MONASH University

UNINTENTIONAL HOSPITAL-TREATED INJURY VICTORIA 2021/22

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Jane Hayman
Janneke Berecki-Gisolf

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CONTENTS

ABBREVIATIONS

DH	DEPARTMENT OF HEALTH
ED	EMERGENCY DEPARTMENT
VAED	VICTORIAN ADMITTED EPISODES DATASET
VEMD	VICTORIAN EMERGENCY MINIMUM DATASET

SUGGESTED CITATION

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UNINTENTIONAL HOSPITAL-TREATED INJURY IN VICTORIA 2021/22

This is the twenty-seventh in a series of regular E-Bulletins that provide an overview of the injury profile for Victoria. This edition provides an overview of unintentional hospital-treated injury in 2021/22 utilising two injury surveillance datasets that separately record hospital admissions and Emergency Department (ED) presentations for injury.

The case selection criteria used in this edition remain the same as those used in the previous edition.

SUMMARY RESULTS

There were 128,994 injury cases admitted to Victorian hospitals in 2021/22 of which 91% were unintentional (n=117,545). At least 373,221 injury cases presented to Victorian EDs, 85% of which were unintentional (n=315,433).

TABLE 1: SUMMARY RESULTS FOR 2021/22

	ALL	CHILD (0–14 YEARS)	ADOLESCENT (15–24 YEARS)	ADULTS (25–64 YEARS)	OLDER ADULTS (65+ YEARS)
			ADMISSIONS		
n	117,545	13,692	12,507	47,066	44,280
Rate/100,000	1,791.9	1,148.8	1,591.9	1,346.1	4,077.3
Age standardised rate/100,000	1,671.7	1,148.7	1,590.2	1,333.2	3,941.3
Rate change (% per year)	+2.3	+1.1 (N.S.)	+1.4	+2.9	+2.5
% males	54.2%	62.1%	71.2%	61.4%	39.3%
Leading cause (%)	Falls (48.4)	Falls (41.5)	Transport (23.3)	Falls (30.1)	Falls (78.4)
Most common setting (%)	Home (29.8)	Home (30.4)	Sports settings (15.9)	Home (20.1)	Home (45.8)
Most common injury (%)	Fracture upper limb (16.5)	Fracture upper limb (26.1)	Fracture upper limb (18.9)	Fracture upper limb (17.0)	Fracture lower limb (18.1)
% of all serious injury cases (row %)	n/a	0.5	1.3	6.8	91.4
			ED PRESENTATIONS		
n	315,433	88,648	47,658	128,967	50,160
Rate/100,000	4,808.5	7,437.9	6,066.1	3,688.5	4,618.8
Age standardised rate/100,000	4,869.6	7,435.2	6,084.4	3,689.7	4,529.4
Rate change (% per year)	–0.6	–0.5 (N.S)	–2.0	–0.3 (N.S.)	–0.1 (N.S.)
% males	57.7%	58.5%	65.3%	59.6%	44.5%
Leading cause (%)	Falls (36.7)	Falls (43.7)	Falls (24.2)	Falls (27.0)	Falls (61.4)
Most common setting (%)	Home (46.7)	Home (54.1)	Home (29.1)	Home (42.5)	Home (61.1)
Most common injury (%)	Fracture upper limb (11.9)	Fracture upper limb (17.9)	Dislocation, sprain & strain to lower limb (11.9)	Open wound upper limb (10.3)	Fracture lower limb (12.5)

Notes:

1. Rate change (% per year) refers to the modelled annual change in rate over 10 years: 2012/13 to 2021/22.
2. Red highlighted cells represent an increase and green represents a decrease (statistically significant at $p<0.05$). N.S. = not statistically significant at $p<0.05$.
3. A serious injury is defined as one with an ICD based Injury Severity Score (ICISS) of less than or equal to 0.941 (see Box 1 in Appendix 1 for details).
4. Percentage of serious injuries is based solely on hospital admissions as this measure is not available in the ED presentation data.

ALL AGES

- The annual rate of injury admissions increased statistically significantly by 2.3% per year over the 10-year period from 2012/13 to 2021/22.
- The annual rate of injury ED presentations showed a slight decrease of –0.6% per year over the ten year period from 2012/13 to 2021/22.
- In 2021/22 there were 3,785 fewer unintentional injury admissions compared to 2020/21 (n=117,545 and n=121,330, respectively).
- In 2021/22 there were 19,897 fewer unintentional ED injury presentations compared to 2020/21 (n=315,433 and n=335,330, respectively).
- In 2021/22 males were overrepresented, accounting for 54.2% of admissions and 57.7% of ED presentations.
- Falls were the leading cause of injury among admissions and ED presentations, accounting for 48.4% of admissions and 36.7% of ED presentations.
- The home was the most common setting for injury among admissions and ED presentations: 29.8% of hospital admissions and 46.7% of ED presentations.
- Fracture to upper limb was the most common injury for both admissions and ED presentations (16.5% and 11.9%, respectively).

CHILDREN (0–14 YEARS)

- In 2021/22, there was a total of 13,692 admissions and at least 88,648 ED presentations for unintentional injury among children at Victorian hospitals.
- In 2021/22 there were 886 fewer unintentional admissions among 0–14 year olds compared to 2020/21 (n=13,692 and n=14,578, respectively).
- In 2021/22 there were 5,835 fewer unintentional ED presentations among 0–14 year olds compared to 2020/21 (n=88,648 and n=94,483, respectively).
- The annual rate of injury admissions among children aged 0–14 years did not show a statistically significantly upward or downward trend over the 10-year period from 2012/13 to 2021/22.
- The annual rate of injury ED presentations among children aged 0–14 years did not show a statistically significantly upward or downward trend over the 10-year period from 2012/13 to 2021/22.
- In 2021/22 males were overrepresented, accounting for 62.1% of admissions and 58.5% of ED presentations.
- Falls were the leading cause of both injury admissions (41.5%) and ED presentations (43.7%).
- Thirty percent of hospital admissions and more than half of ED presentations (54.1%) were for injuries that occurred in the home. Children were also commonly injured in schools and other educational institutions (10.5% of admissions and 11.8% of ED presentations) and sports and athletics areas (6.9% of admissions and 7.3% of ED presentations).
- Fracture to upper limb was the most common injury for both admissions and ED presentations among children (26.1% and 17.9%, respectively).

ADOLESCENTS AND YOUNG ADULTS (15–24 YEARS)

- In 2021/22 there was a total of 12,507 admissions and at least 47,658 ED presentations for unintentional injury among adolescents and young adults at Victorian hospitals.
- In 2021/22 there were 400 fewer unintentional admissions among 15–24 year olds compared to 2020/21 (n=12,507 and n=12,907, respectively).
- In 2021/22 there were 2,155 fewer unintentional ED presentations among 15–24 year olds compared to 2020/21 (n= 47,658 and n=49,813, respectively).
- The annual rate of injury admissions among adolescents and young adults increased statistically significantly by 1.4% per year over the 10-year period from 2012/13 to 2021/22.
- The annual rate of injury ED presentations among adolescents and young adults decreased statistically significantly by –2.0% per year over the 10-year period from 2012/13 to 2021/22.
- In 2021/22 males were overrepresented, accounting for 71.2% of admissions and 65.3% of ED presentations.
- Transport was the leading cause of injury admissions (23.3%) followed by falls (18.3%) and hit/struck/crush injuries (14.3%). Among ED presentations, falls were the leading cause of injury (24.2%), followed by hit/struck/crush injuries (23.6%) and cutting & piercing injuries (11.0%).
- Sports and athletics areas (15.9%) and the road, street and highway (15.2%) were the most common settings for adolescent and young adult injuries resulting in hospital admission, whereas the home (29.1%) and sports and athletics areas (16.9%) were the leading settings for injuries resulting in ED presentation.
- Fracture to upper limb was the most common injury among adolescent and young adult hospital admissions (18.9%), while dislocation, sprain & strain to lower limb was the most common reason for ED presentations (11.9%).

