

***E\_BULLETIN***

**Edition 8**

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

**2010**

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***Suggested citation***

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# Unintentional (accidental) hospital-treated injury in Victoria 2010

## Summary results

This is the eighth of 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 2010 utilising two injury surveillance datasets that separately record hospital admissions and Emergency Department (ED) presentations for injury.

The Victorian Emergency Minimum Dataset (VEMD) held by VISU was replaced in April 2012 to include some useful variables not previously released to VISU by the Department of Health. The new dataset contains consolidated data for the period July 1999 to June 2011 rather than the provisional data previously supplied to VISU earlier in the revision cycle. Consequently, data are more complete and reliable but less timely (VISU will now receive data annually rather than quarterly) and data outputs may be different from those reported previously.

Overall there were 408,226 hospital-treated injury cases in Victoria in 2010 (excluding complications of surgical and medical care, adverse effects of drugs in therapeutic use and late effects of injury), 81% of which were unintentional (n=330,583).

## All ages

- More than 330,000 Victorians (6 in every 100) were treated in hospital for unintentional injury during 2010 (103,129 admissions and 227,454 ED presentations).
- Hospital admissions (frequency and rate) and ED presentations (frequency) have increased significantly over the 11-year period 2000 to 2010. The frequency of admissions increased by 43% and the admission rate by 21% if same day admissions were included in the analysis, reducing to 37% and 15% if same day admissions were excluded (the latter method produces a more stable indicator of trend). The frequency of ED presentations increased by 23% over the same period.
- Males were overrepresented accounting for 59% of all hospital-treated injury cases (55% of admissions and 60% of ED presentations).
- Falls were the leading cause of injury admissions and ED presentations accounting for more 37% of all hospital-treated injury cases, followed by hit/struck/crush (16%), transport (9%) and cutting and piercing (9%).
- The home was the most common location of injury (23% of hospital admissions and 38% of ED presentations). Persons were also commonly injured on roads, streets and highways (10% of admissions and 8% of ED presentations), sports and athletics areas (5% of admissions and 9% of ED presentations) and schools and public buildings (6% of admissions and 6% of ED presentations).
- Coding of hospital admissions for activity was poor with most cases coded to unspecified activity (64%). Sport was recorded as the activity being undertaken at the time of injury in 10% of hospital admissions. ED presentations were better coded for activity. Leisure was the most common activity recorded for ED presentations (40%), followed by sports (11%) and working for income (9%).

## Children (0-14 years)

- 79,788 Victorian children (approximately 8 in every 100) were treated in hospital for unintentional injury during 2010 (13,144 admissions and 66,644 ED presentations).
- The frequency of child ED presentations increased by 21% over the 11-year period 2000 to 2010. The frequency of admissions increased by 5% and the admission rate did not change significantly if same day admissions were included in the analysis. However if same-day admissions were excluded the frequency of admissions decreased by 13% and the admission rate by 18%.

- Males were overrepresented accounting for 59% of all hospital-treated injury cases (63% of admissions and 58% of ED presentations).
- Falls were the leading cause of hospital-treated injury (44%) followed by hit/struck/crush (21%).
- Twenty percent of hospital admissions and almost half of ED presentations (47%) were for injuries that occurred in the home. Children were also commonly injured in schools and other public buildings (14% of admissions and 15% of ED presentations) and sports and athletics areas (7% of admissions and 8% of ED presentations).
- The activity engaged in at the time of injury was unspecified for 60% of all child injury admissions and recorded as 'other specified' for a further 6% of admissions. Sport was the most common specified activity for hospital admissions (16%). Leisure was recorded as the activity engaged in at the time of injury for 51% of child ED presentations, followed by sports (11%).

### **Adolescents and young adults (15-24 years)**

- More than 60,000 Victorian adolescents and young adults (around 8 in every 100) were treated in hospital for unintentional injury during 2010 (13,797 admissions and 46,791 ED presentations).
- The frequency of adolescent and young adult ED presentations increased by 25% over the 11-year period 2000 to 2010. The frequency of admissions increased by 35% and the admission rate by 7% if same day admissions were included in the analysis. However if same-day admissions were excluded the frequency of admissions increased by 19% and the admission rate actually decreased by 6%.
- Males were overrepresented accounting for 69% of all hospital-treated injury cases (74% of admissions and 67% of ED presentations).
- Falls accounted for 18% of admissions and 25% of ED presentations. Hit/struck/crush was the leading cause of ED presentations (26%) and accounted for 16% of hospital admissions. Transport accounted for almost a quarter of admissions (22%) but only 9% of ED presentations.
- The road, street and highway and sports and athletics areas were the most common places of occurrence of adolescent and young adult injuries resulting in hospital admission (each 16%) whereas the home was the leading place of occurrence for injuries resulting in ED presentation (24%).
- The activity engaged in at the time of injury was unspecified for more than half of adolescent and young adult injury admissions (54%) and recorded as 'other specified' for a further 5% of injuries. Sports (25%) and working for income (7%) were the activities recorded for a substantial proportion of admissions. Leisure was recorded as the activity engaged in at the time of injury for 34% of ED presentations, followed by sports (22%) and working for income (11%).

### **Adults (25-64 years)**

- Almost 135,000 Victorian adults (around 5 in every 100) were treated in hospital for unintentional injury during 2010 (40,691 admissions and 94,032 ED presentations).
- Adult hospital admissions (frequency and rate) and ED presentations (frequency) have increased significantly over the 11-year period 2000 to 2010. The frequency of admissions increased by 47% and the admission rate by 23% if same day admissions were included in the analysis, reducing to 40% and 17% if same day admissions were excluded. The frequency of ED presentations increased by 21%.
- Males were overrepresented accounting for 62% of all hospital-treated injury cases (63% of admissions and 61% of ED presentations).
- The leading cause of adult hospital injury admissions and ED presentations was falls: 28% of hospital admissions and 26% of ED presentations. Other major causes were transport (18% of admissions and 8% of ED presentations).

presentations), hit/struck/crush (9% of admissions and 18% of ED presentations) and cutting and piercing (9% of admissions and 13% of ED presentations).

- Seventeen percent of hospital admissions and 37% of ED presentations were for injuries that occurred in the home. Other major locations for injury were: roads, streets and highways (14% of admissions and 10% of ED presentations); trade and service areas (3% of admissions and 9% of ED presentations) and sports and athletics areas (5% of admissions and 6% of ED presentations).
- The activity engaged in at the time of injury was unspecified for more than half of adult injury hospital admissions (61%) and recorded as 'other specified' for a further 6% of injuries. Sports (11%) and working for income (10%) were the activities recorded for a substantial number of older adult admissions. Leisure was recorded as the activity engaged in at the time of injury for 34% of adult ED presentations, followed by working for income (16%) and sports (7%).

### **Older adults (65 years and older)**

- More than 55,000 Victorian older adults (7 in every 100) were treated in hospital for unintentional injury during 2010 (35,497 admissions and 19,987 ED presentations).
- Older adult hospital admissions (frequency and rate) and ED presentations (frequency) have increased significantly over the 11-year period 2000 to 2010. The frequency of admissions increased by 68% and the admission rate by 33% if same day admissions were included in the analysis, reducing to 62% and 28% if same day admissions were excluded. The frequency of ED presentations increased by 34%.
- Females were overrepresented accounting for 61% of all hospital-treated injury cases (64% of admissions and 57% of ED presentations).
- Falls accounted for almost three-quarters of hospital admissions (73%) and more than half of ED presentations (55%) in this age group.
- Almost 40% of hospital admissions and more than half of ED presentations were for injuries that occurred in the home (37% and 54%).
- The activity engaged in at the time of injury was unspecified for more than two-thirds of older adult injury admissions (72%) and recorded as 'other specified' for a further 7% of injuries. Vital activities such as resting, eating and sleeping were the activities recorded for a substantial number of older adult admissions (13%). Leisure was recorded as the activity engaged in at the time of injury for 42% of older adult ED presentations, followed by vital activities such as resting, eating and sleeping (9%).



## Introduction

This E-bulletin provides information on unintentional hospital-treated injury in 2010. Overall there were 408,226 hospital-treated injury cases in Victoria in 2010 (excluding complications of surgical and medical care, adverse effects of drugs in therapeutic use and late effects of injury), 81% of which were unintentional (n=330,583). The remaining injury cases were either intentional i.e. self harm or assault (5%, n=21,983) or of other or undetermined intent (14%, n=55,660).

***The Victorian Emergency Minimum Dataset (VEMD) held by VISU was replaced in April 2012 to include some useful variables not previously released to VISU by the Department of Health. The new dataset contains consolidated data for the period July 1999 to June 2011 rather than the provisional data previously supplied to VISU earlier in the revision cycle. Consequently, data are more complete and reliable but less timely (VISU will now receive data annually rather than quarterly) and data outputs may be different from those reported previously.***

## Method

Hospital admissions data was extracted from the Victorian Admitted Episodes Dataset (VAED) and ED presentations from the Victorian Emergency Minimum Dataset (VEMD). The VAED records all hospital admissions in public and private hospitals in the state of Victoria and the VEMD records all presentations to Victorian public hospitals with 24-hour emergency departments (38 hospitals). Deaths were excluded from the hospital admissions and ED presentations datasets as injury deaths are covered in separate E-Bulletins and 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. Data were selected if the admission (VAED) or presentation (VEMD) date occurred in 2010 and if the injury was unintentional (VAED external cause code in the range V00-X59, VEMD human intent=1). Transfers within and between hospitals were excluded from the hospital admissions data and injuries that occur in the context of medical and surgical care (often referred to as complications) were excluded from both datasets. For ease of comparison VEMD causes, where possible, were recoded to match VAED cause groups.

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

## Data issues

Hospital admissions activity and place of occurrence information should be interpreted with caution due to the high proportion of unspecified data.

Rates per 100,000 population have been calculated for all years for hospital admissions data (VAED) and for 2010 for ED presentations data (VEMD). ED presentation rates were also calculated for 2005 to 2009 in previous E-bulletins but not calculated for other years covered in the trend analysis as all public hospitals with 24-hour emergency departments have not contributed to the data collection over that time.

Trend data are reported for all admissions (including same-day admissions) and for admissions excluding same-day admissions. The exclusion of same-day admissions minimises the influence of admission policy changes across time and between hospitals. Frequencies and rates for 2010 hospital admissions reported in the trend sections differ slightly from those reported elsewhere in the report because a stricter inclusion criterion based on primary injury diagnosis was used for the trend calculations. Frequencies for hospital admissions reported in trend sections differ from those reported elsewhere in the report because only hospitals that contributed data to VEMD over the whole 11-year period were included in the trend analysis of ED presentations frequency data (29 of the current 38 hospitals contributing to the surveillance system).

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 41).





## All ages

Table 1 provides an overview of unintentional hospital-treated injury in Victoria during 2010. Overall, there were more than 330,000 hospital treated injuries recorded in this period (103,129 admissions and 227,454 ED presentations) giving a rate of 5,970.4 hospital-treated injury cases per 100,000 Victorians.

- The hospital admission rate was highest in older adults (4,674.5 per 100,000 persons) and lowest in children (1,294.6 per 100,000 persons)
- The ED presentation rate was highest in children (6,563.8/100,000) and lowest in older adults (2,632.0/100,000).
- Children aged 0-14 years have the highest overall hospital-treated injury rate (admissions and presentations combined, 7,858.4/100,000), followed by adolescents and young adults (7,708.5/100,000) and older adults (7,306.5/100,000). Adults aged 25-64 years have the lowest hospital-treated injury rate (4,526.4/100,000).

**Table 1 Hospital treated injury frequency and rates by broad age group, Victoria 2010**

	Children 0-14 years		Adolescents and young adults 15-24 yrs		Adults 25-64 yrs		Older adults 65+ yrs		ALL	
	Freq.	Rate/ 100,000	Freq.	Rate/ 100,000	Freq.	Rate/ 100,000	Freq.	Rate/ 100,000	Freq.	Rate/ 100,000
<b>Admissions</b>	13,144	1,294.6	13,797	1,755.4	40,691	1,367.1	35,497	4,674.5	103,129	1,862.5
<b>ED presentations</b>	66,644	6,563.8	46,791	5,953.1	94,032	3,159.3	19,987	2,632.0	227,454	4,107.8
<b>Hospital-treated</b>	79,788	7,858.4	60,588	7,708.5	134,723	4,526.4	55,484	7,306.5	330,583	5,970.4

Figure 1 shows hospital admission injury rates by age and gender for Victoria in 2010. In 2010, 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 2010**

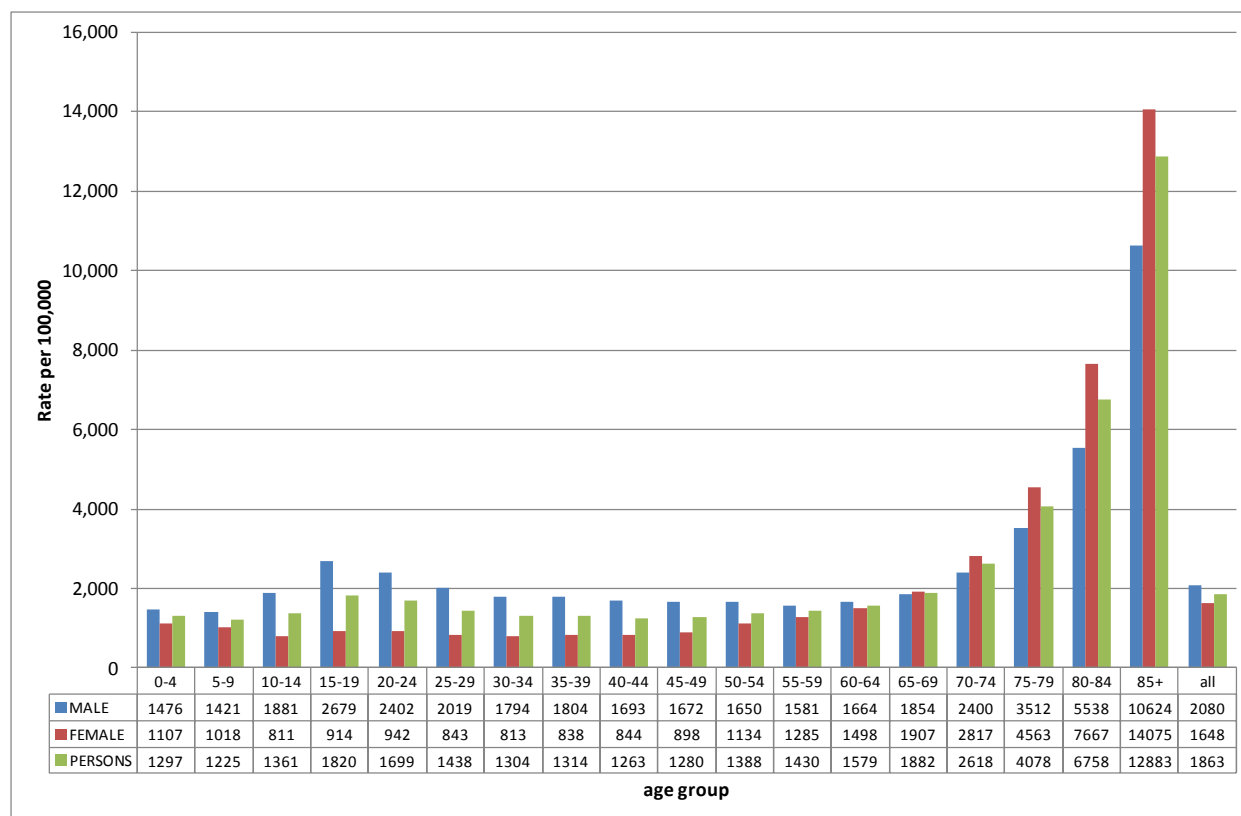
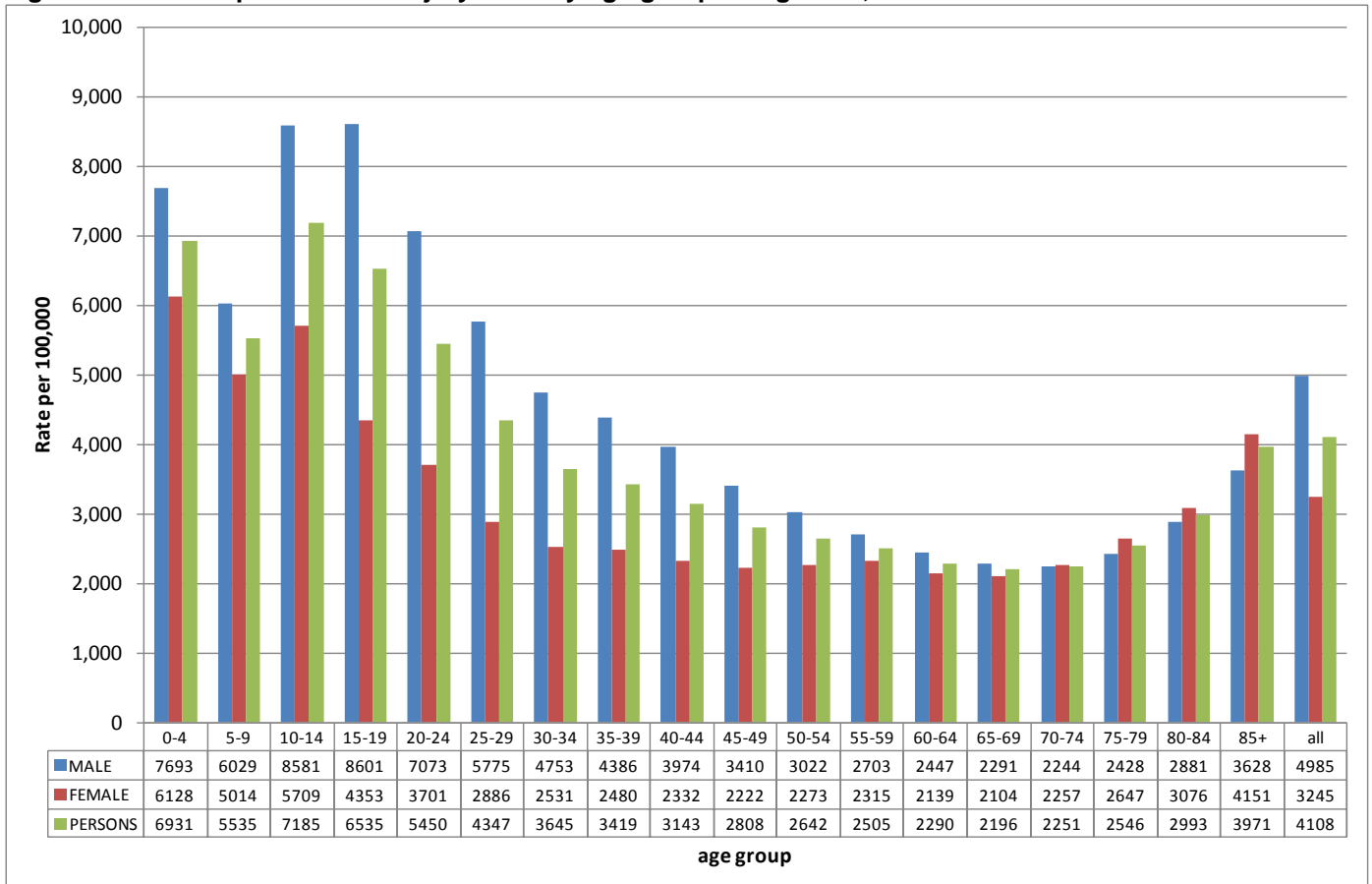


