All	27,048	100.0
5-9 years	1	Fall	2,164	55.5	Fall	11,009	50.3
	2	Hit/struck/crush	502	12.9	Hit/struck/crush	4,383	20.0
	3	Transport	319	8.2	Other specified unintentional	1,909	8.7
	4	Unspecified unintentional	282	7.2	Cutting/piercing	1,272	5.8
	5	Cutting/piercing	218	5.6	Unspecified unintentional	1,009	4.6
	6	Foreign body - natural orifice	155	4.0	Foreign body - natural orifice	921	4.2
	7	Natural/environmental/animals	117	3.0	Transport	602	2.8
	8	Fires/burns/scalds	34	<1	Natural/environmental/animals	410	1.9
	9	Poisoning	33	<1	Fires/burns/scalds	253	1.2
	10	Other specified unintentional	22	<1	Poisoning	73	<1
	11	Overexertion and/or strenuous movements	20	<1	Choking/suffocate	13	<1
	12	Choking/suffocate	16	<1	Drowning/near drowning	8	<1
	13	Drowning/near drowning	8	<1	Machinery	8	<1
	14	Machinery	*	<1	Explosions/firearms	0	<1
	15	Explosions/firearms	*	<1	Overexertion & strenuous movements	N/A	N/A
		All	3,896	100.0	All	21,870	100.0
10-14 years	1	Fall	1,515	40.5	Fall	11,602	44.8
	2	Hit/struck/crush	685	18.3	Hit/struck/crush	7,053	27.2
	3	Transport	508	13.6	Other specified unintentional	2,811	10.8
	4	Unspecified unintentional	499	13.3	Unspecified unintentional	1,517	5.9
	5	Cutting/piercing	184	4.9	Transport	1,042	4.0
	6	Natural/environmental/animals	88	2.4	Cutting/piercing	1,023	3.9
	7	Overexertion and/or strenuous movements	86	2.3	Foreign body - natural orifice	318	1.2
	8	Foreign body - natural orifice	54	1.4	Natural/environmental/animals	280	1.1
	9	Other specified unintentional	53	1.4	Fires/burns/scalds	186	<1
	10	Poisoning	27	<1	Poisoning	50	<1
	11	Fires/burns/scalds	18	<1	Machinery	25	<1
	12	Choking/suffocate	8	<1	Choking/suffocate	9	<1
	13	Machinery	7	<1	Drowning/near drowning	*	<1
	14	Drowning/near drowning	*	<1	Explosions/firearms	*	<1
	15	Explosions/firearms	*	<1	Overexertion & strenuous movements	N/A	N/A
		All	3,741	100.0	All	25,926	100.0
ALL CHILDREN	1	Fall	5,642	47.3	Fall	34,711	46.4
	2	Hit/struck/crush	1,863	15.6	Hit/struck/crush	15,987	21.4
	3	Unspecified unintentional	1,136	9.5	Other specified unintentional	7,990	10.7
	4	Transport	963	8.1	Unspecified unintentional	4,148	5.5
	5	Cutting/piercing	614	5.2	Cutting/piercing	3,544	4.7
	6	Foreign body - natural orifice	498	4.2	Foreign body - natural orifice	3,140	4.2
	7	Natural/environmental/animals	378	3.2	Transport	1,897	2.5
	8	Poisoning	267	2.2	Fires/burns/scalds	1,451	1.9
	9	Fires/burns/scalds	206	1.7	Natural/environmental/animals	1,284	1.7
	10	Overexertion and/or strenuous movements	114	1.0	Poisoning	562	<1
	11	Other specified unintentional	92	<1	Choking/suffocate	58	<1
	12	Choking/suffocate	78	<1	Machinery	50	<1
	13	Drowning/near drowning	33	<1	Drowning/near drowning	*	<1
	14	Machinery	32	<1	Explosions/firearms	*	<1
	15	Explosions/firearms	6	<1	Overexertion & strenuous movements	N/A	N/A
		All	11,922	100.0	All	74,844	100.0

Adolescents and young adults (15-24 years)

Trend

FREQUENCY

- The frequency of ADOLESCENT AND YOUNG ADULT unintentional injury admissions (excluding same day admissions) increased significantly over the 16-year period from 5,441 in 1998/99 to 5,716 in 2013/14, representing an estimated annual change of 1.2% (0.7% to 1.7%) and an overall increase of 20.4% (11.2% to 30.0%) based on the trend line (Figure 28).
- The frequency of ADOLESCENT AND YOUNG ADULT unintentional injury ED presentations increased significantly over the 10-year period from 40,258 in 2004/05 to 46,341 in 2013/14, representing an estimated annual change of 1.1% (0.3% to 1.8%) and an overall increase of 11.3% (3.3% to 19.7%) based on the trend line (Figure 29).

Figure 28: Trend in the frequency of ADOLESCENT & YOUNG ADULT injury hospital admissions, Victoria 1998/99-2013/14

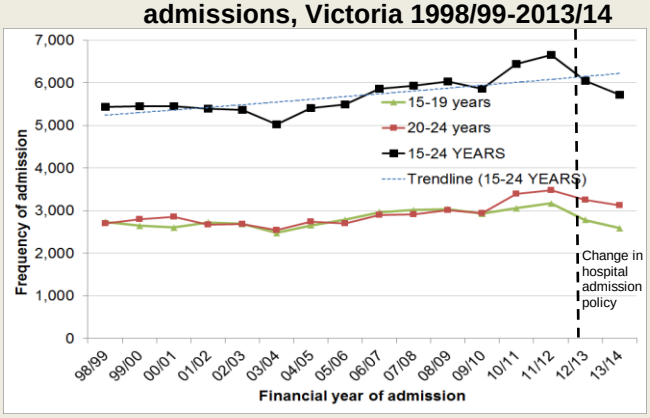
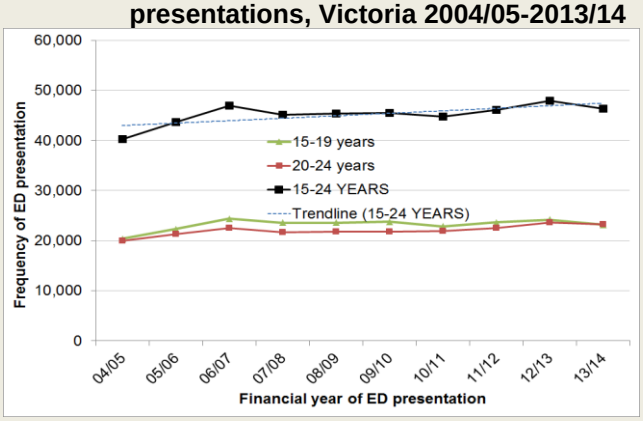


Figure 29: Trend in the frequency of ADOLESCENT & YOUNG ADULT injury ED presentations, Victoria 2004/05-2013/14



RATE

- The ADOLESCENT AND YOUNG ADULT unintentional injury admission rate (excluding same day admissions) decreased slightly over the 16-year period from 860.3/100,000 in 1998/99 to 740.0/100,000 in 2013/14. This decrease was not statistically significant (Figure 30).
- The ADOLESCENT AND YOUNG ADULT unintentional injury ED presentation rate increased over the 10-year period from 5,882.6/100,000 in 2004/05 to 6,044.0/100,000 in 2013/14 although this did not represent a significant change based on the trend line (Figure 31).

Figure 30: Trend in injury hospital admission rates per 100,000 ADOLESCENTS & YOUNG ADULTS, Victoria 1998/99-2013/14

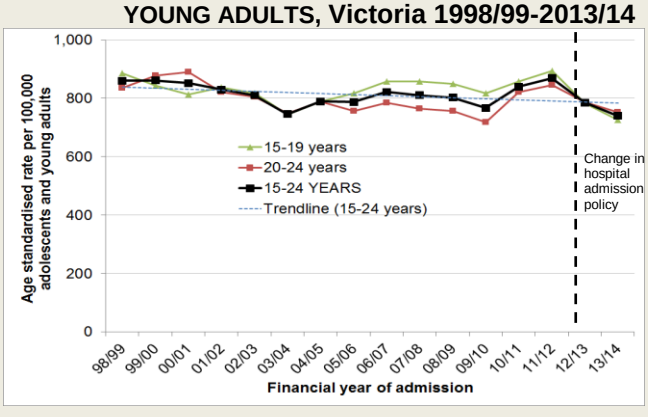
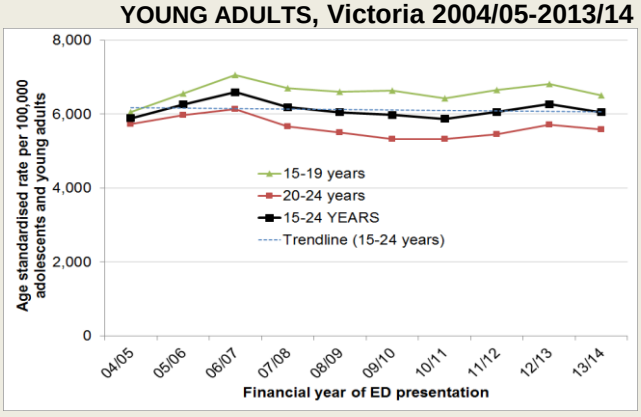


Figure 31: Trend in injury ED presentation rates per 100,000 ADOLESCENTS & YOUNG ADULTS, Victoria 2004/05-2013/14



Hospital treated injury - gender and age

- Males were overrepresented in hospital-treated injury cases among adolescents and young adults, accounting for 72% of hospital admissions (n=8,303) and 67% of ED presentations (n=30,982) in Victoria in 2013/14 (Figure 32 & Figure 33).
- Adolescent injury hospital admissions were more in the 20-24 age group (n=6,196, 54%) while ED presentations were evenly spread across both age groups.