ADULTS (25–64 YEARS)

- In 2021/22 there was a total of 47,066 admissions and at least 128,967 ED presentations for unintentional injury among adults at Victorian hospitals.
- In 2021/22 there were 2,174 fewer unintentional admissions among 25-64 year olds compared to 2020/21 (n=47,066 and n=49,240, respectively).
- In 2021/22 there were 9,827 fewer unintentional ED presentations among 25–64 year olds compared to 2020/21 (n=128,967 and n=138,794, respectively).
- The annual rate of injury admissions among adults increased statistically significantly by 2.9% per year over the 10-year period from 2012/13 to 2021/22.
- The annual rate of injury ED presentations among adults did not show a statistically significant consistent upward or downward trend over the ten year period from 2012/13 to 2021/22.
- Males were overrepresented in 2021/22, accounting for 61.4% of admissions and 59.6% of ED presentations.
- The leading cause of adult hospital-treated injury was falls: 30.1% of hospital admissions and 27.0% of ED presentations. Other major causes were hit/struck/crush (8.5% of admissions and 16.1% of ED presentations), transport (19.2% of admissions and 9.1% of ED presentations) and cutting and piercing (11.1% of admissions and 12.4% of ED presentations).
- Twenty percent of hospital admissions and 42.5% of ED presentations were for injuries that occurred in the home. Another major setting for injury was roads/streets/highways (14.3% of admissions and 8.9% of ED presentations).
- Fracture to upper limb was the most common injury among adult hospital admissions (17.0%) while open wound to upper limb (10.3%), fracture to upper limb (8.8%) and dislocation, sprain & strain to lower limb (8.1%) were the most common reasons for ED presentations.

OLDER ADULTS (65 YEARS AND OLDER)

- In 2021/22 there was a total of 44,280 admissions and at least 50,160 ED presentations for unintentional injury among older adults at Victorian hospitals.
- In 2021/22 there were 325 fewer unintentional admissions among those aged 65 years and older compared to 2020/21 (n=44,280 and n=44,605, respectively).
- In 2021/22 there were 2,080 fewer unintentional ED presentations among those aged 65 years and older compared to 2020/21 (n= 50,160 and n=52,240, respectively).
- The annual rate of injury admissions among older adults increased statistically significantly by 2.5% per year over the 10-year period from 2012/13 to 2021/22.
- The annual rate of injury ED presentations among older adults did not show a statistically significant consistent upward or downward trend over the 10-year period from 2012/13 to 2021/22.
- In 2021/22 females were overrepresented, accounting for 60.7% of admissions and 55.5% of ED presentations.
- Falls accounted for more than three-quarters of hospital admissions (78.4%) and more than half of ED presentations (61.4%) among older adults.
- Forty six percent of hospital admissions and more than half of ED presentations (61.1%) were for injuries that occurred in the home. Other common settings for injuries were residential institutions (15.4% of admissions and 7.4% of ED presentations) and the road/street/highway (6.8% of admissions and 6.1% of ED presentations).
- Fracture to lower limb was the most common injury among older adult hospital admissions (18.1%) and ED presentations (12.5%).

INTRODUCTION

This E-Bulletin provides information on unintentional hospital-treated injury in 2021/22. There were 128,994 injury hospital admissions in Victoria in 2021/22, 91% of which were unintentional (n=117,545). The remaining injury cases were either intentional i.e., self-harm or assault (8%, n=9,668) or of other or undetermined intent (1%, n=1,781). In this same year, there were 373,221 injury cases presenting to Victorian hospital EDs, 85% of which were unintentional (n=315,433), 4% were intentional (self-harm or assault) (n=16,118) and 11% were of other or undetermined intent (n=41,670).

METHOD

DATA SOURCES

Hospital admissions data were extracted from the Victorian Admitted Episodes Dataset (VAED) and ED presentations data from the Victorian Emergency Minimum Dataset (VEMD). The VAED records all hospital admissions in public and private hospitals in the state of Victoria and the VEMD records all presentations to Victorian public hospitals with 24-hour emergency departments[1].

ED presentations that resulted in subsequent hospital admission have not been excluded from the ED presentations dataset. This results in some duplication if summing the total number of ED presentations (VEMD) and the hospital admissions (VAED) in this bulletin. However, this is done in order to estimate the *incidence of injury-related ED presentations* (regardless of the subsequent admission status). Furthermore, removing these cases from the VEMD would result in a biased sample of relatively less severe injury presentations. For this report the VEMD records included 70,507 unintentional injury cases that were admitted to hospital for further treatment, which represents 22.4% of emergency department unintentional injury presentations in 2021/22.

CASE SELECTION CRITERIA

Cases were selected if the admission (VAED) or presentation (VEMD) date occurred in the financial year 2021/22, if gender was male or female[2], and if the injury was unintentional (VAED: external cause code in the range V00-X59, VEMD: human intent=1). Hospital admission cases were selected only if the first occurring diagnosis code was a community injury (see Box 2 in Appendix 1) and the episode was an incident (i.e., the case was not a statistical separation from another unit within the same hospital or an inward transfer from another hospital and not a repeat admission for the same injury). ED presentation case selection was restricted to incident cases: return visits and pre-arranged visits were excluded.

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

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

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

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

RATES AND TRENDS ANALYSIS

Rates per 100,000 population were calculated for the 10-year period 2012/13 to 2021/22 for the VAED and the VEMD. The denominators used for calculating rates were December population estimates from the Australian Bureau of Statistics. Age standardisation of rates was carried out using 5-year age groups and the direct method. The standard population used was the Victorian resident population at 30 June, 2001.

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

Time trend results are presented as the modelled % change in rate per year, calculated as:

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

where α is the parameter estimate of year, in the Poisson model. A trend was considered to be statistically significant if the p-value of the slope of the regression model was less than 0.05. The analyses were conducted using the PROC GENMOD procedure in SAS V9.4.

For further discussion of data sources and issues, particularly issues relating to the Victorian hospital admission policy change and how this may have influenced admission trends, please refer to Appendix 1.

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

1. Currently 39 hospitals contribute to the VEMD.
2. Cases where the patients’ sex is recorded as Indeterminate or Other were excluded in the VAED and VEMD case selection due to data confidentiality concerns related to small numbers.

