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**UNINTENTIONAL (ACCIDENTAL)
HOSPITAL-TREATED INJURY
VICTORIA**

2012/13

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Contents

Summary results.....	4
All ages.....	4
Children (0-14 years)	5
Adolescents and young adults (15-24 years)	5
Adults (25-64 years).....	6
Older adults (65 years and older).....	6
Introduction.....	8
Method	8
Data selection.....	8
Rates and trends analysis.....	8
All ages.....	9
Children (0-14 years)	17
Adolescents and young adults (15-24 years)	22
Adults (25-64 years)	27
Older adults (65 years and older).....	32
Appendix.....	37

Unintentional (accidental) hospital-treated injury in Victoria 2012/13

This is the tenth 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 2012/13 utilising two injury surveillance datasets that separately record hospital admissions and Emergency Department (ED) presentations for injury.

There have been some changes made in this edition, mainly:

- data is presented on a financial year basis rather than calendar year;
- the selection criteria and time periods for trends sections have been altered (see Box 1 and methods section); and
- analysis of activity and place of occurrence data reported in previous E-bulletins has been replaced with analysis by setting which is a new code combining activity and place (see Box 2).

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 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 397,014 hospital-treated injury cases in Victoria in 2012/13 (excluding complications of surgical and medical care, adverse effects of drugs in therapeutic use and late effects of injury), 83.9% of which were unintentional (n=332,956).

All ages

- More than 330,000 Victorians (6 in every 100) were treated in hospital for unintentional injury during 2012/13 (92,750 admissions and 240,206 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 15-year period 1998/99-2012/13 by 50.6% and 10.7%, respectively.
- Trend analysis for ED presentations is restricted to the 9-year period 2004/05-2012/13 as the hospitals contributing to the collection have largely been consistent since 2004. The frequency of unintentional injury ED presentations increased by 15.8% over the period 2004/05-2012/13 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 more 37% 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).

Children (0-14 years)

- 83,014 Victorian children (8 in every 100) were treated in hospital for unintentional injury during 2012/13 (10,894 admissions and 72,120 ED presentations).
- The frequency and rate per 100,000 population of unintentional injury hospital admissions (non-same day only) decreased significantly over the 15-year period 1998/99-2012/13 by 15.5% and 22.2%, respectively.
- In contrast to the trend among hospital admissions, the frequency of child unintentional injury ED presentations increased by 18.9% over the 9-year period 2004/05-2012/13 while the rate per 100,000 population remained fairly stable.
- Males were overrepresented accounting for 58% of all hospital-treated injury cases (61% of admissions and 58% of ED presentations).
- Falls were the leading cause of hospital-treated injury (44%) followed by hit/struck/crush incidents (21%).
- Twenty-one percent of hospital admissions and almost half of ED presentations (46%) were for injuries that occurred in the home. Children were also commonly injured in schools and other public buildings (12% of admissions and 13% of ED presentations) and sports and athletics areas (8% of admissions and 8% of ED presentations).

Adolescents and young adults (15-24 years)

- More than 58,000 Victorian adolescents and young adults (around 8 in every 100) were treated in hospital for unintentional injury during 2012/13 (10,691 admissions and 47,861 ED presentations).
- The frequency of unintentional injury hospital admissions (non-same day only) and ED presentations both increased significantly (hospital admissions by 23.4% over the 15-year period 1998/99-2012/13; ED presentations by 12.0% over the 9-year period 2004/05-2012/13). 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 (74% of admissions and 67% of ED presentations).
- Falls accounted for 18% of admissions and 26% of ED presentations. Hit/struck/crush was the leading cause of ED presentations (26%) and accounted for 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 (17%) 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 (19%) were the leading settings for injuries resulting in ED presentation.

Adults (25-64 years)

- Around 134,000 Victorian adults (around 4 in every 100) were treated in hospital for unintentional injury during 2012/13 (35,183 admissions and 98,751 ED presentations).
- The frequency and rate of unintentional injury hospital admissions (non-same day only) increased significantly over the 15-year period 1998/99-2012/13 by 57.5% and 22.6%, respectively.
- The frequency of unintentional injury ED presentations increased by 12.1% over the period 2004/05-2012/13 while the rate per 100,000 population remained fairly stable.
- Males were overrepresented accounting for 61% of all hospital-treated injury cases (63% of admissions and 61% of ED presentations).
- The leading cause of adult hospital-treated injury was falls: 28% of hospital admissions and 26% of ED presentations. Other major causes were transport (17% of admissions and 7% of ED presentations), hit/struck/crush (8% of admissions and 19% of ED presentations) and cutting and piercing (9% of admissions and 13% of ED presentations).
- Sixteen percent of hospital admissions and 37% of ED presentations were for injuries that occurred in the home. Other major settings for injury were: working for income (13% of admissions and 16% of ED presentations).

Older adults (65 years and older)

- Almost than 58,000 Victorian older adults (7 in every 100) were treated in hospital for unintentional injury during 2012/13 (35,982 admissions and 21,654 ED presentations).
- The frequency and rate of unintentional injury hospital admissions (non-same day only) increased significantly over the 15-year period 1998/99-2012/13 by 91.5% and 23.0%, respectively.
- The frequency of unintentional injury ED presentations increased by 33.5% over the period 2004/05-2012/13 while the rate per 100,000 population remained fairly stable.
- Females were overrepresented accounting for 60% of all hospital-treated injury cases (63% of admissions and 55% of ED presentations).
- Falls accounted for almost three-quarters of hospital admissions (72%) and more than half of ED presentations (52%) in this age group.
- Thirty-eight percent of hospital admissions and more than half of ED presentations (54%) were for injuries that occurred in the home. Other common settings for injuries were residential institutions (16% of admissions and 6% of ED presentations), health service areas (8% of admissions) and the road/street/highway (6% of admissions and 8% of ED presentations).

Table 1: Summary results

	All	Child (0-14 years)	Adolescent (15-24 years)	Adults (25-64 years)	Older adults (65+ years)
Total hospital treated	332,956	83,014	58,552	133,754	57,636
n in every 100	6	8	8	4	7
% all serious injury	n/a	3.4	6.6	27.1	62.9
Hospital costs	\$794.1 m	\$46.3 m	\$63.8 m	\$258.5 m	\$425.4 m
Admissions					
n	92,750	10,894	10,691	35,183	35,982
Rate/100,000	1,631.2	1,046.2	1,389.4	1,153.1	4,366.5
Trend frequency (% change)	50.6	15.5	23.4	57.5	91.5
Trend rate (% change)	10.7	22.2	stable	22.6	23.0
% males	54	61	74	63	37
Leading cause (%)	Falls (45.9)	Falls (45.0)	Transport (21.1)	Falls (27.6)	Falls (72.2)
Most common setting (%)	Home (24.0)	Home (20.6)	Sports (17.0)	Home (16.4)	Home (37.6)
Most common injury (%)	Fracture upper limb (17)	Fracture upper limb (32)	Fracture upper limb (21)	Fracture upper limb (17)	Fracture lower limb (17)
ED presentations					
n	240,206	72,120	47,861	98,751	21,654
Rate/100,000	4,224.6	6,926.2	6,219.8	3,230.6	2,627.8
Trend frequency (% change)	15.8	18.9	12.0	12.1	33.5
Trend rate (% change)	stable	stable	stable	stable	stable
% males	59	58	67	61	45
Leading cause (%)	Falls (34.0)	Falls (44.3)	Hit/struck/crush (26.7)	Falls (26.3)	Falls (52.4)
Most common setting (%)	Home (38.5)	Home (45.7)	Home (23.5)	Home (37.0)	Home (54.3)
Most common injury (%)	Dislocation, sprain & strain to lower limb and Fracture to upper limb (11)	Fracture upper limb (15)	Dislocation, sprain & strain to lower limb (16)	Dislocation, sprain & strain to lower limb (12)	Fracture upper limb (10)

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 (ISS) of less than or equal to 0.941 (see Box 2 in Appendix).
- 3) Percentage of serious injuries and hospital costs are based on hospital admissions only as these two measures are not available with the ED presentation data.

Introduction

This E-bulletin provides information on unintentional hospital-treated injury in 2012/13. Overall there were 397,014 hospital-treated injury cases in Victoria in 2012/13 (excluding complications of surgical and medical care, adverse effects of drugs in therapeutic use and late effects of injury), 83.9% of which were unintentional (n=332,956). The remaining injury cases were either intentional i.e. self-harm or assault (4.4%, n=17,495) or of other or undetermined intent (11.7%, n=46,563).

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 departments¹.

Data were selected if the admission (VAED) or presentation (VEMD) date occurred in the financial year 2012/13, 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* (NIPSP Plan).

Rates and trends analysis

Rates per 100,000 population have been calculated for the 15-year period 1998/99-2012/13 for hospital admissions data (VAED) and for the 9-year period 2004/05-2012/13 for ED presentations data (VEMD)². The denominators used for calculating rates were December 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-value, 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 36).

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

² The shorter time period has been selected for ED presentation 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 2012/13. Overall, there were more than 330,000 hospital treated injuries recorded in this period (92,750 admissions and 240,206 ED presentations) giving a rate of 5,855.8 hospital-treated injury cases per 100,000 Victorians.

- The hospital admission rate was highest in older adults (4,366.5 per 100,000 persons) and lowest in children (1,046.2 per 100,000 persons).
- The ED presentation rate was highest in children (6,926.2/100,000) and lowest in older adults (2,627.8/100,000).
- Children have the highest overall hospital-treated injury rate (admissions and ED presentations combined, 7,972.5/100,000), followed by adolescents and young adults (7,609.2/100,000) and older adults (6,994.3/100,000). Adults aged 25-64 years have the lowest hospital-treated injury rate (4,383.7/100,000).

Table 2: Hospital treated injury frequency and rates by broad age group, Victoria 2012/13

	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	10,894	1,046.2	10,691	1,389.4	35,183	1,153.1	35,982	4,366.5	92,750	1,631.2
ED presentations	72,120	6,926.2	47,861	6,219.8	98,571	3,230.6	21,654	2,627.8	240,206	4,224.6
Hospital-treated	83,014	7,972.5	58,552	7,609.2	133,754	4,383.7	57,636	6,994.3	332,956	5,855.8

Figure 1 shows hospital admission injury rates by age and gender for Victoria in 2012/13. 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 2012/13

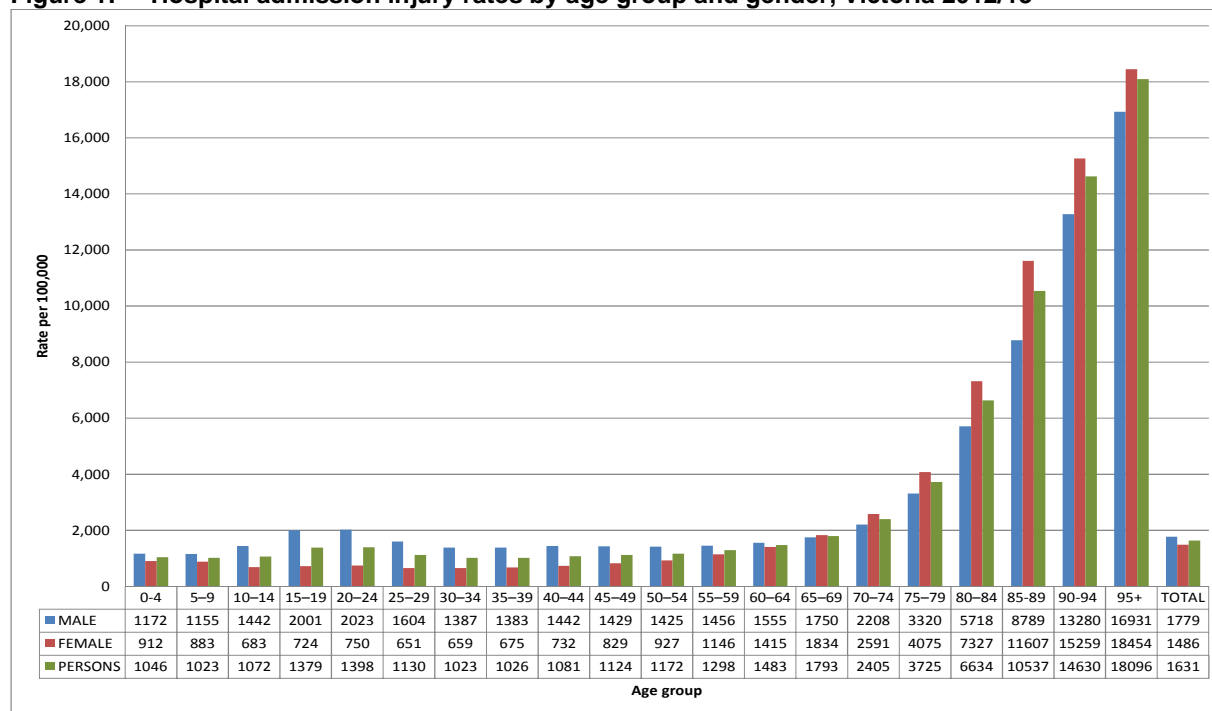


Figure 2 shows ED presentation injury rates by age and gender for Victoria in 2012/13. Age-specific injury ED presentation rates were high among children (0-9 years) and highest among older children (10-14 years) and then decreased throughout the adolescent and adult age groups until age 75 when rates 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 2012/13

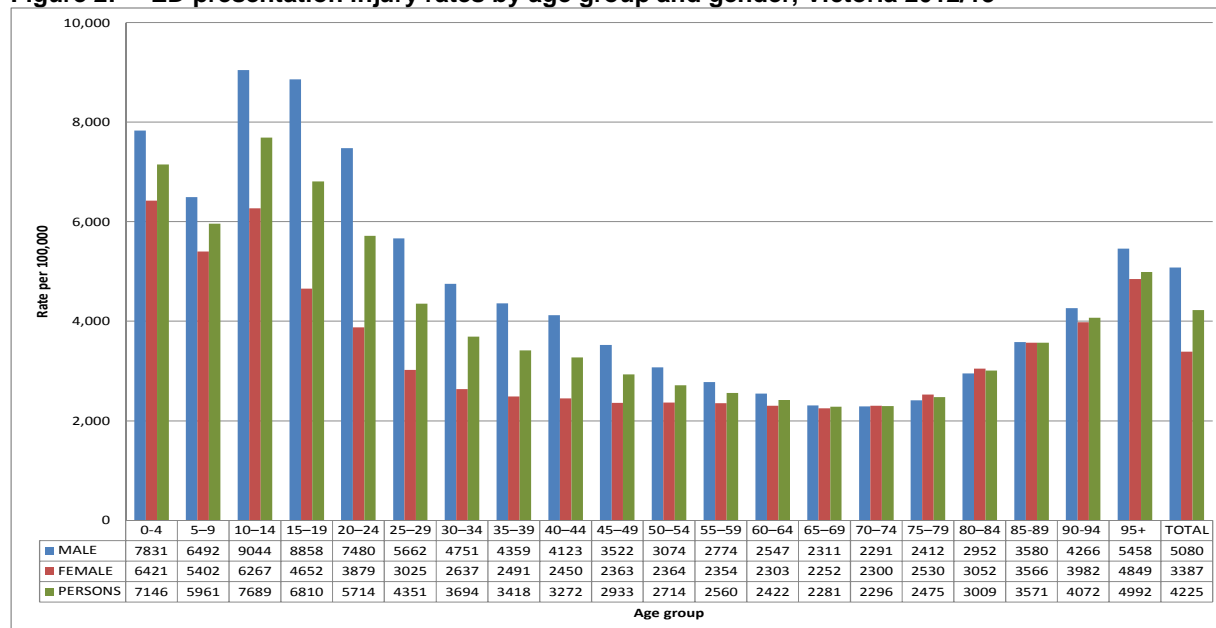


Figure 3 shows hospital-treated injury rates (admissions and ED presentations combined) by age and gender for Victoria in 2012/13. Age-specific hospital-treated injury rates were highest among persons aged 80 years and older and high among children, adolescents and young adults (0-24 years). The overall 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 2012/13