Figure 32: Adolescent and young adult hospital admissions by gender and age, Victoria 2013/14

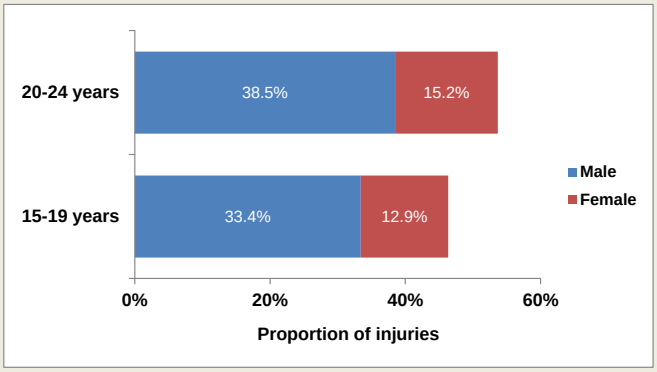
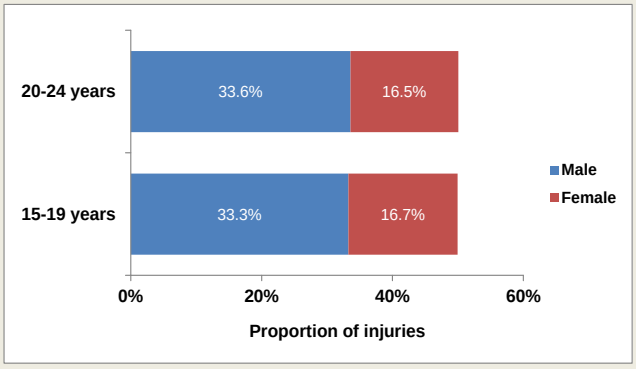


Figure 33: Adolescent and young adult ED presentations by gender and age, Victoria 2013/14



- Hospital admissions and ED presentation rates were higher for males than females (2,105.9 & 7,858/100,000 vs. 859.7 & 4,072.7/100,000) (Table 8). Admission rates were quite similar across the two age groups while the ED presentation rate was higher in the 15-19 age group.

Table 8: Frequency and rate of hospital admissions and ED presentations in adolescents and young adults by gender and age, Victoria 2013/14

Age group	Sex	Hospital admissions		ED presentations	
		n	Rate	n	Rate
15-19 years	Male	3,858	2,110.8	15,421	8,437.2
	Female	1,491	861.8	7,724	4,464.5
	All	**5,349**	**1,503.4**	**23,145**	**6,505.4**
20-24 years	Male	4,445	2,101.7	15,561	7,357.5
	Female	1,751	857.9	7,635	3,740.6
	All	**6,196**	**1,490.8**	**23,196**	**5,581.2**
All	Male	8,303	2,105.9	30,982	7,858.0
	Female	3,242	859.7	15,359	4,072.7
	All	**11,545**	**1,496.6**	**46,341**	**6,007.5**

Leading causes of injury

- Four of the five leading causes of adolescent and young adult hospital admissions and ED presentations were the same although the ranking on frequency of cases is different (Figure 34 & Figure 35).
- Transport was the leading cause of adolescent and young adult hospital admissions (21%, n=2,452) but only accounted for 8% of ED presentations (n=3,748).
- Falls was the second most common cause of hospital admissions (18%, n=2,104), and the leading cause of ED presentations (27%, n=12,690) in this age group.
- Hit/struck/crush injuries accounted for 16% of hospital admissions (n=1,878) and 27% of ED presentations (n=12,386).
- Cutting and piercing injuries accounted for 11% of admissions (n=1,229) and 10% of ED presentations (n=4,632).
- The fifth ranking cause of adolescent and young adult hospital admissions was overexertion and strenuous movements (4%, n=451) whereas for ED presentations it was injuries caused by a foreign body in a natural orifice e.g. ear, nose, eye (3%, n=1,573).

Figure 34: Adolescent and young adult hospital admissions by cause, Victoria 2013/14

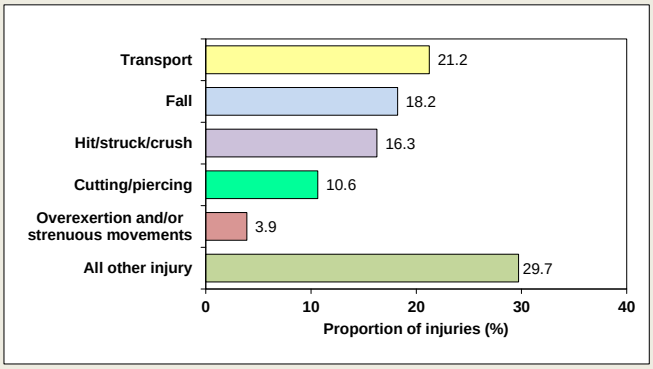
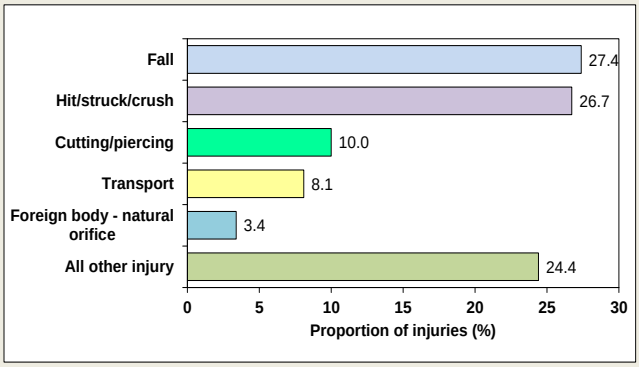


Figure 35: Adolescent and young adult ED presentations by cause, Victoria 2013/14



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 36 & Figure 37 shows 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=2,254) of hospital injury admissions and 10% of ED presentations (n=4,748).
- Fracture to the lower limb (9%, n=1,027) and dislocations, sprains and strains to the lower limb (9%, n=1,016) were common among admissions.
- Dislocations, sprains and strains to lower limb (16%, n=7,436), upper limb (12%, n=5,276) and open wounds to the upper limb (8%, n=3,811) were common among ED presentations.

Figure 36: Major injury type, adolescent and young adult hospital admissions, Victoria 2013/14

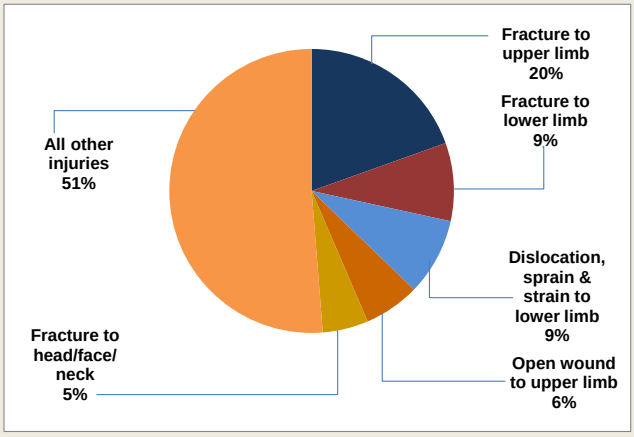
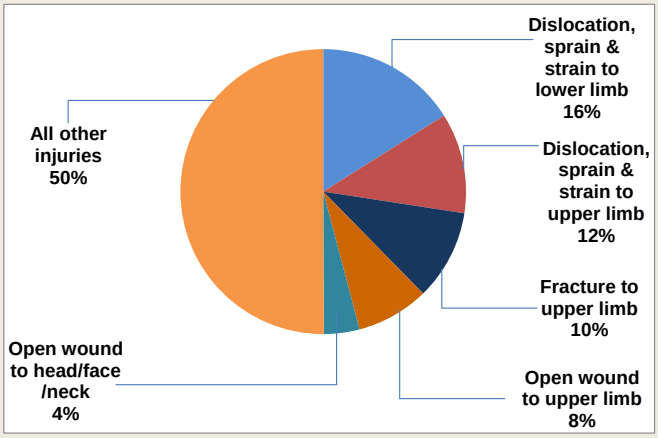


Figure 37: Major injury type, adolescent and young adult ED presentations, Victoria 2013/14



Setting

- Sports (19%, n=2,170) and the road, street and highway (14%, n=1,601) settings were the most common places of occurrence of adolescent and young adult injuries resulting in hospital admission (Figure 38). Other common settings were working for income (9%, n=1,038) and the home (8%, n=879).
- Among ED presentations the home (24%, n=11,304) and sports settings (20%, n=9,158) were the most common places of occurrence for injuries resulting in ED presentation (Figure 39). Other common settings were working for income (12%, n=5,362) and road/street and highway (8%, n=3,726).