ALL AGES

TREND

- During the 10-year period 2012/13 to 2021/22, there were on average 107,794 injury admissions and 321,213 injury ED presentations per year in Victoria. The average age-standardised annual rates were 1,635 admissions and 5,200 ED presentations per 100,000 population.
- The age-standardised annual rates of **injury admissions** are shown in Figure 1. The modelled trend in rate showed a statistically significant annual increase of 2.3% [95% CI 1.4 to 3.2%].
- The age-standardised annual rates of **injury ED presentations** are shown in Figure 2. The modelled trend in rate showed a modest annual decrease of –0.6% [95%CI –1.1 to –0.2%] over the ten year period.

FIGURE 1: TREND IN INJURY HOSPITAL ADMISSION RATES PER 100,000 POPULATION, VICTORIA 2012/13-2021/22

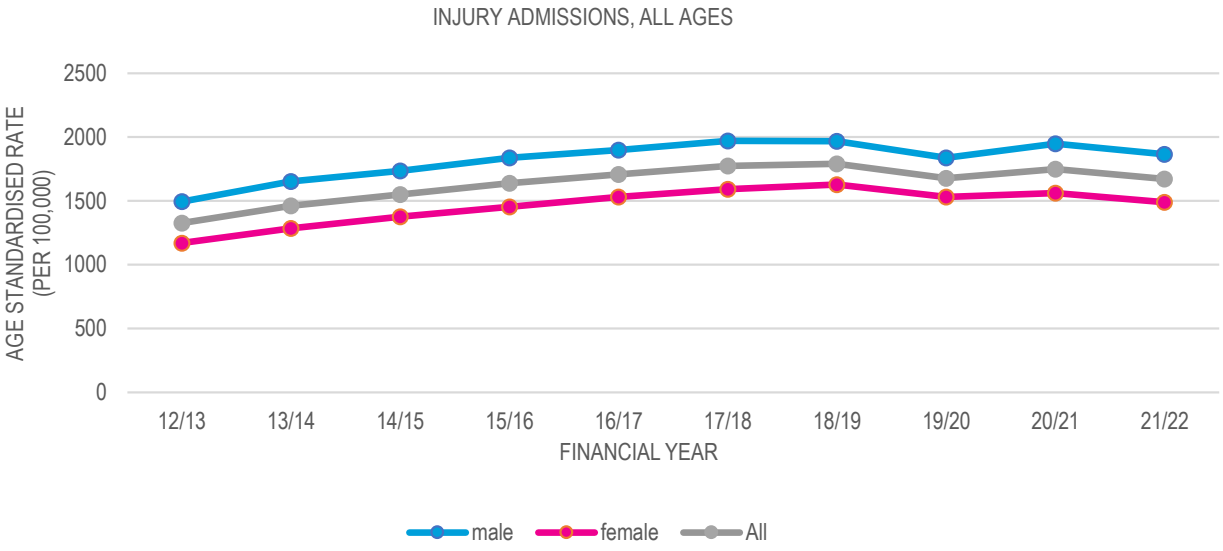
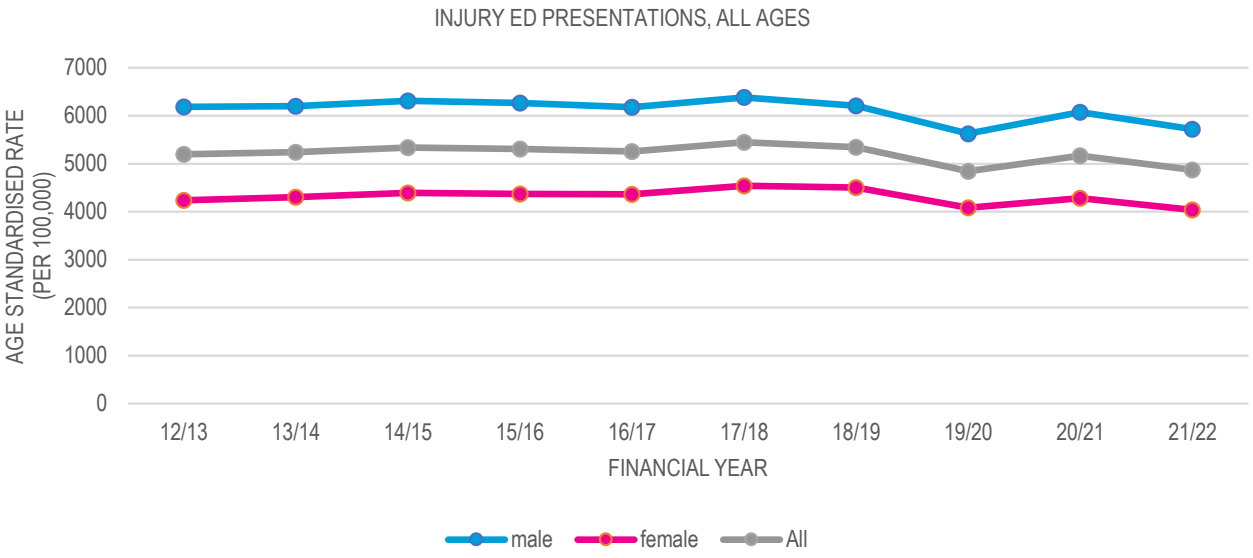


FIGURE 2: TREND IN INJURY ED PRESENTATION RATES PER 100,000 POPULATION, VICTORIA 2012/13-2021/22



HOSPITAL TREATED INJURY – GENDER AND AGE

- Males were overrepresented accounting for 54.2% of all injury admissions (n= 63,740) and 57.7% of ED presentations (n=181,997) in Victoria in 2021/22.
- Seventy-eight percent (n=91,346) of hospital admissions occurred among persons aged 25 years and older; forty percent of those admitted were aged 25-64 years (n=47,066) and 38% were aged 65 years and above (n= 44,280). Adults aged 25-64 years accounted for 40.9% of ED presentations (n=128,967).
- Males accounted for more hospital admissions and ED presentations than women in all age groups up to 64 years. However, in the 65 years and older group, females accounted for more hospital admissions and ED presentations than males (Figure 3 & Figure 4).