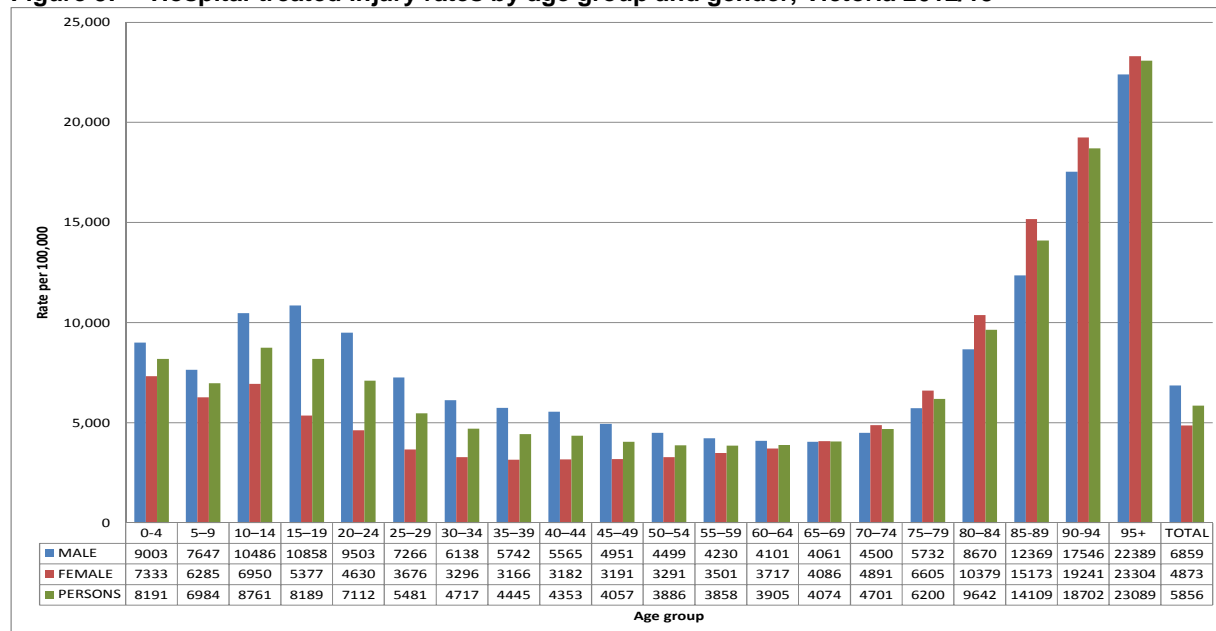


Table 3 provides an overview of the severity and health-care burden associated with unintentional injury hospital admissions by age group. Serious injuries are defined using the International Classification of Disease based Injury Severity Score – ICISS which reflects threat to life (see Box 2 in Appendix).

- Adults aged 25-64 years and older adults aged 65+ each accounted for around 40% of unintentional injury hospital admissions in 2012/13, while children (0-14 years) and adolescents & young adults (15-24 years) each accounted for around 12% of injury admissions.
- Almost two-thirds of serious injury admission occurred among those aged 65 years and older (62.9%, 9,247 serious injuries). Adults 65 years and older also accounted for the majority of hospital bed-days (70.8%, 541,210 days) and around half of the direct hospital costs (53.6%, \$425 million).
- Those aged 75-94 years accounted for more than a quarter of all unintentional injury hospital admissions (27.4%) and were particularly over-represented when serious injuries, bed-days and costs are taken in to account (48.0%, 54.4% and 38.3%, respectively).

Table 3: Unintentional injury hospital admissions by age group – frequency, serious injuries, direct hospital costs and hospital bed days (2012/13)

	Frequency		Serious injuries		Hospital bed-days		Hospital costs*	
	n	%	n	%	n	%	(millions)	%
0-4	3,812	4.1	212	1.4	7,057	0.9	\$15.0	1.9
5-9	3,529	3.8	122	0.8	5,713	0.7	\$14.7	1.8
10-14	3,553	3.8	174	1.2	6,322	0.8	\$16.6	2.1
0-14	10,894	11.7	508	3.4	19,092	2.4	\$46.3	5.8
15-19	4,902	5.3	420	2.9	13,215	1.7	\$28.7	3.6
20-24	5,789	6.2	547	3.7	17,543	2.3	\$35.1	4.4
15-24	10,691	11.5	967	6.6	30,758	4.0	\$63.8	8.0
25-34	9,208	9.9	868	6.0	30,508	4.0	\$55.5	7.0
35-44	8,506	9.1	860	5.8	33,652	4.4	\$56.8	7.2
45-54	8,656	9.3	1,012	6.9	44,142	5.8	\$65.1	8.2
55-64	8,813	9.5	1,223	8.4	64,530	8.4	\$81.1	10.2
25-64	35,183	37.8	3,963	27.1	172,832	22.6	\$258.5	32.6
65-74	9,208	10.0	1,713	11.7	104,258	13.6	\$105.8	13.4
75-84	13,196	14.3	3,382	23.0	207,386	27.1	\$164.7	20.7
85-94	12,197	13.1	3,677	25.0	208,082	27.3	\$140.0	17.6
95+	1,381	1.5	475	3.2	21,484	2.8	\$14.8	1.9
65+	35,982	38.9	9,247	62.9	541,210	70.8	\$425.4	53.6
TOTAL	92,750	100.0	14,685	100.0	763,892	100.0	\$794.1	100.0

* Estimate only – based on average 2011/12 hospital costs

Trend

FREQUENCY

Frequency and rate data for 2012/13 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 15-year period from 38,118 in 1998/99 to 53,600 in 2012/13, representing an estimated annual change of 2.8% (2.4% to 3.1%) and an overall increase of 50.6% (42.2% to 57.7%) based on the trend line (Figure 4).
- The frequency of ALL AGES unintentional injury ED presentations increased significantly over the 9-year period from 197,266 in 2004/05 to 240,206 in 2012/13, representing an estimated annual change of 1.6% (0.8% to 2.4%) and an overall increase of 15.8% (7.6% to 24.3%) based on the trend line (Figure 5).

Figure 4: Trend in the frequency of injury hospital admissions, Victoria 1998/99-2012/13

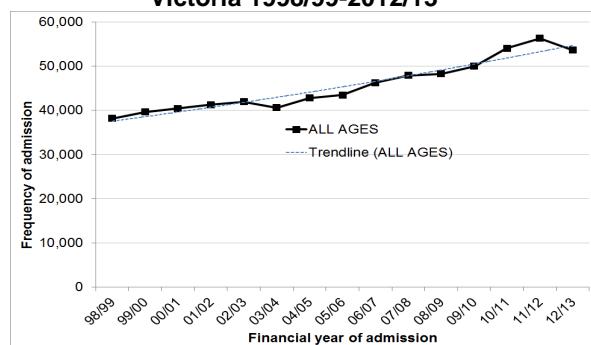
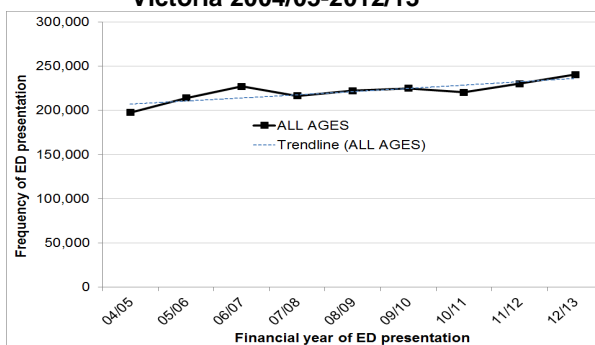


Figure 5: Trend in the frequency of injury ED presentations, Victoria 2004/05-2012/13



RATE

- The ALL AGES unintentional injury admission rate (excluding same day admissions) increased significantly over the 15-year period from 798.7/100,000 in 1998/99 to 847.1/100,000 in 2012/13, representing an estimated annual change of 0.7% (0.4% to 1.0%) and an overall increase of 10.7% (5.6% to 16.1%) based on the trend line (Figure 6).
- The ALL AGES unintentional injury ED presentation rate increased slightly over the 9-year period from 3,985.2/100,000 in 2004/05 to 4,289.6/100,000 in 2012/13. 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 1998/99-2012/13

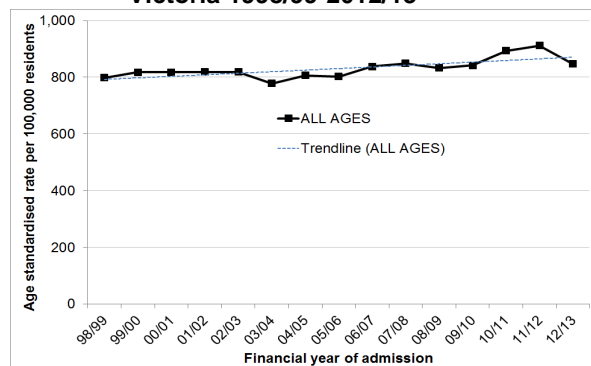
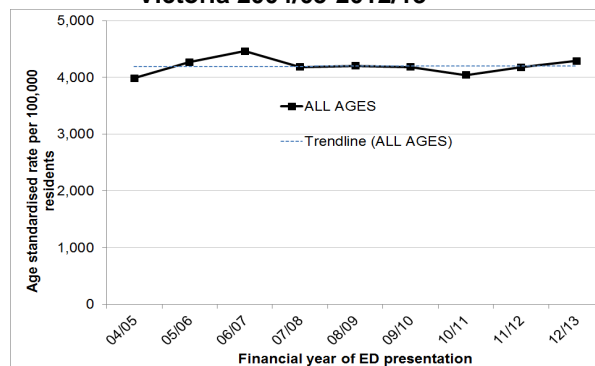


Figure 7: Trend in injury ED presentation rates per 100,000 population, Victoria 2004/05-2012/13



Hospital treated injury - gender and age

- Males were overrepresented accounting for 54% of all admissions (n= 50,059) and 59% of ED presentations (n=142,916) in Victoria in 2012/13.
- Seventy-seven percent (n=71,165) of hospital admissions occurred among persons aged 25 years and older, around half of these admissions were aged 25-64 years (n= 35,183) and the other half were aged 65 years and older (n= 35,982). Adults aged 25-64 years accounted for 41% of ED presentations (n=98,571).
- 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 2012/13

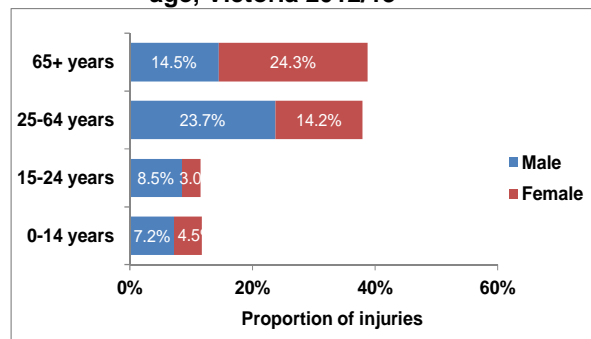
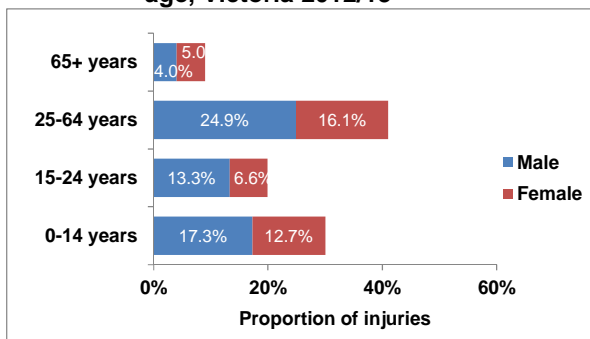


Figure 9: ED presentations by gender and age, Victoria 2012/13



- The all ages rate of hospital admission and ED presentation was higher for males than females (1,779.3/100,000 vs. 1,486.2/100,000 for admissions and 5,079.8/100,000 vs 3,387.0/100,000 for ED presentations).
- The hospital admission rate was highest in older adults (4,366.5 per 100,000 persons) and lowest in children (1,046.2 per 100,000 persons), whereas, the ED presentation rate was highest in children (6,926.2/100,000) and lowest in older adults (2,627.8/100,000) (Table 4).

Table 4: Frequency and rate of injury hospital admissions and ED presentations by gender and age, Victoria 2012/13

Age group	Sex	Hospital admissions		ED presentations	
		n	Rate	n	Rate
0-14 years	Male	6,688	1,252.0	41,522	7,772.9
	Female	4,206	829.5	30,598	6,034.3
	All	10,894	1,046.2	72,120	6,926.2
15-24 years	Male	7,913	2,012.3	31,926	8,119.1
	Female	2,778	738.3	15,935	4,235.0
	All	10,691	1,389.4	47,861	6,219.8
25-64 years	Male	22,025	1,459.4	59,788	3,961.7
	Female	13,158	853.3	38,783	2,515.1
	All	35,183	1,153.1	98,571	3,230.6
65+ years	Male	13,433	3,564.4	9,680	2,568.5
	Female	22,549	5,042.6	11,974	2,677.7
	All	35,982	4,366.5	21,654	2,627.8
All	Male	50,059	1,779.3	142,916	5,079.8
	Female	42,691	1,486.2	97,290	3,387.0
	All	92,750	1,631.2	240,206	4,224.6

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 46% (n=42,527) of hospital admissions and 34% (n=81,777) of ED presentations.
- Transport accounted for 12% of admissions (n=10,704) but just 6% of presentations (n=13,884) which indicates that transport injuries were more severe than injuries from other causes.
- Hit/struck/crush injuries accounted for 8% of admissions (n=7,303) but a higher proportion of ED presentations (20%, n=48,980).
- Cutting and piercing injuries accounted for 6% of admissions (n=5,203) and 9% of ED presentations (n=22,678).
- The fifth ranking cause of hospital admissions was natural/environmental/animal related injury (3%, n=2,847) whereas for ED presentations it was injuries caused by a foreign body in a natural orifice e.g. ear, nose, eye (5%, n=11,402).