Figure 38: Adolescent and young adult hospital admissions by setting, Victoria 2013/14

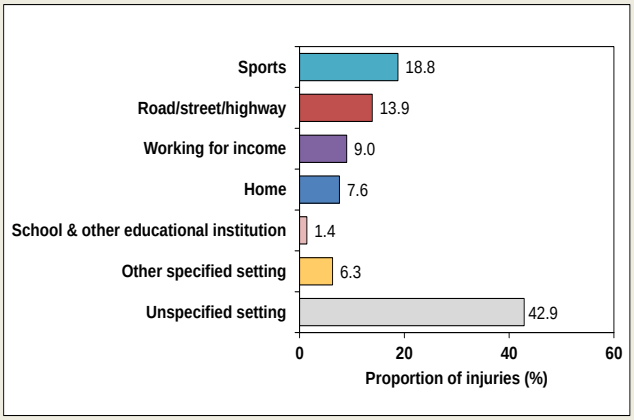


Figure 39: Adolescent and young adult ED presentations by setting, Victoria 2013/14

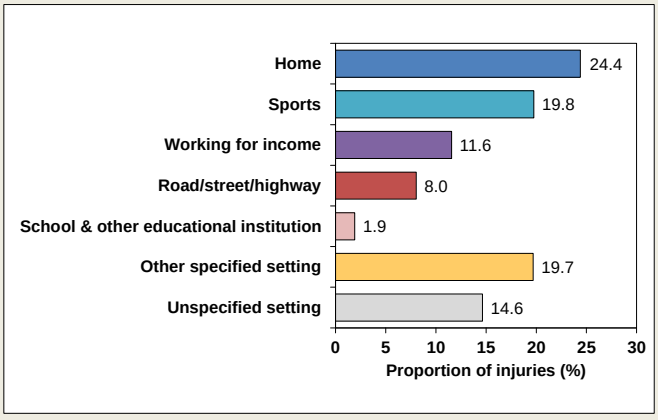


Table 9 Ranking of causes for injuries resulting in hospital admissions and ED presentations, persons aged 15-24 years, Victoria 2013/14

AGE GROUP	RANK	Admissions			Presentations		
		Cause	n	%	Cause	n	%
15-19yrs	1	Transport	1,060	19.8	Fall	7,008	30.3
	2	Fall	1,033	19.3	Hit/struck/crush	6,666	28.8
	3	Unspecified unintentional	1,030	19.3	Other specified unintentional	2,701	11.7
	4	Hit/struck/crush	965	18.0	Cutting/piercing	1,825	7.9
	5	Cutting/piercing	466	8.7	Transport	1,755	7.6
	6	Overexertion and/or strenuous movements	215	4.0	Unspecified unintentional	1,597	6.9
	7	Natural/environmental/animals	148	2.8	Foreign body - natural orifice	510	2.2
	8	Other specified unintentional	124	2.3	Natural/environmental/animals	387	1.7
	9	Poisoning	117	2.2	Fires/burns/scalds	375	1.6
	10	Foreign body - natural orifice	64	1.2	Poisoning	211	<1
	11	Fires/burns/scalds	54	1.0	Machinery	83	<1
	12	Machinery	42	<1	Choking/suffocate	15	<1
	13	Choking/suffocate	21	<1	Drowning/near drowning	*	<1
	14	Explosions/firearms	*	<1	Explosions/firearms	*	<1
	15	Drowning/near drowning	*	<1	Overexertion & strenuous movements	N/A	N/A
		All	5,349	100.0	All	23,145	100.0
20-24yrs	1	Transport	1,392	22.5	Hit/struck/crush	5,720	24.7
	2	Unspecified unintentional	1,102	17.8	Fall	5,682	24.5
	3	Fall	1,071	17.3	Cutting/piercing	2,807	12.1
	4	Hit/struck/crush	913	14.7	Other specified unintentional	2,578	11.1
	5	Cutting/piercing	763	12.3	Transport	1,993	8.6
	6	Overexertion and/or strenuous movements	236	3.8	Unspecified unintentional	1,762	7.6
	7	Natural/environmental/animals	194	3.1	Foreign body - natural orifice	1,063	4.6
	8	Poisoning	161	2.6	Fires/burns/scalds	539	2.3
	9	Other specified unintentional	94	1.5	Natural/environmental/animals	528	2.3
	10	Machinery	93	1.5	Poisoning	311	1.3
	11	Fires/burns/scalds	90	1.5	Machinery	187	<1
	12	Foreign body - natural orifice	50	<1	Choking/suffocate	20	<1
	13	Choking/suffocate	19	<1	Drowning/near drowning	*	<1
	14	Explosions/firearms	*	<1	Explosions/firearms	*	<1
	15	Drowning/near drowning	*	<1	Overexertion & strenuous movements	N/A	N/A
		All	6,196	100.0	All	23,196	100.0
ALL ADOLESCENTS AND YOUNG ADULTS	1	Transport	2,452	21.2	Fall	12,690	27.4
	2	Unspecified unintentional	2,132	18.5	Hit/struck/crush	12,386	26.7
	3	Fall	2,104	18.2	Other specified unintentional	5,279	11.4
	4	Hit/struck/crush	1,878	16.3	Cutting/piercing	4,632	10.0
	5	Cutting/piercing	1,229	10.6	Transport	3,748	8.1
	6	Overexertion and/or strenuous movements	451	3.9	Unspecified unintentional	3,359	7.2
	7	Natural/environmental/animals	342	3.0	Foreign body - natural orifice	1,573	3.4
	8	Poisoning	278	2.4	Natural/environmental/animals	915	2.0
	9	Other specified unintentional	218	1.9	Fires/burns/scalds	914	2.0
	10	Fires/burns/scalds	144	1.2	Poisoning	522	1.1
	11	Machinery	135	1.2	Machinery	270	<1
	12	Foreign body - natural orifice	114	1.0	Choking/suffocate	35	<1
	13	Choking/suffocate	40	<1	Drowning/near drowning	13	<1
	14	Explosions/firearms	23	<1	Explosions/firearms	5	<1
	15	Drowning/near drowning	5	<1	Overexertion & strenuous movements	N/A	N/A
		All	11,545	100.0	All	46,341	100.0

Adults (25-64 years)

Trend

FREQUENCY

- The frequency of ADULT unintentional injury admissions (excluding same day admissions) increased significantly over the 16-year period from 13,751 in 1998/99 to 19,744 in 2013/14, representing an estimated annual change of 2.9% (2.4% to 3.3%) and an overall increase of 57.3% (46.3% to 66.9%) based on the trend line (Figure 40).
- The frequency of ADULT unintentional injury ED presentations increased significantly over the 10-year period from 83,723 in 2004/05 to 99,626 in 2013/14, representing an estimated annual change of 1.4% (0.8% to 2.0%) and an overall increase of 14.8% (8.3% to 21.4%) based on the trend line (Figure 41).

Figure 40: Trend in the frequency of ADULT injury hospital admissions, Victoria 1998/99-2013/14

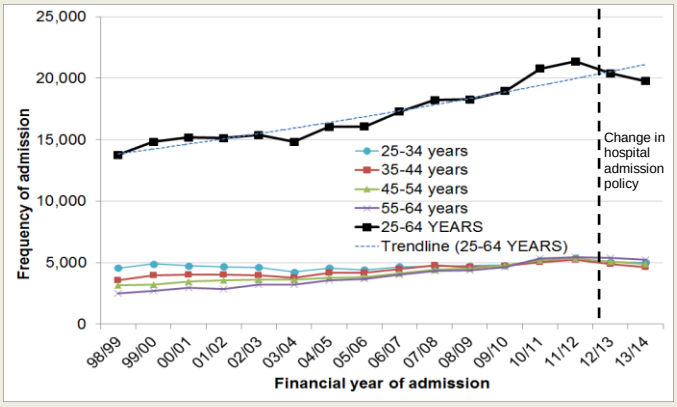
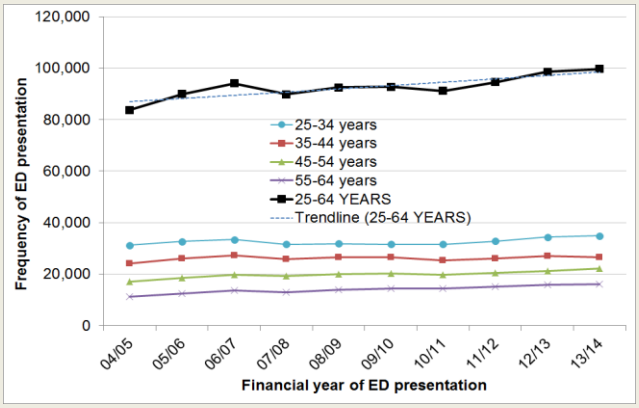


Figure 41: Trend in the frequency of ADULT injury ED presentations, Victoria 2004/05-2013/14



RATE

- The ADULT unintentional injury admission rate (excluding same day admissions) increased significantly over the 16-year period from 557.8/100,000 in 1998/99 to 632.9/100,000 in 2013/14, representing an estimated annual change of 1.2% (0.8% to 1.5%) and an overall increase of 20.8% (13.8% to 27.9%) based on the trend line (Figure 42).
- The ADULT unintentional injury ED presentation rate increased slightly over the 10-year period from 3,183.9/100,000 in 2004/05 to 3,257.1/100,000 in 2013/14 although this did not represent a significant change based on the trend line (Figure 43).