FIGURE 3: INJURY HOSPITAL ADMISSIONS BY GENDER AND AGE, VICTORIA 2021/22

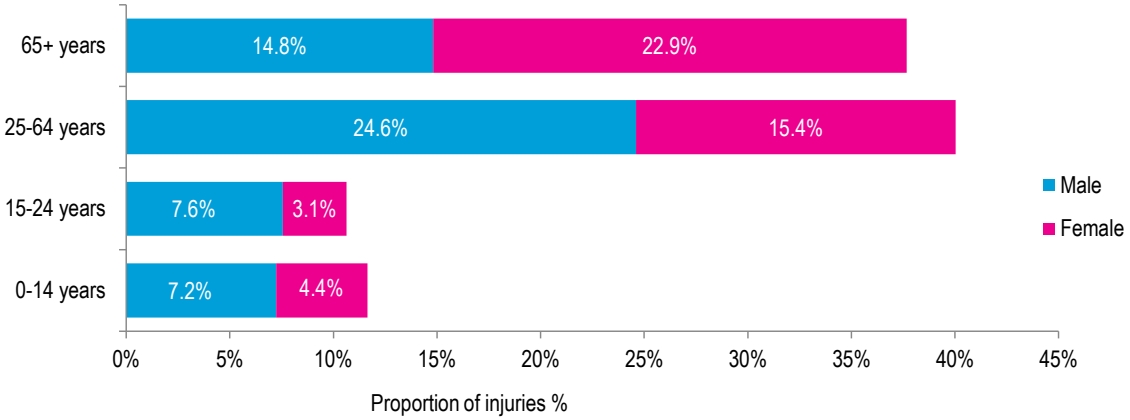
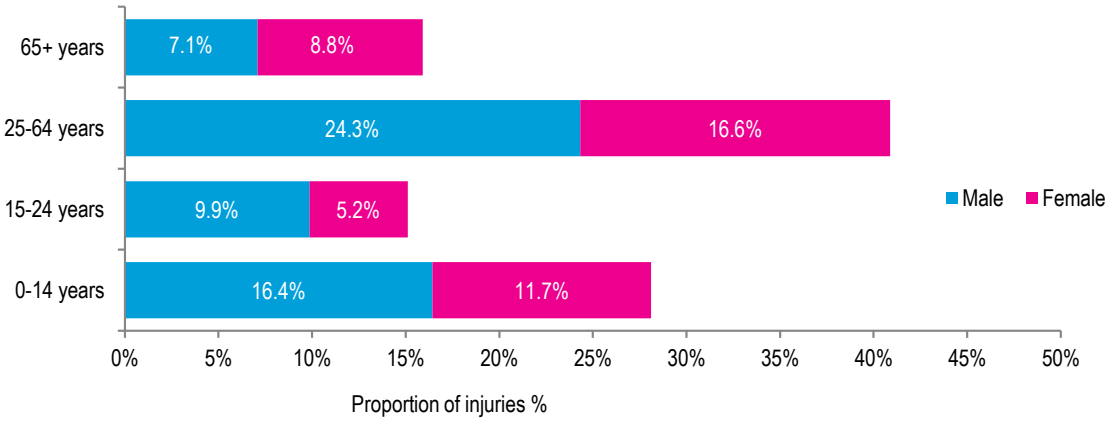


FIGURE 4: INJURY ED PRESENTATIONS BY GENDER AND AGE, VICTORIA 2021/22



An overview of unintentional hospital-treated injury in Victoria during 2021/22 is provided in Table 2. Overall, there were 117,545 admissions and 315,433 presentations.

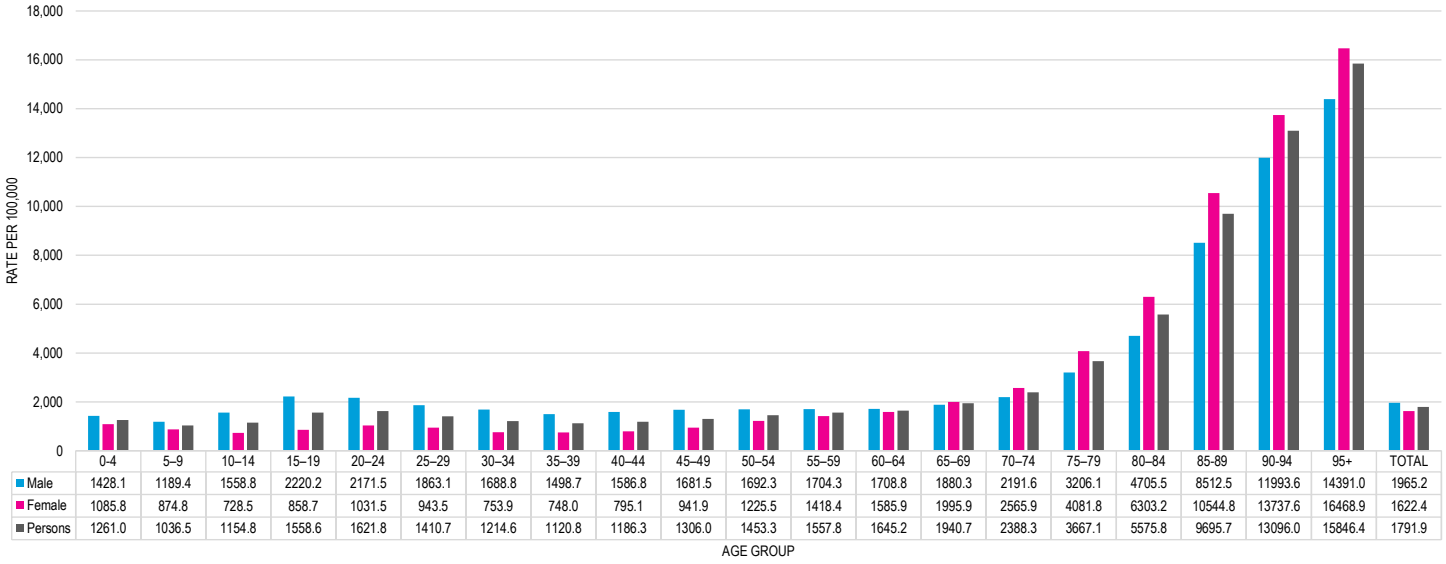
- The age standardised rate of injury hospital admission and ED presentation was higher for males than females: 1,865.4 vs. 1,490.1 per 100,000 for admissions and 5,718.0 vs 4,037.5 per 100,000 for ED presentations.
- The age standardised hospital admission rate per 100,000 population was highest in older adults (3,941.3) and lowest in children (1,148.7). In contrast, the age standardised ED presentation rate per 100,000 population was highest in children (7,435.2) and lowest in adults (3,689.7) (Table 2).

TABLE 2: FREQUENCY, AGE-SPECIFIC AND AGE STANDARDISED RATES OF INJURY HOSPITAL ADMISSIONS AND ED PRESENTATIONS BY GENDER AND AGE, VICTORIA 2021/22

AGE GROUP	GENDER	HOSPITAL ADMISSIONS			ED PRESENTATIONS		
		n	RATE PER 100,000 POPULATION	AGE STANDARDISED RATE PER 100,000 POPULATION	n	RATE PER 100,000 POPULATION	AGE STANDARDISED RATE PER 100,000 POPULATION
0–14 years	**Male**	8,502	1,390.3	1,391.4	51,842	8,477.6	8,479.7
	Female	5,190	894.3	892.3	36,806	6,342.3	6,332.6
	All	13,692	1,148.8	1,148.7	88,648	7,437.9	7,435.2
15–24 years	**Male**	8,897	2,194.4	2,195.9	31,099	7,670.4	7,706.1
	Female	3,610	949.5	945.4	16,559	4,355.3	4,359.4
	All	12,507	1,591.9	1,590.2	47,658	6,066.1	6,084.4
25–64 years	**Male**	28,925	1,676.9	1,673.3	76,719	4,447.8	4,453.3
	Female	18,141	1,024.0	998.1	52,248	2,949.3	2,936.6
	All	47,066	1,346.1	1,333.2	128,967	3,688.5	3,689.7
65+ years	**Male**	17,416	3,471.6	3,204.1	22,337	4,452.5	4,262.6
	Female	26,864	4,597.4	4,589.4	27,823	4,761.5	4,756.3
	All	44,280	4,077.3	3,941.3	50,160	4,618.8	4,529.4
All	**Male**	63,740	1,965.2	1,865.4	181,997	5,611.1	5,718.0
	Female	53,805	1,622.4	1,490.1	133,436	4,023.5	4,037.5
	All	117,545	1,791.9	1,671.7	315,433	4,808.5	4,869.6

Hospital admission injury rates by age and gender for Victoria in 2021/22 are shown in Figure 5. Age-specific hospital admitted injury rates rose after childhood and peaked in older adults aged 90 years or more. The overall male age-specific hospital admitted injury rate was higher than the female rate in all 5-year age groups up to age 64 years.