Figure 10: Hospital admissions by cause, Victoria 2012/13

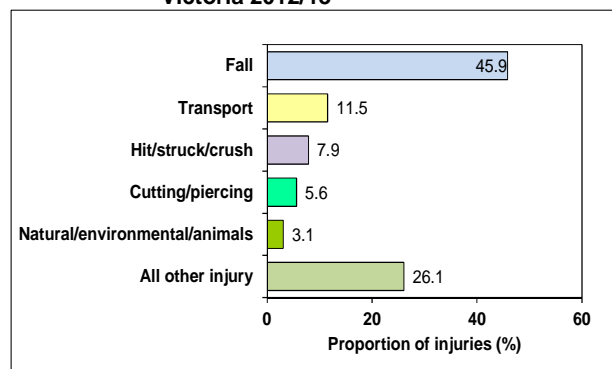
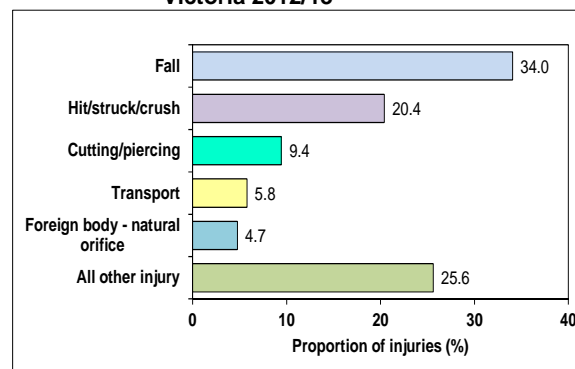


Figure 11: ED presentations by cause, Victoria 2012/13

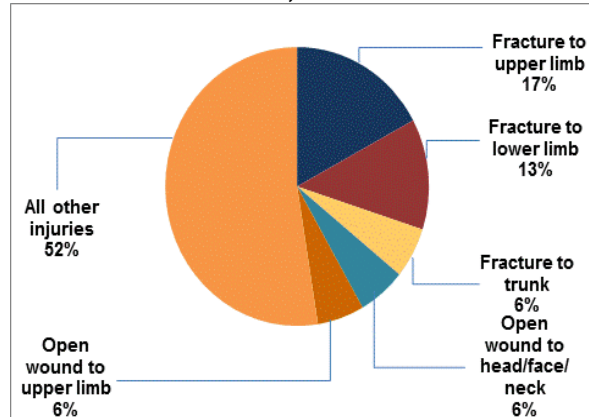
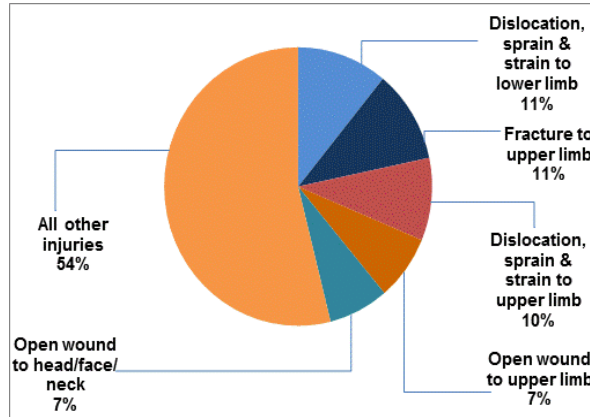


Note: "Other specified" and "unspecified" cases were included in the 'all other injuries' category regardless of their ranking

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 17% of hospital admissions and 11% ED presentations.
- Fracture to the lower limb was the second most common type of injury requiring hospital admission (13%).
- Dislocations, sprains and strains to the lower limb (10%) and upper limb (10%) were common among ED presentations.
- Open wounds to the head/face/neck and the upper limbs each accounted for 6% of hospital injury admissions and 7% of ED presentations.

Figure 12: Major injury type, hospital admissions, Victoria 2012/13**Figure 13: Major injury type, ED presentations Victoria 2012/13**

Setting

- Twenty four percent (n=22,298) of all injuries requiring hospital admission and 39% (n=92,397) 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 (5% of admissions and 9% of ED presentations). Around 6% of admissions resulted from injuries that occurred in residential institutional settings (Figure 14 & Figure 15).

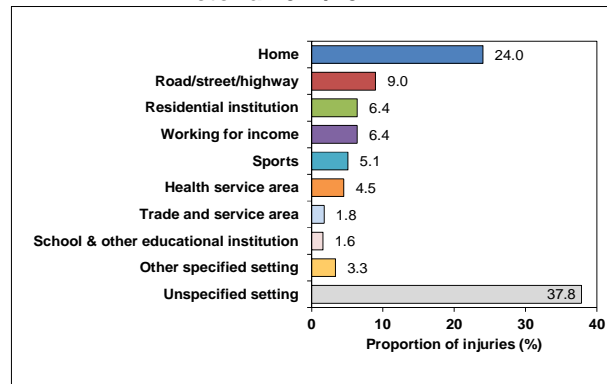
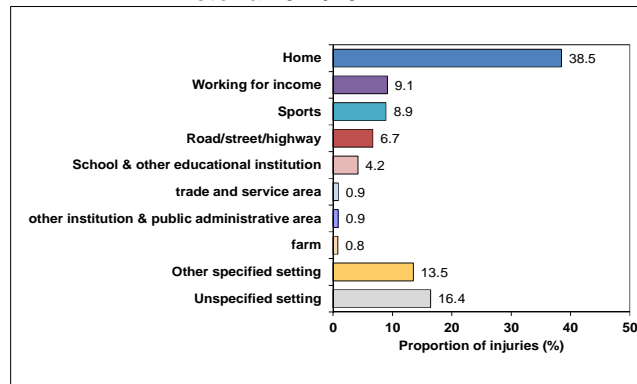
Figure 14: Hospital admissions by setting, Victoria 2012/13**Figure 15: ED presentations by setting, Victoria 2012/13**

Table 5 Ranking of causes for injuries resulting in hospital admissions and ED presentations, all ages, Victoria 2012/13

AGE GROUP	RANK	ADMISSIONS			PRESENTATIONS		
		CAUSE	n	%	CAUSE	n	%
0-14 years	1	Fall	4,906	45.0	Fall	31,949	44.3
	2	Hit/struck/crush	1,675	15.4	Hit/struck/crush	15,778	21.9
	3	Unspecified unintentional	1,169	10.7	Other specified unintentional	7,773	10.8
	4	Transport	899	8.3	Unspecified unintentional	5,064	7.0
	5	Foreign body - natural orifice	464	4.3	Cutting/piercing	3,541	4.9
	6	Cutting/piercing	455	4.2	Foreign body - natural orifice	2,708	3.8
	7	Natural/environmental/animals	404	3.7	Transport	1,946	2.7
	8	Poisoning	235	2.2	Natural/environmental/animals	1,355	1.9
	9	Other specified unintentional	218	2.0	Fires/burns/scalds	1,327	1.8
	10	Fires/burns/scalds	196	1.8	Poisoning	538	<1
	11	Overexertion and/or strenuous movements	119	1.1	Machinery	57	<1
	12	Choking/suffocate	82	<1	Choking/suffocate	52	<1
	13	Near drowning	31	<1	Near drowning	32	<1
	14	Machinery	30	<1	Explosions/firearms	*	*
	15	Explosions/firearms	11	<1	Overexertion & strenuous movements	N/A	N/A
15-24 years	All	10,894	100.0	All	72,120	100.0	
	1	Transport	2,259	21.1	Hit/struck/crush	12,764	26.7
	2	Unspecified unintentional	2,084	19.5	Fall	12,526	26.2
	3	Fall	1,917	17.9	Other specified unintentional	5,332	11.1
	4	Hit/struck/crush	1,722	16.1	Cutting/piercing	4,841	10.1
	5	Cutting/piercing	975	9.1	Unspecified unintentional	4,397	9.2
	6	Overexertion and/or strenuous movements	387	3.6	Transport	3,863	8.1
	7	Other specified unintentional	383	3.6	Foreign body - natural orifice	1,544	3.2
	8	Natural/environmental/animals	285	2.7	Fires/burns/scalds	934	2.0
	9	Poisoning	235	2.2	Natural/environmental/animals	847	1.8
	10	Machinery	151	1.4	Poisoning	527	1.1
	11	Fires/burns/scalds	113	1.1	Machinery	245	<1
	12	Foreign body - natural orifice	113	1.1	Choking/suffocate	32	<1
	13	Explosions/firearms	28	<1	Near drowning	9	<1
	14	Choking/suffocate	27	<1	Explosions/firearms	*	*
25-64 years	15	Near drowning	12	<1	Overexertion & strenuous movements	N/A	N/A
	All	10,691	100.0	All	47,861	100.0	
	1	Fall	9,715	27.6	Fall	25,950	26.3
	2	Unspecified unintentional	6,027	17.1	Hit/struck/crush	18,504	18.8
	3	Transport	6,022	17.1	Cutting/piercing	12,593	12.8
	4	Cutting/piercing	3,212	9.1	Other specified unintentional	11,432	11.6
	5	Hit/struck/crush	2,909	8.3	Unspecified unintentional	9,537	9.7
	6	Natural/environmental/animals	1,616	4.6	Transport	7,308	7.4
	7	Overexertion and/or strenuous movements	1,459	4.1	Foreign body - natural orifice	6,307	6.4
	8	Other specified unintentional	1,166	3.3	Natural/environmental/animals	2,730	2.8
	9	Poisoning	849	2.4	Fires/burns/scalds	2,274	2.3
	10	Machinery	757	2.2	Machinery	959	1.0
	11	Foreign body - natural orifice	560	1.6	Poisoning	871	<1
	12	Fires/burns/scalds	507	1.4	Choking/suffocate	71	<1
	13	Choking/suffocate	315	<1	Near drowning	25	<1
65+ years	14	Explosions/firearms	52	<1	Explosions/firearms	10	<1
	15	Near drowning	17	<1	Overexertion & strenuous movements	N/A	N/A
	All	35,183	100.0	All	98,571	100.0	
	1	Fall	25,989	72.2	Fall	11,352	52.4
	2	Unspecified unintentional	3,350	9.3	Unspecified unintentional	2,082	9.6
	3	Transport	1,524	4.2	Other specified unintentional	2,034	9.4
	4	Hit/struck/crush	997	2.8	Hit/struck/crush	1,934	8.9
	5	Choking/suffocate	801	2.2	Cutting/piercing	1,703	7.9
	6	Overexertion and/or strenuous movements	659	1.8	Foreign body - natural orifice	843	3.9
	7	Cutting/piercing	561	1.6	Transport	767	3.5
	8	Natural/environmental/animals	542	1.5	Natural/environmental/animals	475	2.2
	9	Poisoning	503	1.4	Fires/burns/scalds	181	<1
	10	Foreign body - natural orifice	383	1.1	Poisoning	153	<1
	11	Other specified unintentional	353	1.0	Machinery	109	<1
	12	Fires/burns/scalds	190	<1	Choking/suffocate	23	<1
All ages	13	Machinery	117	<1	Near drowning	*	*
	14	Explosions/firearms	7	<1	Explosions/firearms	*	*
	15	Near drowning	6	<1	Overexertion & strenuous movements	N/A	N/A
	All	35,982	100.0	All	21,654	100.0	
	1	Fall	42,527	45.9	Fall	81,777	34.0
	2	Unspecified unintentional	12,630	13.6	Hit/struck/crush	48,980	20.4
	3	Transport	10,704	11.5	Other specified unintentional	26,562	11.1
	4	Hit/struck/crush	7,303	7.9	Cutting/piercing	22,678	9.4
	5	Cutting/piercing	5,203	5.6	Unspecified unintentional	21,076	8.8
	6	Natural/environmental/animals	2,847	3.1	Transport	13,884	5.8
	7	Overexertion and/or strenuous movements	2,624	2.8	Foreign body - natural orifice	11,402	4.7
	8	Other specified unintentional	2,120	2.3	Natural/environmental/animals	5,407	2.3
	9	Poisoning	1,822	2.0	Fires/burns/scalds	4,716	2.0
	10	Foreign body - natural orifice	1,520	1.6	Poisoning	2,089	<1
	11	Choking/suffocate	1,225	1.3	Machinery	1,370	<1
12	Machinery	1,055	1.1	Choking/suffocate	178	<1	
13	Fires/burns/scalds	1,006	1.1	Near drowning	68	<1	
14	Explosions/firearms	98	<1	Explosions/firearms	17	<1	
15	Near drowning	66	<1	Overexertion & strenuous movements	N/A	N/A	
All	92,750	100.0	All	240,206	100.0		

Children (0-14 years)

Trend

FREQUENCY

- The frequency of CHILD unintentional injury admissions (excluding same day admissions) decreased significantly over the 15-year period from 6,944 in 1998/99 to 5,663 in 2012/13, representing an estimated annual decrease of 1.1% (-1.5% to -0.7%) and an overall reduction of 15.5% (-20.8% to -9.9%) based on the trend line (Figure 16).
- In contrast, the frequency of CHILD unintentional injury ED presentations increased significantly over the 9-year period from 57,507 in 2004/05 to 72,120 in 2012/13, representing an estimated annual change of 1.9% (1.0% to 2.8%) and an overall increase of 18.9% (9.3% to 28.8%) based on the trend line (Figure 17).

Figure 16: Trend in the frequency of CHILD injury hospital admissions, Victoria 1998/99-2012/13

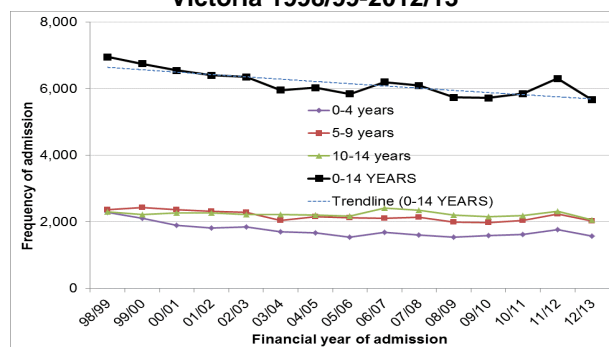
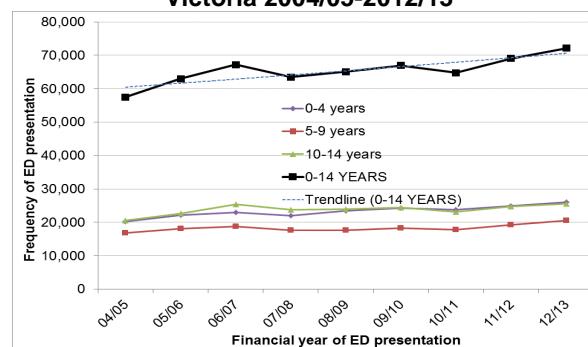


Figure 17: Trend in the frequency of CHILD injury ED presentations, Victoria 2004/05-2012/13



RATE

- The CHILD unintentional injury admission rate (excluding same day admissions) decreased significantly over the 15-year period from 734.1/100,000 in 1998/99 to 549.1/100,000 in 2012/13, representing an estimated annual decrease of 1.7% (-2.0% to -1.3%) and an overall reduction of 22.2% (-26.6% to -17.8%) based on the trend line (Figure 18).
- The CHILD unintentional injury ED presentation rate increased over the 9-year period from 5,999.1/100,000 in 2004/05 to 6,927.6/100,000 in 2012/13 although this did not represent a significant change based on the trend line (Figure 19).