Figure 42: Trend in injury hospital admission rates per 100,000 ADULTS, Victoria 1998/99-2013/14

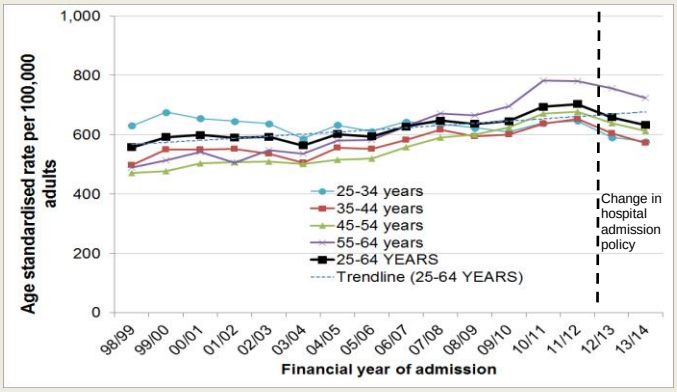
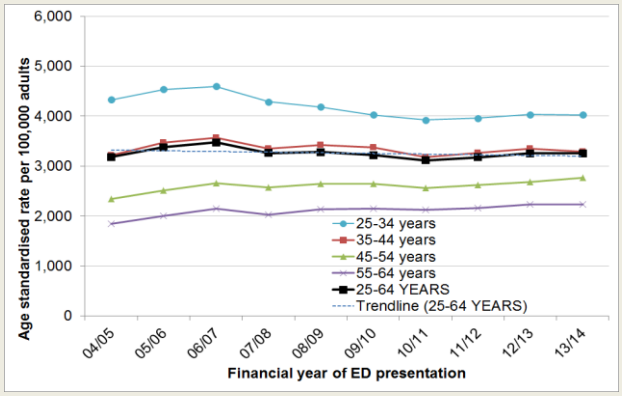


Figure 43: Trend in injury ED presentation rates per 100,000 ADULTS, Victoria 2004/05-2013/14



Hospital treated injury - gender and age

- Males were overrepresented in hospital injury data for adults aged 25 to 64 years, accounting for 62% of hospital admissions (n=23,669) and 60% of ED presentations (n=59,951) in Victoria in 2013 (Figure 44 & Figure 45).
- The proportion of injuries was fairly evenly distributed among all age groups for admissions whereas a gradual drop can be seen with increase in age for ED presentations.

Figure 44: Adult hospital admissions by gender and age, Victoria 2013/14

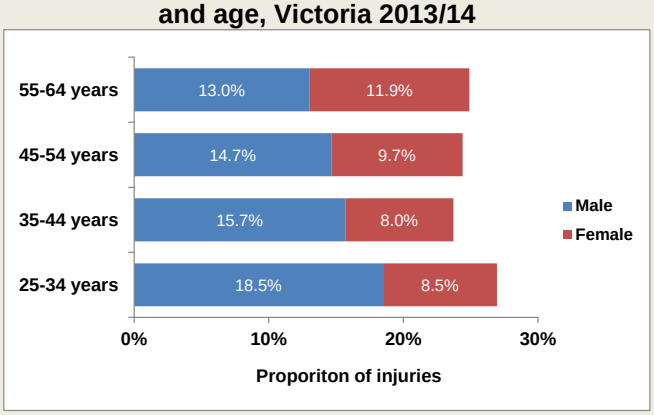
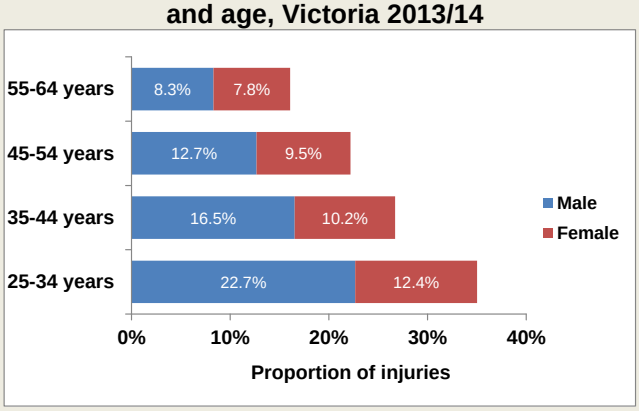


Figure 45: Adult ED presentations by gender and age, Victoria 2013/14



- Hospital admission and ED presentation rates were higher for males compared with females (1,554.7 & 3,937.8/100,000 vs. 936.7 & 2,551/100,000) and highest in the 55-64 age group for admissions and the 25-34 group for ED presentations (Table 10).

Table 10: Frequency and rate of hospital admissions and ED presentations in adults by gender and age, Victoria 2013/14

Age group	Sex	Hospital admissions		ED presentations	
		n	Rate	n	Rate
25-34 years	Male	7,072	1,627.3	22,584	5,196.8
	Female	3,237	747.8	12,314	2,844.6
	All	**10,309**	**1,188.4**	**34,898**	**4,023.0**
35-44 years	Male	6,005	1,500.2	16,467	4,113.8
	Female	3,067	748.9	10,150	2,478.5
	All	**9,072**	**1,120.3**	**26,617**	**3,286.8**
45-54 years	Male	5,606	1,501.8	12,626	3,382.4
	Female	3,726	967.6	9,477	2,461.0
	All	**9,332**	**1,230.5**	**22,103**	**2,914.5**
55-64 years	Male	4,986	1,586.3	8,274	2,632.4
	Female	4,539	1,384.7	7,734	2,359.4
	All	**9,525**	**1,483.4**	**16,008**	**2,493.0**
All	Male	23,669	1,554.7	59,951	3,937.8
	Female	14,569	936.7	39,675	2,551.0
	All	**38,238**	**1,242.4**	**99,626**	**3,237.0**

Leading causes of injury

- Four of the five leading causes of adult hospital admissions and ED presentations were the same although the ranking on frequency of cases is different (Figure 46 & Figure 47).
- The leading cause of adult hospital admissions and ED presentations was falls accounting for 28% (n=10,560) of hospital admissions and 27% (n=26,557) of ED presentations.
- Transport accounted for 18% of admissions (n=6,687) but only 7% of presentations (n=7,267).
- Cutting and piercing injuries accounted for 11% of admissions (n=4,045) and 13% of ED presentations (n=12,498).
- Hit/struck/crush injuries accounted for just 9% of admissions (n=3,331) but 19% of ED presentations (n=18,817).
- The fifth ranking cause of hospital admissions was natural/environmental/animal related injury (5%, n=1,708) whereas for ED presentations it was injuries caused by a foreign body in a natural orifice e.g. ear, nose, eye (7%, n=6,629).

Figure 46: Adult hospital admissions by cause, Victoria 2013/14

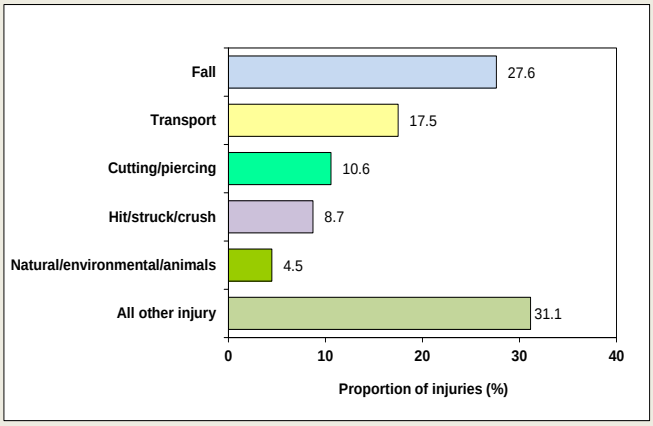
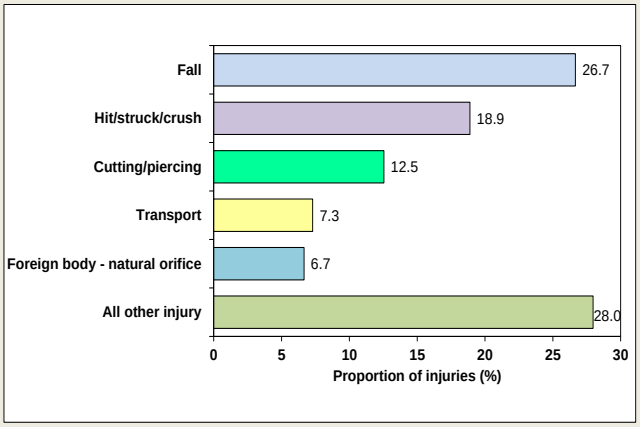


Figure 47: Adult ED presentations by cause, Victoria 2013/14



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 48 & Figure 49 show the five major specific injury types for adult hospital admissions and ED presentations.

- Fracture to the upper limb accounted for 16% (n=6,223) of adult hospital injury admissions and 9% (n=8,474) of ED presentations.
- Fracture to the lower limb was the second most common type of injury requiring hospital admission (11%, n=4,144) followed by open wound to upper limb (7%, n=2,760) and dislocations, sprains and strains to lower limb and injury to muscle and tendon in upper limb (5% each, n=1,972 & n=1,837).
- Dislocations, sprains and strains to the lower limb (11%, n=11,451), open wounds to the upper limb (11%, n=10,718) and dislocations, sprains and strains to the upper limb (7%, n=7,423) were the most common type of injuries among ED presentations.