FIGURE 5: AGE-SPECIFIC HOSPITAL ADMITTED INJURY RATES BY AGE GROUP AND GENDER, VICTORIA 2021/22

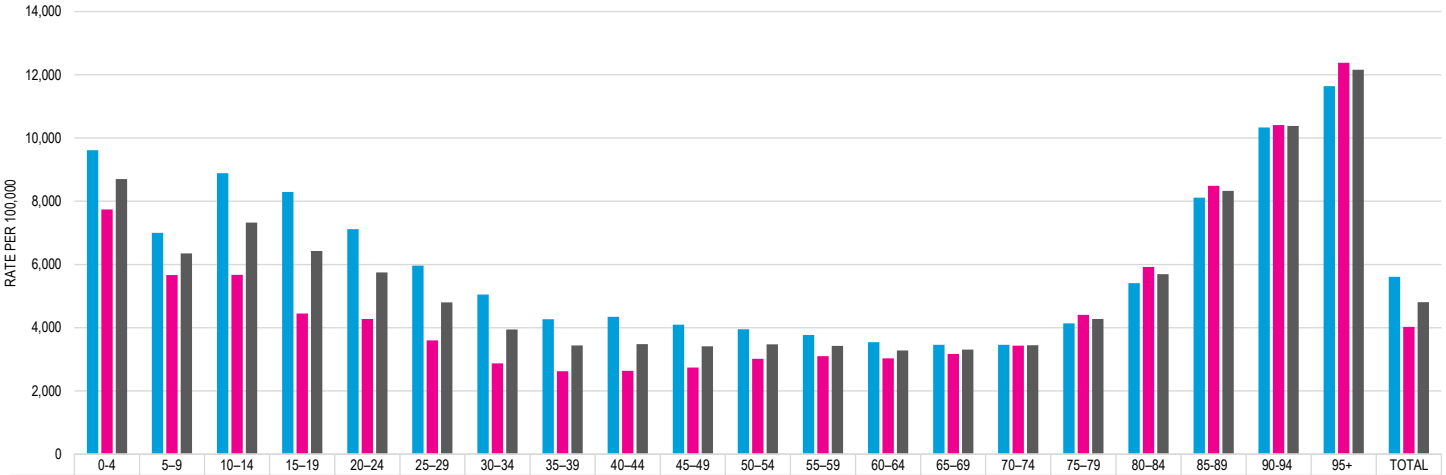


	0-4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85-89	90-94	95+	TOTAL
Male	1428.1	1189.4	1558.8	2220.2	2171.5	1863.1	1688.8	1498.7	1586.8	1681.5	1692.3	1704.3	1708.8	1880.3	2191.6	3206.1	4705.5	8512.5	11993.6	14391.0	1965.2
Female	1085.8	874.8	728.5	858.7	1031.5	943.5	753.9	748.0	795.1	941.9	1225.5	1418.4	1585.9	1995.9	2565.9	4081.8	6303.2	10544.8	13737.6	16468.9	1622.4
Persons	1261.0	1036.5	1154.8	1558.6	1621.8	1410.7	1214.6	1120.8	1186.3	1306.0	1453.3	1557.8	1645.2	1940.7	2388.3	3667.1	5575.8	9695.7	13096.0	15846.4	1791.9

AGE GROUP

ED presentation injury rates by age and gender for Victoria in 2021/22 are shown in Figure 6. Age-specific injury ED presentation rates were high among younger children (0–4 years) and among older children (10–14 years); then decreased throughout the adolescent and adult age groups until age 69 then increased again, peaking at 90 years and over. The overall male age-specific injury ED presentations rate was higher than the female rate in all 5-year age groups up to age 74 years.

FIGURE 6: AGE-SPECIFIC INJURY ED PRESENTATION RATES BY AGE GROUP AND GENDER, VICTORIA 2021/22



	0-4	5–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85-89	90-94	95+	TOTAL
Male	9617.8	6999.6	8885.8	8292.3	7117.0	5961.6	5047.3	4269.1	4346.8	4098.0	3948.5	3771.6	3546.1	3458.1	3457.7	4136.8	5412.4	8112.2	10336.0	11640.5	5611.1
Female	7738.5	5666.5	5675.5	4446.9	4272.6	3599.3	2869.0	2624.9	2637.6	2740.6	3018.5	3100.1	3032.5	3166.3	3429.6	4403.8	5924.5	8485.7	10407.5	12383.2	4023.5
Persons	8700.3	6351.6	7323.8	6423.9	5745.4	4799.3	3942.5	3441.4	3482.1	3408.8	3472.5	3427.6	3280.2	3305.7	3442.9	4277.3	5691.4	8329.6	10381.2	12160.7	4808.5

AGE GROUP

LEADING CAUSES OF INJURY

- Four of the five major causes of injury admissions and injury ED presentations were the same (falls, transport, hit/struck/crush injuries & cutting/piercing), but the ranking on frequency of cases was different (Figure 7 & Figure 8).
- The leading cause of both hospital admissions and ED presentations was falls. Falls accounted for 48.4% (n=56,865) of hospital admissions and 36.7% (n=115,882) of ED presentations.
- Transport accounted for 13.4% of admissions (n=15,775) but just 7.1% of presentations (n=22,449).
- Hit/struck/crush injuries accounted for 7.6% of admissions (n=8,938) but a higher proportion of ED presentations (16.5%, n=52,183). Cutting and piercing injuries accounted for 7.2% of admissions (n=8,493) and 8.7% of ED presentations (n=27,457).
- The fifth ranking cause of injury-related admissions was natural/environmental/animals (3.8%, n=4,431) whereas for ED presentations it was injuries caused by a foreign body in a natural orifice e.g. ear, nose, eye (4.6%, n=14,485).