Figure 18: Trend in injury hospital admission rates per 100,000 CHILDREN, Victoria 1998/99-2012/13

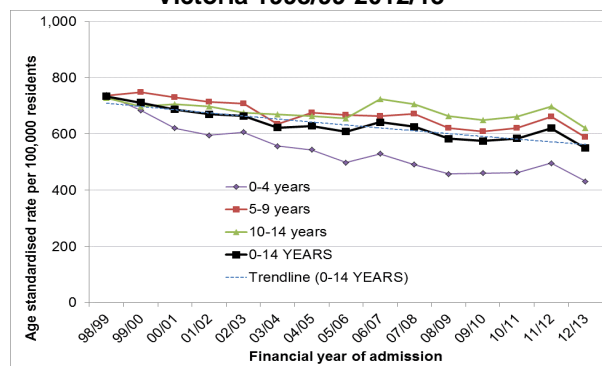
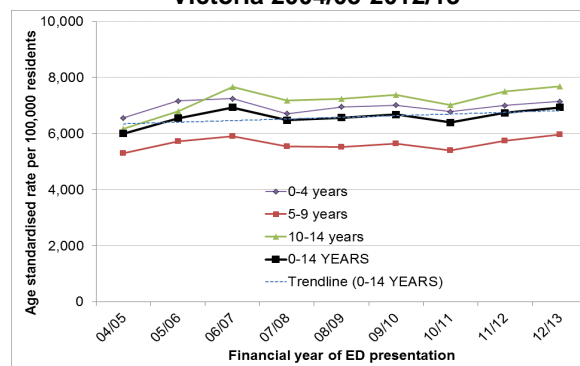


Figure 19: Trend in injury ED presentation rates per 100,000 CHILDREN, Victoria 2004/05-2012/13



Hospital treated injury - gender and age

- Males were overrepresented in child hospital-treated injury cases, accounting for 61% of hospital admissions (n=6,688) and 58% of ED presentations (n=41,522) in Victoria in 2012/13 (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 35% of child admissions and 36% of child ED presentations.
 - Children aged 5-9 years accounted for 32% of child admissions and 29% of child ED presentations.
 - Children aged 10-14 years accounted for 33% of child admissions and 35% of child ED presentations.

Figure 20: Child hospital admissions by gender and age, Victoria 2012/13

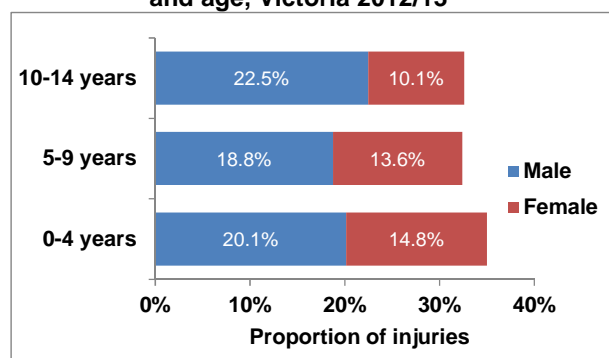
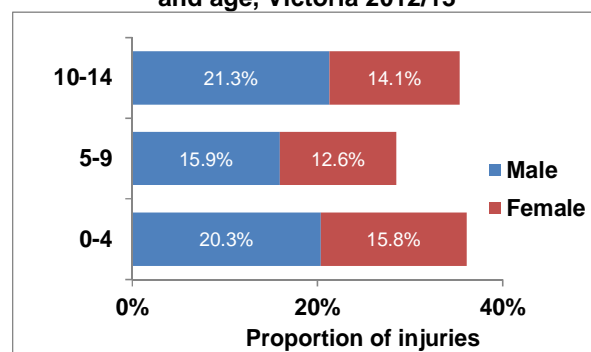


Figure 21: Child ED presentations by gender and age, Victoria 2012/13



- The child hospital admission and ED presentation rates were higher for males than females (1,252.0 & 7,772.9/100,000 vs. 829.5 & 6,034.3/100,000).
- 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 2012/13

Age group	Sex	Hospital admissions		ED presentations	
		n	Rate	n	Rate
0-4 years	Male	2,195	1,171.6	14,672	7,831.4
	Female	1,617	912.2	11,382	6,421.2
	All	3,812	1,045.5	26,054	7,145.8
5-9 years	Male	2,045	1,154.9	11,495	6,492.0
	Female	1,484	883.2	9,077	5,402.0
	All	3,529	1,022.6	20,572	5,961.3
10-14 years	Male	2,448	1,441.9	15,355	9,044.4
	Female	1,105	683.0	10,139	6,267.1
	All	3,553	1,071.6	25,494	7,689.2
All	Male	6,688	1,252.0	41,522	7,772.9
	Female	4,206	829.5	30,598	6,034.3
	All	10,894	1,046.2	72,120	6,926.2

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 45% (n=4,906) of child hospital admissions and 44% (n=31,949) of ED presentations.
- Hit/struck/crush injuries were the next major cause of injury accounting for 15% of admissions (n=1,675) and 22% of ED presentations (n=15,778).
- Transport accounted for 8% of admissions (n=899) and only 3% of ED presentations (n=1,946).
- Foreign body in a natural orifice injuries and cutting and piercing related injuries accounted for 4-5% of admissions (n=464 & n=455) and ED presentations (n=2,708 & n=3,541).

Figure 22: Child hospital admissions by cause, Victoria 2012/13

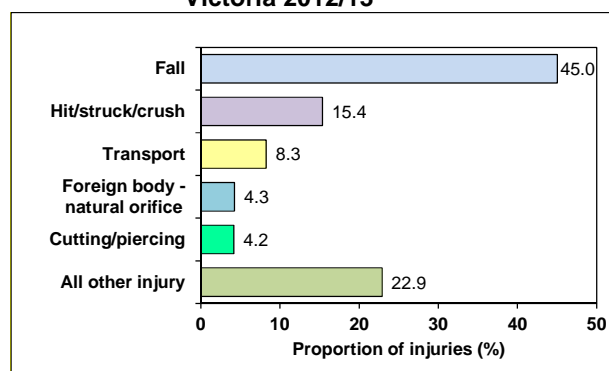
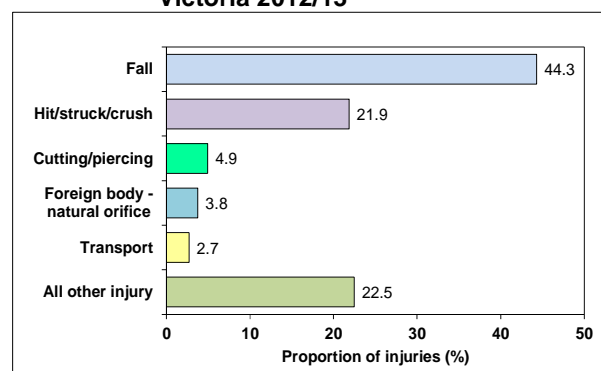


Figure 23: Child ED presentations by cause, Victoria 2012/13

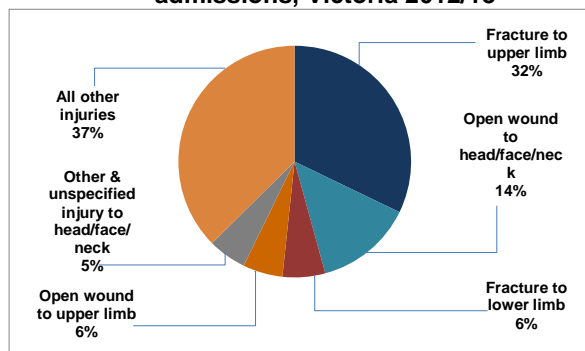
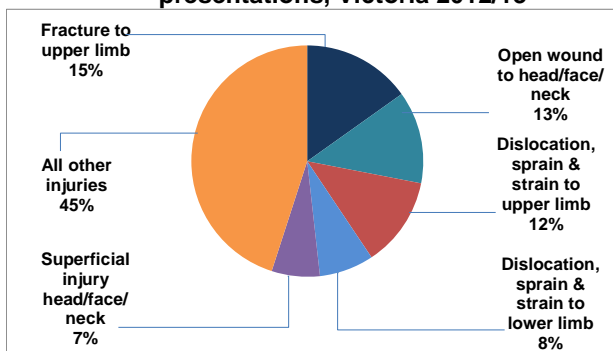


Note: 'Other specified' and 'unspecified' cases were included in the 'all other injuries' category regardless of their ranking

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 32% (n=3,506) of child hospital injury admissions and 15% of ED presentations.
- Open wounds to the head/face/neck accounted for 14% of child hospital injury admissions and 13% of ED presentations.
- Open wounds to upper limb and fractures to lower limb accounted for about 6% 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%, 8% and 7% respectively for ED presentations in children.

Figure 24: Major injury type, child hospital admissions, Victoria 2012/13**Figure 25: Major injury type, child ED presentations, Victoria 2012/13**

Setting

- Twenty one percent (n=2,245) of all injuries requiring hospital admission and 46% (n=32,943) of injuries resulting in ED presentation occurred in the home (Figure 26 & Figure 27).
- Children were also commonly injured in schools and educational settings (12% of admissions and 13% of ED presentations) and sports and athletics areas (8% of admissions and 8% of ED presentations).

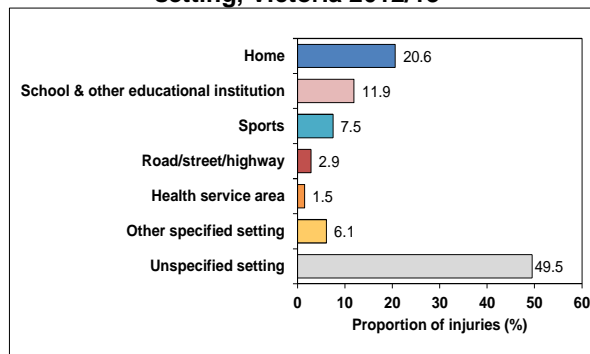
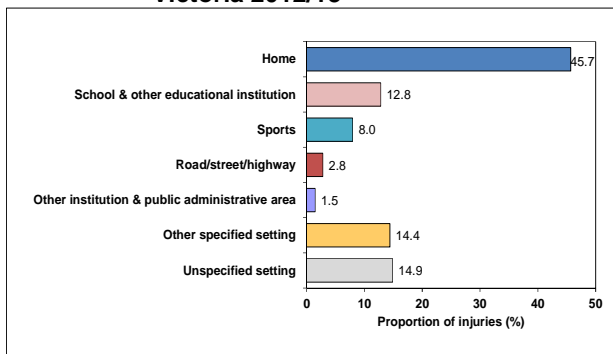
Figure 26: Child hospital admissions by setting, Victoria 2012/13**Figure 27: Child ED presentations by setting, Victoria 2012/13**

Table 7 Ranking of causes for injuries resulting in hospital admissions and ED presentations, children aged 0-14 years, Victoria 2012/13

AGE GROUP	RANK	ADMISSIONS			PRESENTATIONS		
		Cause	n	%	Cause	n	%
0-4 years	1	Fall	1,572	41.2	Fall	11,192	43.0
	2	Hit/struck/crush	639	16.8	Hit/struck/crush	4,581	17.6
	3	Unspecified unintentional	356	9.3	Other specified unintentional	3,225	12.4
	4	Foreign body - natural orifice	266	7.0	Unspecified unintentional	1,912	7.3
	5	Poisoning	195	5.1	Foreign body - natural orifice	1,641	6.3
	6	Cutting/piercing	170	4.5	Cutting/piercing	1,218	4.7
	7	Natural/environmental/animals	155	4.1	Fires/burns/scalds	912	3.5
	8	Fires/burns/scalds	149	3.9	Natural/environmental/animals	614	2.4
	9	Transport	124	3.3	Poisoning	434	1.7
	10	Other specified unintentional	80	2.1	Transport	246	<1
	11	Choking/suffocate	51	1.3	Choking/suffocate	30	<1
	12	Near drowning	24	<1	Machinery	25	<1
	13	Machinery	22	<1	Near drowning	24	<1
	14	Overexertion and/or strenuous movements	9	<1	Explosions/firearms	0	<1
	15	Explosions/firearms	*	*	Overexertion & strenuous movements	N/A	N/A
	All		3,812	100.0	All	26,054	100.0
5-9 years	1	Fall	1,907	54.0	Fall	9,858	47.9
	2	Hit/struck/crush	458	13.0	Hit/struck/crush	4,218	20.5
	3	Unspecified unintentional	295	8.4	Other specified unintentional	1,842	8.9
	4	Transport	287	8.1	Unspecified unintentional	1,328	6.5
	5	Foreign body - natural orifice	164	4.6	Cutting/piercing	1,216	5.9
	6	Natural/environmental/animals	147	4.2	Foreign body - natural orifice	776	3.8
	7	Cutting/piercing	128	3.6	Transport	597	2.9
	8	Other specified unintentional	58	1.6	Natural/environmental/animals	426	2.1
	9	Fires/burns/scalds	24	<1	Fires/burns/scalds	230	1.1
	10	Poisoning	21	<1	Poisoning	53	<1
	11	Choking/suffocate	18	<1	Machinery	13	<1
	12	Overexertion and/or strenuous movements	17	<1	Choking/suffocate	9	<1
	13	Machinery	5	<1	Near drowning	6	<1
	14	Near drowning	*	*	Explosions/firearms	*	*
	15	Explosions/firearms	*	*	Overexertion & strenuous movements	N/A	N/A
	All		3,529	100.0	All	20,572	100.0
10-14 years	1	Fall	1,427	40.2	Fall	10,899	42.8
	2	Hit/struck/crush	578	16.3	Hit/struck/crush	6,979	27.4
	3	Unspecified unintentional	518	14.6	Other specified unintentional	2,708	10.6
	4	Transport	488	13.7	Unspecified unintentional	1,824	7.2
	5	Cutting/piercing	157	4.4	Cutting/piercing	1,107	4.3
	6	Natural/environmental/animals	102	2.9	Transport	1,103	4.3
	7	Overexertion and/or strenuous movements	93	2.6	Natural/environmental/animals	315	1.2
	8	Other specified unintentional	93	2.6	Foreign body - natural orifice	291	1.1
	9	Foreign body - natural orifice	34	1.0	Fires/burns/scalds	185	<1
	10	Fires/burns/scalds	23	<1	Poisoning	51	<1
	11	Poisoning	19	<1	Machinery	19	<1
	12	Choking/suffocate	13	<1	Choking/suffocate	13	<1
	13	Explosions/firearms	8	<1	Near drowning	*	*
	14	Near drowning	*	*	Explosions/firearms	*	*
	15	Machinery	*	*	Overexertion & strenuous movements	N/A	N/A
	All		3,553	100.0	All	25,494	100.0
ALL CHILDREN	1	Fall	4,906	45.0	Fall	31,949	44.3
	2	Hit/struck/crush	1,675	15.4	Hit/struck/crush	15,778	21.9
	3	Unspecified unintentional	1,169	10.7	Other specified unintentional	7,769	10.8
	4	Transport	899	8.3	Unspecified unintentional	5,068	7.0
	5	Foreign body - natural orifice	464	4.3	Cutting/piercing	3,541	4.9
	6	Cutting/piercing	455	4.2	Foreign body - natural orifice	2,708	3.8
	7	Natural/environmental/animals	404	3.7	Transport	1,946	2.7
	8	Poisoning	235	2.2	Natural/environmental/animals	1,355	1.9
	9	Other specified unintentional	218	2.0	Fires/burns/scalds	1,327	1.8
	10	Fires/burns/scalds	196	1.8	Poisoning	538	<1
	11	Overexertion and/or strenuous movements	119	1.1	Machinery	57	<1
	12	Choking/suffocate	82	<1	Choking/suffocate	52	<1
	13	Near drowning	31	<1	Near drowning	32	<1
	14	Machinery	30	<1	Explosions/firearms	*	*
	15	Explosions/firearms	11	<1	Overexertion & strenuous movements	N/A	N/A
	All		10,894	100.0	All	72,120	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 15-year period from 5,441 in 1998/99 to 6,005 in 2012/13, representing an estimated annual change of 1.4% (0.9% to 1.9%) and an overall increase of 23.4% (14.5% to 32.5%) based on the trend line (Figure 28).
- The frequency of ADOLESCENT AND YOUNG ADULT unintentional injury ED presentations increased significantly over the 9-year period from 40,258 in 2004/05 to 47,861 in 2012/13, representing an estimated annual change of 1.3% (0.4% to 2.2%) and an overall increase of 12.0% (3.2% to 21.3%) based on the trend line (Figure 29).