Figure 2 shows ED presentation rates by age and gender for Victoria in 2010. In 2010, age-specific injury ED presentation rates were high among children (0-9 years) and highest among older children (10-14 years) and then decreased throughout the adolescent and adult age groups until age 75 when rates showed a slight increase. 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 2010**



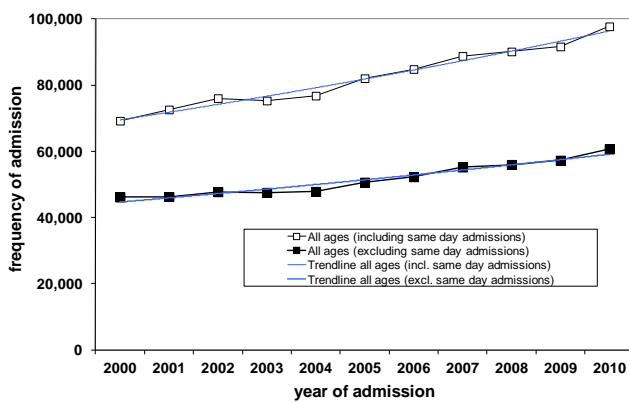
## Trend

### FREQUENCY

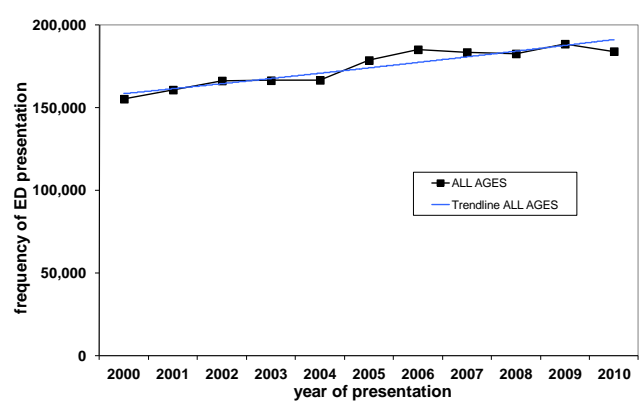
Frequency and rate data for 2010 reported here differ slightly from those reported elsewhere in this report because a stricter inclusion criterion based on primary injury diagnosis (for admissions) and hospital site (for ED presentations) were used for the trend calculations.

- The frequency of ALL AGES unintentional injury and poisoning admissions (INCLUDING same-day admissions) increased significantly over the 11-year period from 69,217 in 2000 to 97,741 in 2010, representing an estimated annual change of 3.3% (95% confidence interval 3.0% to 3.6%) and an overall increase of 43% (38% to 47%) based on the trend line (figure 3).
- The frequency of ALL AGES unintentional injury and poisoning admissions (EXCLUDING same-day admissions) increased significantly over the 11-year period from 46,168 in 2000 to 60,670 in 2010, representing an estimated annual change of 2.9% (2.4% to 3.2%) and an overall increase of 37% (30% to 42%) based on the trend line (figure 3).
- The frequency of ALL AGES unintentional injury and poisoning ED presentations increased significantly over the 11-year period from 155,164 in 2000 to 183,896 in 2010, representing an estimated annual change of 1.9% (1.4% to 2.3%) and an overall increase of 23% (17% to 28%) based on the trend line (figure 4).

**Figure 3 Trend in the frequency of injury hospital admissions, Victoria 2000-2010**



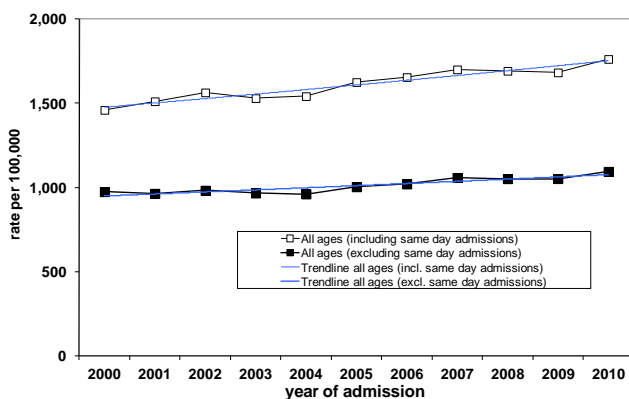
**Figure 4 Trend in the frequency of injury ED presentations, Victoria 2000-2010**



### RATE

- The ALL AGES unintentional injury and poisoning admission rate (INCLUDING same-day admissions) increased significantly over the 11-year period from 1460/100,000 in 2000 to 1762/100,000 in 2010, representing an estimated annual change of 1.7% (1.4% to 2.0%) and an overall increase of 21% (17% to 25%) based on the trend line (figure 5).
- The ALL AGES unintentional injury and poisoning admission rate (EXCLUDING same-day admissions) increased significantly over the 11-year period from 974/100,000 in 2000 to 1094/100,000 in 2010, representing an estimated annual change of 1.3% (0.9% to 1.6%) and an overall increase of 15% (10% to 19%) based on the trend line (figure 5).
- The trend in the ED presentation rate cannot be determined because numerator data were not complete.

**Figure 5 Trend in the hospital admission rates per 100,000 population, Victoria 2000-2010**

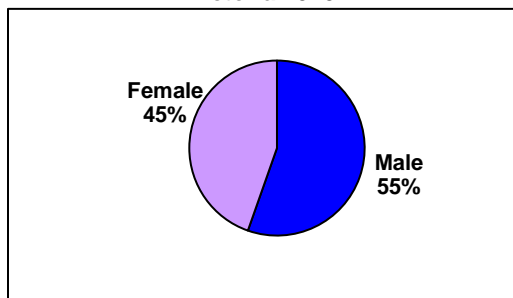


Rates cannot be calculated for ED presentations because numerator data were not complete for the 11-year period.

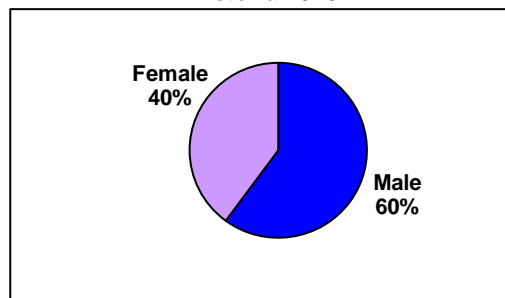
## Gender

- Males were overrepresented accounting for 55% of hospital admissions (n=57,118) and 60% of ED presentations (n=136,870) in Victoria in 2010 (figures 6 & 7).

**Figure 6 Hospital injury admissions by gender, Victoria 2010**



**Figure 7 ED injury presentations by gender, Victoria 2010**



- The rate of hospital admission and ED presentation was also higher for males than females (2,080.5 & 4,985.3/100,000 vs. 1,648.2 & 3,244.9/100,000). (Table 2)

**Table 2 Frequency and rate of hospital admission and ED presentation, Victoria 2010**

	Hospital admissions		ED presentations	
	Frequency	Rate	Frequency	Rate
<b>Male</b>	57,118	2,080.5	136,870	4,985.3
<b>Female</b>	46,010	1,648.2	90,584	3,244.9
<b>All</b>	103,129	1,862.5	227,454	4,107.8

## Age

- Persons aged 65 years and older have the highest rate of hospital admissions (4,674.5/100,000) and children aged 0-14 years have the lowest (1,294.6/100,000) (Table 3).
- Young persons aged 0-14 and 15-24 have the highest ED presentation (non-admission) rates, 6,563.8 and 5,953.1/100,000 respectively (Table 3).

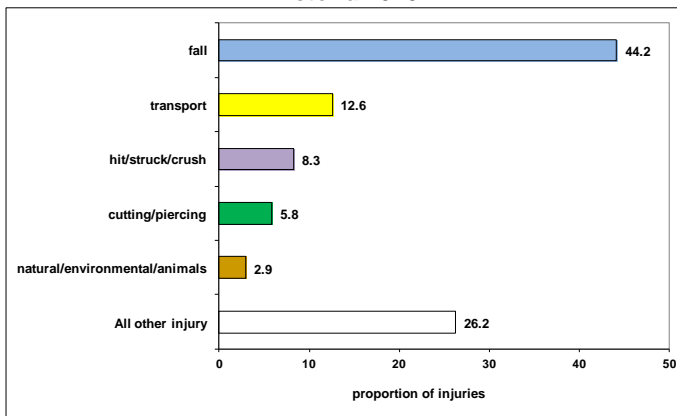
**Table 3 Frequency and rate of hospital admission and ED presentation, Victoria 2010**

	Hospital admissions		ED presentations	
	Frequency	Rate	Frequency	Rate
<b>0-14 years</b>	13,144	1,294.6	66,644	6,563.8
<b>15-24 years</b>	13,797	1,755.4	46,791	5,953.1
<b>25-64 years</b>	40,691	1,367.1	94,032	3,159.3
<b>65+ years</b>	35,497	4,674.5	19,987	2,632.0
<b>ALL</b>	103,129	1,862.5	227,454	4,107.8

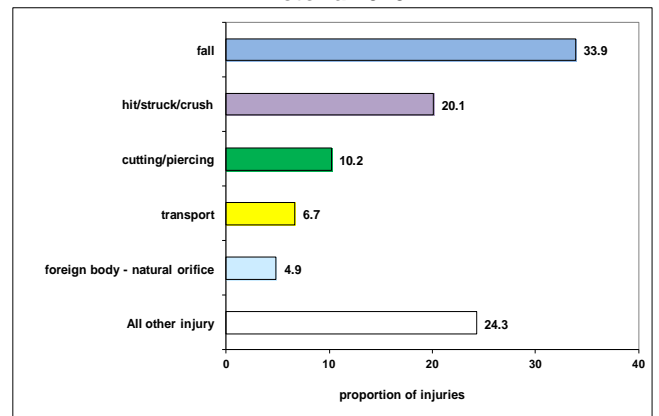
## Leading causes of injury

- Four of the five major causes of hospital admissions and ED presentations were the same although the ranking on frequency of cases is different (figures 8 & 9).
- The leading cause of both hospital admissions and ED presentations was falls. Falls accounted for 44% (n=45,534) of hospital admissions and 34% (n=77,090) of ED presentations.
- Transport accounted for 13% of admissions (n=12,970) but just 7% of presentations (n=15,139) which indicates that transport injuries were more severe than injuries from other causes.
- Hit/struck/crush injuries accounted for 8% of admissions (n=8,518) but a higher proportion of ED presentations (20%, n=45,767).
- Cutting and piercing injuries accounted for 6% of admissions (n=6,031) and 11% of ED presentations (n=23,217).
- The fifth ranking cause of hospital admissions was natural/environmental/animal related injury (3%, n=3,005) whereas for ED presentations it was injuries caused by a foreign body in a natural orifice e.g. ear, nose, eye (5%, n=11,040).

**Figure 8 Hospital admissions by cause, Victoria 2010**



**Figure 9 ED presentations by cause, Victoria 2010**



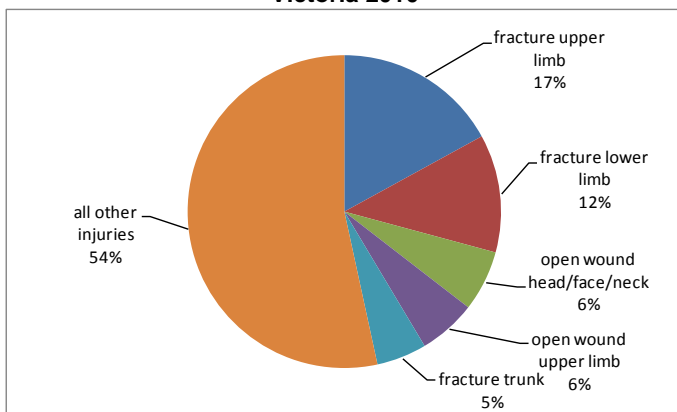
Note: 'Other specified' and 'unspecified' cases were included in the 'all other injuries' category regardless of their ranking

## Major injury type (body site and nature of injury)

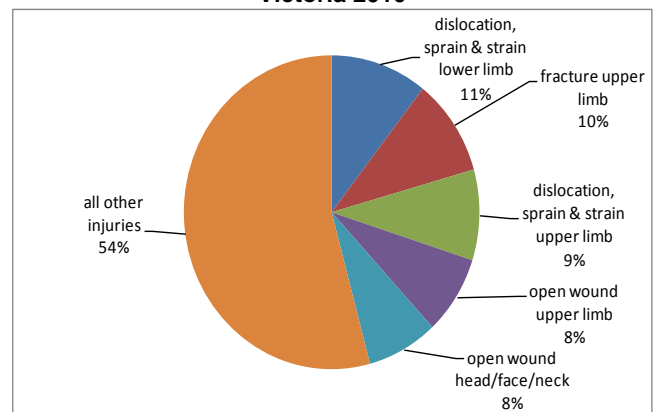
Figures 10 & 11 show the five most common specific injury types for hospital admissions and ED presentations.

- Fracture to the upper limb accounted for 17% of hospital injury admissions and 10% of ED presentations.
- Fracture to the lower limb was the second most common type of injury requiring hospital admission (12%).
- Dislocations/sprains and strains to the lower limb (11%) and upper limb (9%) were common among ED presentations.
- Open wounds to the head/face/neck accounted for 6% of hospital injury admissions and 8% of ED presentations.
- Open wounds to the upper limb accounted for 6% of hospital injury admissions and 8% of ED presentations.

**Figure 10 Major injury type, hospital admissions, Victoria 2010**



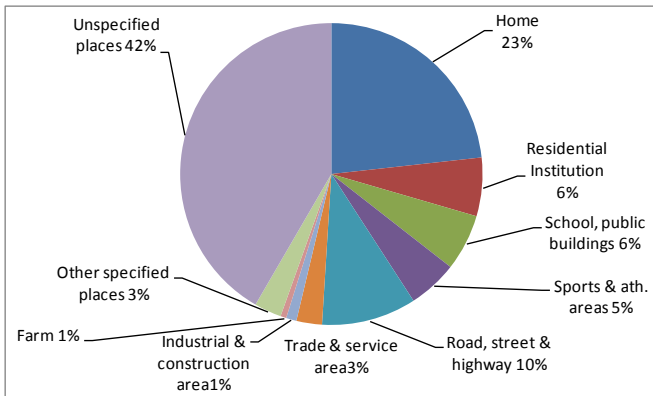
**Figure 11 Major injury type, ED presentations, Victoria 2010**



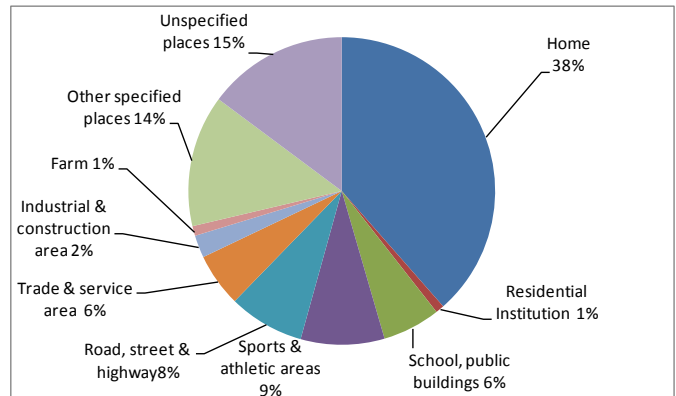
## Place of injury occurrence

- At least 23% of all injuries requiring hospital admission and 38% of injuries resulting in ED presentation occurred in the home (figures 12 & 13).
- Persons were also commonly injured on roads, streets and highways (10% of admissions and 8% of ED presentations), sports and athletics areas (5% of admissions and 9% of ED presentations) and schools and public buildings (6% of admissions and 6% of ED presentations).