FIGURE 7: INJURY HOSPITAL ADMISSIONS BY CAUSE, VICTORIA 2021/22

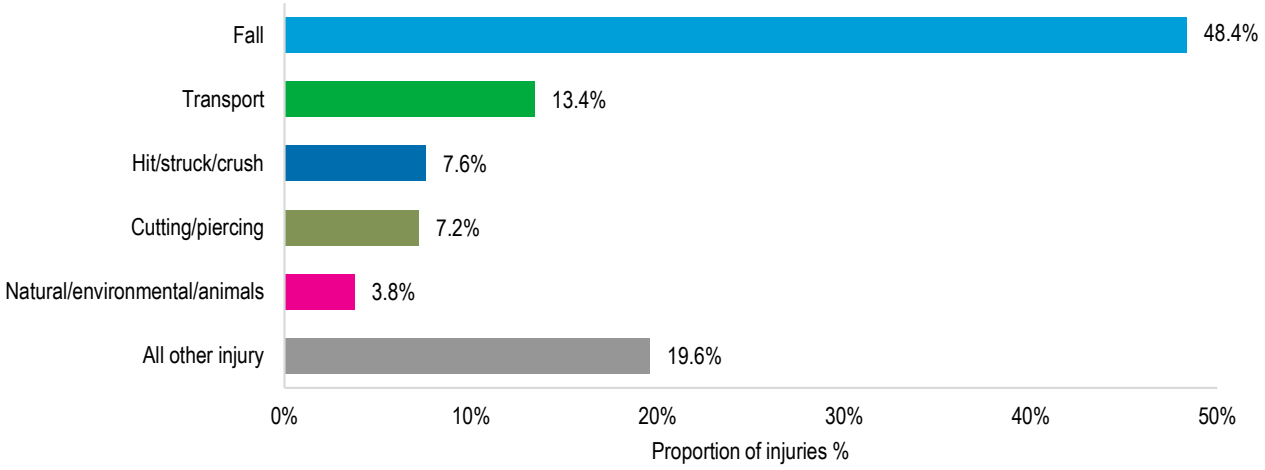
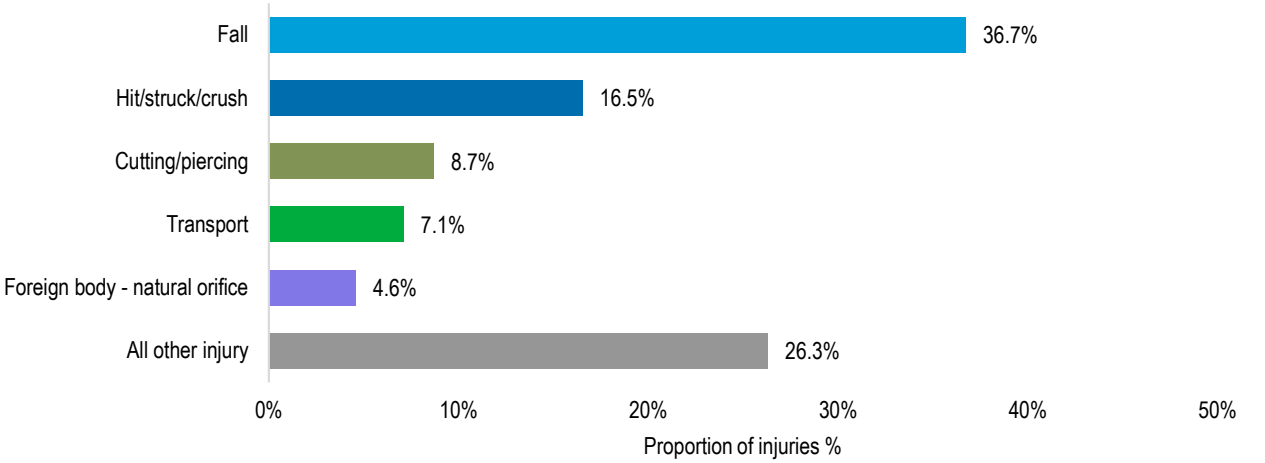


FIGURE 8: INJURY ED PRESENTATIONS BY CAUSE, VICTORIA 2021/22



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

MAJOR INJURY TYPE (BODY SITE AND NATURE OF INJURY)

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

- Fracture to the upper limb accounted for 16.5% (n=19,453) of hospital admissions and 11.9% (n=37,401) of ED presentations.
- Fracture to the lower limb was the second most common type of injury requiring hospital admission (13.0%, n=15,286) and accounted for 6.7% of ED presentations (n=21,032).
- Dislocations, sprains and strains to the lower limb (7.3%, n=22,908) and upper limb (6.4%, n=20,231) were common among ED presentations.
- Fracture to the trunk accounted for 8.2% of admissions (n=9,606).
- Open wounds to the upper limb accounted for 7.5% of admissions (n=8,794) and 7.0% of ED presentations (n=22,033).
- Open wounds to the head/face/neck accounted for 6.4% of admissions (n=7,485).

FIGURE 9: MAJOR INJURY TYPE, HOSPITAL ADMISSIONS, VICTORIA, 2021/22

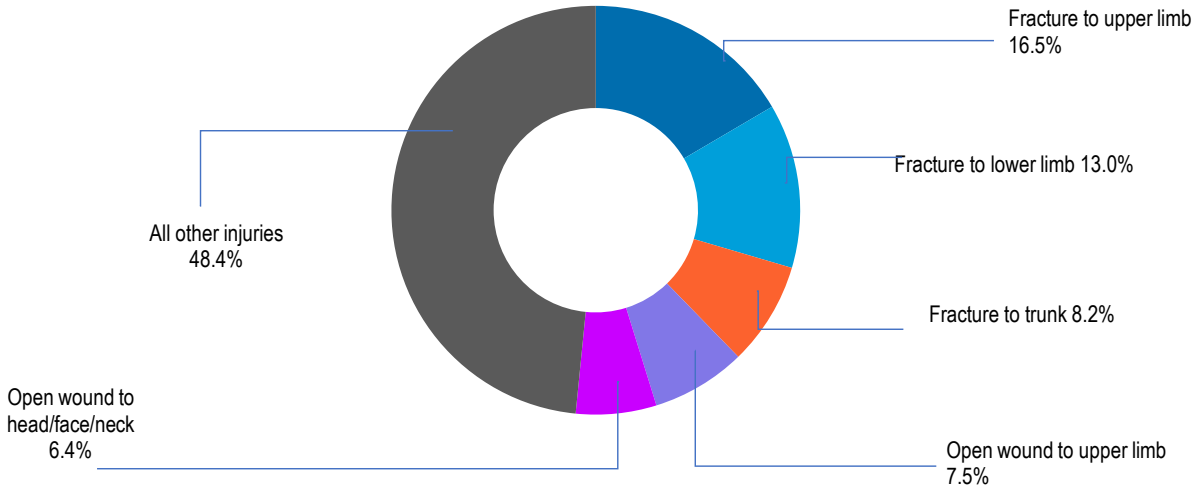
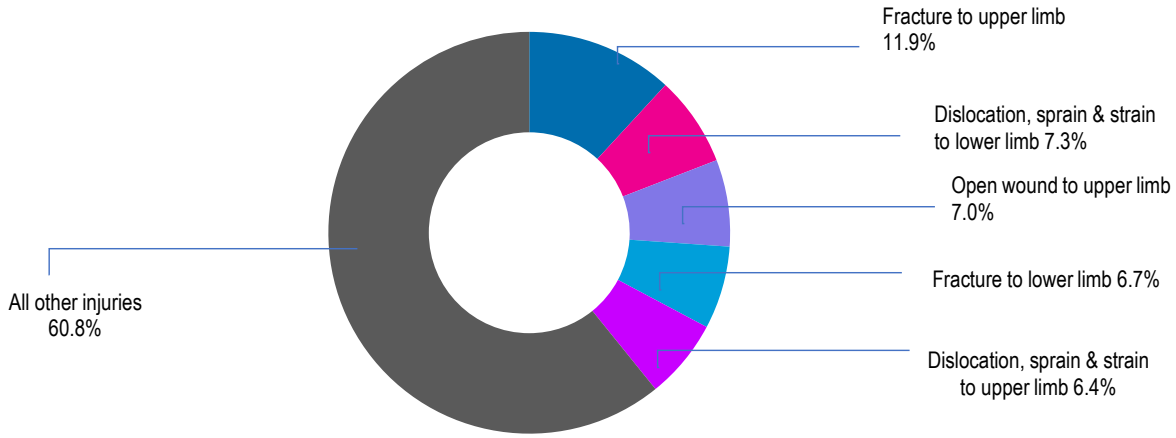


FIGURE 10: MAJOR INJURY TYPE, ED PRESENTATIONS VICTORIA 2021/22



SETTING

- In 2021/22 29.8% (n=35,086) of all injuries requiring hospital admission and 46.7% (n=147,342) of injuries resulting in ED presentation occurred in the home.
- Injuries also commonly occurred on roads/streets/highways (10.4% of admissions and 6.6% of ED presentations), and in sports settings (4.7% of admissions and 6.8% of ED presentations). Around 6% of admissions resulted from injuries that occurred in residential institutional settings (Figure 11 & Figure 12).