Figure 48: Major injury type, adult hospital admissions, Victoria 2013/14

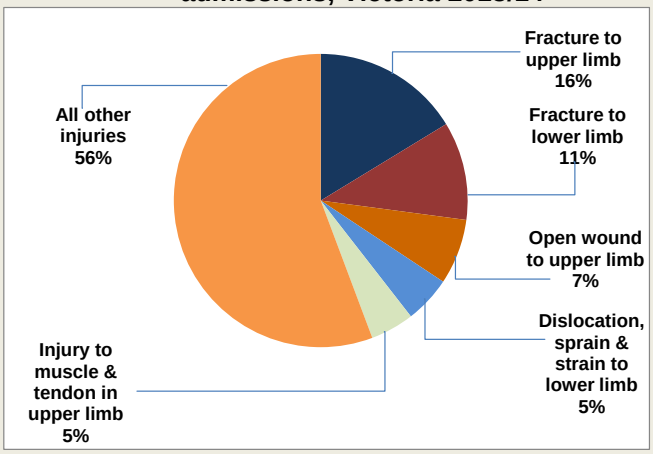
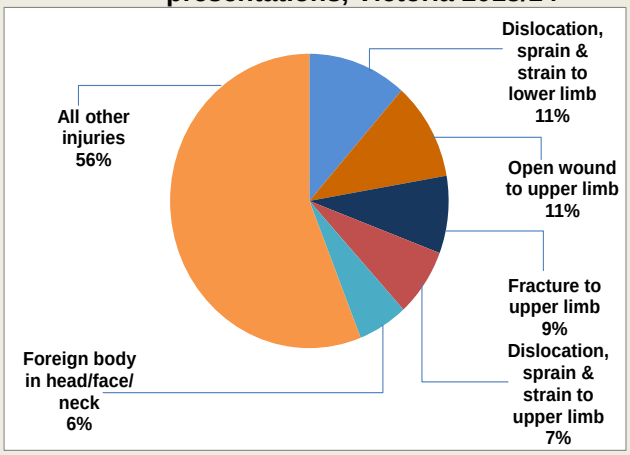


Figure 49: Major injury type, adult ED presentations, Victoria 2013/14



Setting

- Seventeen percent of injuries requiring hospital admission (n=6,419) and 38% of injuries resulting in ED presentation (n=37,659) occurred in the home (Figure 50 & Figure 51).
- Other locations where injuries to adults commonly occurred were:
  - working for income (13% of admissions (n=4,832) and 16% of ED presentations (n=15,781))
  - roads, streets and highways (13% of admissions (n=5,021) and 9% of ED presentations (n=8,426))
  - sports and athletics setting (6% of admissions (n=2,247) and 7% of ED presentations (n=6,450)).

Figure 50: Adult hospital admissions by setting, Victoria 2013/14

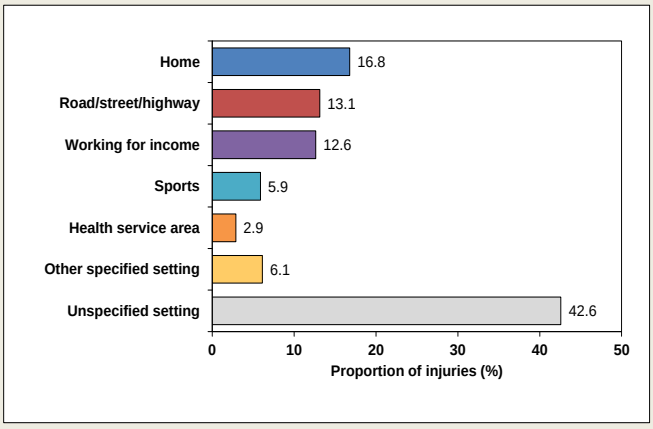


Figure 51: Adult ED presentations by setting, Victoria 2013/14

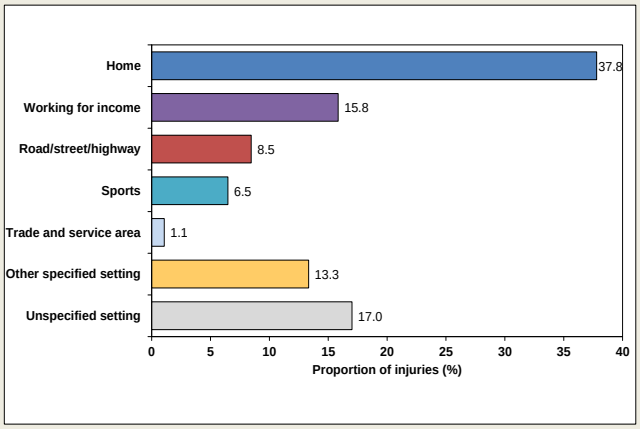


Table 11 Ranking of causes for injuries resulting in hospital admissions and ED presentations, persons aged 25 to 64 years, Victoria 2013/14

AGE GROUP	RANK	Admissions			Presentations		
		Cause	n	%	Cause	n	%
25-34 years	1	Transport	2,072	20.1	Hit/struck/crush	8,131	23.3
	2	Fall	1,840	17.8	Fall	7,920	22.7
	3	Unspecified unintentional	1,837	17.8	Cutting/piercing	4,581	13.1
	4	Cutting/piercing	1,325	12.9	Other specified unintentional	4,106	11.8
	5	Hit/struck/crush	1,316	12.8	Transport	2,749	7.9
	6	Overexertion and/or strenuous movements	464	4.5	Unspecified unintentional	2,707	7.8
	7	Natural/environmental/animals	417	4.0	Foreign body - natural orifice	2,063	5.9
	8	Poisoning	310	3.0	Natural/environmental/animals	963	2.8
	9	Other specified unintentional	201	1.9	Fires/burns/scalds	878	2.5
	10	Machinery	183	1.8	Poisoning	412	1.2
	11	Fires/burns/scalds	146	1.4	Machinery	339	1.0
	12	Foreign body - natural orifice	131	1.3	Choking/suffocate	36	<1
	13	Choking/suffocate	38	<1	Drowning/near drowning	13	<1
	14	Explosions/firearms	22	<1	Explosions/firearms	0	<1
	15	Drowning/near drowning	7	<1	Overexertion & strenuous movements	N/A	N/A
		All	10,309	100	All	34,898	100.0
35-44 years	1	Fall	1,976	21.8	Fall	6,529	24.5
	2	Transport	1,838	20.3	Hit/struck/crush	5,069	19.0
	3	Unspecified unintentional	1,572	17.3	Cutting/piercing	3,427	12.9
	4	Cutting/piercing	1,097	12.1	Other specified unintentional	3,417	12.8
	5	Hit/struck/crush	844	9.3	Unspecified unintentional	2,261	8.5
	6	Overexertion and/or strenuous movements	425	4.7	Transport	2,053	7.7
	7	Natural/environmental/animals	411	4.5	Foreign body - natural orifice	1,911	7.2
	8	Poisoning	231	2.5	Natural/environmental/animals	784	2.9
	9	Machinery	205	2.3	Fires/burns/scalds	614	2.3
	10	Foreign body - natural orifice	136	1.5	Poisoning	269	1.0
	11	Other specified unintentional	134	1.5	Machinery	257	1.0
	12	Fires/burns/scalds	123	1.4	Choking/suffocate	16	<1
	13	Choking/suffocate	53	<1	Drowning/near drowning	*	<1
	14	Explosions/firearms	22	<1	Explosions/firearms	*	<1
	15	Drowning/near drowning	5	<1	Overexertion & strenuous movements	N/A	N/A
		All	9,072	100	All	26,617	100.0
45-54 years	1	Fall	2,756	29.5	Fall	6,328	28.6
	2	Transport	1,577	16.9	Hit/struck/crush	3,523	15.9
	3	Unspecified unintentional	1,566	16.8	Other specified unintentional	2,887	13.1
	4	Cutting/piercing	926	9.9	Cutting/piercing	2,677	12.1
	5	Hit/struck/crush	681	7.3	Unspecified unintentional	1,920	8.7
	6	Natural/environmental/animals	461	4.9	Foreign body - natural orifice	1,621	7.3
	7	Overexertion and/or strenuous movements	408	4.4	Transport	1,543	7.0
	8	Poisoning	231	2.5	Natural/environmental/animals	649	2.9
	9	Machinery	189	2.0	Fires/burns/scalds	524	2.4
	10	Foreign body - natural orifice	189	2.0	Machinery	223	1.0
	11	Fires/burns/scalds	125	1.3	Poisoning	180	<1
	12	Other specified unintentional	122	1.3	Choking/suffocate	18	<1
	13	Choking/suffocate	85	<1	Drowning/near drowning	*	<1
	14	Drowning/near drowning	8	<1	Explosions/firearms	*	<1
	15	Explosions/firearms	8	<1	Overexertion & strenuous movements	N/A	N/A
		All	9,332	99	All	22,103	100.0
55-64 years	1	Fall	3,988	41.9	Fall	5,780	36.1
	2	Unspecified unintentional	1,568	16.5	Hit/struck/crush	2,094	13.1
	3	Transport	1,200	12.6	Other specified unintentional	1,944	12.1
	4	Cutting/piercing	697	7.3	Cutting/piercing	1,813	11.3
	5	Hit/struck/crush	490	5.1	Unspecified unintentional	1,343	8.4
	6	Natural/environmental/animals	419	4.4	Foreign body - natural orifice	1,034	6.5
	7	Overexertion and/or strenuous movements	278	2.9	Transport	922	5.8
	8	Foreign body - natural orifice	199	2.1	Natural/environmental/animals	479	3.0
	9	Poisoning	197	2.1	Fires/burns/scalds	315	2.0
	10	Machinery	160	1.7	Machinery	156	1.0
	11	Choking/suffocate	120	1.3	Poisoning	115	<1
	12	Fires/burns/scalds	109	1.1	Choking/suffocate	11	<1
	13	Other specified unintentional	90	<1	Drowning/near drowning	*	<1
	14	Explosions/firearms	*	<1	Explosions/firearms	*	<1
	15	Drowning/near drowning	*	<1	Overexertion & strenuous movements	N/A	N/A
		All	9,525	99	All	16,008	100.0
All ADULTS	1	Fall	10,560	27.6	Fall	26,557	26.7
	2	Transport	6,687	17.5	Hit/struck/crush	18,817	18.9
	3	Unspecified unintentional	6,543	17.1	Cutting/piercing	12,498	12.5
	4	Cutting/piercing	4,045	10.6	Other specified unintentional	12,354	12.4
	5	Hit/struck/crush	3,331	8.7	Unspecified unintentional	8,231	8.3
	6	Natural/environmental/animals	1,708	4.5	Transport	7,267	7.3
	7	Overexertion and/or strenuous movements	1,575	4.1	Foreign body - natural orifice	6,629	6.7
	8	Poisoning	969	2.5	Natural/environmental/animals	2,875	2.9
	9	Machinery	737	1.9	Fires/burns/scalds	2,331	2.3
	10	Foreign body - natural orifice	655	1.7	Poisoning	976	1.0
	11	Other specified unintentional	547	1.4	Machinery	975	1.0
	12	Fires/burns/scalds	503	1.3	Choking/suffocate	81	<1
	13	Choking/suffocate	296	<1	Drowning/near drowning	*	<1
	14	Explosions/firearms	59	<1	Explosions/firearms	*	<1
	15	Drowning/near drowning	23	<1	Overexertion & strenuous movements	N/A	N/A
		All	38,238	100	All	99,626	100.0