**Figure 12 Hospital admissions by place of occurrence, Victoria 2010**



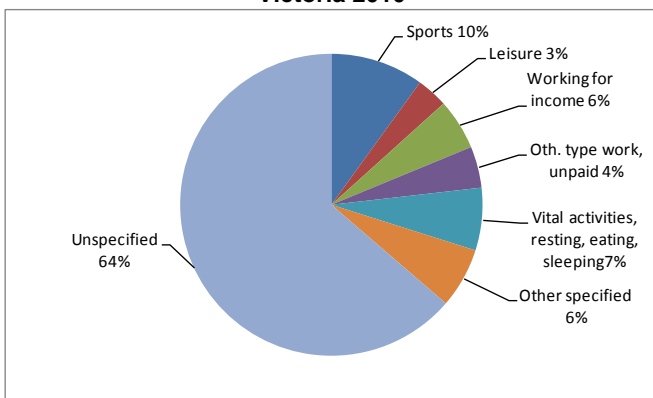
**Figure 13 ED presentations by place of occurrence, Victoria 2010**



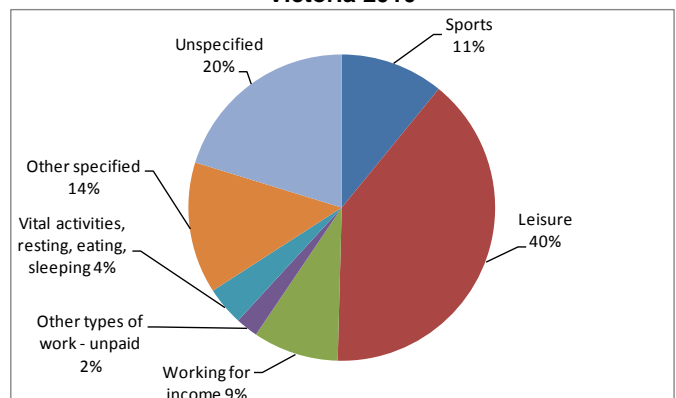
## Activity when injured

- Hospital admissions were mostly coded to unspecified activity (64%). Sport was recorded as the activity at the time of injury for 10% of hospital admissions (figure 14).
- Leisure was the most common activity recorded for ED presentations (40%), followed by sports (11%) and working for income (9%) (figure 15).

**Figure 14 Hospital admissions by activity when injured, Victoria 2010**



**Figure 15 ED presentations by activity when injured, Victoria 2010**



**Table 4 Ranking of causes for hospital admissions and ED presentations, all ages, 2010**

AGE GROUP	RANK	ADMISSIONS			PRESENTATIONS		
		CAUSE	FREQ	%	CAUSE	FREQ	%
0-14 years	1	fall	5,907	44.9	fall	29,553	44.3
	2	hit/struck/crush	1,923	14.6	hit/struck/crush	14,563	21.9
	3	unspecified unintentional	1,393	10.6	other specified unintentional	6,655	10.0
	4	transport	1,217	9.3	unspecified unintentional	4,040	6.1
	5	cutting/piercing	548	4.2	cutting/piercing	3,679	5.5
	6	foreign body - natural orifice	479	3.6	foreign body - natural orifice	2,362	3.5
	7	natural/environmental/animals	400	3.0	transport	2,197	3.3
	8	poisoning	317	2.4	natural/environmental/animals	1,476	2.2
	9	fires/burns/scalds	315	2.4	fires/burns/scalds	1,395	2.1
	10	other specified unintentional	295	2.2	poisoning	615	<1
	11	overexertion & strenuous movements	162	1.2	choking/suffocate	45	<1
	12	choking/suffocate	100	<1	machinery	38	<1
	13	machinery	45	<1	near drowning	24	<1
	14	near drowning	34	<1	explosions/firearms	*	*
	15	explosions/firearms	9	<1	overexertion & strenuous movements	N/A	N/A
		ALL	13,144	100.0	ALL	66,644	100.0
15-24 years	1	transport	3,051	22.1	hit/struck/crush	12,160	26.0
	2	fall	2,493	18.1	fall	11,793	25.2
	3	unspecified unintentional	2,335	16.9	cutting/piercing	5,516	11.8
	4	hit/struck/crush	2,160	15.7	other specified unintentional	4,996	10.7
	5	cutting/piercing	1,383	10.0	transport	4,421	9.4
	6	other specified unintentional	464	3.4	unspecified unintentional	3,535	7.6
	7	overexertion & strenuous movements	456	3.3	foreign body - natural orifice	1,565	3.3
	8	poisoning	437	3.2	natural/environmental/animals	1,022	2.2
	9	natural/environmental/animals	353	2.6	fires/burns/scalds	990	2.1
	10	fires/burns/scalds	214	1.6	poisoning	466	1.0
	11	machinery	201	1.5	machinery	271	<1
	12	foreign body - natural orifice	170	1.2	choking/suffocate	37	<1
	13	choking/suffocate	36	<1	near drowning	12	<1
	14	explosions/firearms	34	<1	explosions/firearms	7	<1
	15	near drowning	10	<1	overexertion & strenuous movements	N/A	N/A
		ALL	13,797	100.0	ALL	46,791	100.0
25-64 years	1	fall	11,377	28.0	fall	24,812	26.4
	2	transport	7,194	17.7	hit/struck/crush	17,288	18.4
	3	unspecified unintentional	6,388	15.7	cutting/piercing	12,506	13.3
	4	cutting/piercing	3,590	8.8	other specified unintentional	10,495	11.2
	5	hit/struck/crush	3,497	8.6	transport	7,773	8.3
	6	natural/environmental/animals	1,701	4.2	unspecified unintentional	7,566	8.0
	7	overexertion & strenuous movements	1,614	4.0	foreign body - natural orifice	6,333	6.7
	8	other specified unintentional	1,283	3.2	natural/environmental/animals	3,004	3.2
	9	poisoning	1,152	2.8	fires/burns/scalds	2,308	2.5
	10	machinery	957	2.4	machinery	919	1.0
	11	foreign body - natural orifice	884	2.2	poisoning	899	1.0
	12	fires/burns/scalds	586	1.4	choking/suffocate	90	<1
	13	choking/suffocate	389	1.0	near drowning	33	<1
	14	explosions/firearms	61	<1	explosions/firearms	6	<1
	15	near drowning	18	<1	overexertion & strenuous movements	N/A	N/A
		ALL	40,691	100.0	ALL	94,032	100.0
65+ years	1	fall	25,757	72.6	fall	10,932	54.7
	2	unspecified unintentional	2,904	8.2	other specified unintentional	1,759	8.8
	3	transport	1,508	4.2	hit/struck/crush	1,756	8.8
	4	choking/suffocate	942	2.7	unspecified unintentional	1,592	8.0
	5	hit/struck/crush	938	2.6	cutting/piercing	1,516	7.6
	6	overexertion & strenuous movements	714	2.0	foreign body - natural orifice	780	3.9
	7	natural/environmental/animals	551	1.6	transport	748	3.7
	8	poisoning	530	1.5	natural/environmental/animals	448	2.2
	9	cutting/piercing	510	1.4	fires/burns/scalds	208	1.0
	10	foreign body - natural orifice	412	1.2	poisoning	138	<1
	11	other specified unintentional	356	1.0	machinery	99	<1
	12	fires/burns/scalds	198	<1	choking/suffocate	11	<1
	13	machinery	157	<1	near drowning	0	0.0
	14	explosions/firearms	12	<1	explosions/firearms	0	0.0
	15	near drowning	8	<1	overexertion & strenuous movements	N/A	N/A
		ALL	35,497	100.0	ALL	19,987	100.0
ALL AGES	1	fall	45,534	44.2	fall	77,090	33.9
	2	unspecified unintentional	13,020	12.6	hit/struck/crush	45,767	20.1
	3	transport	12,970	12.6	other specified unintentional	23,905	10.5
	4	hit/struck/crush	8,518	8.3	cutting/piercing	23,217	10.2
	5	cutting/piercing	6,031	5.8	unspecified unintentional	16,733	7.4
	6	natural/environmental/animals	3,005	2.9	transport	15,139	6.7
	7	overexertion & strenuous movements	2,946	2.9	foreign body - natural orifice	11,040	4.9
	8	poisoning	2,436	2.4	natural/environmental/animals	5,950	2.6
	9	other specified unintentional	2,398	2.3	fires/burns/scalds	4,901	2.2
	10	foreign body - natural orifice	1,945	1.9	poisoning	2,118	<1
	11	choking/suffocate	1,467	1.4	machinery	1,327	<1
	12	machinery	1,360	1.3	choking/suffocate	183	<1
	13	fires/burns/scalds	1,313	1.3	near drowning	69	<1
	14	explosions/firearms	116	<1	explosions/firearms	15	<1
	15	near drowning	70	<1	overexertion & strenuous movements	N/A	N/A
		ALL	103,129	100.0	ALL	227,454	100.0





# Children (0-14 years)

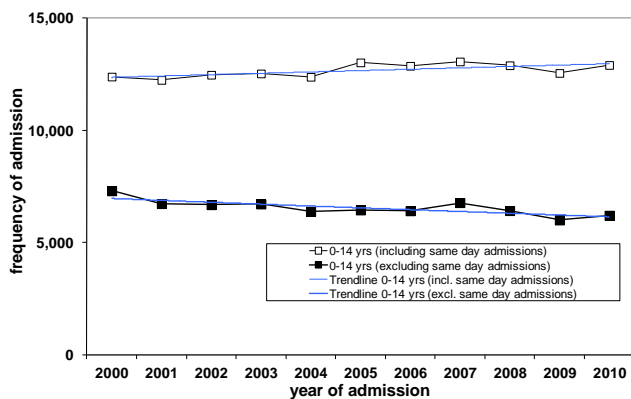
## Trend

### FREQUENCY

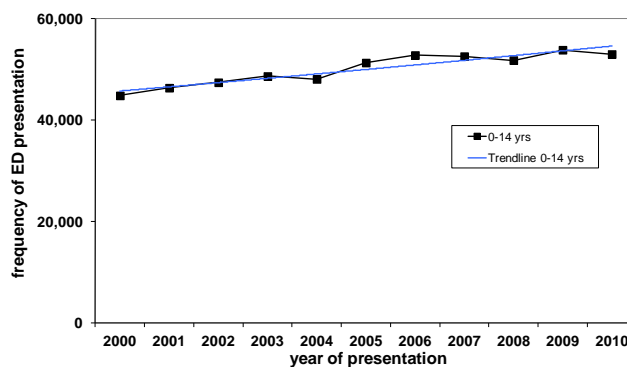
Frequency and rate data for 2010 reported here differ slightly from those reported elsewhere in this report because a stricter inclusion criterion based on primary injury diagnosis (for admissions) and hospital site (for ED presentations) were used for the trend calculations.

- The frequency of CHILD unintentional injury and poisoning admissions (INCLUDING same-day admissions) increased significantly over the 11-year period from 12,391 in 2000 to 12,908 in 2010, representing an estimated annual change of 0.5% (95% confidence interval 0.2% to 0.8%) and an overall increase of 5% (2% to 9%) based on the trend line (figure 16).
- The frequency of CHILD unintentional injury and poisoning admissions (EXCLUDING same-day admissions) decreased significantly over the 11-year period from 7,301 in 2000 to 6,207 in 2010, representing an estimated annual decrease of 1.2% (-1.8% to -0.7%) and an overall reduction of 13% (-18% to -7%) based on the trend line (figure 16).
- The frequency of CHILD unintentional injury and poisoning ED presentations increased significantly over the 11-year period from 44,841 in 2000 to 53,012 in 2010, representing an estimated annual change of 1.8% (1.4% to 2.13%) and an overall increase of 21% (16% to 26%) based on the trend line (figure 17).

**Figure 16 Trend in the frequency of hospital admissions, Victoria 2000-2010**



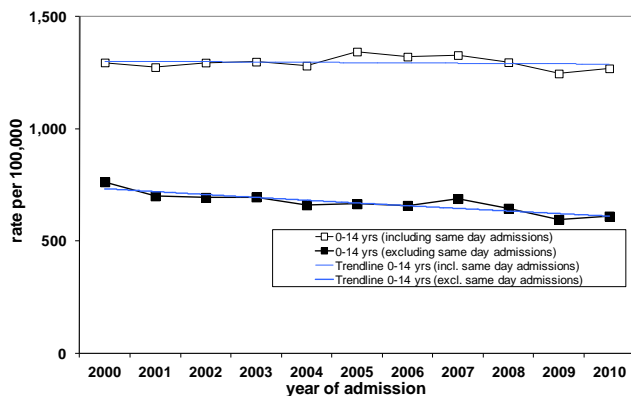
**Figure 17 Trend in the frequency of injury ED presentations, Victoria 2000-2010**



### RATE

- The CHILD unintentional injury and poisoning admission rate (INCLUDING same-day admissions) did not change significantly over the 11-year period. In 2000 it was 1,295.1/100,000 and in 2010 it was 1,268.9/100,000, representing an estimated annual change of just -0.1% (-0.5% to 0.3%) and an overall reduction of 1% (2% to 14%) based on the trend line (figure 18).
- The CHILD unintentional injury and poisoning admission rate (EXCLUDING same-day admissions) decreased significantly over the 11-year period from 763.1/100,000 in 2000 to 610.2/100,000 in 2010, representing an estimated annual decrease of 1.8% (-2.4% to -1.2%) and an overall reduction of 18% (-24% to -13%) based on the trend line (figure 18).
- The trend in the ED presentation rate cannot be determined because numerator data were not complete.

**Figure 18 Trend in hospital admission rates per 100,000 population, Victoria 2000-2010**

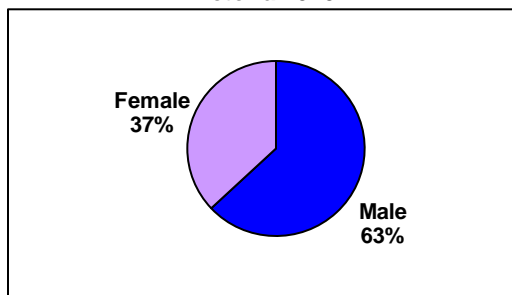


Rates cannot be calculated for ED presentations because numerator data were not complete for the 11-year period.

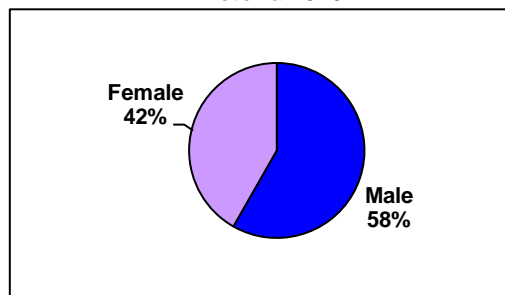
## Gender

- Males were overrepresented in child hospital-treated injury cases, accounting for 63% of hospital admissions (n=8,297) and 58% of ED presentations (n=38,819) in Victoria in 2010 (figures 19 & 20).

**Figure 19 Child hospital injury admissions by gender, Victoria 2010**



**Figure 20 Child ED injury presentations by gender, Victoria 2010**



- The child hospital admission and ED presentation rates were also higher for males than females (1,592.2 & 7,449.4/100,000 vs. 980.7 & 5,630.1/100,000). (Table 5)

**Table 5 Frequency and rate of hospital admission and ED presentation in children, Victoria 2010**

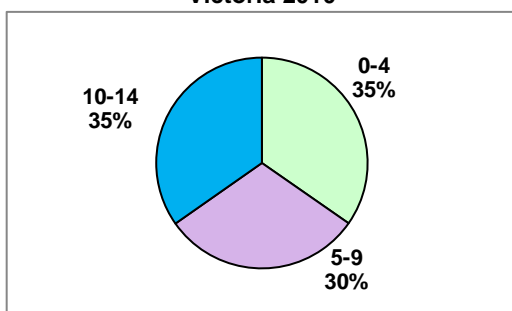
	Hospital admissions		ED presentations	
	Frequency	Rate	Frequency	Rate
Male	8,297	1,592.2	38,819	7,449.4
Female	4,847	980.7	27,825	5,630.1
All	13,144	1,294.6	66,644	6,563.8

## Age

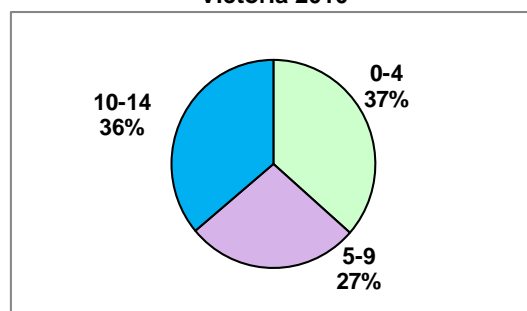
Child injury hospital admissions and ED presentations were fairly evenly distributed across the 5-year age groups (figures 21 & 22).

- Children aged 0-4 years accounted for 35% of child admissions and 37% of child ED presentations.
- Children aged 5-9 years accounted for 30% of child hospital admissions and 27% of child ED presentations.
- Children aged 10-14 years accounted for 35% of child admissions and 36% of child ED presentations.