Figure 28: Trend in the frequency of ADOLESCENT & YOUNG ADULT injury hospital admissions, Victoria 1998/99-2012/13

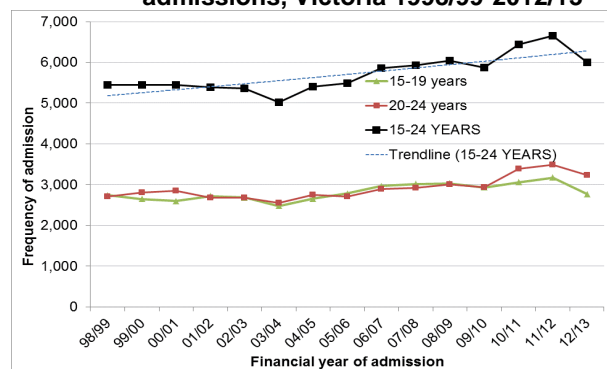
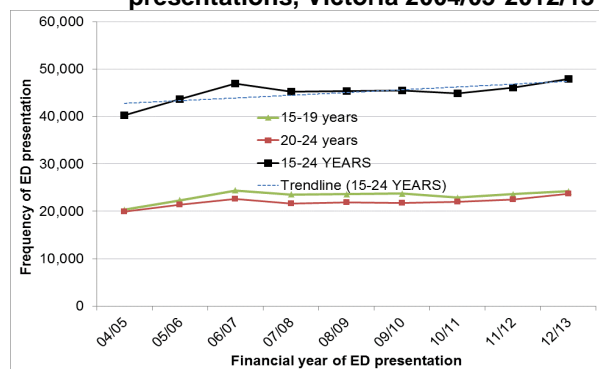


Figure 29: Trend in the frequency of ADOLESCENT & YOUNG ADULT injury ED presentations, Victoria 2004/05-2012/13



RATE

- The ADOLESCENT AND YOUNG ADULT unintentional injury admission rate (excluding same day admissions) decreased slightly over the 15-year period from 860.3/100,000 in 1998/99 to 780.2/100,000 in 2012/13. This decrease was not statistically significant (Figure 30).
- The ADOLESCENT AND YOUNG ADULT unintentional injury ED presentation rate increased over the 9-year period from 5,882.6/100,000 in 2004/05 to 6,262.3/100,000 in 2012/13 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 1998/99-2012/13

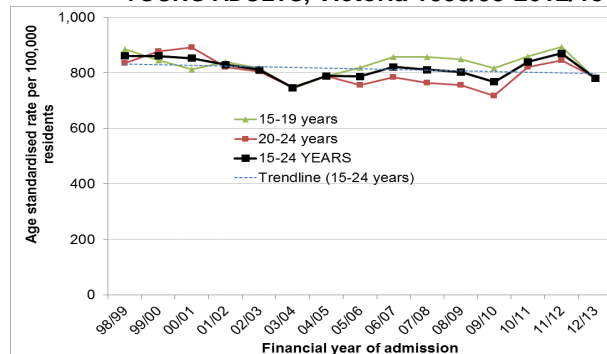
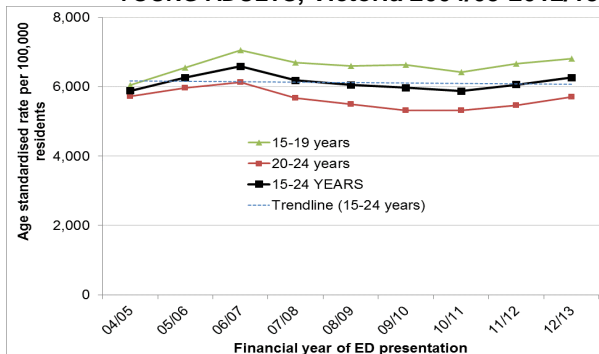


Figure 31: Trend in injury ED presentation rates per 100,000 ADOLESCENTS & YOUNG ADULTS, Victoria 2004/05-2012/13



Hospital treated injury - gender and age

- Males were overrepresented in hospital-treated injury cases among adolescents and young adults, accounting for 74% of hospital admissions (n=7,913) and 67% of ED presentations (n=31,926) in Victoria in 2012/13 (Figure 32 & Figure 33).
- Adolescent injury hospital admissions were more in the 20-24 age group (54%) while ED presentations were more common in the 15-19 age group (51%).

Figure 32: Adolescent and young adult hospital admissions by gender and age, Victoria 2012/13

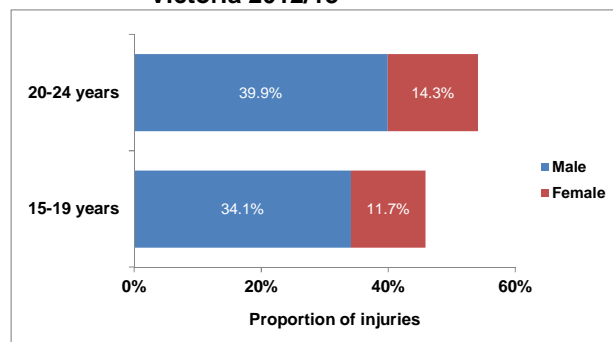
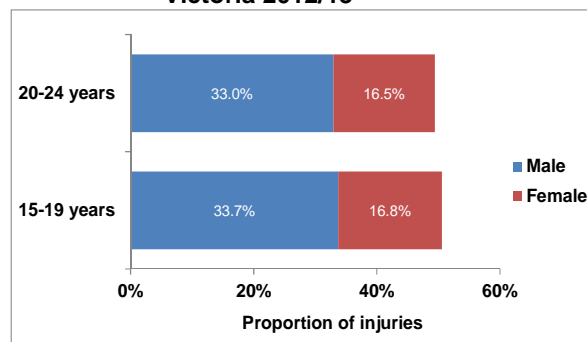


Figure 33: Adolescent and young adult ED presentations by gender and age, Victoria 2012/13



- Hospital admissions and ED presentation rates were higher for males than females (2,012.3 & 8,119.1/100,000 vs. 738.3 & 4,235.0/100,000) (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 2012/13

Age group	Sex	Hospital admissions		ED presentations	
		n	Rate	n	Rate
15-19 years	Male	3,648	2,000.5	16,152	8,857.6
	Female	1,254	724.4	8,054	4,652.3
	All	4,902	1,379.0	24,206	6,809.6
20-24 years	Male	4,265	2,022.6	15,774	7,480.4
	Female	1,524	750.2	7,881	3,879.4
	All	5,789	1,398.2	23,655	5,713.5
All	Male	7,913	2,012.3	31,926	8,119.1
	Female	2,778	738.3	15,935	4,235.0
	All	10,691	1,389.4	47,861	6,219.8

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=2,259) but only accounted for 8% of ED presentations (n=3,863).
- Falls was the second most common cause of hospital admissions (18%, n=1,917), and ED presentations (26%, n=12,526) in this age group.
- Hit/struck/crush injuries accounted for 16% of hospital admissions (n=1,722) and was the leading cause of ED presentations (27%, n=12,764).
- Cutting and piercing injuries accounted for 9% of admissions (n=975) and 10% of ED presentations (n=4,841).
- The fifth ranking cause of adolescent and young adult hospital admissions was overexertion and strenuous movements (4%, n=387) whereas for ED presentations it was injuries caused by a foreign body in a natural orifice e.g. ear, nose, eye (3%, n=1,544).

Figure 34: Adolescent and young adult hospital admissions by cause, Victoria 2012/13

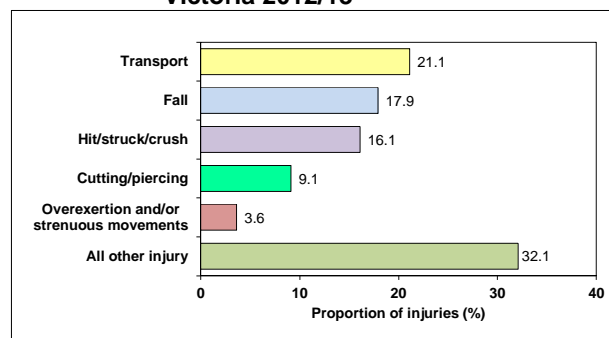
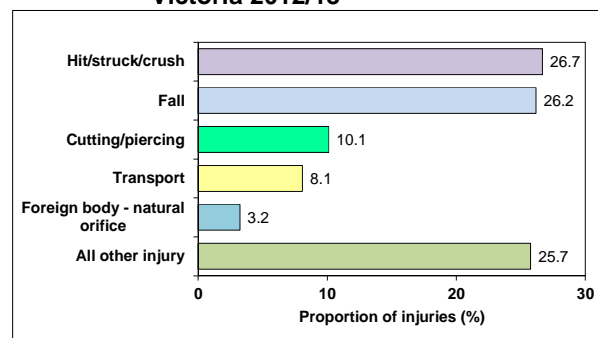


Figure 35: Adolescent and young adult ED presentations by cause, Victoria 2012/13



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 21% of hospital injury admissions and 10% of ED presentations.
- Fracture to the lower limb (9%) and dislocations, sprains and strains to the lower limb (8%) were common among admissions.
- Dislocations, sprains and strains to lower limb (16%), upper limb (11%) and open wounds to the upper limb (8%) were common among ED presentations.

Figure 36: Major injury type, adolescent and young adult hospital admissions, Victoria 2012/13

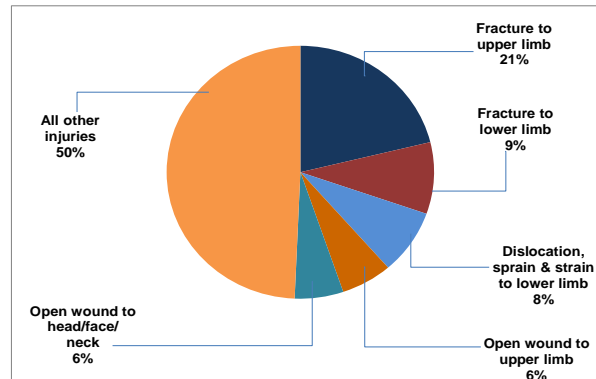
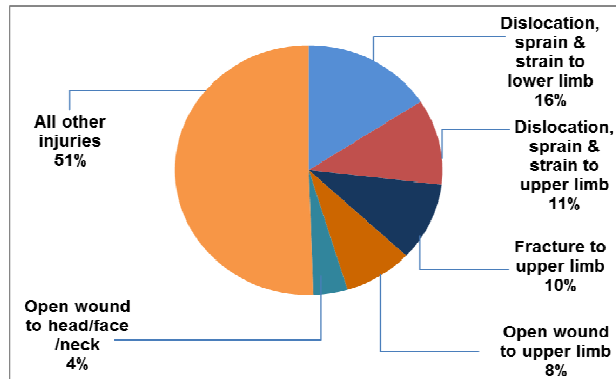


Figure 37: Major injury type, adolescent and young adult ED presentations, Victoria 2012/13



Setting

- Sports (17%) and the road, street and highway (14%) setting 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 (10%) and the home (7%).
- Among ED presentations the home (24%) and sports settings (19%) were the most common places of occurrence for injuries resulting in ED presentation (Figure 39). Other common settings were working for income (12%) and road/street and highway (8%).

Figure 38: Adolescent and young adult hospital admissions by setting, Victoria 2012/13

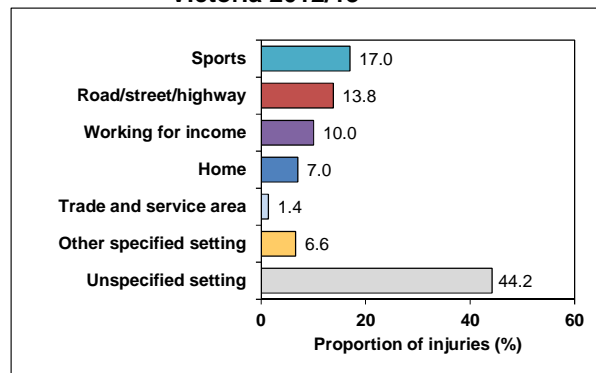


Figure 39: Adolescent and young adult ED presentations by setting, Victoria 2012/13

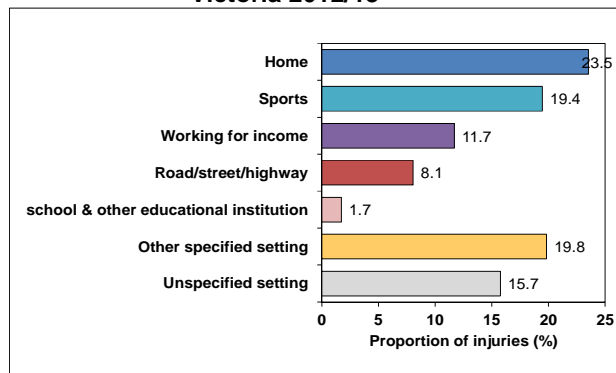


Table 9 Ranking of causes for injuries resulting in hospital admissions and ED presentations, adolescents and young adults, Victoria 2012/13