Older adults (65 years and older)

Trend

FREQUENCY

- The frequency of OLDER ADULT unintentional injury admissions (excluding same day admissions) increased significantly over the 16-year period from 11,982 in 1998/99 to 21,213 in 2013/14, representing an estimated annual change of 4.2% (3.8% to 4.5%) and an overall increase of 94.3% (82.5% to 101.2%) based on the trend line (Figure 52).
- The frequency of OLDER ADULT unintentional injury ED presentations increased significantly over the 10-year period from 15,778 in 2004/05 to 21,938 in 2013/14, representing an estimated annual change of 3.2% (2.6% to 3.8%) and an overall increase of 37.4% (29.1% to 44.9%) based on the trend line (Figure 53).

Figure 52: Trend in the frequency of OLDER ADULT injury hospital admissions, Victoria 1998/99- 2013/14

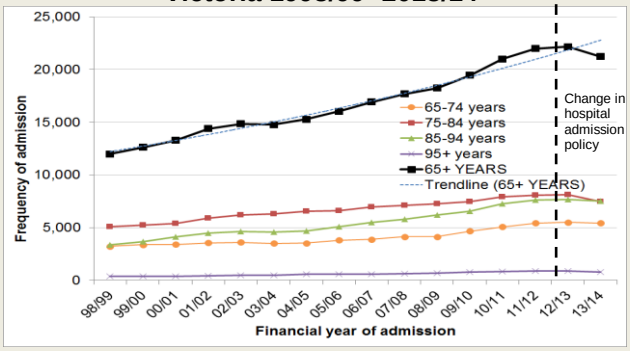
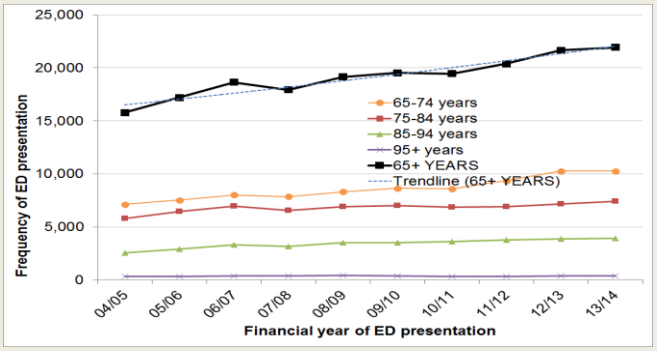


Figure 53: Trend in the frequency of OLDER ADULT injury ED presentations, Victoria 2004/05-2013/14



RATE

- The OLDER ADULT unintentional injury admission rate (excluding same day admissions) increased significantly over the 16-year period from 1,822.7/100,000 in 1998/99 to 2073.8/100,000 in 2013/14, representing an estimated annual change of 1.2% (0.9% to 1.5%) and an overall increase of 21.8% (16.3% to 27.1%) based on the trend line (Figure 54).
- The OLDER ADULT unintentional injury ED presentation rate increased slightly over the 10-year period from 2,207.8/100,000 in 2004/05 to 2,434.7/100,000 in 2013/14 although this did not represent a significant change based on the trend line (Figure 55).

Figure 54: Trend in injury hospital admission rates per 100,000 OLDER ADULTS, Victoria 1998/99-2013/14

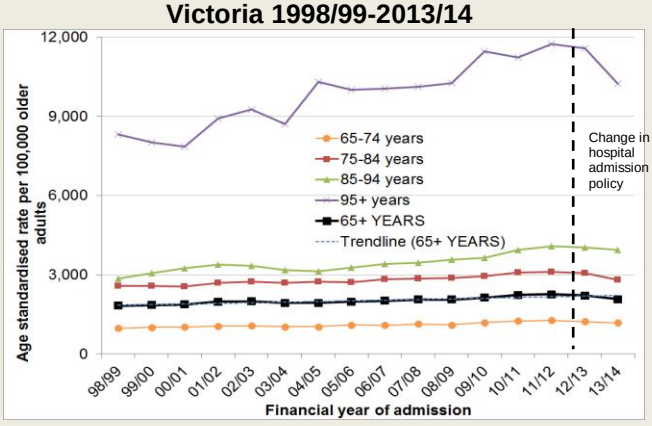
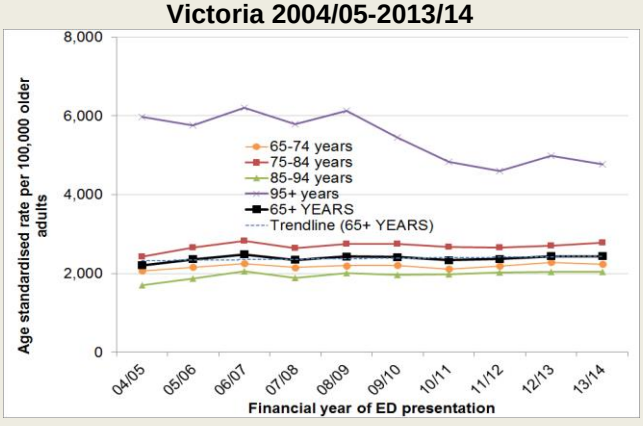


Figure 55: Trend in injury ED presentation rates per 100,000 OLDER ADULTS, Victoria 2004/05-2013/14



Hospital treated injury - gender and age

- Females were overrepresented in hospital injury data for persons aged 65 years and older. They accounted for 62% of hospital admissions (n=23,248) and 55% of ED presentations (n=12,144) in Victoria in 2013/14 (Figure 56 & Figure 57).
- 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, ED presentations then show a gradual drop with increasing age.

Figure 56: Older adult hospital admissions by gender and age,Victoria 2013/14

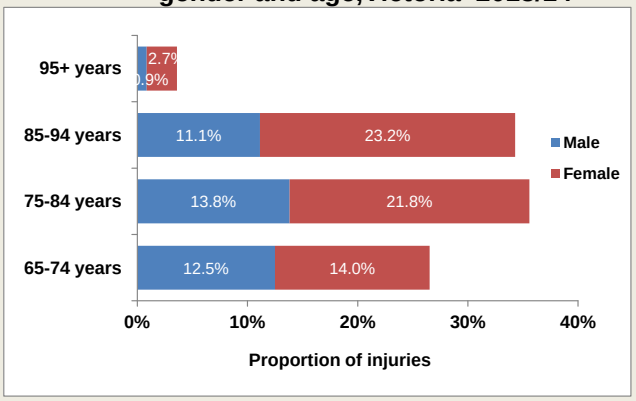
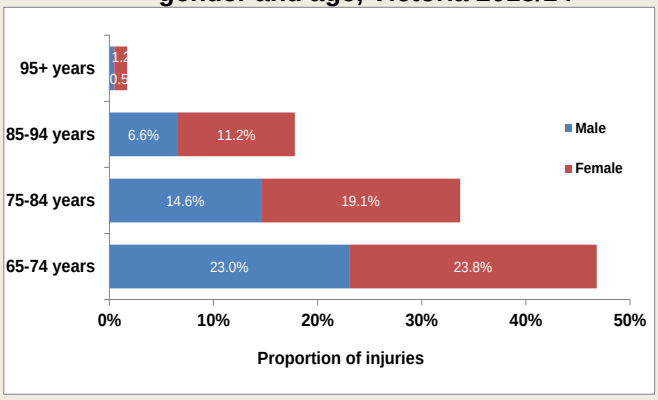


Figure 57: Older adult ED presentations by gender and age, Victoria 2013/14



- The rate of hospital admission and ED presentation was higher for females than males (5,114 & 2,671.4 /100,000 vs. 3,757.1 & 2,547.9/100,000) (Table 12).
- The rate of admissions and ED presentations increases with increase in age, but this is largely due to the lower population numbers in the older age groups.