**Figure 21 Child hospital admissions by age group, Victoria 2010**



**Figure 22 Child ED presentations by age group, Victoria 2010**



- Hospital admission and ED presentation rates were slightly higher in 10-14 and 0-4 year olds than 5-9 year olds. (Table 6)

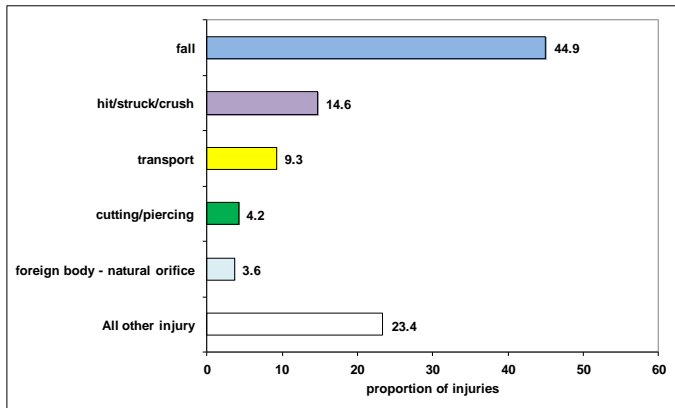
**Table 6 Frequency and rate of hospital admission and ED presentation in children, Victoria 2010**

	Hospital admissions		ED presentations	
	Frequency	Rate	Frequency	Rate
0-4 years	4,560	1,296.6	24,374	6,930.6
5-9 years	4,017	1,224.7	18,156	5,535.2
10-14 years	4,567	1,360.7	24,114	7,184.7
All	13,144	1,294.6	66,644	6,563.8

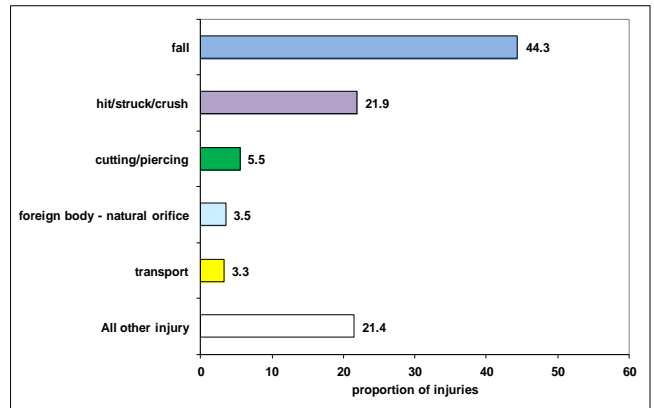
## Leading causes of injury

- The five leading causes of child hospital admissions and ED presentations were the same although the ranking on frequency of cases is different (figures 23 & 24).
- The leading cause of child hospital admissions and ED presentations was falls accounting for 45% (n=5907) of child hospital admissions and 44% (n=29,553) of ED presentations.
- Hit/struck/crush injuries were the next major cause of injury accounting for 15% of admissions (n=1,923) and 22% of ED presentations (n=14,563).
- Transport accounted for 9% of admissions (n=1,217) and only 3% of ED presentations (n=2,197).
- Cutting and piercing injuries accounted for 4% of admissions (n=548) and 5.5% of ED presentations (n=3,679).
- Injuries caused by a foreign body in a natural orifice e.g. ear, nose, eye, accounted for 4% of admissions (n=479) and 3.5% of presentations (n=2,362).

**Figure 23 Child hospital admissions by cause, Victoria 2010**



**Figure 24 Child ED presentations by cause, Victoria 2010**



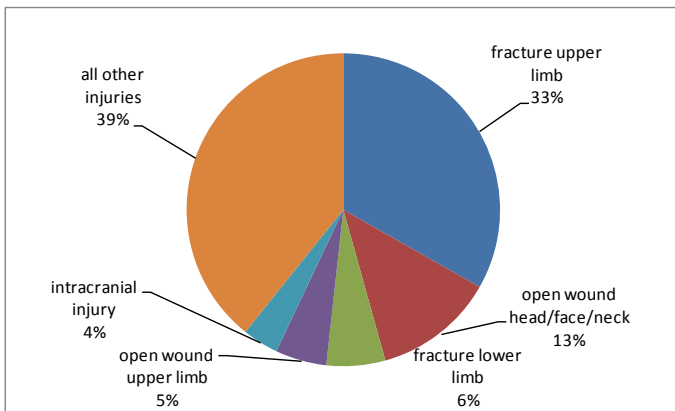
*Note: 'Other specified' and 'unspecified' cases were included in the 'all other injuries' category regardless of their ranking*

## Major injury type (body site and nature of injury)

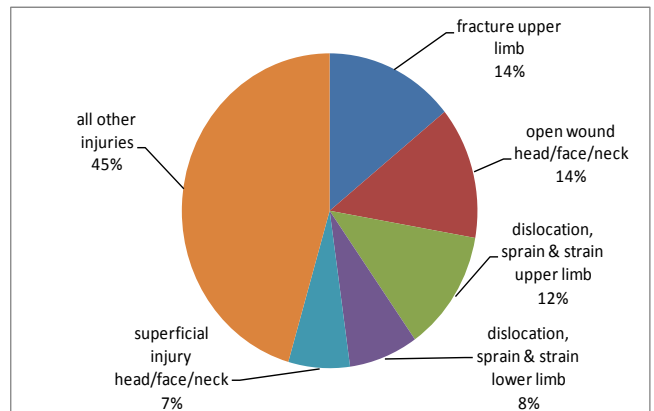
Figures 25 & 26 show the five major injury types for child hospital admissions and presentations.

- Fracture to the upper limb accounted for one-third of child hospital injury admissions (33%) and 14% of ED presentations.
- Open wounds to the head/face/neck accounted for 13% of child hospital injury admissions and 14% of ED presentations.

**Figure 25 Major injury type, child hospital admissions, Victoria 2010**



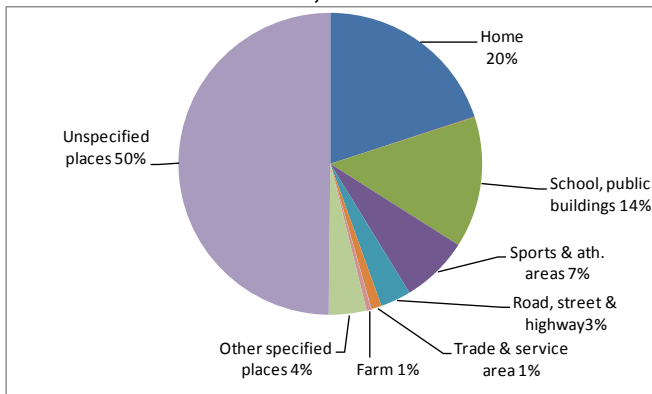
**Figure 26 Major injury type, child ED presentations, Victoria 2010**



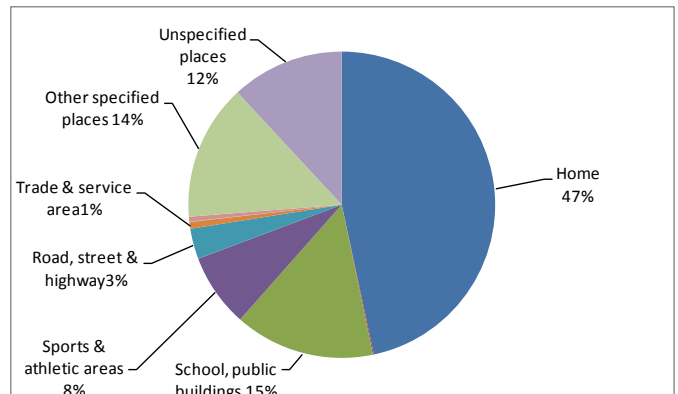
## Place of injury occurrence

- The major place of occurrence (location) of injury was the home (20% of hospital admissions and 47% of ED presentations) (figures 27 & 28).
- Children were also commonly injured in schools and other public buildings (14% of admissions and 15% of ED presentations) and sports and athletics areas (7% of admissions and 8% of ED presentations).

**Figure 27 Child hospital admissions by place of occurrence, Victoria 2010**



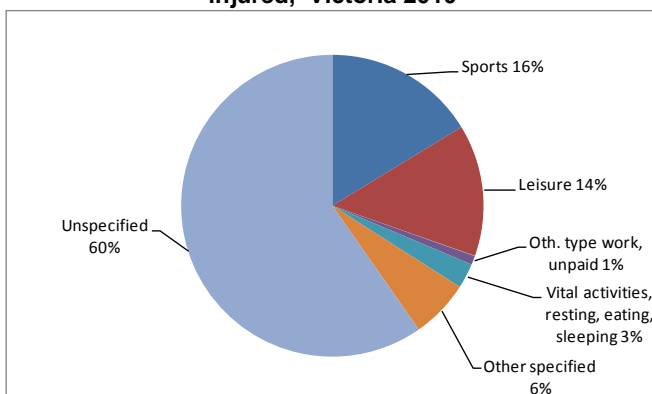
**Figure 28 Child ED presentations by place of occurrence, Victoria 2010**



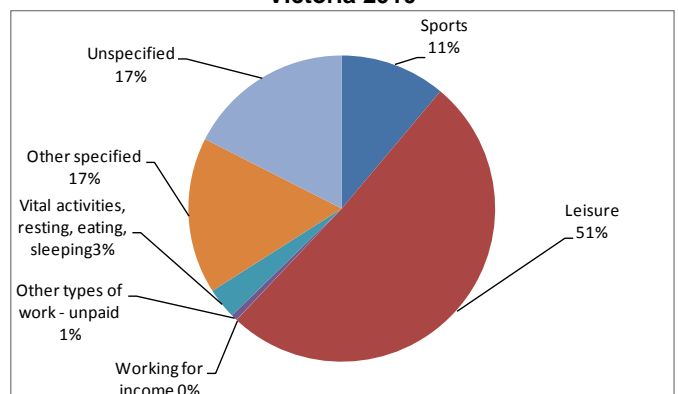
## Activity when injured

- The activity engaged in at the time of injury was unspecified for 60% of all child injury admissions and recorded as 'other specified' for a further 6% of injuries (figure 29).
- Sport and leisure were the only activities recorded for a significant number of child injury admissions (16% and 14%, respectively) (figure 29). The same activities were commonly reported among injury ED presentations (11% and 51%, respectively) (figure 30).

**Figure 29 Child hospital admissions by activity when injured, Victoria 2010**



**Figure 30 Child ED presentations by activity when injured, Victoria 2010**



**Table 7 Ranking of causes for hospital admissions and ED presentations, children aged 0-14 years, 2010**

AGE GROUP	RANK	ADMISSIONS			PRESENTATIONS		
		CAUSE	FREQ	%	CAUSE	FREQ	%
0-4 years	1	fall	1,792	39.3	fall	10,346	42.4
	2	hit/struck/crush	735	16.1	hit/struck/crush	4,416	18.1
	3	unspecified unintentional	491	10.8	other specified unintentional	2,864	11.8
	4	foreign body - natural orifice	295	6.5	unspecified unintentional	1,617	6.6
	5	poisoning	251	5.5	foreign body - natural orifice	1,452	6.0
	6	fires/burns/scalds	232	5.1	cutting/piercing	1,265	5.2
	7	cutting/piercing	190	4.2	fires/burns/scalds	917	3.8
	8	natural/environmental/animals	177	3.9	natural/environmental/animals	670	2.7
	9	transport	154	3.4	poisoning	490	2.0
	10	other specified unintentional	101	2.2	transport	280	1.1
	11	choking/suffocate	63	1.4	choking/suffocate	26	<1
	12	overexertion & strenuous movements	35	<1	drowning/near drowning	16	<1
	13	drowning/near drowning	22	<1	machinery	15	<1
	14	machinery	21	<1	explosions/firearms	0	0.0
	15	explosions/firearms	1	<1	overexertion & strenuous movements	N/A	N/A
		ALL	4,560	100.0	ALL	24,374	100.0
5-9 years	1	fall	2,227	55.4	fall	8,809	48.5
	2	hit/struck/crush	488	12.1	hit/struck/crush	3,703	20.4
	3	transport	335	8.3	other specified unintentional	1,447	8.0
	4	unspecified unintentional	320	8.0	cutting/piercing	1,212	6.7
	5	cutting/piercing	176	4.4	unspecified unintentional	945	5.2
	6	foreign body - natural orifice	122	3.0	foreign body - natural orifice	647	3.6
	7	natural/environmental/animals	112	2.8	transport	622	3.4
	8	other specified unintentional	91	2.3	natural/environmental/animals	432	2.4
	9	fires/burns/scalds	44	1.1	fires/burns/scalds	251	1.4
	10	poisoning	31	<1	poisoning	73	<1
	11	overexertion & strenuous movements	28	<1	choking/suffocate	9	<1
	12	choking/suffocate	24	<1	machinery	5	<1
	13	machinery	12	<1	drowning/near drowning	*	*
	14	drowning/near drowning	7	<1	explosions/firearms	0	0.0
	15	explosions/firearms	0	<1	overexertion & strenuous movements	N/A	N/A
		ALL	4,017	100.0	ALL	18,156	100.0
10-14 years	1	fall	1,888	41.3	fall	10,398	43.1
	2	transport	728	15.9	hit/struck/crush	6,444	26.7
	3	hit/struck/crush	700	15.3	other specified unintentional	2,344	9.7
	4	unspecified unintentional	582	12.7	unspecified unintentional	1,478	6.1
	5	cutting/piercing	182	4.0	transport	1,295	5.4
	6	natural/environmental/animals	111	2.4	cutting/piercing	1,202	5.0
	7	other specified unintentional	103	2.3	natural/environmental/animals	374	1.6
	8	overexertion & strenuous movements	99	2.2	foreign body - natural orifice	263	1.1
	9	foreign body - natural orifice	62	1.4	fires/burns/scalds	227	<1
	10	fires/burns/scalds	39	<1	poisoning	52	<1
	11	poisoning	35	<1	machinery	18	<1
	12	choking/suffocate	13	<1	choking/suffocate	10	<1
	13	machinery	12	<1	drowning/near drowning	7	<1
	14	explosions/firearms	8	<1	explosions/firearms	*	*
	15	drowning/near drowning	5	<1	overexertion & strenuous movements	N/A	N/A
		ALL	4,567	100.0	ALL	24,114	100.0
ALL CHILDREN	1	fall	5,907	44.9	fall	29,553	44.3
	2	hit/struck/crush	1,923	14.6	hit/struck/crush	14,563	21.9
	3	unspecified unintentional	1,393	10.6	other specified unintentional	6,655	10.0
	4	transport	1,217	9.3	unspecified unintentional	4,040	6.1
	5	cutting/piercing	548	4.2	cutting/piercing	3,679	5.5
	6	foreign body - natural orifice	479	3.6	foreign body - natural orifice	2,362	3.5
	7	natural/environmental/animals	400	3.0	transport	2,197	3.3
	8	poisoning	317	2.4	natural/environmental/animals	1,476	2.2
	9	fires/burns/scalds	315	2.4	fires/burns/scalds	1,395	2.1
	10	other specified unintentional	295	2.2	poisoning	615	<1
	11	overexertion & strenuous movements	162	1.2	choking/suffocate	45	<1
	12	choking/suffocate	100	<1	machinery	38	<1
	13	machinery	45	<1	drowning/near drowning	24	<1
	14	drowning/near drowning	34	<1	explosions/firearms	*	*
	15	explosions/firearms	9	<1	overexertion & strenuous movements	N/A	N/A
		ALL	13,144	100.0	ALL	66,644	100.0



# Adolescents and young adults (15-24 years)

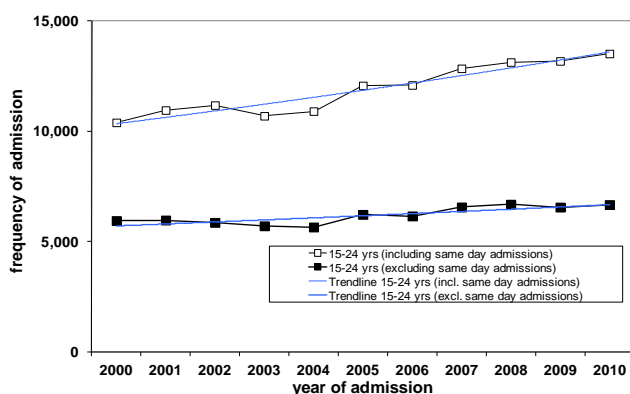
## Trend

### FREQUENCY

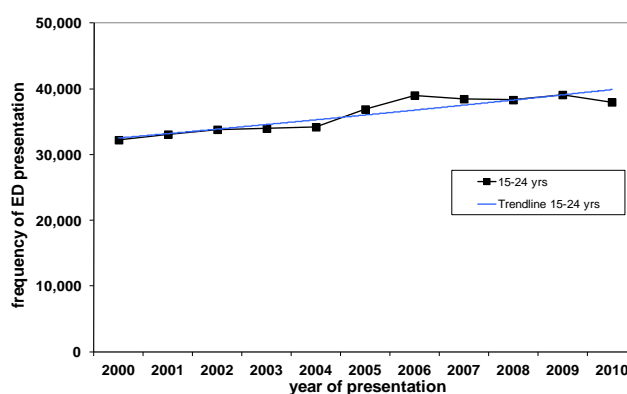
Frequency and rate data for 2010 reported here differ slightly from those reported elsewhere in this report because a stricter inclusion criterion based on primary injury diagnosis (for admissions) and hospital site (for ED presentations) were used for the trend calculations.