AGE GROUP	RANK	ADMISSIONS			PRESENTATIONS		
		Cause	n	%	Cause	n	%
15-19yrs	1	Unspecified unintentional	1,028	21.0	Hit/struck/crush	6,980	28.8
	2	Transport	1,004	20.5	Fall	6,937	28.7
	3	Fall	922	18.8	Other specified unintentional	2,713	11.2
	4	Hit/struck/crush	841	17.2	Unspecified unintentional	2,136	8.8
	5	Cutting/piercing	381	7.8	Cutting/piercing	1,988	8.2
	6	Overexertion and/or strenuous movements	174	3.5	Transport	1,836	7.6
	7	Other specified unintentional	161	3.3	Foreign body - natural orifice	519	2.1
	8	Natural/environmental/animals	114	2.3	Fires/burns/scalds	408	1.7
	9	Poisoning	104	2.1	Natural/environmental/animals	342	1.4
	10	Machinery	52	1.1	Poisoning	241	1.0
	11	Foreign body - natural orifice	49	1.0	Machinery	90	<1
	12	Fires/burns/scalds	40	<1	Choking/suffocate	16	<1
	13	Choking/suffocate	13	<1	Near drowning	*	*
	14	Explosions/firearms	11	<1	Explosions/firearms	0	<1
	15	Near drowning	8	<1	Overexertion & strenuous movements	N/A	N/A
		All	4,902	100.0	All	24,206	100.0
20-24yrs	1	Transport	1,255	21.7	Hit/struck/crush	5,784	24.5
	2	Unspecified unintentional	1,056	18.2	Fall	5,589	23.6
	3	Fall	995	17.2	Cutting/piercing	2,853	12.1
	4	Hit/struck/crush	881	15.2	Other specified unintentional	2,622	11.1
	5	Cutting/piercing	594	10.3	Unspecified unintentional	2,261	9.6
	6	Other specified unintentional	226	3.9	Transport	2,027	8.6
	7	Overexertion and/or strenuous movements	213	3.7	Foreign body - natural orifice	1,025	4.3
	8	Natural/environmental/animals	171	3.0	Fires/burns/scalds	526	2.2
	9	Poisoning	131	2.3	Natural/environmental/animals	505	2.1
	10	Machinery	99	1.7	Poisoning	286	1.2
	11	Fires/burns/scalds	73	1.3	Machinery	155	<1
	12	Foreign body - natural orifice	64	1.1	Choking/suffocate	16	<1
	13	Explosions/firearms	17	<1	Near drowning	6	<1
	14	Choking/suffocate	14	<1	Explosions/firearms	*	*
	15	Near drowning	*	*	Overexertion & strenuous movements	N/A	N/A
		All	5,789	100.0	All	23,655	100.0
ALL ADOLESCENTS AND YOUNG ADULTS	1	Transport	2,259	21.1	Hit/struck/crush	12,764	26.7
	2	Unspecified unintentional	2,084	19.5	Fall	12,526	26.2
	3	Fall	1,917	17.9	Other specified unintentional	5,332	11.1
	4	Hit/struck/crush	1,722	16.1	Cutting/piercing	4,841	10.1
	5	Cutting/piercing	975	9.1	Unspecified unintentional	4,397	9.2
	6	Overexertion and/or strenuous movements	387	3.6	Transport	3,863	8.1
	7	Other specified unintentional	383	3.6	Foreign body - natural orifice	1,544	3.2
	8	Natural/environmental/animals	285	2.7	Fires/burns/scalds	934	2.0
	9	Poisoning	235	2.2	Natural/environmental/animals	847	1.8
	10	Machinery	151	1.4	Poisoning	527	1.1
	11	Fires/burns/scalds	113	1.1	Machinery	245	<1
	12	Foreign body - natural orifice	113	1.1	Choking/suffocate	32	<1
	13	Explosions/firearms	28	<1	Near drowning	9	<1
	14	Choking/suffocate	27	<1	Explosions/firearms	*	*
	15	Near drowning	12	<1	Overexertion & strenuous movements	N/A	N/A
		All	10,691	100.0	All	47,861	100.0

Adults (25-64 years)

Trend

FREQUENCY

- The frequency of ADULT unintentional injury admissions (excluding same day admissions) increased significantly over the 15-year period from 13,751 in 1998/99 to 20,216 in 2012/13, representing an estimated annual change of 3.1% (2.6% to 3.4%) and an overall increase of 57.5% (47.5% to 66.0%) based on the trend line (Figure 40).
- The frequency of ADULT unintentional injury ED presentations increased significantly over the 9-year period from 83,723 in 2004/05 to 98,571 in 2012/13, representing an estimated annual change of 1.3% (0.5% to 2.0%) and an overall increase of 12.1% (5.1% to 19.4%) based on the trend line (Figure 41).

Figure 40: Trend in the frequency of ADULT injury hospital admissions, Victoria 1998/99-2012/13

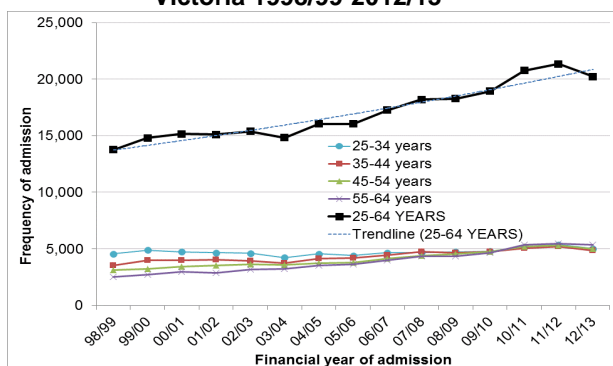
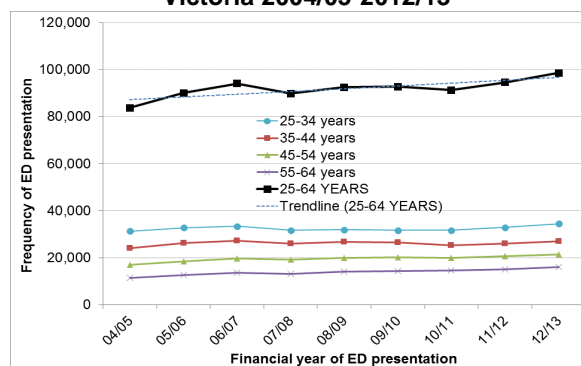


Figure 41: Trend in the frequency of ADULT injury ED presentations, Victoria 2004/05-2012/13



RATE

- The ADULT unintentional injury admission rate (excluding same day admissions) increased significantly over the 15-year period from 557.8/100,000 in 1998/99 to 654.1/100,000 in 2012/13, representing an estimated annual change of 1.4% (1.0% to 1.7%) and an overall increase of 22.6% (15.9% to 29.4%) based on the trend line (Figure 42).
- The ADULT unintentional injury ED presentation rate increased slightly over the 9-year period from 3,183.9/100,000 in 2004/05 to 3,253.6/100,000 in 2012/13 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 1998/99-2012/13

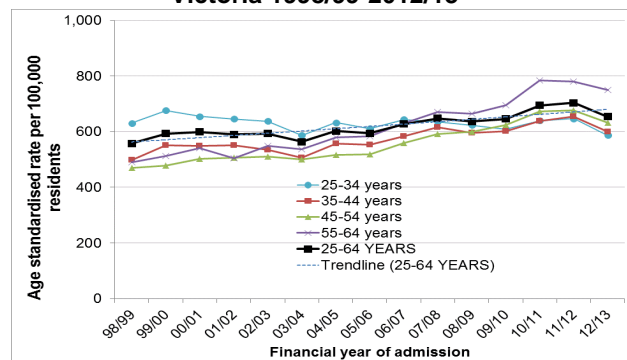
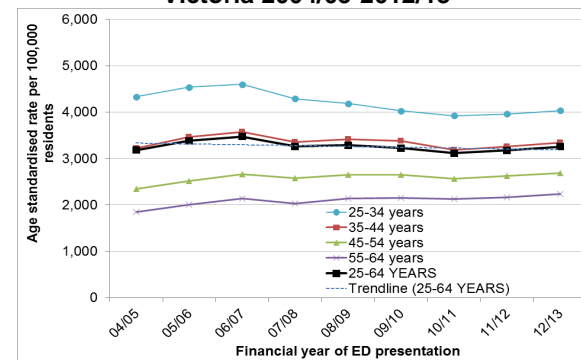


Figure 43: Trend in injury ED presentation rates per 100,000 ADULTS, Victoria 2004/05-2012/13



Hospital treated injury - gender and age

- Males were overrepresented in hospital injury data for adults aged 25 to 64 years, accounting for 63% of hospital admissions (n=22,025) and 61% of ED presentations (n=59,788) in Victoria in 2013 (Figure 44 & Figure 45).
- The proportion of injuries was 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 2012/13

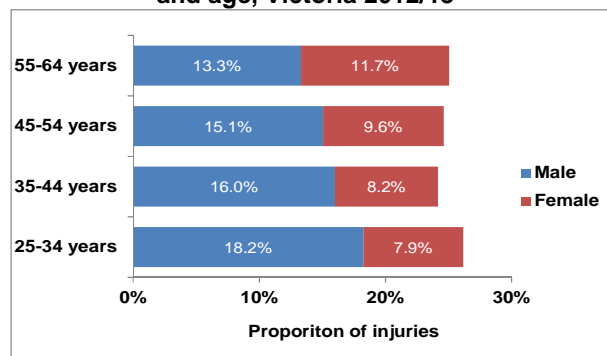
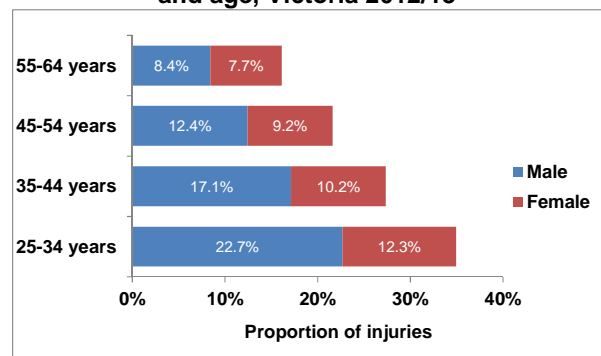


Figure 45: Adult ED presentations by gender and age, Victoria 2012/13



- Hospital admission and ED presentation rates were higher for males compared with females (1,459.4 & 3,961.7/100,000 vs. 853.3 & 2,515.1/100,000) and highest in the 55-64 age group for admissions and 25-29 group for ED presentations (Table 10).

Table 10: Frequency and rate of hospital admissions and ED presentations in adults by gender and age, Victoria 2012/13

Age group	Sex	Hospital admissions		ED presentations	
		n	Rate	n	Rate
25-34 years	Male	6,419	1,499.1	22,352	5,220.0
	Female	2,789	654.7	12,081	2,836.0
	All	9,208	1,078.0	34,433	4,031.1
35-44 years	Male	5,629	1,413.2	16,882	4,238.5
	Female	2,877	704.6	10,085	2,469.8
	All	8,506	1,054.5	26,967	3,343.1
45-54 years	Male	5,296	1,427.3	12,242	3,299.3
	Female	3,360	877.3	9,052	2,363.5
	All	8,656	1,148.0	21,294	2,824.0
55-64 years	Male	4,681	1,502.2	8,312	2,667.4
	Female	4,132	1,272.7	7,565	2,330.0
	All	8,813	1,385.1	15,877	2,495.3
All	Male	22,025	1,459.4	59,788	3,961.7
	Female	13,158	853.3	38,783	2,515.1
	All	35,183	1,153.1	98,571	3,230.6

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=9,715) of hospital admissions and 26% (n=25,950) of ED presentations.
- Transport accounted for 17% of admissions (n=6,022) but only 7% of presentations (n=7,308).
- Cutting and piercing injuries accounted for 9% of admissions (n=3,212) and 13% of ED presentations (n=12,593).
- Hit/struck/crush injuries accounted for just 8% of admissions (n=2,909) but 19% of ED presentations (n=17,821).
- The fifth ranking cause of hospital admissions was natural/environmental/animal related injury (5%, n=1,616) whereas for ED presentations it was injuries caused by a foreign body in a natural orifice e.g. ear, nose, eye (6%, n=6,307).

Figure 46: Adult hospital admissions by cause, Victoria 2012/13

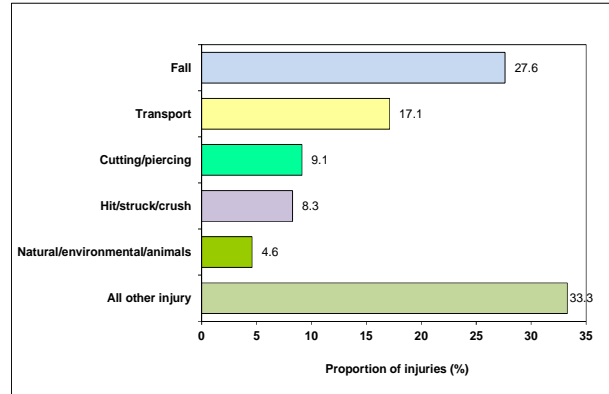
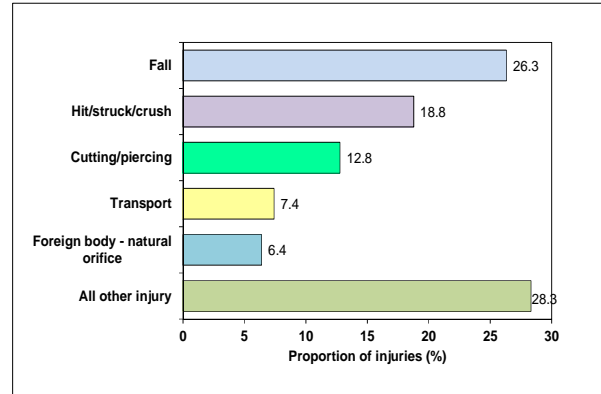


Figure 47: Adult ED presentations by cause, Victoria 2012/13



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 17% of adult hospital injury admissions and 8% of ED presentations.
- Fracture to the lower limb was the second most common type of injury requiring hospital admission (12%) followed by open wound to upper limb (7%) and injury to muscle and tendon in upper limb and dislocations, sprains and strains to lower limb (5% each).
- Dislocations, sprains and strains to the lower limb (12%), open wounds to the upper limb (11%) and dislocations, sprains and strains to the upper limb (7%) were the most common type of injuries among ED presentations.

Figure 48: Major injury type, adult hospital admissions, Victoria 2012/13

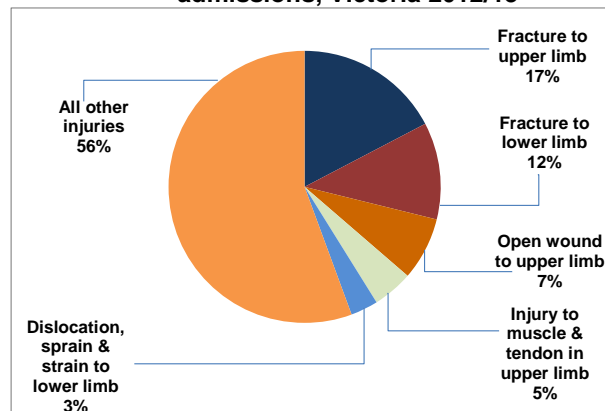
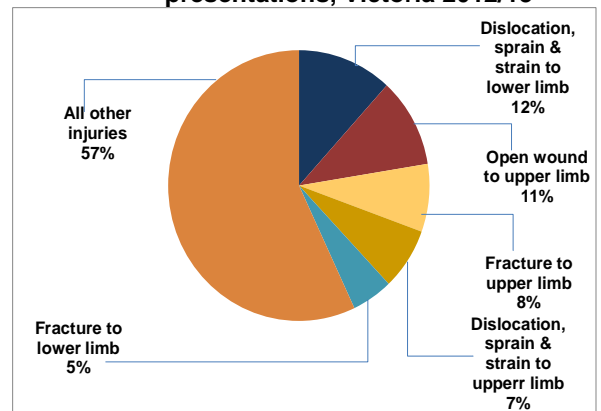


Figure 49: Major injury type, adult ED presentations, Victoria 2012/13



Setting

- Sixteen percent of injuries requiring hospital admission and 37% of injuries resulting in ED presentation occurred in the home (Figure 50 & Figure 51).
- Other locations where injuries to adults commonly occurred were:
 - working for income (13% of admissions and 16% of ED presentations)
 - roads, streets and highways (12% of admissions and 9% of ED presentations)
 - sports and athletics setting (6% of admissions and ED presentations).