Table 12: Frequency and rate of older adult hospital admissions and ED presentations by gender and age, Victoria 2013/14

Age group	Sex	Hospital admissions		ED presentations	
		n	Rate	n	Rate
65-74 years	Male	4,710	2,107.3	5,052	2,260.4
	Female	5,287	2,251.5	5,216	2,221.2
	All	**9,997**	**2,181.2**	**10,268**	**2,240.3**
75-84 years	Male	5,210	4,339.6	3,197	2,662.9
	Female	8,198	5,609.5	4,193	2,869.1
	All	**13,408**	**5,036.8**	**7,390**	**2,776.1**
85-94 years	Male	4,198	10,769.1	1,443	3,701.7
	Female	8,728	12,895.6	2,465	3,642.0
	All	**12,926**	**12,118.4**	**3,908**	**3,663.8**
95+ years	Male	324	17,551.5	102	5,525.5
	Female	1,035	17,403.7	270	4,540.1
	All	**1,359**	**17,438.7**	**372**	**4,773.5**
All	Male	14,442	3,757.1	9,794	2,547.9
	Female	23,248	5,114.0	12,144	2,671.4
	All	**37,690**	**4,492.3**	**21,938**	**2,614.8**

Leading causes of injury

- The leading cause of hospital admissions and ED presentations for older adults was falls. Falls accounted for almost three-quarters of hospital admissions (71%, n=26,782) and more than half of ED presentations (53%, n=11,706) in this age group (Figure 58 & Figure 59).
- Transport was the second most common cause of hospital admission (4%, n=1,600) and the cause of 3% of presentations (n=708). The second most common cause for ED presentations in this age group was hit/struck/crush (9%, n=1,934).
- The third leading cause of admissions was hit/struck/crush (3%, n=1,079) whereas for ED presentations it was cutting and piercing (7%, n=1,628).
- Natural/environmental/animal related injury accounted for 2% of admissions (n=801) and cutting and piercing accounted for 2% of admissions (n=785) and 7% of ED presentations (n=1,628) while injuries caused by a foreign body in a natural orifice e.g. ear, nose, eye accounted for 4% (n=837) of ED presentations.

Figure 58: Older adult hospital admissions by cause, Victoria 2013/14

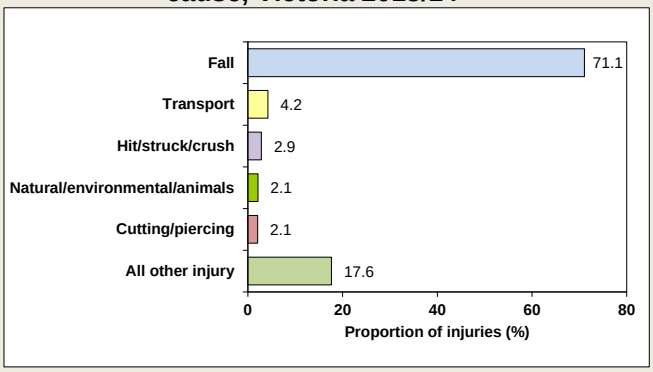
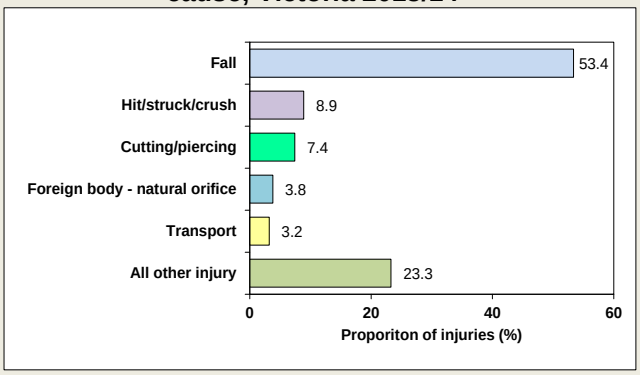


Figure 59: Older adult ED presentations by cause, Victoria 2013/14



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 60 & Figure 61 show the five major specific injury types for older adult hospital admissions and ED presentations.

- Fracture to the lower limb accounted for 17% of hospital injury admissions (n=6,519).
- Fracture to the upper limb accounted for 11% (n=4,182) of hospital admissions and 11% (n=2,381) of ED presentations. Fractures to the trunk were also common among hospital admissions (10%, n=3,724).
- Open wound to upper limb was the second most common injury (9%, n=1,850) among ED presentations in this age group.
- Open wounds to the head/face/neck accounted for 7% (n=2,567) of hospital admissions and 8% (n=1,779) of ED presentations.
- Dislocations, sprains and strains to the lower (7%, n=1,542) and upper limb (6%, n=1,356) were also common among ED presentations.

Figure 60: Major injury type, older adult hospital admissions, Victoria 2013/14

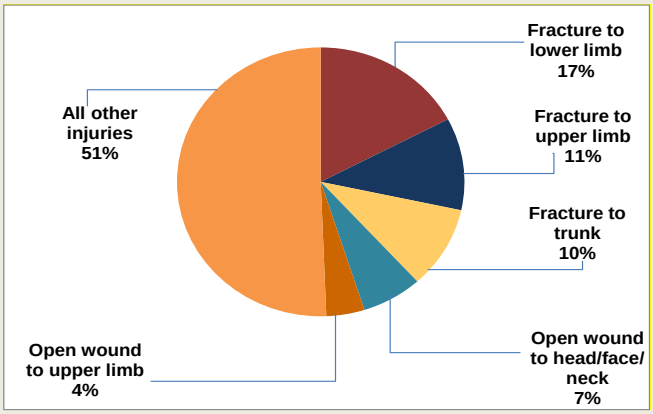
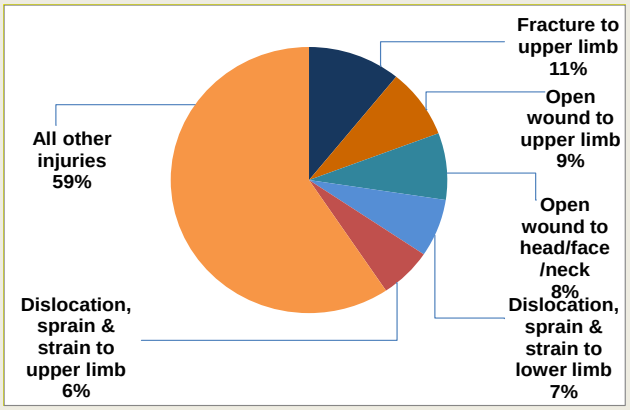


Figure 61: Major injury type, older adult ED presentations, Victoria 2013/14



Setting

- Around 38% of older adult injuries requiring hospital admission (n=14,428) and more than half of injuries resulting in ED presentations (56%, n=12,199) occurred in the home (Figure 62 & Figure 63).
- Other locations where injuries to older adults commonly occurred were:
  - residential institutions (14% of admissions (n=5,314) and 6% of ED presentations (n=1,406))
  - health service areas (8% of admissions (n=3,070))
  - roads, streets and highways (6% of admissions (n=2,411) and 7% of ED presentations (n=1,591)).

Figure 62: Older adult hospital admissions by setting, Victoria 2013/14

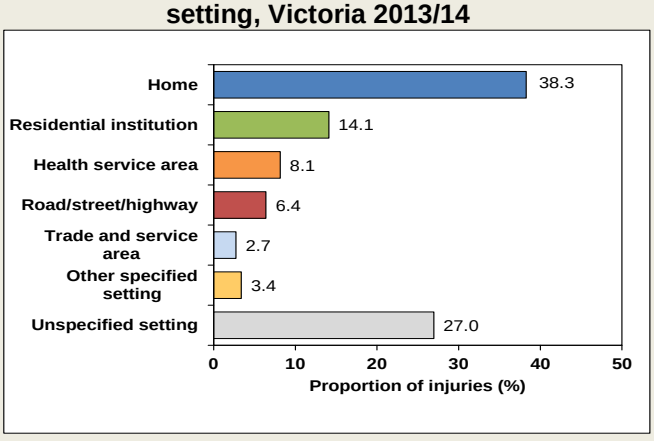


Figure 63: Older adult ED presentations by setting, Victoria 2013/14

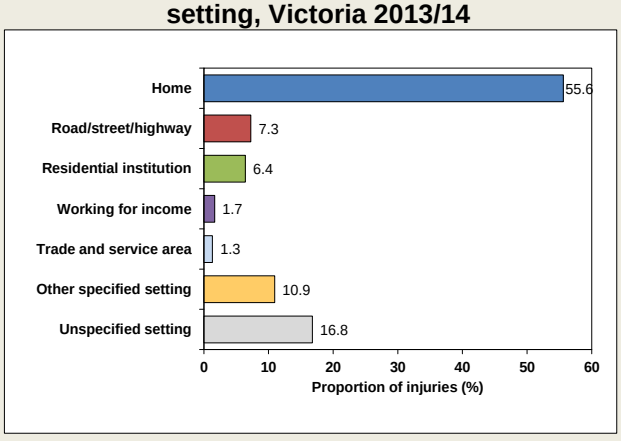


Table 13 Ranking of causes for injuries resulting in hospital admissions and ED presentations, persons aged 65 years and older, Victoria 2013/14