- The frequency of ADOLESCENT AND YOUNG ADULT unintentional injury and poisoning admissions (INCLUDING same-day admissions) increased significantly over the 11-year period from 10,396 in 2000 to 13,520 in 2010, representing an estimated annual change of 2.8% (95% confidence interval 2.2% to 3.3%) and an overall increase of 35% (27% to 42%) based on the trend line (figure 31).
- The frequency of ADOLESCENT AND YOUNG ADULT unintentional injury and poisoning admissions (EXCLUDING same-day admissions) increased significantly over the 11-year period. In 2000 the frequency was 5,942 and in 2010 it was 6,668. This represented an estimated annual change of 1.6% (0.9% to 2.2%) and an overall increase of 19% (11% to 27%) based on the trend line (figure 31).
- The frequency of ADOLESCENT AND YOUNG ADULT unintentional injury and poisoning ED presentations increased significantly over the 11-year period from 33,971 in 2000 to 37,979 in 2010, representing an estimated annual change of 2.0% (1.5% to 2.6%) and an overall increase of 25% (17% to 32%) based on the trend line (figure 32).

**Figure 31 Trend in the frequency of hospital admissions, Victoria 2000-2010**



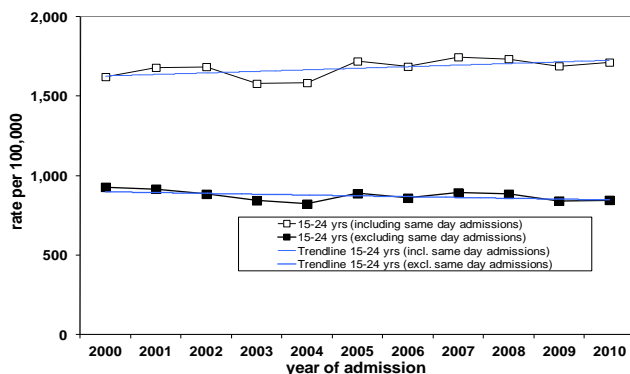
**Figure 32 Trend in the frequency of injury ED presentations, Victoria 2000-2010**



### RATE

- The ADOLESCENT AND YOUNG ADULT unintentional injury and poisoning admission rate (INCLUDING same-day admissions) increased significantly over the 11-year period from 1,622.2/100,000 in 2000 to 1,713.4/100,000 in 2010, representing an estimated annual change of 0.6% (0.1% to 1.1%) and an overall increase of 7% (1% to 13%) based on the trend line (figure 33).
- The ADOLESCENT AND YOUNG ADULT unintentional injury and poisoning admission rate (EXCLUDING same-day admissions) decreased over the 11-year period from 927.2/100,000 in 2000 to 845.1/100,000 in 2010, representing an estimated annual reduction of 0.6% (-1.2% to 0.0%) and an overall decrease of 6% (-12% to 0%) based on the trend line. This decrease was not statistically significant (figure 33).
- The trend in ED presentation rate cannot be determined because numerator data were not complete.

**Figure 33 Trend in hospital admission rates per 100,000 population, Victoria 2000-2010**

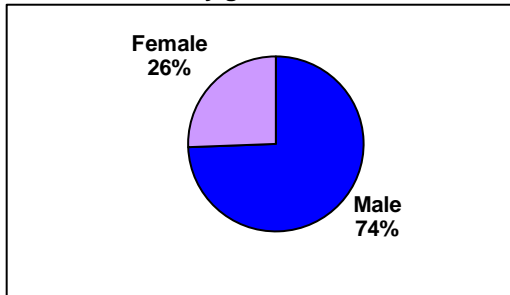


Rates cannot be calculated for ED presentations because numerator data were not complete for the 11-year period.

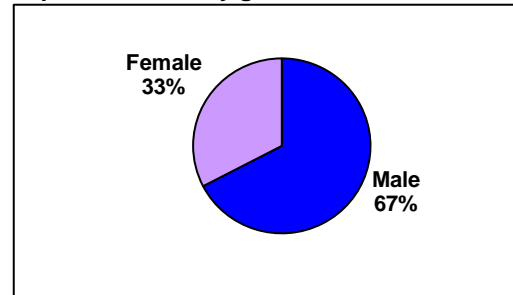
## Gender

- Males were overrepresented in hospital-treated injury cases among adolescents and young adults, accounting for 74% of hospital admissions (n=10,266) and 67% of ED presentations (n=31,560) in Victoria in 2010 (figure 34 & 35).

**Figure 34 Adolescent and young adult hospital injury admissions by gender, Victoria 2010**



**Figure 35 Adolescent and young adult ED injury presentations by gender, Victoria 2010**



- Hospital admissions and ED presentation rates were also higher for males than females (2,530.2 & 7,778.3/100,000 vs. 928.6 & 4,005.6/100,000). (Table 8)

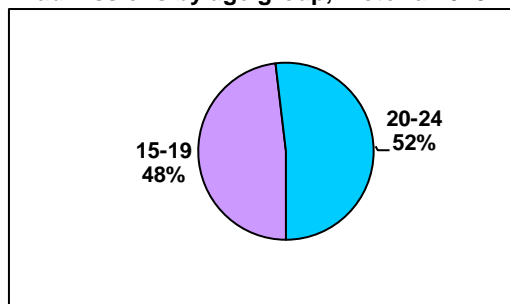
**Table 8 Frequency and rate of hospital admission and ED presentation, adolescent and young adults, Victoria 2010**

	Hospital admissions		ED presentations	
	Frequency	Rate	Frequency	Rate
Male	10,266	2,530.2	31,560	7,778.3
Female	3,531	928.6	15,231	4,005.6
All	13,797	1,755.4	46,791	5,953.1

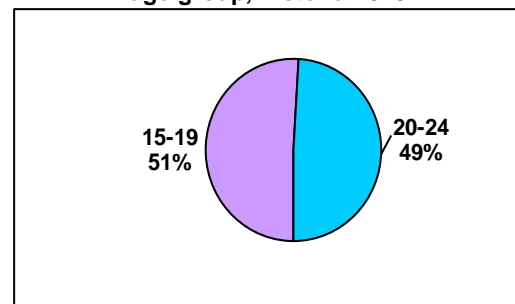
## Age

- Adolescent and young adult injury hospital admissions and ED presentations were very evenly distributed across the two 5-year age groups (figures 36 & 37).
- Adolescents aged 15 to 19 years accounted for 48% of admissions and 51% of ED presentations.
- Young adults aged 20 to 24 years accounted for 52% of admissions and 49% of ED presentations.

**Figure 36 Adolescent and young adult hospital admissions by age group, Victoria 2010**



**Figure 37 Adolescent and young adult ED presentations by age group, Victoria 2010**



- Both hospital admission rates were higher in 15-19 year olds than 20-24 year olds (1,820.4/100,000 vs. 1,699.1/100,000 & 6,534.8 /100,000 vs. 5,449.6/100,000, respectively) (Table 9).

**Table 9 Frequency and rate of hospital admission and ED presentation in adolescent and young adults, Victoria 2010**

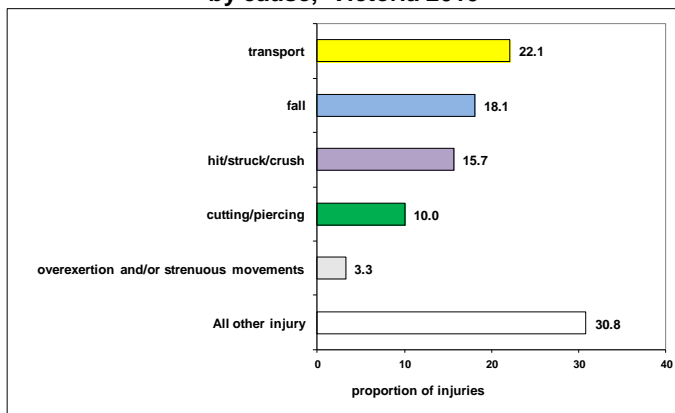
	Hospital admissions		ED presentations	
	Frequency	Rate	Frequency	Rate
15-19 years	6,639	1,820.4	23,833	6,534.8
20-24 years	7,158	1,699.1	22,958	5,449.6
All	13,797	1,755.4	46,791	5,953.1



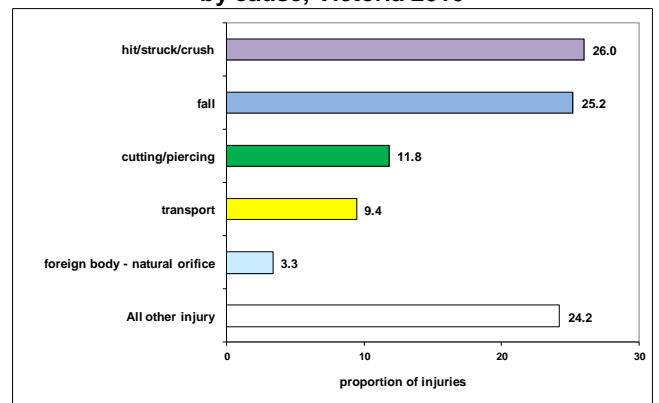
## Leading causes of injury

- 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 (figures 38 & 39).
- Transport was the leading cause of adolescent and young adult hospital admissions (22%, n=3,051) but only accounted for 9% of ED presentations (n=4,421).
- Falls was the second most common cause of hospital admissions (18%, n=2,493), and ED presentations (25%, n=11,793) in this age group.
- Hit/struck/crush accounted for 16% of hospital admissions (n=2,160) and was the leading cause of ED presentations (26%, n=12,160).
- Cutting and piercing injuries accounted for 10% of admissions (n=1,383) and 12% of ED presentations (n=5,516).
- The fifth ranking cause of adolescent and young adult hospital admissions was overexertion and strenuous movements (3%, n=456) whereas for ED presentations it was injuries caused by a foreign body in a natural orifice e.g. ear, nose, eye (3%, n=1,565).

**Figure 38 Adolescent and young adult hospital admissions by cause, Victoria 2010**



**Figure 39 Adolescent and young adult ED presentations by cause, Victoria 2010**



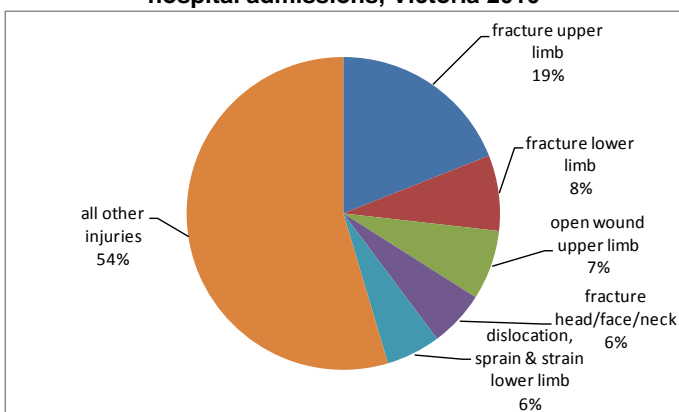
*Note: 'Other specified' and 'unspecified' cases were included in the 'all other injuries' category regardless of their ranking*

## Major injury type (body site and nature of injury)

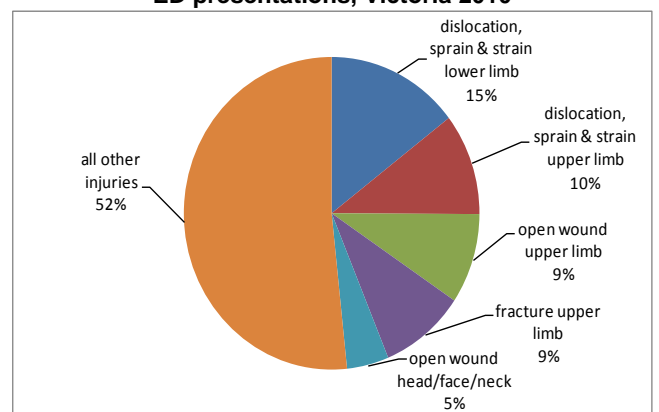
Figures 40 & 41 show the five major specific injury types for adolescent and young adult hospital admissions and ED presentations.

- Fracture to the upper limb accounted for 19% of hospital injury admissions and 9% of ED presentations.
- Fracture to the lower limb was the second most common type of injury requiring hospital admission (8%).
- Dislocations/sprains and strains to the lower limb (15%), upper limb (10%) and open wounds to the upper limb (10%) were common among ED presentations.

**Figure 40 Major injury type, adolescent and young adult hospital admissions, Victoria 2010**



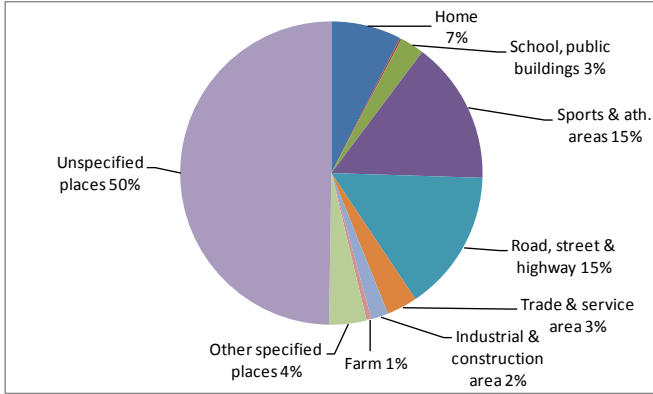
**Figure 41 Major injury type, adolescent and young adult ED presentations, Victoria 2010**



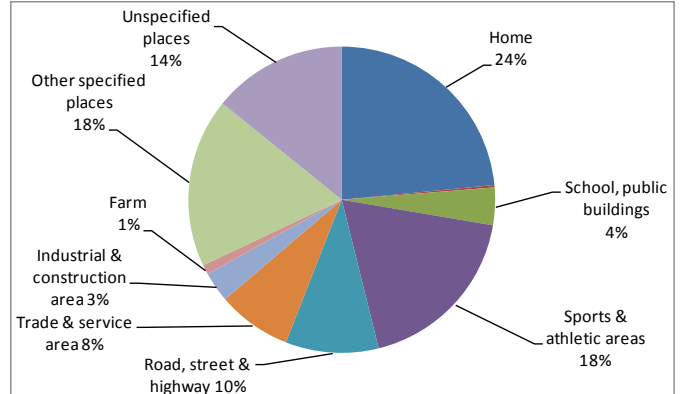
## Place of injury occurrence

- Sports & athletics areas (15%) and the road, street and highway (15%) were the most common places of occurrence of adolescent and young adult injuries resulting in hospital admission (figure 42).
- Among ED presentations the home (24%) and sports & athletics areas (18%) were the most common places of occurrence for injuries resulting in ED presentation (23%) (figure 43).

**Figure 42 Adolescent and young adult hospital admissions by place of occurrence, Victoria 2010**



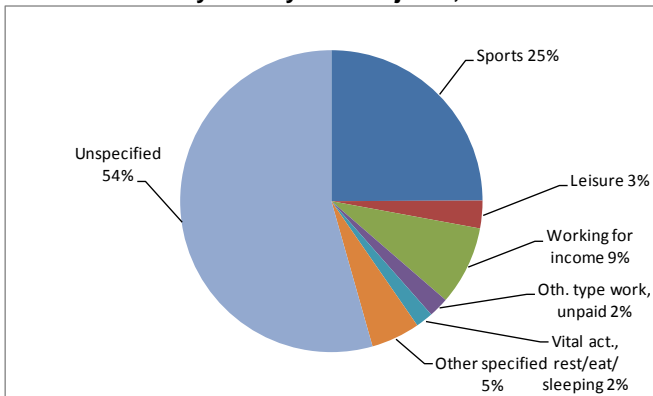
**Figure 43 Adolescent and young adult ED presentations by place of occurrence, Victoria 2010**



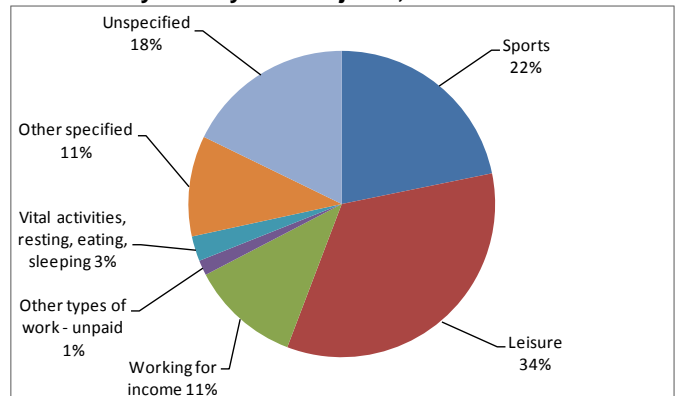
## Activity when injured

- The activity engaged in at the time of injury was unspecified for more than half of adolescent and young adult injury admissions (54%) (figure 44).
- Sports (25%) and working for income (9%) were the only activities recorded for a significant number of adolescent and young adult admissions (figure 44).
- Leisure was recorded as the activity engaged in at the time of injury for 34% of adolescent and young adult ED presentations, followed by sports (22%) and working for income (11%) (figure 45).