FIGURE 11: INJURY HOSPITAL ADMISSIONS BY SETTING, VICTORIA 2021/22

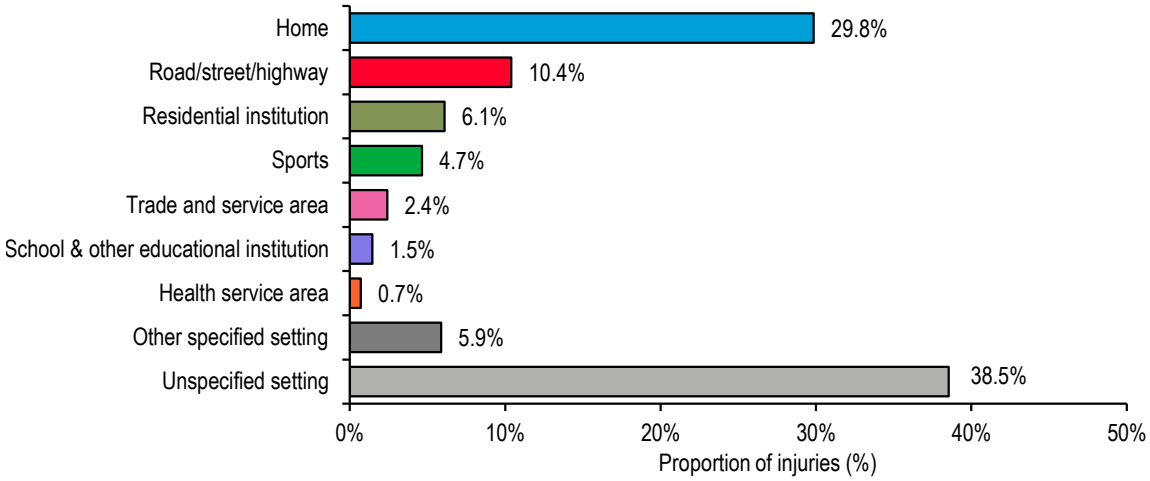
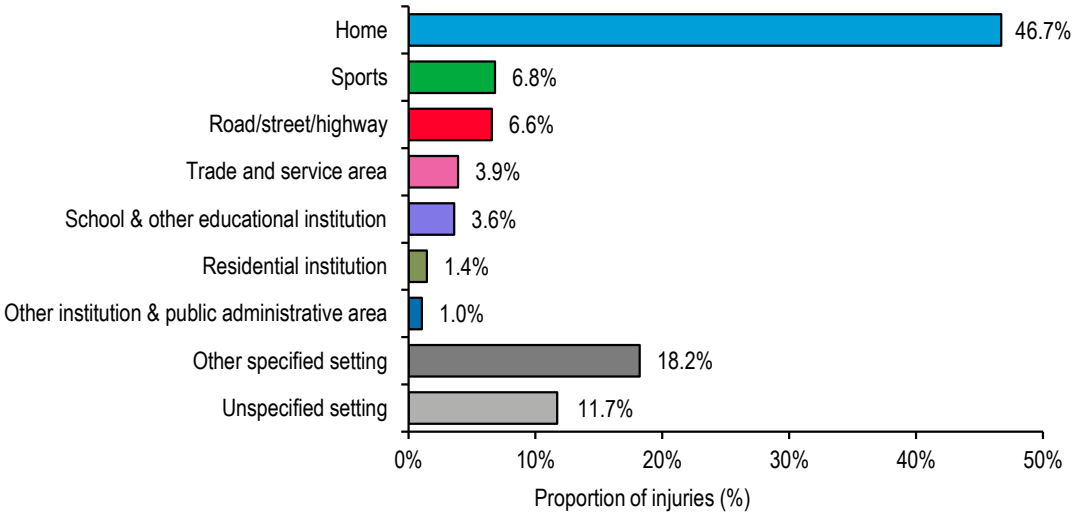


FIGURE 12: INJURY ED PRESENTATIONS BY SETTING, VICTORIA 2021/22



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

- Adults aged 25–64 years accounted for 40.0% of unintentional hospital admissions in 2021/22 and older adults aged 65+ accounted for 37.7% of injury admissions during this period. Children (0–14 years) accounted for 11.6% of injury admissions and adolescents & young adults (15–24 years) accounted for 10.6% of injury admissions during 2021/22.
- Older adults aged 65+ years accounted for the majority of serious injury admissions (91.4%, n=9,574). They also accounted for more than two-thirds of hospital bed-days (71.8%, 661,204 days).
- Those aged 75–94 years accounted for just under a quarter of all unintentional injury hospital admissions (24.9%) and were particularly over-represented when serious injuries and bed-days are taken into account (76.2% and 52.9% respectively).

TABLE 3: UNINTENTIONAL INJURY HOSPITAL ADMISSIONS BY AGE GROUP: FREQUENCY, SERIOUS INJURY CASES* AND HOSPITAL BED DAYS (2021/22)

	FREQUENCY		SERIOUS INJURY CASES		HOSPITAL BED-DAYS	
	n	%	n	%	n	%
0–4	4,867	4.1	19	0.2	9,161	1.0
5–9	4,215	3.6	11	0.1	5,737	0.6
10–14	4,610	3.9	23	0.2	7,208	0.8
0–14	**13,692**	**11.6**	**53**	**0.5**	**22,106**	**2.4**
15–19	5,787	4.9	65	0.6	13,013	1.4
20–24	6,720	5.7	67	0.6	15,945	1.7
15–24	**12,507**	**10.6**	**132**	**1.3**	**28,958**	**3.1**
25–34	12,998	11.1	147	1.4	35,273	3.8
35–44	10,725	9.1	139	1.3	35,382	3.8
45–54	11,410	9.7	188	1.8	52,136	5.7
55–64	11,933	10.2	242	2.3	86,448	9.4
25–64	**47,066**	**40.0**	**716**	**6.8**	**209,239**	**22.7**
65–74	12,836	10.9	788	7.5	140,327	15.2
75–84	15,438	13.1	3,052	29.1	242,939	26.4
85–94	13,852	11.8	4,935	47.1	244,455	26.5
95+	**2,154**	**1.8**	**799**	**7.6**	**33,483**	**3.6**
65+	**44,280**	**37.7**	**9,574**	**91.4**	**661,204**	**71.8**
Total	117,545	100.0	10,475	100.0	921,507	100.0

*Note: Serious injury cases were based on a newly derived ICISS measure based on recent Victorian data (see Box 1 in Appendix 1). These values are lower than those used to calculate ICISS in previous E-Bulletins and as a result serious injury rates presented in this E-Bulletin are relatively low. Serious injury frequencies can be used for comparing groups within each report but should not be used for comparisons across reports that utlitise different versions of ICISS.