Figure 50: Adult hospital admissions by setting, Victoria 2012/13

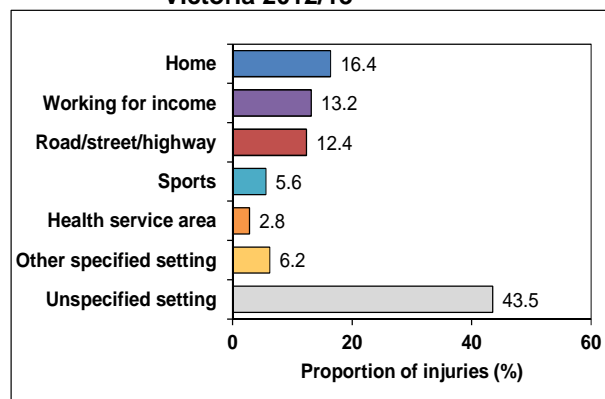


Figure 51: Adult ED presentations by setting, Victoria 2012/13

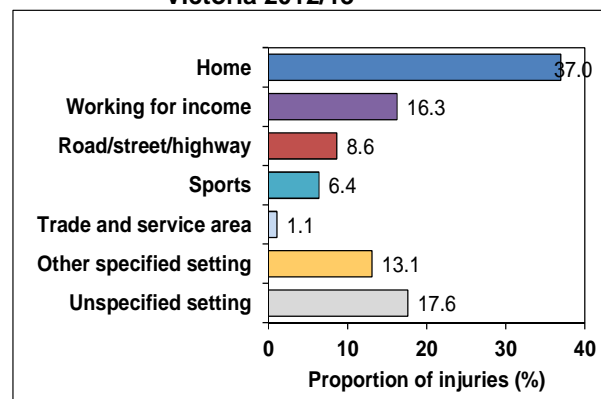


Table 11 Ranking of causes for injuries resulting in hospital admissions and ED presentations, persons aged 25 to 64 years, Victoria 2012/13

AGE GROUP	RANK	ADMISSIONS			PRESENTATIONS		
		CAUSE	n	%	CAUSE	n	%
25-34 years	1	Transport	1,873	20.3	Fall	7,954	23.1
	2	Unspecified unintentional	1,711	18.6	Hit/struck/crush	7,823	22.7
	3	Fall	1,626	17.7	Cutting/piercing	4,535	13.2
	4	Hit/struck/crush	1,117	12.1	Other specified unintentional	3,874	11.3
	5	Cutting/piercing	980	10.6	Unspecified unintentional	3,159	9.2
	6	Overexertion and/or strenuous movements	421	4.6	Transport	2,713	7.9
	7	Other specified unintentional	361	3.9	Foreign body - natural orifice	1,940	5.6
	8	Natural/environmental/animals	357	3.9	Natural/environmental/animals	868	2.5
	9	Poisoning	257	2.8	Fires/burns/scalds	859	2.5
	10	Machinery	199	2.2	Poisoning	352	1.0
	11	Fires/burns/scalds	136	1.5	Machinery	311	<1
	12	Foreign body - natural orifice	104	1.1	Choking/suffocate	30	<1
	13	Choking/suffocate	38	<1	Near drowning	10	<1
	14	Explosions/firearms	21	<1	Explosions/firearms	5	<1
	15	Near drowning	7	<1	Overexertion & strenuous movements	N/A	N/A
	All		9,208	100	All	34,433	100.0
35-44 years	1	Fall	1,798	21.1	Fall	6,508	24.1
	2	Transport	1,707	20.1	Hit/struck/crush	5,179	19.2
	3	Unspecified unintentional	1,489	17.5	Cutting/piercing	3,632	13.5
	4	Cutting/piercing	899	10.6	Other specified unintentional	3,235	12.0
	5	Hit/struck/crush	773	9.1	Unspecified unintentional	2,617	9.7
	6	Natural/environmental/animals	414	4.9	Transport	2,130	7.9
	7	Overexertion and/or strenuous movements	402	4.7	Foreign body - natural orifice	1,806	6.7
	8	Other specified unintentional	342	4.0	Natural/environmental/animals	718	2.7
	9	Poisoning	202	2.4	Fires/burns/scalds	651	2.4
	10	Machinery	192	2.3	Machinery	255	<1
	11	Fires/burns/scalds	126	1.5	Poisoning	214	<1
	12	Foreign body - natural orifice	102	1.2	Choking/suffocate	15	<1
	13	Choking/suffocate	39	<1	Near drowning	7	<1
	14	Explosions/firearms	14	<1	Explosions/firearms	*	*
	15	Near drowning	7	<1	Overexertion & strenuous movements	N/A	N/A
	All		8,506	100	All	26,967	100.0
45-54 years	1	Fall	2,495	28.8	Fall	5,876	27.6
	2	Unspecified unintentional	1,458	16.8	Hit/struck/crush	3,421	16.1
	3	Transport	1,422	16.4	Cutting/piercing	2,620	12.3
	4	Cutting/piercing	767	8.9	Other specified unintentional	2,554	12.0
	5	Hit/struck/crush	598	6.9	Unspecified unintentional	2,179	10.2
	6	Natural/environmental/animals	458	5.3	Transport	1,560	7.3
	7	Overexertion and/or strenuous movements	358	4.1	Foreign body - natural orifice	1,504	7.1
	8	Other specified unintentional	275	3.2	Natural/environmental/animals	673	3.2
	9	Machinery	208	2.4	Fires/burns/scalds	466	2.2
	10	Poisoning	203	2.3	Machinery	220	1.0
	11	Foreign body - natural orifice	176	2.0	Poisoning	199	<1
	12	Fires/burns/scalds	134	1.5	Choking/suffocate	14	<1
	13	Choking/suffocate	94	1.1	Near drowning	8	<1
	14	Explosions/firearms	10	<1	Explosions/firearms	*	*
	15	Near drowning	*	*	Overexertion & strenuous movements	N/A	N/A
	All		8,656	100	All	21,294	100.0
55-64 years	1	Fall	3,796	43.1	Fall	5,612	35.3
	2	Unspecified unintentional	1,369	15.5	Hit/struck/crush	2,081	13.1
	3	Transport	1,020	11.6	Cutting/piercing	1,806	11.4
	4	Cutting/piercing	566	6.4	Other specified unintentional	1,774	11.2
	5	Hit/struck/crush	421	4.8	Unspecified unintentional	1,582	10.0
	6	Natural/environmental/animals	387	4.4	Foreign body - natural orifice	1,057	6.7
	7	Overexertion and/or strenuous movements	278	3.2	Transport	905	5.7
	8	Other specified unintentional	191	2.2	Natural/environmental/animals	471	3.0
	9	Poisoning	187	2.1	Fires/burns/scalds	298	1.9
	10	Foreign body - natural orifice	178	2.0	Machinery	173	1.1
	11	Machinery	158	1.8	Poisoning	106	<1
	12	Choking/suffocate	144	1.6	Choking/suffocate	12	<1
	13	Fires/burns/scalds	111	1.3	Explosions/firearms	*	*
	14	Explosions/firearms	7	<1	Near drowning	0	0.0
	15	Near drowning	*	*	Overexertion & strenuous movements	N/A	N/A
	All		8,813	100	All	15,877	100.0
All ADULTS	1	Fall	9,715	27.6	Fall	25,950	26.3
	2	Unspecified unintentional	6,027	17.1	Hit/struck/crush	18,504	18.8
	3	Transport	6,022	17.1	Cutting/piercing	12,593	12.8
	4	Cutting/piercing	3,212	9.1	Other specified unintentional	11,432	11.6
	5	Hit/struck/crush	2,909	8.3	Unspecified unintentional	9,537	9.7
	6	Natural/environmental/animals	1,616	4.6	Transport	7,308	7.4
	7	Overexertion and/or strenuous movements	1,459	4.1	Foreign body - natural orifice	6,307	6.4
	8	Other specified unintentional	1,166	3.3	Natural/environmental/animals	2,730	2.8
	9	Poisoning	849	2.4	Fires/burns/scalds	2,274	2.3
	10	Machinery	757	2.2	Machinery	959	1.0
	11	Foreign body - natural orifice	560	1.6	Poisoning	871	0.9
	12	Fires/burns/scalds	507	1.4	Choking/suffocate	71	0.1
	13	Choking/suffocate	315	<1	Near drowning	25	0.0
	14	Explosions/firearms	52	<1	Explosions/firearms	10	0.0
	15	Near drowning	17	<1	Overexertion & strenuous movements	N/A	N/A
	All		35,183	100	All	98,571	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 15-year period from 11,982 in 1998/99 to 21,716 in 2012/13, representing an estimated annual change of 4.4% (4.1% to 4.6%) and an overall increase of 91.5% (81.8% to 96.2%) based on the trend line (Figure 52).
- The frequency of OLDER ADULT unintentional injury ED presentations increased significantly over the 9-year period from 15,778 in 2004/05 to 21,654 in 2012/13, representing an estimated annual change of 3.3% (2.4% to 4.0%) and an overall increase of 33.5% (24.2% to 42.2%) based on the trend line (Figure 53).

Figure 52: Trend in the frequency of OLDER injury hospital admissions, Victoria 1998/99- 2012/13

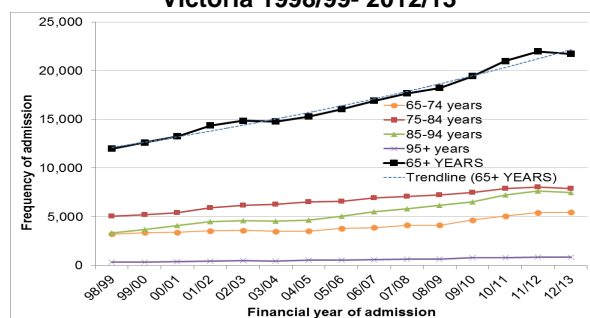
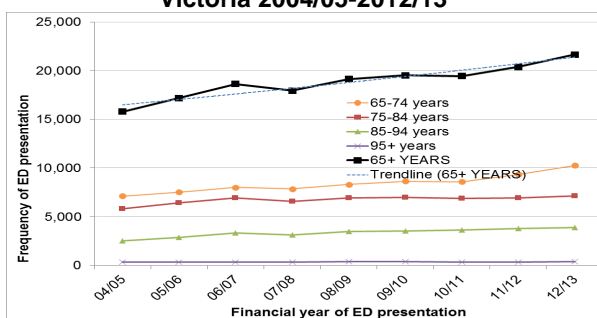


Figure 53: Trend in the frequency of OLDER ADULT injury ED presentations, Victoria 2004/05-2012/13



RATE

- The OLDER ADULT unintentional injury admission rate (excluding same day admissions) increased significantly over the 15-year period from 1,822.7/100,000 in 1998/99 to 2,166.7/100,000 in 2012/13, representing an estimated annual change of 1.4% (1.1% to 1.6%) and an overall increase of 23.0% (18.4% to 27.4%) based on the trend line (Figure 54).
- The OLDER ADULT unintentional injury ED presentation rate increased slightly over the 9-year period from 2,207.8/100,000 in 2004/05 to 2,438.3/100,000 in 2012/13 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 1998/99-2012/13

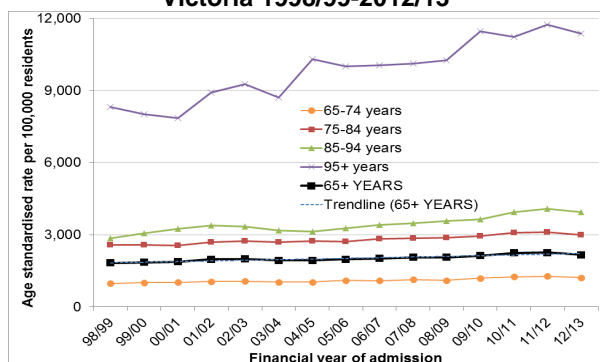
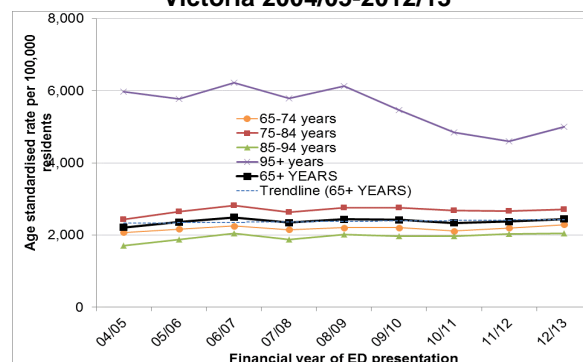


Figure 55: Trend in injury ED presentation rates per 100,000 OLDER ADULTS, Victoria 2004/05-2012/13



Hospital treated injury - gender and age

- Females were overrepresented in hospital injury data for persons aged 65 years and older. They accounted for 63% of hospital admissions (n=22,549) and 55% of ED presentations (n=11,974) in Victoria in 2012/13 (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 2012/13

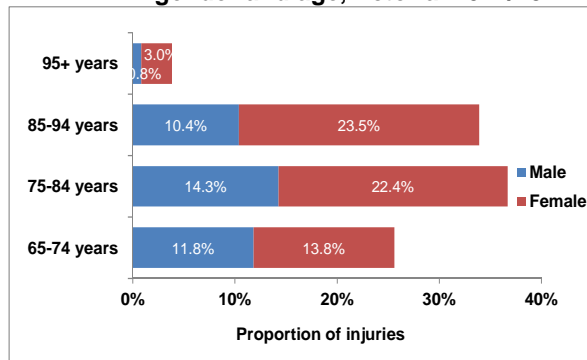
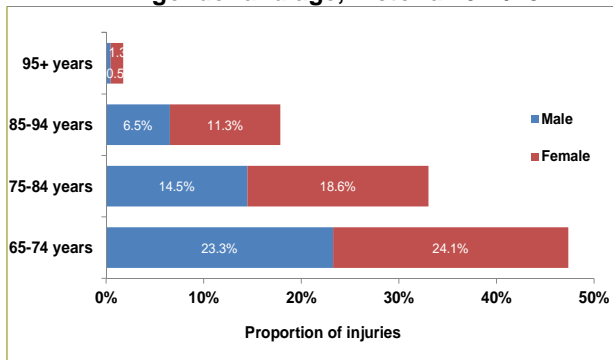


Figure 57: Older adult ED presentations by gender and age, Victoria 2012/13



- The rate of hospital admission and ED presentation was higher for females than males (5,042.6 & 2,677.7 /100,000 vs. 3,564.4 & 2,568.5/100,000) (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 2012/13

Age group	Sex	Hospital admissions		ED presentations	
		n	Rate	n	Rate
65-74 years	Male	4,253	1,945.0	5,035	2,302.6
	Female	4,955	2,158.4	5,217	2,272.5
	All	9,208	2,054.3	10,252	2,287.2
75-84 years	Male	5,137	4,326.0	3,133	2,638.4
	Female	8,059	5,545.2	4,020	2,766.1
	All	13,196	4,997.0	7,153	2,708.7
85-94 years	Male	3,739	9,926.5	1,414	3,753.9
	Female	8,458	12,732.2	2,454	3,694.1
	All	12,197	11,717.0	3,868	3,715.8
95+ years	Male	304	16,931.2	98	5,458.1
	Female	1,077	18,454.4	283	4,849.2
	All	1,381	18,096.0	381	4,992.5
All	Male	13,433	3,564.4	9,680	2,568.5
	Female	22,549	5,042.6	11,974	2,677.7
	All	35,982	4,366.5	21,654	2,627.8

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 (72%, n=25,989) and more than half of ED presentations (52%, n=11,352) in this age group (Figure 58 & Figure 59).
- Transport was the second most common cause of hospital admission (4%, n=1,524) and the cause of 4% of presentations (n=767). 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=997) whereas for ED presentations it was cutting and piercing (8%, n=1,703).
- Choking and suffocation and overexertion and strenuous movements each accounted for 2% of admissions (n=801 & 659) and 4% of ED presentations (n=843) were due to foreign body in natural orifice.