**Figure 44 Adolescent and young adult hospital admissions by activity when injured, Victoria 2010**



**Figure 45 Adolescent and young adult ED presentations by activity when injured, Victoria 2010**



**Table 10 Ranking of causes for hospital admissions and ED presentations, persons aged 15 to 24 years, 2010**

AGE GROUP	RANK	ADMISSIONS			PRESENTATIONS		
		CAUSE	FREQ	%	CAUSE	FREQ	%
<b>15-19 years</b>	1	transport	1,461	22.0	hit/struck/crush	6,661	27.9
	2	fall	1,334	20.1	fall	6,605	27.7
	3	hit/struck/crush	1,133	17.1	other specified unintentional	2,560	10.7
	4	unspecified unintentional	1,117	16.8	cutting/piercing	2,341	9.8
	5	cutting/piercing	593	8.9	transport	2,192	9.2
	6	overexertion & strenuous movements	212	3.2	unspecified unintentional	1,682	7.1
	7	other specified unintentional	200	3.0	foreign body - natural orifice	564	2.4
	8	poisoning	172	2.6	fires/burns/scalds	444	1.9
	9	natural/environmental/animals	151	2.3	natural/environmental/animals	444	1.9
	10	fires/burns/scalds	81	1.2	poisoning	219	<1
	11	foreign body - natural orifice	73	1.1	machinery	95	<1
	12	machinery	72	1.1	choking/suffocate	19	<1
	13	choking/suffocate	17	<1	drowning/near drowning	5	<1
	14	explosions/firearms	17	<1	explosions/firearms	*	*
	15	near drowning	6	<1	overexertion & strenuous movements	N/A	N/A
			6,639	100.0	ALL	23,833	100.0
<b>20-24 years</b>	1	transport	1,590	22.2	hit/struck/crush	5,499	24.0
	2	unspecified unintentional	1,218	17.0	fall	5,188	22.6
	3	fall	1,159	16.2	cutting/piercing	3,175	13.8
	4	hit/struck/crush	1,027	14.3	other specified unintentional	2,436	10.6
	5	cutting/piercing	790	11.0	transport	2,229	9.7
	6	poisoning	265	3.7	unspecified unintentional	1,853	8.1
	7	other specified unintentional	264	3.7	foreign body - natural orifice	1,001	4.4
	8	overexertion & strenuous movements	244	3.4	natural/environmental/animals	578	2.5
	9	natural/environmental/animals	202	2.8	fires/burns/scalds	546	2.4
	10	fires/burns/scalds	133	1.9	poisoning	247	1.1
	11	machinery	129	1.8	machinery	176	<1
	12	foreign body - natural orifice	97	1.4	choking/suffocate	18	<1
	13	choking/suffocate	19	<1	drowning/near drowning	7	<1
	14	explosions/firearms	17	<1	explosions/firearms	5	<1
	15	near drowning	*	<1	overexertion & strenuous movements	N/A	N/A
			7,158	100.0	ALL	22,958	100.0
<b>ALL ADOLESCENTS &amp; YOUNG ADULTS</b>	1	transport	3,051	22.1	hit/struck/crush	12,160	26.0
	2	fall	2,493	18.1	fall	11,793	25.2
	3	unspecified unintentional	2,335	16.9	cutting/piercing	5,516	11.8
	4	hit/struck/crush	2,160	15.7	other specified unintentional	4,996	10.7
	5	cutting/piercing	1,383	10.0	transport	4,421	9.4
	6	other specified unintentional	464	3.4	unspecified unintentional	3,535	7.6
	7	overexertion & strenuous movements	456	3.3	foreign body - natural orifice	1,565	3.3
	8	poisoning	437	3.2	natural/environmental/animals	1,022	2.2
	9	natural/environmental/animals	353	2.6	fires/burns/scalds	990	2.1
	10	fires/burns/scalds	214	1.6	poisoning	466	1.0
	11	machinery	201	1.5	machinery	271	<1
	12	foreign body - natural orifice	170	1.2	choking/suffocate	37	<1
	13	choking/suffocate	36	<1	drowning/near drowning	12	<1
	14	explosions/firearms	34	<1	explosions/firearms	7	<1
	15	near drowning	10	<1	overexertion & strenuous movements	N/A	N/A
			13,797	100.0	ALL	46,791	100.0



# Adults (25-64 years)

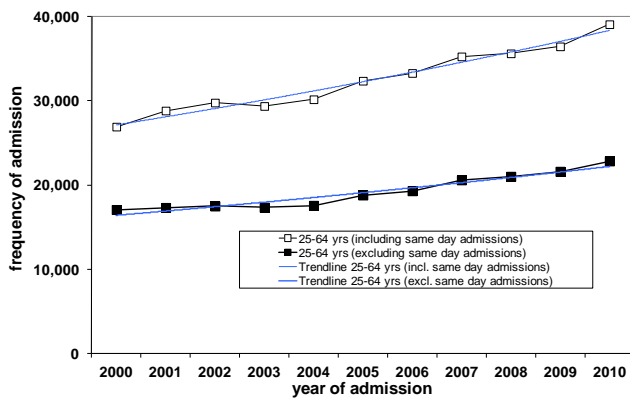
## Trend

### FREQUENCY

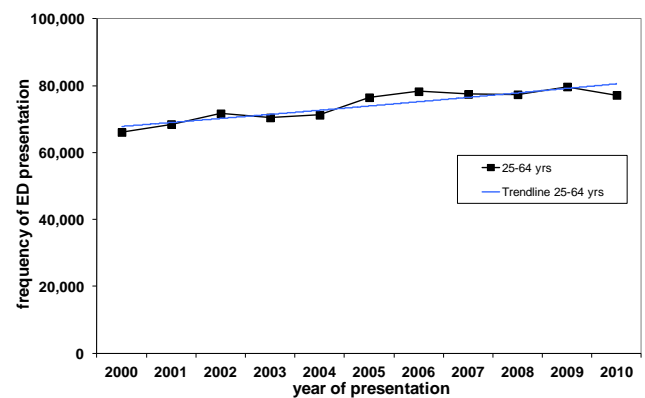
Frequency and rate data for 2010 reported here differ slightly from those reported elsewhere in this report because a stricter inclusion criterion based on primary injury diagnosis (for admissions) and hospital site (for ED presentations) were used for the trend calculations.

- The frequency of ADULT unintentional injury and poisoning admissions (INCLUDING same-day admissions) increased significantly over the 11-year period from 26,920 in 2000 to 39,094 in 2010, representing an estimated annual change of 3.5% (95% confidence interval 3.1% to 3.8%) and an overall increase of 47% (40% to 51%) based on the trend line (figure 46).
- The frequency of ADULT unintentional injury and poisoning admissions (EXCLUDING same-day admissions) increased significantly over the 11-year period from 17,064 in 2000 to 22,845 in 2010, representing an estimated annual change of 3.1% (2.6% to 3.6%) and an overall increase of 40% (32% to 47%) based on the trend line (figure 46).
- The frequency of ADULT unintentional injury and poisoning ED presentations increased significantly over the 11-year period from 66,096 in 2000 to 77,176 in 2010, representing an estimated annual change of 1.7% (1.2% to 2.2%) and an overall increase of 21% (14% to 27%) based on the trend line (figure 47).

**Figure 46 Trend in the frequency of hospital admissions, Victoria 2000-2010**



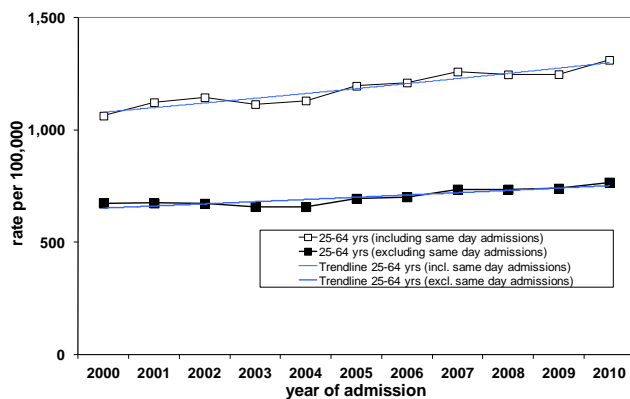
**Figure 47 Trend in the frequency of injury ED presentations, Victoria 2000-2010**



### RATE

- The ADULT unintentional injury and poisoning admission rate (INCLUDING same-day admissions) increased significantly over the 11-year period from 1,063.3/100,000 in 2000 to 1,312.0/100,000 in 2010, representing an estimated annual change of 1.9% (1.5% to 2.2%) and an overall increase of 23% (18% to 27%) based on the trend line (figure 48).
- The ADULT unintentional injury and poisoning admission rate (EXCLUDING same-day admissions) increased significantly over the 11-year period from 674.0/100,000 in 2000 to 766.7/100,000 in 2010, representing an estimated annual change of 1.5% (1.0% to 1.9%) and an overall increase of 17% (12% to 23%) based on the trend line (figure 48).
- The trend in ED presentation rate cannot be determined because numerator data were not complete.

**Figure 48 Trend in hospital admission rates per 100,000 population, Victoria 2000-2010**

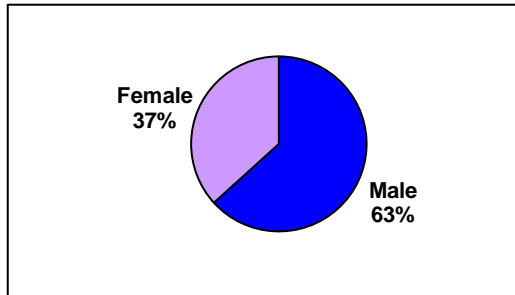


Rates cannot be calculated for ED presentations because numerator data were not complete for the 11-year period.

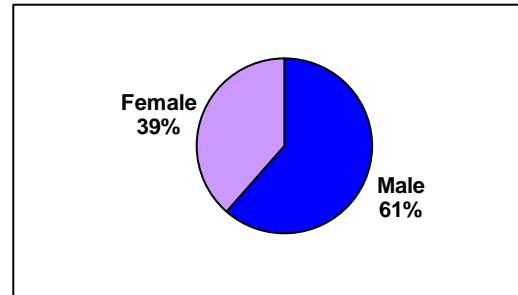
## Gender

- Males were overrepresented in hospital injury data for adults aged 25 to 64 years, accounting for 63% of hospital admissions (n=25,747) and 61% of ED presentations (n=57,806) in Victoria in 2010 (figures 49 & 50).

**Figure 49 Adult hospital injury admissions by gender, Victoria 2010**



**Figure 50 Adult ED injury presentations by gender, Victoria 2010**



- Hospital admission and ED presentation rates were higher for males compared with females (1,745.9 & 3,919.8/100,000 vs. 995.2 & 2,412.4/100,000). (Table 11)

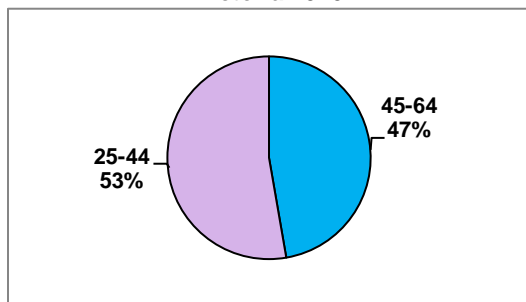
**Table 11 Frequency and rate of adult hospital admission and ED presentation, Victoria 2010**

	Hospital admissions		ED presentations	
	Frequency	Rate	Frequency	Rate
Male	25,747	1,745.9	57,806	3,919.8
Female	14,944	995.2	36,226	2,412.4
All	40,691	1,367.1	94,032	3,159.3

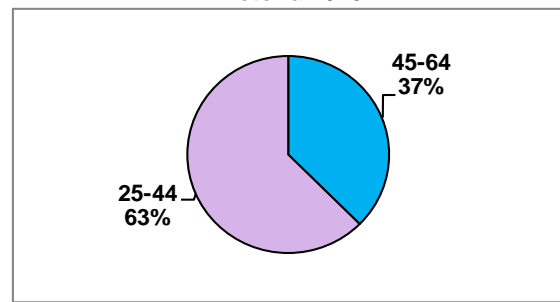
## Age

- Persons aged 25 to 44 years accounted for more adult hospital admissions and ED presentations than persons aged 45 to 64 years (53% and 63%) (figures 51 & 52).

**Figure 51 Adult hospital admissions by age group, Victoria 2010**



**Figure 52 Adult ED presentations by age group, Victoria 2010**



- The highest adult hospital admission rate was among 60-64 year olds (1579.4/100,000). The highest ED presentation rate was among 25-29 year olds (4347.4/100,000), rates then decrease with age. (Table 12)

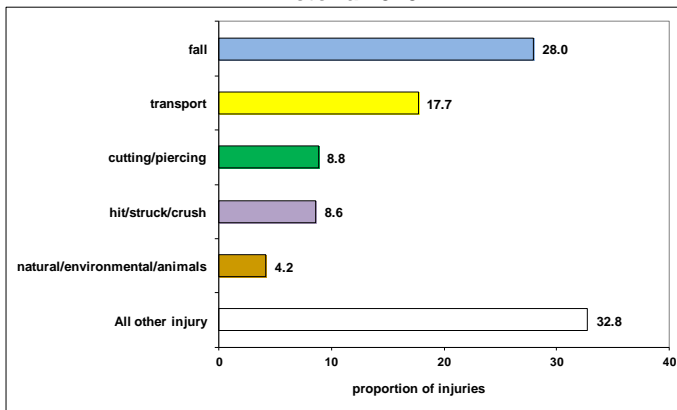
**Table 12 Frequency and rate of hospital admission and ED presentation in adults, Victoria 2010**

	Hospital admissions		ED presentations	
	Frequency	Rate	Frequency	Rate
25-29 years	6,071	1,438.0	18,354	4,347.4
30-34 years	5,078	1,304.2	14,191	3,644.8
35-39 years	5,353	1,313.8	13,930	3,418.9
40-44 years	4,951	1,263.3	12,319	3,143.3
45-49 years	4,954	1,280.2	10,868	2,808.4
50-54 years	4,999	1,388.3	9,513	2,641.9
55-59 years	4,618	1,430.0	8,090	2,505.2
60-64 years	4,667	1,579.4	6,767	2,290.1
All	40,691	1,367.1	94,032	3,159.3

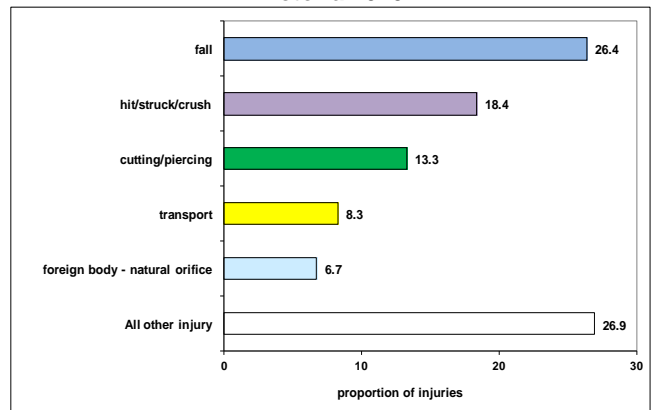
## Leading causes of injury

- 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 (figures 53 and 54).
- The leading cause of adult hospital admissions and ED presentations was falls accounting for 28% (n=11,377) of hospital admissions and 26% (n=24,812) of ED presentations.
- Transport accounted for 18% of admissions (n=7,194) but only 8% of presentations (n=7,773).
- Cutting and piercing injuries accounted for 9% of admissions (n=3,590) and 13% of ED presentations (n=12,506).
- Hit/struck/crush injuries accounted for just 9% of admissions (n=3,497) but 18% of ED presentations (n=17,288).
- The fifth ranking cause of hospital admissions was natural/environmental/animal related injury (4%, n=1,701) whereas for ED presentations it was injuries caused by a foreign body in a natural orifice e.g. ear, nose, eye (7%, n=6,333).

**Figure 53 Adult hospital admissions by cause, Victoria 2010**



**Figure 54 Adult ED presentations by cause, Victoria 2010**



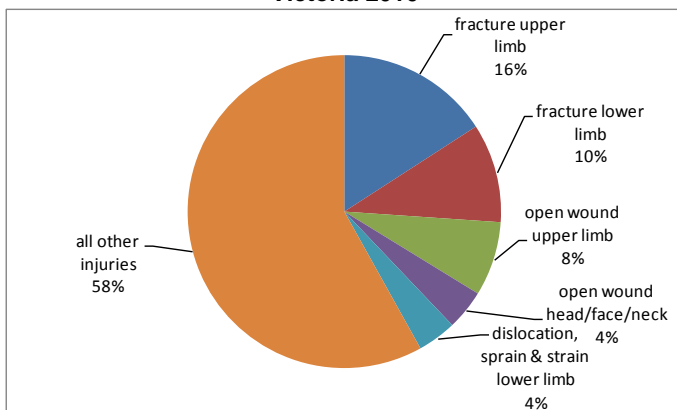
*Note: 'Other specified' and 'unspecified' cases were included in the 'all other injuries' category regardless of their ranking*

## Major injury type (body site and nature of injury)

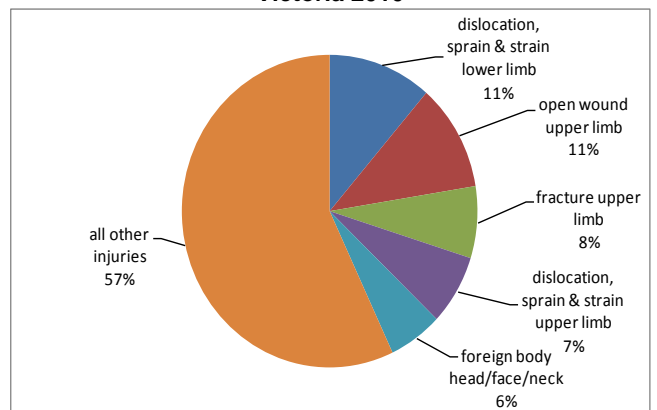
Figures 55 & 56 show the five major specific injury types for adult hospital admissions and ED presentations.