AGE GROUP	RANK	Admissions			Presentations		
		Cause	**n**	**%**	**Cause**	**n**	**%**
65-74 years	1	Fall	5,626	56.3	Fall	4,452	43.4
	2	Unspecified unintentional	1,294	12.9	Other specified unintentional	1,227	11.9
	3	Transport	764	7.6	Hit/struck/crush	1,070	10.4
	4	Cutting/piercing	508	5.1	Cutting/piercing	1,041	10.1
	5	Hit/struck/crush	378	3.8	Unspecified unintentional	910	8.9
	6	Natural/environmental/animals	338	3.4	Foreign body - natural orifice	568	5.5
	7	Overexertion and/or strenuous movements	280	2.8	Transport	416	4.1
	8	Poisoning	217	2.2	Natural/environmental/animals	283	2.8
	9	Foreign body - natural orifice	179	1.8	Fires/burns/scalds	139	1.4
	10	Choking/suffocate	141	1.4	Machinery	84	<1
	11	Other specified unintentional	91	<1	Poisoning	71	<1
	12	Fires/burns/scalds	87	<1	Choking/suffocate	*	<1
	13	Machinery	87	<1	Drowning/near drowning	*	<1
	14	Drowning/near drowning	*	<1	Explosions/firearms	0	<1
	15	Explosions/firearms	*	<1	Overexertion & strenuous movements	N/A	N/A
		All	9,997	100.0	All	10,268	100.0
75-84 years	1	Fall	9,660	72.0	Fall	4,237	57.3
	2	Unspecified unintentional	1,288	9.6	Other specified unintentional	764	10.3
	3	Transport	548	4.1	Unspecified unintentional	617	8.3
	4	Hit/struck/crush	362	2.7	Hit/struck/crush	607	8.2
	5	Overexertion and/or strenuous movements	283	2.1	Cutting/piercing	443	6.0
	6	Choking/suffocate	276	2.1	Transport	230	3.1
	7	Natural/environmental/animals	273	2.0	Foreign body - natural orifice	218	2.9
	8	Cutting/piercing	207	1.5	Natural/environmental/animals	117	1.6
	9	Poisoning	181	1.3	Fires/burns/scalds	65	<1
	10	Foreign body - natural orifice	161	1.2	Poisoning	48	<1
	11	Other specified unintentional	78	<1	Machinery	38	<1
	12	Fires/burns/scalds	54	<1	Drowning/near drowning	*	<1
	13	Machinery	*	<1	Choking/suffocate	*	<1
	14	Drowning/near drowning	*	<1	Explosions/firearms	0	<1
	15	Explosions/firearms	0	<1	Overexertion & strenuous movements	N/A	N/A
		All	13,408	100.0	All	7,390	100.0
85-94 years	1	Fall	10,351	80.1	Fall	2,717	69.5
	2	Unspecified unintentional	952	7.4	Unspecified unintentional	307	7.9
	3	Hit/struck/crush	310	2.4	Other specified unintentional	298	7.6
	4	Choking/suffocate	307	2.4	Hit/struck/crush	261	6.7
	5	Transport	278	2.2	Cutting/piercing	133	3.4
	6	Natural/environmental/animals	168	1.3	Transport	56	1.4
	7	Overexertion and/or strenuous movements	164	1.3	Foreign body - natural orifice	51	1.3
	8	Poisoning	136	1.1	Natural/environmental/animals	35	<1
	9	Foreign body - natural orifice	73	<1	Poisoning	25	<1
	10	Cutting/piercing	68	<1	Fires/burns/scalds	15	<1
	11	Other specified unintentional	52	<1	Machinery	6	<1
	12	Fires/burns/scalds	44	<1	Choking/suffocate	*	<1
	13	Machinery	*	<1	Explosions/firearms	*	<1
	14	Explosions/firearms	*	<1	Drowning/near drowning	0	<1
	15	Drowning/near drowning	0	<1	Overexertion & strenuous movements	N/A	N/A
		All	12,926	100.0	All	3,908	100.0
95+ years	1	Fall	1,145	84.3	Fall	300	80.6
	2	Unspecified unintentional	98	7.2	Unspecified unintentional	18	4.8
	3	Hit/struck/crush	29	2.1	Other specified unintentional	17	4.6
	4	Choking/suffocate	25	1.8	Hit/struck/crush	14	3.8
	8	Natural/environmental/animals	22	1.6	Cutting/piercing	11	3.0
	5	Transport	10	<1	Transport	6	1.6
	6	Overexertion and/or strenuous movements	8	<1	Poisoning	*	1.1
	7	Poisoning	7	<1	Natural/environmental/animals	*	<1
	9	Foreign body - natural orifice	7	<1	Drowning/near drowning	0	<1
	10	Other specified unintentional	*	<1	Fires/burns/scalds	0	<1
	11	Fires/burns/scalds	*	<1	Choking/suffocate	0	<1
	12	Cutting/piercing	*	<1	Machinery	0	<1
	13	Drowning/near drowning	0	<1	Explosions/firearms	0	<1
	14	Machinery	0	<1	Foreign body - natural orifice	0	<1
	15	Explosions/firearms	0	<1	Overexertion & strenuous movements	N/A	N/A
		All	1,359	100.0	All	372	100.0
ALL OLDER ADULTS	1	Fall	26,782	71.1	Fall	11,706	53.4
	2	Unspecified unintentional	3,632	9.6	Other specified unintentional	2,306	10.5
	3	Transport	1,600	4.2	Hit/struck/crush	1,952	8.9
	4	Hit/struck/crush	1,079	2.9	Unspecified unintentional	1,852	8.4
	5	Natural/environmental/animals	801	2.1	Cutting/piercing	1,628	7.4
	6	Cutting/piercing	785	2.1	Foreign body - natural orifice	837	3.8
	7	Choking/suffocate	749	2.0	Transport	708	3.2
	8	Overexertion and/or strenuous movements	735	2.0	Natural/environmental/animals	437	2.0
	9	Poisoning	541	1.4	Fires/burns/scalds	219	1.0
	10	Foreign body - natural orifice	420	1.1	Poisoning	148	<1
	11	Other specified unintentional	225	<1	Machinery	128	<1
	12	Fires/burns/scalds	187	<1	Choking/suffocate	10	<1
	13	Machinery	145	<1	Drowning/near drowning	*	<1
	14	Drowning/near drowning	*	<1	Explosions/firearms	*	<1
	15	Explosions/firearms	*	<1	Overexertion & strenuous movements	N/A	N/A
		All	37,690	100.0	All	21,938	100.0

Appendix

VISU DEFINITIONS, DATA SOURCES AND CASE SELECTION

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 includes 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.
'Non-same day admission' is defined as a hospital admission that separates on a date after the admission date.

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. A **'non-admission'** is a person who is discharged from the ED within four hours of the time patient management commenced or whose entire treatment occurs within the ED.

A **'child'** is usually defined as a person aged 0-14 years. An **'adult'** is usually defined as a person aged 15 years and older. These definitions apply because age data are usually grouped in 5-year age groups (0-4, 5-9, 10-14, 15-19 etc.).

Box 2: 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). Previously, VISU calculated injury severity scores using a standard set of Australian DSPs published in 2003 (Stephenson et al., 2003) and by using all injury diagnoses in a patient's record. 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.

VISU DATA SOURCES AND CASE SELECTION

1. Hospital admissions

1.1 Source: Victorian Admitted Episodes Dataset (VAED)

Hospital admissions for injury that contain an external cause code are extracted from the VAED by the Victorian Department of Health (DH) and supplied in unit record format to VISU annually. The 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 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 2013 to 30 June 2014, 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)*.
- 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.
- Mode of separation has any value except that the person died while in hospital.
- For the trends section only non-same day cases and those with a principal diagnosis in the ICD-10-AM range S00-T98 using Chapter XIX *Injury, poisoning and certain other consequences of external causes' codes* were included. Cases were selected for this section if the admission occurred between 1 July 1998 and 30 June 2014.

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 Department of Health (DH) 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 18th Edition, published by the Department of Health. The VEMD contains cases that are treated and discharged from the ED within 4 hours from the time patient management commences (i.e. 'non-admissions') and cases that are defined as 'admissions' according to the Victorian hospital admission policy. Admissions recorded on the VEMD are not usually included in injury surveillance reports if admissions are also being selected from the VAED because cases would then be over counted.

When the data file is received by VISU, it is cleaned, checked and merged with the VISU-VEMD injury surveillance dataset. VISU is able to run data searches on any of the data items contained in the dataset to provide a customised report containing a set of tables and short written summary.

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 2013 to 30 June 2014 coded according to the Victorian Emergency Minimum Dataset (VEMD) User Manual 18th edition.
- Data were selected if the injury was unintentional (VEMD human intent=1)
- ED presentations that resulted in death have been excluded.
- Presentations resulting in admissions have been excluded from the ED presentations dataset to avoid double counting with the hospital admissions data provided in this edition.
- Trends were analysed for the period 2004/05-2013/14 because from January 2004, VEMD data are collected by all Victorian public hospitals that provide a 24-hour ED service.