Figure 58: Older adult hospital admissions by cause, Victoria 2012/13

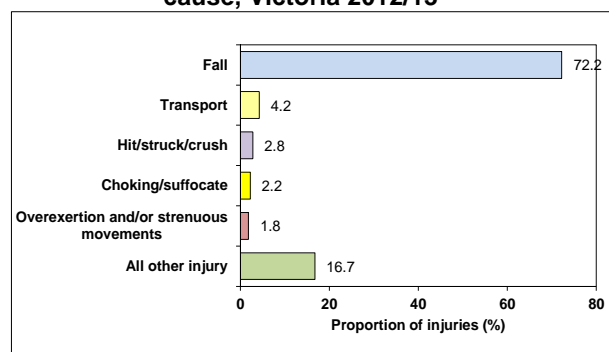
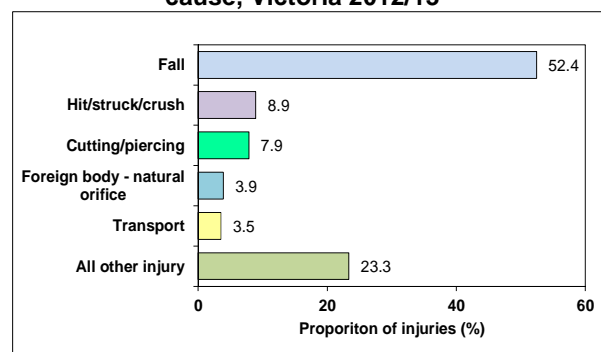


Figure 59: Older adult ED presentations by cause, Victoria 2012/13



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.
- Fracture to the upper limb accounted for 11% of hospital admissions and 10% of ED presentations. Fractures to the trunk were also common among hospital admissions (10%).
- Open wound to upper limb was the second most common injury (9%) among ED presentations in this age group.
- Open wounds to the head/face/neck accounted for 7% of hospital admissions and 8% of ED presentations.
- Dislocations, sprains and strains to the lower (7%) and upper limb (6%) were also common among ED presentations.

Figure 60: Major injury type, older adult hospital admissions, Victoria 2012/13

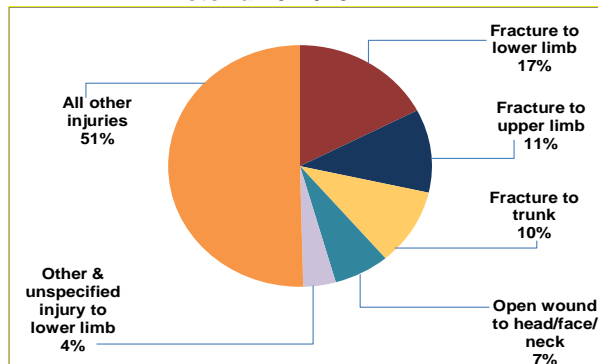
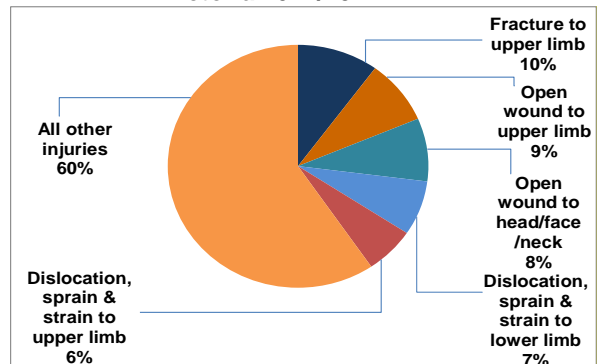


Figure 61: Major injury type, older adult ED presentations, Victoria 2012/13



Setting

- Around 40% of older adult injuries requiring hospital admission (38%) and more than half of injuries resulting in ED presentations (54%) occurred in the home (Figure 62 & Figure 63).
- Other locations where injuries to older adults commonly occurred were:
 - residential institutions (16% of admissions and 6% of ED presentations)
 - health service areas (8% of admissions)
 - roads, streets and highways (6% of admissions and 8% of ED presentations) and

Figure 62: Older adult hospital admissions by setting, Victoria 2012/13

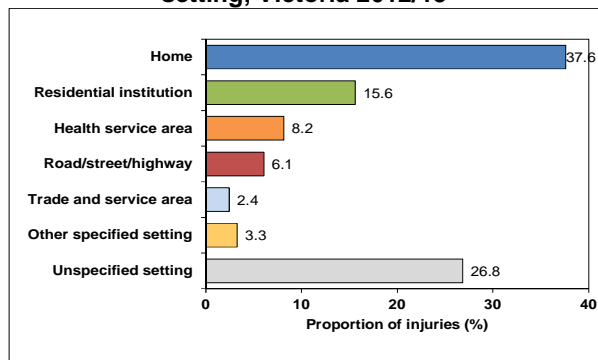


Figure 63: Older adult ED presentations by setting, Victoria 2012/13

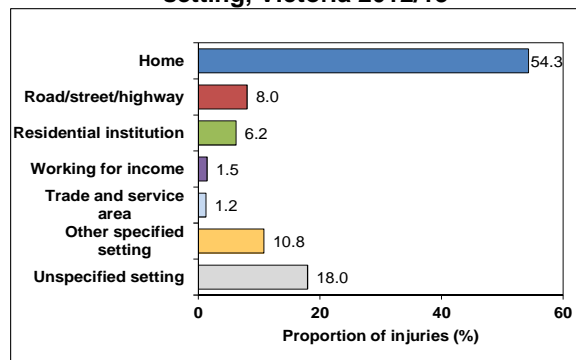


Table 13 Ranking of causes for injuries resulting in hospital admissions and ED presentations, persons aged 65 years and older, Victoria 2012/13

AGE GROUP	RANK	ADMISSIONS			PRESENTATIONS		
		Cause	n	%	Cause	n	%
65-74 years	1	Fall	5,290	57.5	Fall	4,368	42.6
	2	Unspecified unintentional	1,184	12.9	Other specified unintentional	1,100	10.7
	3	Transport	690	7.5	Hit/struck/crush	1,073	10.5
	4	Cutting/piercing	368	4.0	Cutting/piercing	1,056	10.3
	5	Hit/struck/crush	308	3.3	Unspecified unintentional	1,038	10.1
	6	Natural/environmental/animals	272	3.0	Foreign body - natural orifice	601	5.9
	7	Overexertion and/or strenuous movements	261	2.8	Transport	465	4.5
	8	Poisoning	187	2.0	Natural/environmental/animals	279	2.7
	9	Choking/suffocate	179	1.9	Fires/burns/scalds	108	1.1
	10	Foreign body - natural orifice	166	1.8	Poisoning	80	<1
	11	Other specified unintentional	151	1.6	Machinery	73	<1
	12	Fires/burns/scalds	80	<1	Choking/suffocate	11	<1
	13	Machinery	72	<1	Near drowning	*	*
	14	Explosions/firearms	*	*	Explosions/firearms	0	0.0
	15	Near drowning	*	*	Overexertion & strenuous movements	N/A	N/A
75-84 years	All		9,208	100.0	All	10,252	100.0
	1	Fall	9,616	72.9	Fall	4,005	56.0
	2	Unspecified unintentional	1,191	9.0	Unspecified unintentional	696	9.7
	3	Transport	562	4.3	Other specified unintentional	661	9.3
	4	Hit/struck/crush	351	2.7	Hit/struck/crush	591	8.3
	5	Choking/suffocate	345	2.6	Cutting/piercing	484	6.8
	6	Overexertion and/or strenuous movements	254	1.9	Transport	229	3.2
	7	Poisoning	195	1.5	Foreign body - natural orifice	189	2.6
	8	Natural/environmental/animals	173	1.3	Natural/environmental/animals	143	2.0
	9	Cutting/piercing	152	1.2	Fires/burns/scalds	60	<1
	10	Foreign body - natural orifice	130	1.0	Poisoning	49	<1
	11	Other specified unintentional	135	1.0	Machinery	30	<1
	12	Fires/burns/scalds	59	<1	Choking/suffocate	11	<1
	13	Machinery	33	<1	Explosions/firearms	*	*
	14	Near drowning	*	*	Near drowning	0	0.00
	15	Explosions/firearms	*	*	Overexertion & strenuous movements	N/A	N/A
85-94 years	All		13,196	100.0	All	7,153	100.0
	1	Fall	9,904	81.2	Fall	2,681	69.3
	2	Unspecified unintentional	885	7.3	Unspecified unintentional	321	8.3
	3	Hit/struck/crush	304	2.5	Other specified unintentional	256	6.6
	4	Transport	262	2.1	Hit/struck/crush	250	6.5
	5	Choking/suffocate	259	2.1	Cutting/piercing	157	4.1
	6	Overexertion and/or strenuous movements	134	1.1	Transport	68	1.8
	7	Poisoning	113	<1	Natural/environmental/animals	49	1.3
	8	Natural/environmental/animals	91	<1	Foreign body - natural orifice	49	1.3
	9	Foreign body - natural orifice	78	<1	Poisoning	24	<1
	10	Other specified unintentional	71	<1	Fires/burns/scalds	13	<1
	11	Fires/burns/scalds	48	<1	Machinery	*	*
	12	Cutting/piercing	37	<1	Choking/suffocate	*	*
	13	Machinery	11	<1	Near drowning	0	0.0
	14	Near drowning	*	*	Explosions/firearms	0	0.0
	15	Explosions/firearms	*	*	Overexertion & strenuous movements	N/A	N/A
95+ years	All		12,197	100.0	All	3,868	100.0
	1	Fall	1,179	85.4	Fall	298	78.2
	2	Unspecified unintentional	90	6.5	Unspecified unintentional	25	6.6
	3	Hit/struck/crush	34	2.5	Hit/struck/crush	20	5.2
	4	Choking/suffocate	18	1.3	Other specified unintentional	27	7.1
	8	Other specified unintentional	17	1.2	Cutting/piercing	6	1.6
	5	Transport	10	<1	Transport	5	1.3
	6	Overexertion and/or strenuous movements	10	<1	Natural/environmental/animals	*	*
	7	Foreign body - natural orifice	9	<1	Foreign body - natural orifice	*	*
	9	Poisoning	8	<1	Machinery	*	*
	10	Natural/environmental/animals	6	<1	Near drowning	0	0.0
	11	Cutting/piercing	*	*	Poisoning	0	0.0
	12	Fires/burns/scalds	*	*	Fires/burns/scalds	0	0.0
	13	Machinery	*	*	Choking/suffocate	0	0.0
	14	Near drowning	0	0.0	Explosions/firearms	0	0.0
	15	Explosions/firearms	0	0.0	Overexertion & strenuous movements	N/A	N/A
ALL OLDER ADULTS	All		1,381	100.0	All	381	100.0
	1	Fall	25,989	72.2	Fall	11,352	52.4
	2	Unspecified unintentional	3,350	9.3	Unspecified unintentional	2,080	9.6
	3	Transport	1,524	4.2	Other specified unintentional	2,034	9.4
	4	Hit/struck/crush	997	2.8	Hit/struck/crush	1,934	8.9
	5	Choking/suffocate	801	2.2	Cutting/piercing	1,703	7.9
	6	Overexertion and/or strenuous movements	659	1.8	Foreign body - natural orifice	843	3.9
	7	Cutting/piercing	561	1.6	Transport	767	3.5
	8	Natural/environmental/animals	542	1.5	Natural/environmental/animals	475	2.2
	9	Poisoning	503	1.4	Fires/burns/scalds	181	<1
	10	Foreign body - natural orifice	383	1.1	Poisoning	153	<1
	11	Other specified unintentional	353	1.0	Machinery	109	<1
	12	Fires/burns/scalds	190	<1	Choking/suffocate	23	<1
	13	Machinery	117	<1	Near drowning	*	*
	14	Explosions/firearms	7	<1	Explosions/firearms	*	*
	15	Near drowning	6	<1	Overexertion & strenuous movements	N/A	N/A
	All		35,982	100.0	All	21,654	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, injury severity and hospital costs**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 record was given an International Classification of Disease (ICD)-based Injury Severity Score (ICISS) (Davie et al., 2008). The ICISS involves estimating probability of death using the ICD injury diagnosis codes recorded in a person's hospital record. Determining which injuries are 'serious' involves calculating a survival risk ratio (SRR) for each individual injury. A given SRR represents the likelihood that a patient will survive a particular injury. Each patient's final ICISS is the product of the SRRs associated with all the diagnoses listed on the patient hospital record. An injury is considered 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 G, Cryer C, Langley J. Improving the predictive ability of the ICD-based Injury Severity Score. *Injury Prevention* 2008; 14: 250-255.

Hospital costs

The National Hospital Costs Data Collection (NHCDC) is based on the principles of Casemix costing analysis which is a scientific approach to the classification of patient care whereby each hospital admission is assigned an Australian Refined Diagnosis Related Group (AR-DRG). The NHCDC contains component costs per DRG and enables DRG Cost Weights and average costs for DRGs (national and state/territory specific) for acute in-patients to be produced. The types of component costs included are ward medical, ward nursing, non-clinical salaries, pathology, imaging, allied health, pharmacy, critical care, operating rooms, ED, ward supplies and other overheads, specialist procedure suites, on-costs, prostheses, hotel and depreciation. The Victorian Department of Health supplied VISU with Victorian average costs per AR-DRG by year, 5-year age group and sex for the 3 financial years 2009/10, 2010/11 and 2011/12. The relevant 2011/12 costs were applied to each 2012/13 admission to estimate direct hospital costs.

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 2012 to 30 June 2013, coded according to the 7th edition of ICD-10-AM (NCCH, July 2010)
- 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 2013.

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 17th 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 2012 to 30 June 2013 coded according to the Victorian Emergency Minimum Dataset (VEMD) User Manual 17th edition.
- Data were selected if the injury was unintentional (VEMD human intent=1)
- ED presentations that resulted in death or admission 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 2004/05-2012/13 because from January 2004, VEMD data are collected by all Victorian public hospitals that provide a 24-hour ED service.