- Fracture to the upper limb accounted for 16% of adult hospital injury admissions and 8% of ED presentations.
- Fracture to the lower limb was the second most common type of adult injury requiring hospital admission (10%).
- Dislocations/sprains and strains to the lower limb (11%) and open wounds to the upper limb (11%) were the most common type of injuries among ED presentations.

**Figure 55 Major injury type, adult hospital admissions, Victoria 2010**



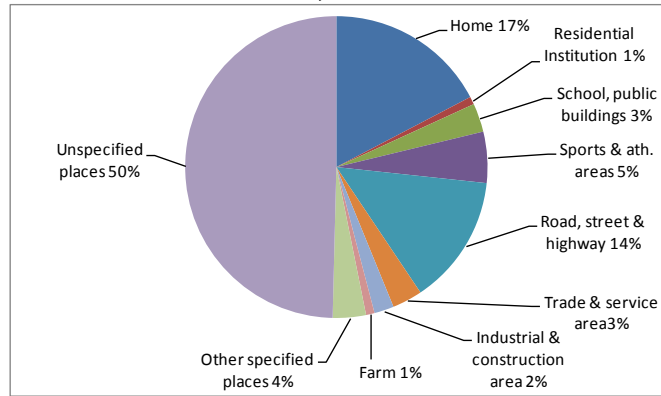
**Figure 56 Major injury type, adult ED presentations, Victoria 2010**



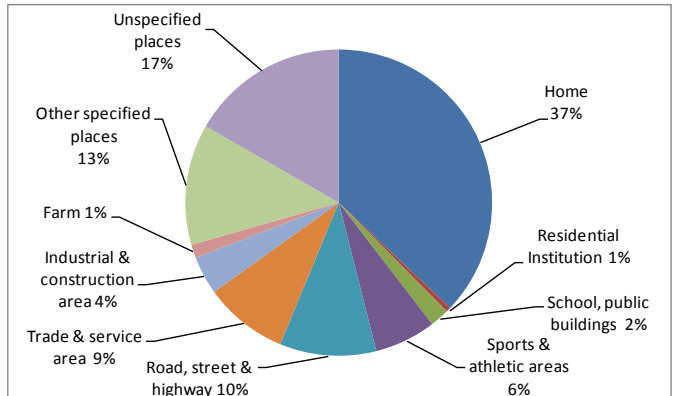
## Place of injury occurrence

- Seventeen percent of adult injuries requiring hospital admission and 37% of injuries resulting in ED presentation occurred in the home (figures 57 & 58).
- Other locations where injuries to adults commonly occurred were:
  - roads, streets and highways (14% of admissions and 10% of ED presentations)
  - trade and service areas (3% of admissions and 9% of ED presentations) and
  - sports and athletics areas (5% of admissions and 6% of ED presentations).

**Figure 57 Adult hospital admissions by place of occurrence, Victoria 2010**



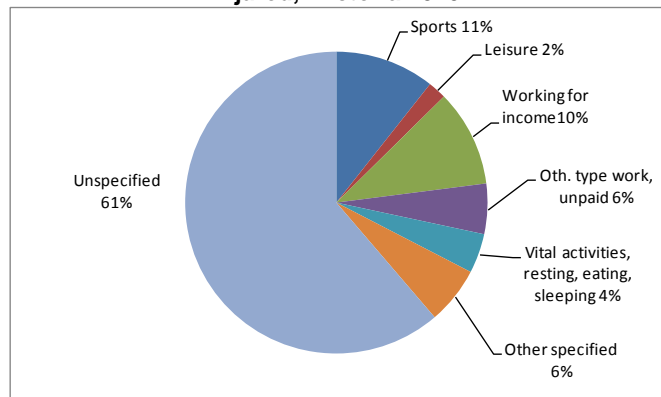
**Figure 58 Adult ED presentations by place of occurrence, Victoria 2010**



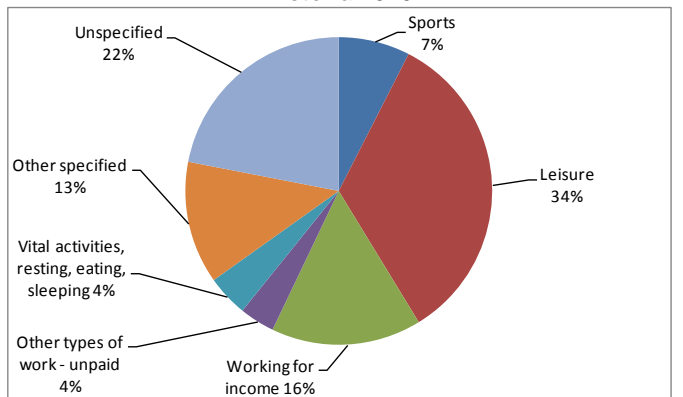
## Activity when injured

- The activity engaged in at the time of injury was unspecified for 61% of adult injury admissions and recorded as 'other specified' for a further 6% of injuries (figure 59).
- Working for income (10%) and sports (11%) were the only activities recorded for a significant number of adult admissions (figure 59).
- Leisure was recorded as the activity engaged in at the time of injury for more than one-third of adult ED presentations (34%), followed by working for income (16%) and sports (7%) (figure 60).

**Figure 59 Adult hospital admissions by activity when injured, Victoria 2010**



**Figure 60 Adult ED presentations by activity when injured, Victoria 2010**





**Table 13 Ranking of causes for hospital admissions and ED presentations, persons aged 25 to 64 years, 2010**

AGE GROUP	RANK	ADMISSIONS			PRESENTATIONS		
		CAUSE	FREQ	%	CAUSE	FREQ	%
<b>25-44 years</b>	1	fall	4,358	20.3	fall	14,050	23.9
	2	transport	4,346	20.3	hit/struck/crush	11,995	20.4
	3	unspecified unintentional	3,481	16.2	cutting/piercing	8,050	13.7
	4	hit/struck/crush	2,317	10.8	other specified unintentional	6,605	11.2
	5	cutting/piercing	2,192	10.2	transport	5,122	8.7
	6	overexertion & strenuous movements	973	4.5	unspecified unintentional	4,662	7.9
	7	natural/environmental/animals	824	3.8	foreign body - natural orifice	3,823	6.5
	8	other specified unintentional	764	3.6	natural/environmental/animals	1,750	3.0
	9	poisoning	744	3.5	fires/burns/scalds	1,503	2.6
	10	machinery	516	2.4	poisoning	600	1.0
	11	foreign body - natural orifice	397	1.9	machinery	546	<1
	12	fires/burns/scalds	353	1.6	choking/suffocate	54	<1
	13	choking/suffocate	133	<1	drowning/near drowning	29	<1
	14	explosions/firearms	42	<1	explosions/firearms	5	<1
	15	near drowning	13	<1	overexertion & strenuous movements	N/A	N/A
		ALL	21,453	100.0	ALL	58,794	100.0
<b>45-64 years</b>	1	fall	7,019	36.5	fall	10,762	30.5
	2	unspecified unintentional	2,907	15.1	hit/struck/crush	5,293	15.0
	3	transport	2,848	14.8	cutting/piercing	4,456	12.6
	4	cutting/piercing	1,398	7.3	other specified unintentional	3,890	11.0
	5	hit/struck/crush	1,180	6.1	unspecified unintentional	2,904	8.2
	6	natural/environmental/animals	877	4.6	transport	2,651	7.5
	7	overexertion & strenuous movements	641	3.3	foreign body - natural orifice	2,510	7.1
	8	other specified unintentional	519	2.7	natural/environmental/animals	1,254	3.6
	9	foreign body - natural orifice	487	2.5	fires/burns/scalds	805	2.3
	10	machinery	441	2.3	machinery	373	1.1
	11	poisoning	408	2.1	poisoning	299	<1
	12	choking/suffocate	256	1.3	choking/suffocate	36	<1
	13	fires/burns/scalds	233	1.2	drowning/near drowning	*	*
	14	explosions/firearms	19	<1	explosions/firearms	*	*
	15	near drowning	5	<1	overexertion & strenuous movements	N/A	N/A
		ALL	19,238	100.0	ALL	35,238	100.0
<b>ALL ADULTS AGED 25-64</b>	1	fall	11,377	28.0	fall	24,812	26.4
	2	transport	7,194	17.7	hit/struck/crush	17,288	18.4
	3	unspecified unintentional	6,388	15.7	cutting/piercing	12,506	13.3
	4	cutting/piercing	3,590	8.8	other specified unintentional	10,495	11.2
	5	hit/struck/crush	3,497	8.6	transport	7,773	8.3
	6	natural/environmental/animals	1,701	4.2	unspecified unintentional	7,566	8.0
	7	overexertion & strenuous movements	1,614	4.0	foreign body - natural orifice	6,333	6.7
	8	other specified unintentional	1,283	3.2	natural/environmental/animals	3,004	3.2
	9	poisoning	1,152	2.8	fires/burns/scalds	2,308	2.5
	10	machinery	957	2.4	machinery	919	1.0
	11	foreign body - natural orifice	884	2.2	poisoning	899	1.0
	12	fires/burns/scalds	586	1.4	choking/suffocate	90	<1
	13	choking/suffocate	389	1.0	drowning/near drowning	33	<1
	14	explosions/firearms	61	<1	explosions/firearms	6	<1
	15	near drowning	18	<1	overexertion & strenuous movements	N/A	N/A
		ALL	40,691	100.0	ALL	94,032	100.0



# Older adults (65 years and older)

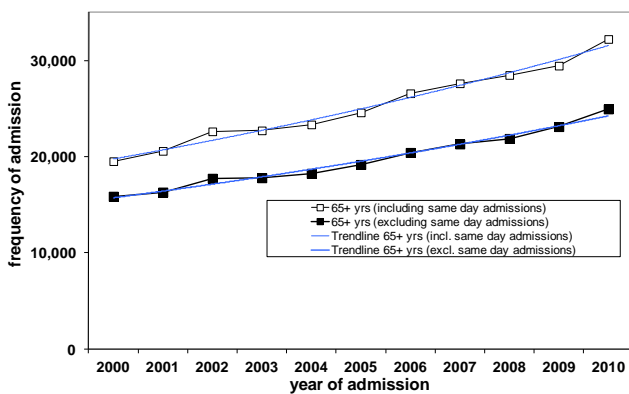
## Trend

### FREQUENCY

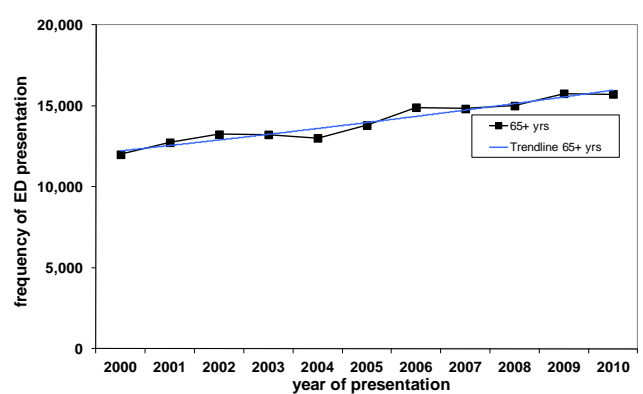
Frequency and rate data for 2010 reported here differ slightly from those reported elsewhere in this report because a stricter inclusion criterion based on primary injury diagnosis (for admissions) and hospital site (for ED presentations) were used for the trend calculations.

- The frequency of OLDER ADULT unintentional injury and poisoning admissions (INCLUDING same-day admissions) increased significantly over the 11-year period from 19,510 in 2000 to 32,219 in 2010, representing an estimated annual change of 4.8% (95% confidence interval 4.3% to 5.1%) and an overall increase of 68% (59% to 72%) based on the trend line (figure 61).
- The frequency of OLDER ADULT unintentional injury and poisoning admissions (EXCLUDING same-day admissions) increased significantly over the 11-year period from 15,861 in 2000 to 24,950 in 2010, representing an estimated annual change of 4.5% (4.0% to 4.7%) and an overall increase of 62% (54% to 66%) based on the trend line (figure 61).
- The frequency of OLDER ADULT unintentional injury and poisoning ED presentations increased significantly over the 11-year period from 12,001 in 2000 to 15,729 in 2010, representing an estimated annual change of 2.7% (2.2% to 3.1%) and an overall increase of 34% (28% to 40%) based on the trend line (figure 62).

**Figure 61 Trend in the frequency of hospital admissions, Victoria 2000-2010**



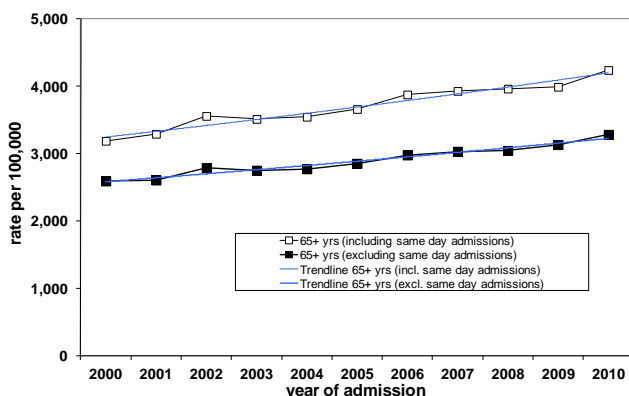
**Figure 62 Trend in the frequency of injury ED presentations, Victoria 2000-2010**



### RATE

- The OLDER ADULT unintentional injury and poisoning admission rate (INCLUDING same-day admissions) increased significantly over the 11-year period from 3,187.8/100,000 in 2000 to 4,239.8/100,000 in 2010, representing an estimated annual change of 2.6% (2.2% to 2.9%) and an overall increase of 33% (27% to 37%) based on the trend line (figure 63).
- The OLDER ADULT unintentional injury and poisoning admission rate (EXCLUDING same-day admissions) increased significantly over the 11-year period from 2,591.6/100,000 in 2000 to 3,283.3/100,000 in 2010, representing an estimated annual change of 2.3% (2.0% to 2.5%) and an overall increase of 28% (24% to 31%) based on the trend line (figure 63).
- The trend in ED presentation rate cannot be determined because numerator data were not complete.

**Figure 63 Trend in hospital admission rates per 100,000 population, Victoria 2000-2010**

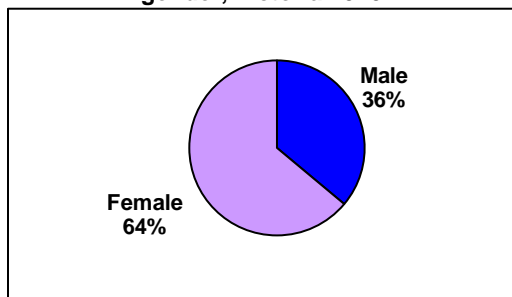


Rates cannot be calculated for ED presentations because numerator data were not complete for the 11-year period.

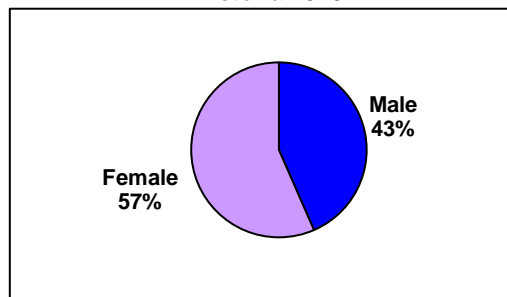
## Gender

- Females were overrepresented in hospital injury data for persons aged 65 years and older. They accounted for 64% of hospital admissions (n=22,688) and 57% of ED presentations (n=11,302) in Victoria in 2010 (figure 64 & 65).

**Figure 64 Older adult hospital injury admissions by gender, Victoria 2010**



**Figure 65 Older adult ED injury presentations by gender, Victoria 2010**



- The rate of hospital admission and ED presentation was higher for females than males (5460.4 & 2720.1 /100,000 vs. 3724.6 & 2525.6/100,000). (Table 14)

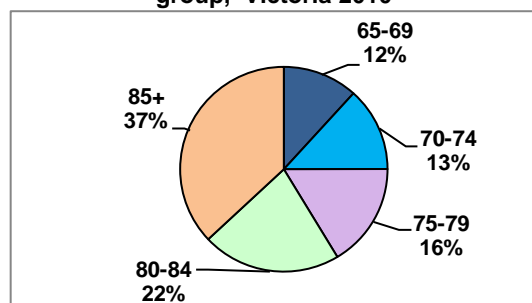
**Table 14 Frequency and rate of older adult hospital admission and ED presentation, Victoria 2010**

	Hospital admissions		ED presentations	
	Frequency	Rate	Frequency	Rate
Male	12,808	3,724.6	8,685	2,525.6
Female	22,688	5,460.4	11,302	2,720.1
All	35,497	4,674.5	19,987	2,632.0

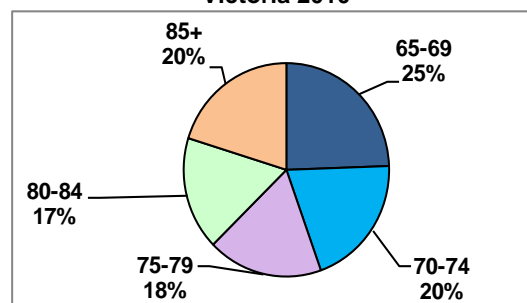
## Age

- Persons aged 85 years and older accounted for 37% of injury hospital admissions among older adults and persons aged 80-84 years accounted for a further 22% (figure 66).
- Older adult ED presentations were fairly evenly distributed across the five age groups (figure 67).

**Figure 66 Older adult hospital admissions by age group, Victoria 2010**



**Figure 67 Older adult ED presentations by age group, Victoria 2010**



- Among persons aged 65 years and older both admission and ED presentation rates increased as age increased and the highest rates were in persons aged 85 years and older. (Table 15)

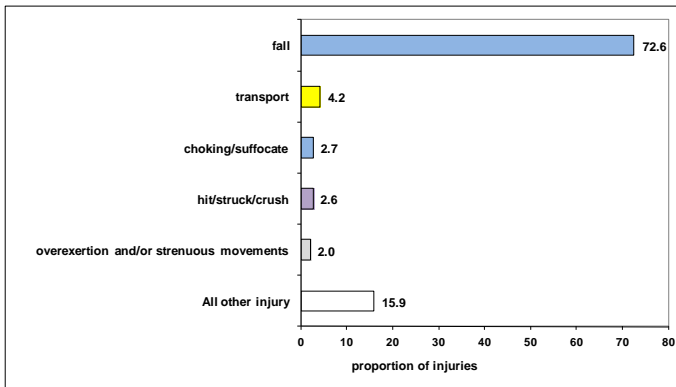
**Table 15 Frequency and rate of hospital admission and ED presentation in older adults, Victoria 2010**

	Hospital admissions		ED presentations	
	Frequency	Rate	Frequency	Rate
65-69 years	4,185	1,881.7	4,883	2,195.5
70-74 years	4,677	2,617.9	4,021	2,250.7
75-79 years	5,797	4,078.4	3,619	2,546.1
80-84 years	7,736	6,757.6	3,426	2,992.7
85+ years	13,102	12,883.4	4,038	3,970.6
All	35,497	4,674.5	19,987	2,632.0

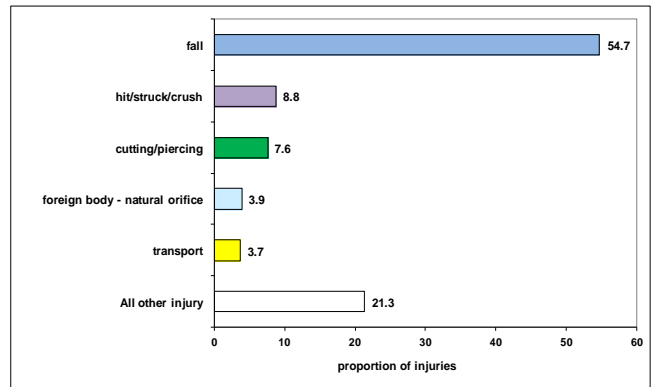
## Leading causes of injury

- The leading cause of hospital admissions and ED presentations for older adults was falls. Falls accounted for almost three-quarters of hospital admissions (73%, n=25,757) and more than half of ED presentations (55%, n=10,932) in this age group (figures 68 & 69).
- Transport was the second most common cause of hospital admission (4%, n=1,508) and the cause of 4% of presentations (n=748).
- The third leading cause of admissions was choking and suffocation (3%, n=942) whereas for ED presentations it was cutting and piercing (8%, n=1516).
- Hit/struck/crush injuries accounted for 3% of admissions (n=938) and 9% of ED presentations (n=1,756).
- The fifth ranking cause of hospital admissions was overexertion and strenuous movements (2%, n=714) whereas for ED presentations it was transport (4%, n=748).

**Figure 68 Older adult hospital admissions by cause, Victoria 2010**



**Figure 69 Older adult ED presentations by cause, Victoria 2010**



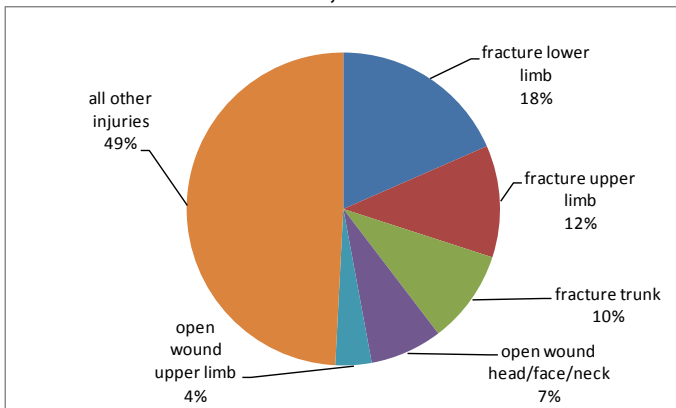
Note: 'Other specified' and 'unspecified' cases were included in the 'all other injuries' category regardless of their ranking

## Major injury type (body site and nature of injury)

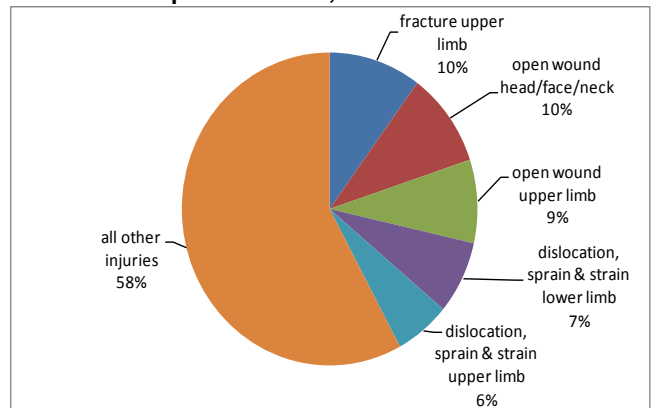
Figures 70 & 71 show the five major specific injury types for older adult hospital admissions and ED presentations.

- Fracture to the lower limb accounted for 18% of hospital injury admissions.
- Fracture to the upper limb accounted for 12% of hospital admissions and 10% of ED presentations.
- Open wounds to the head/face/neck accounted for 7% of hospital admissions and 10% of ED presentations.

**Figure 70 Major injury type, older adult hospital admissions, Victoria 2010**



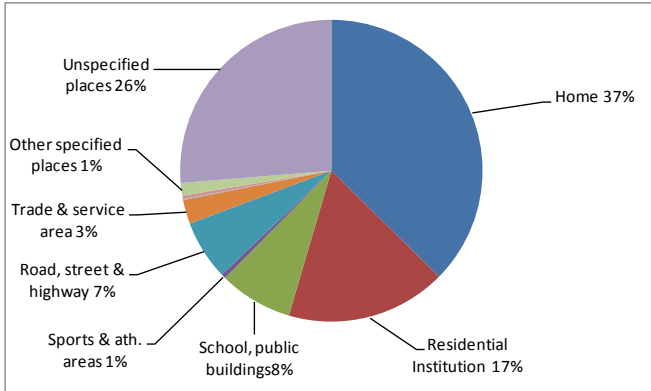
**Figure 71 Major injury type, older adult ED presentations, Victoria 2010**



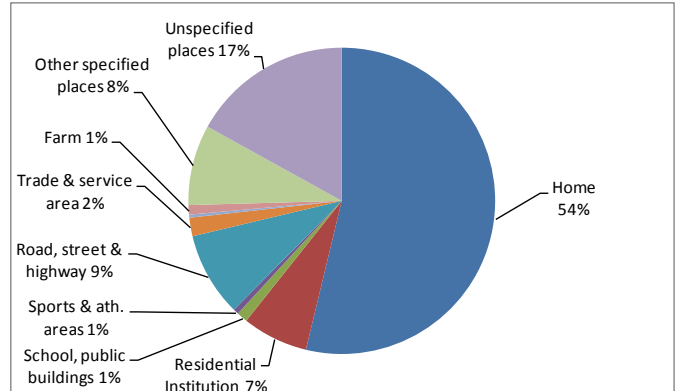
## Place of injury occurrence

- Thirty-seven percent of older adult injuries requiring hospital admission and more than half of injuries resulting in ED presentations (54%) occurred in the home (figures 72 & 73).
- Other locations where injuries to older adults commonly occurred were:
  - residential institutions (17% of admissions and 7% of ED presentations)
  - roads, streets and highways (7% of admissions and 9% of ED presentations) and
  - schools and other public buildings (8% of admissions).

**Figure 72 Older adult hospital admissions by place of occurrence, Victoria 2010**



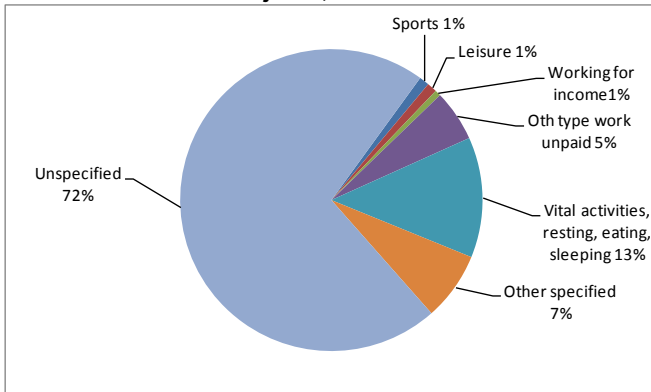
**Figure 73 Older adult ED presentations by place of occurrence, Victoria 2010**



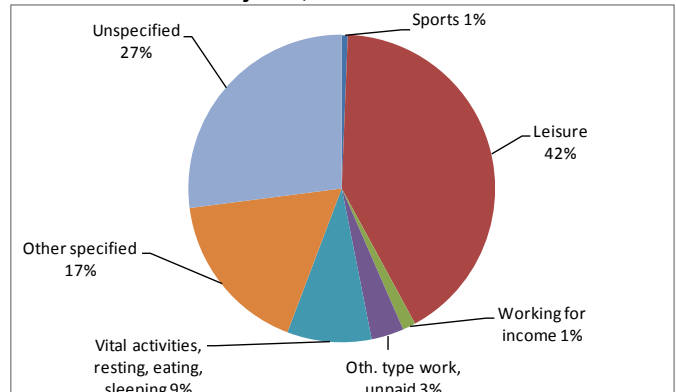
## Activity when injured

- The activity engaged in at the time of injury was unspecified for 72% of older adult injury admissions and recorded as 'other specified' for a further 7% of injuries (figure 74).
- Vital activities such as resting, eating and sleeping were the only activities recorded for a significant number of older adult admissions (13%) (figure 74).
- Leisure was recorded as the activity engaged in at the time of injury for 42% of older adult ED presentations, followed by vital activities such as resting, eating and sleeping (9%) (figure 75).

**Figure 74 Older adult hospital admissions by activity when injured, Victoria 2010**



**Figure 75 Older adult ED presentations by activity when injured, Victoria 2010**



**Table 16 Ranking of causes for hospital admissions and ED presentations, persons aged 65 years and older, 2010**

AGE GROUP	RANK	ADMISSIONS			PRESENTATIONS		
		CAUSE	FREQ	%	CAUSE	FREQ	%
65-74 years	1	fall	5,095	57.5	fall	3,874	43.5
	2	unspecified unintentional	1,018	11.5	other specified unintentional	961	10.8
	3	transport	668	7.5	hit/struck/crush	925	10.4
	4	cutting/piercing	336	3.8	cutting/piercing	914	10.3
	5	hit/struck/crush	318	3.6	unspecified unintentional	777	8.7
	6	overexertion & strenuous movements	264	3.0	foreign body - natural orifice	520	5.8
	7	natural/environmental/animals	257	2.9	transport	418	4.7
	8	choking/suffocate	206	2.3	natural/environmental/animals	244	2.7
	9	foreign body - natural orifice	183	2.1	fires/burns/scalds	128	1.4
	10	poisoning	173	2.0	machinery	69	<1
	11	other specified unintentional	153	1.7	poisoning	68	<1
	12	machinery	109	1.2	choking/suffocate	6	<1
	13	fires/burns/scalds	71	<1	explosions/firearms	0	0.0
	14	explosions/firearms	8	<1	near drowning	0	0.0
	15	near drowning	*	*	overexertion & strenuous movements	N/A	N/A
		ALL	8,862	100.0	ALL	8,904	100.0
75-84 years	1	fall	9,931	73.4	fall	4,052	57.5
	2	unspecified unintentional	1,017	7.5	other specified unintentional	593	8.4
	3	transport	604	4.5	hit/struck/crush	572	8.1
	4	choking/suffocate	403	3.0	unspecified unintentional	557	7.9
	5	hit/struck/crush	321	2.4	cutting/piercing	471	6.7
	6	overexertion & strenuous movements	284	2.1	transport	274	3.9
	7	poisoning	221	1.6	foreign body - natural orifice	219	3.1
	8	natural/environmental/animals	205	1.5	natural/environmental/animals	165	2.3
	9	foreign body - natural orifice	158	1.2	fires/burns/scalds	62	<1
	10	cutting/piercing	142	1.0	poisoning	52	<1
	11	other specified unintentional	130	1.0	machinery	26	<1
	12	fires/burns/scalds	70	<1	choking/suffocate	2	<1
	13	machinery	38	<1	explosions/firearms	0	0.0
	14	near drowning	5	<1	near drowning	0	0.0
	15	explosions/firearms	*	*	overexertion & strenuous movements	N/A	N/A
		ALL	13,533	100.0	ALL	7,045	100.0
85 + years	1	fall	10,731	81.9	fall	3,006	74.4
	2	unspecified unintentional	869	6.6	hit/struck/crush	259	6.4
	3	choking/suffocate	333	2.5	unspecified unintentional	258	6.4
	4	hit/struck/crush	299	2.3	other specified unintentional	205	5.1
	5	transport	236	1.8	cutting/piercing	131	3.2
	6	overexertion & strenuous movements	166	1.3	transport	56	1.4
	7	poisoning	136	1.0	foreign body - natural orifice	41	1.0
	8	natural/environmental/animals	89	<1	natural/environmental/animals	39	1.0
	9	other specified unintentional	73	<1	poisoning	18	<1
	10	foreign body - natural orifice	71	<1	fires/burns/scalds	18	<1
	11	fires/burns/scalds	57	<1	machinery	4	<1
	12	cutting/piercing	32	<1	choking/suffocate	3	<1
	13	machinery	10	<1	explosions/firearms	0	0.0
	14	near drowning	0	0.0	near drowning	0	0.0
	15	explosions/firearms	0	0.0	overexertion & strenuous movements	N/A	N/A
		ALL	13,102	100.0	ALL	4,038	100.0
ALL 65+ YEARS	1	fall	25,757	72.6	fall	10,932	54.7
	2	unspecified unintentional	2,904	8.2	other specified unintentional	1,759	8.8
	3	transport	1,508	4.2	hit/struck/crush	1,756	8.8
	4	choking/suffocate	942	2.7	unspecified unintentional	1,592	8.0
	5	hit/struck/crush	938	2.6	cutting/piercing	1,516	7.6
	6	overexertion & strenuous movements	714	2.0	foreign body - natural orifice	780	3.9
	7	natural/environmental/animals	551	1.6	transport	748	3.7
	8	poisoning	530	1.5	natural/environmental/animals	448	2.2
	9	cutting/piercing	510	1.4	fires/burns/scalds	208	1.0
	10	foreign body - natural orifice	412	1.2	poisoning	138	<1
	11	other specified unintentional	356	1.0	machinery	99	<1
	12	fires/burns/scalds	198	<1	choking/suffocate	11	<1
	13	machinery	157	<1	explosions/firearms	0	0.0
	14	explosions/firearms	12	<1	near drowning	0	0.0
	15	near drowning	8	<1	overexertion & strenuous movements	N/A	N/A
		ALL	35,497	100.0	ALL	19,987	100.0





## Appendix 1 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.

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.

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.).

### VISU DATA SOURCES AND CASE SELECTION

#### 1. Hospital admissions Source: Victorian Admitted Episodes Dataset (VAED)

Hospital admissions for injury and poisoning 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:

#### 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.

#### 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).

#### Case selection (for this report):

- Victorian hospital admissions recorded on the VAED occurring 1 January 2010 to 31 December 2010, coded according to the 6<sup>th</sup> and 7<sup>th</sup> editions of ICD-10-AM (NCCH, July 2008 & 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 cases with a Primary 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 January 2000 and 31 December 2010.

**Note: As of January 1<sup>st</sup> 2010 (2008 injury data E-bulletin) VISU no longer recodes X59 cases to falls as in previous E-Bulletins of hospital treated injury.**

## 2. Emergency Department Presentations

### 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.

Emergency Department presentations for injury and poisoning 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 14<sup>th</sup> & 15<sup>th</sup> Editions, 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' because they are treated for 4 hours or more in the ED or a short stay ward attached to the ED or depart from the ED to an inpatient bed or are transferred to another hospital campus. 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:

#### 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.)

#### 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')

#### Case selection (for this report)

- Victorian hospital ED presentations recorded on the VEMD occurring 1 January 2010 to 31 December 2010 coded according to the Victorian Emergency Minimum Dataset (VEMD) User Manuals 14<sup>th</sup> & 15<sup>th</sup> editions.
- 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.
- Only hospitals that contributed data to VEMD over the whole 11-year period were included in the trend analysis of ED presentations frequency data (24 of the current 38 hospitals contributing to the surveillance system).

***The Victorian Emergency Minimum Dataset (VEMD) held by VISU was replaced in April 2012 to include some useful variables not previously released to VISU by the Department of Health. The new dataset contains consolidated data for the period July 1999 to June 2011 rather than the provisional data previously supplied to VISU earlier in the revision cycle. Consequently, data are more complete and reliable but less timely (VISU will now receive data annually rather than quarterly) and data outputs may be different from those reported previously.***