TABLE 4: RANKING OF CAUSES OF INJURY HOSPITAL ADMISSIONS BY AGE GROUPS

RANK	AGE GROUPS (YEARS)											
	0–4 yrs	5–9 yrs	10–14 yrs	15–19 yrs	20–24 yrs	25–34 yrs	35–44 yrs	45–54 yrs	55–64 yrs	65–74 yrs	75–84 yrs	85+ yrs
1 n %	fall 2,116 43.5%	fall 2,042 48.4%	fall 1,476 32.0%	transport 1,381 23.9%	transport 1,533 22.8%	transport 2,829 21.8%	fall 2,510 23.4%	fall 3,651 32.0%	fall 5,428 45.5%	fall 8,150 63.5%	fall 12,259 79.4%	fall 14,322 89.5%
2 n %	hit/struck/ crush 780 16.0%	hit/struck/ crush 639 15.2%	transport 1,092 23.7%	fall 1,113 19.2%	unspec. unintent. 1,226 18.2%	fall 2,571 19.8%	transport 2,203 20.5%	transport 2,214 19.4%	transport 1,813 15.2%	unspec. unintent. 1,188 9.3%	unspec. unintent. 796 5.2%	unspec. unintent. 560 3.5%
3 n %	unspec. unintent. 370 7.6%	transport 434 10.3%	hit/struck/ crush 696 15.1%	unspec. unintent. 1,067 18.4%	fall 1,177 17.5%	unspec. unintent. 1,973 15.2%	unspec. unintent. 1,661 15.5%	unspec. unintent. 1,684 14.8%	unspec. unintent. 1,428 12.0%	transport 1,109 8.6%	transport 710 4.6%	transport 258 1.6%
4 n %	foreign body 301 6.2%	unspec. unintent. 301 7.1%	unspec. unintent. 575 12.5%	hit/struck/ crush 913 15.8%	cutting/ piercing 888 13.2%	cutting/ piercing 1,715 13.2%	cutting/ piercing 1,392 13.0%	cutting /piercing 1,189 10.4%	cutting/ piercing 940 7.9%	cutting/ piercing 611 4.8%	hit/struck/ crush 334 2.2%	hit/struck/ crush 231 1.4%
5 n %	cutting/piercing 278 5.7%	cutting/piercing 276 6.5%	cutting/piercing 250 5.4%	cutting/piercing 564 9.7%	hit/struck/crush 873 13.0%	hit/struck/crush 1,556 12.0%	hit/struck/crush 1,043 9.7%	hit/struck/ crush 796 7.0%	hit/struck/ crush 623 5.2%	hit/struck/ crush 454 3.5%	cutting/ piercing 303 2.0%	ovrext./ stren. mmts 151 0.9%
6 n %	poisoning 267 5.5%	Nat./envir./ animals 209 5.0%	Nat./envir./ animals 166 3.6%	Nat./envir./ animals 177 3.1%	Nat./envir./ animals 301 4.5%	Nat./envir./ animals 749 5.8%	Nat./envir./ animals 565 5.3%	Nat./envir./ animals 678 5.9%	Nat./envir./ animals 617 5.2%	Nat./envir./ animals 404 3.1%	ovrext./ stren. mmts 269 1.7%	Nat./envir./ animals 106 0.7%
7 n %	Nat./envir./ animals 204 4.2%	foreign body 176 4.2%	ovrext./ stren. mmts 127 2.8%	ovrext./ stren. mmts 166 2.9%	ovrext./ stren. mmts 213 3.2%	ovrext./ stren. mmts 545 4.2%	ovrext./ stren. mmts 426 4.0%	ovrext./ stren. mmts 370 3.2%	ovrext./ stren. mmts 303 2.5%	ovrext./ stren. mmts 275 2.1%	Nat./envir./ animals 255 1.7%	poisoning 95 0.6%
8 n %	transport 199 4.1%	poisoning 53 1.3%	foreign body 84 1.8%	poisoning 117 2.0%	poisoning 139 2.1%	poisoning 269 2.1%	machinery 242 2.3%	machinery 202 1.8%	machinery 207 1.7%	foreign body 186 1.4%	poisoning 160 1.0%	cutting/ piercing 87 0.5%
9 n %	fires/burns/ scalds 187 3.8%	fires/burns/ scalds 36 0.9%	fires/burns/ scalds 47 1.0%	other spec. unintent. 87 1.5%	machinery 127 1.9%	machinery 263 2.0%	poisoning 241 2.2%	poisoning 200 1.8%	foreign body 203 1.7%	poisoning 142 1.1%	foreign body 147 1.0%	foreign body 75 0.5%
10 n %	choking/ suffoc. 40 0.8%	ovrext./ stren. mmts 25 0.6%	other spec. unintent. 43 0.9%	machinery 72 1.2%	other spec. unintent. 95 1.4%	fires/burns/ scalds 170 1.3%	foreign body 168 1.6%	foreign body 184 1.6%	poisoning 160 1.3%	machinery 139 1.1%	fires/burns/ scalds 81 0.5%	fires/burns/ scalds 51 0.3%
11 n %	drown/ near drown 25 0.5%	machinery 11 0.3%	poisoning 34 0.7%	foreign body 72 1.2%	fires/burns/ scalds 64 1.0%	foreign body 167 1.3%	fires/burns/ scalds 145 1.4%	fires/burns/ scalds 140 1.2%	fires/burns/ scalds 129 1.1%	fires/burns/ scalds 89 0.7%	other spec. unintent. 47 0.3%	other spec. unintent. 31 0.2%
12 n %	other spec. unintent. 20 0.4%	other spec. unintent. 7 0.2%	machinery 12 0.3%	fires/burns/ scalds 41 0.7%	foreign body 55 0.8%	other spec. unintent. 156 1.2%	other spec. unintent. 98 0.9%	other spec. unintent. 72 0.6%	other spec. unintent. 39 0.3%	other spec. unintent. 50 0.4%	machinery 44 0.3%	machinery 20 0.1%
13 n %	ovrext./ wstren. mmts 17 0.3%	drown/ near drown * *	explosions/ firearms 5 0.1%	drown/ near drown 6 0.1%	explosions/ firearms 18 0.3%	explosions/ firearms 22 0.2%	explosions/ firearms 13 0.1%	explosions/ firearms 13 0.1%	choking/ suffoc. 26 0.2%	choking/ suffoc. 19 0.1%	choking/ suffoc. 29 0.2%	choking/ suffoc. 19 0.1%
14 n %	machinery ** **	choking/ suffoc. * *	choking/ suffoc. * *	explosions/ firearms 6 0.1%	choking/ suffoc. ** **	drown/ near drown 7 0.1%	choking/ suffoc. 13 0.1%	choking/ suffoc. 11 0.1%	explosions/ firearms 11 0.1%	explosions/ firearms 14 0.1%	drown/ near drown * *	drown/ near drown 0 0.0%
15 n %	explosions/ firearms * *	explosions/ firearms 0 0.0%	drown/ near drown ** **	choking/ suffoc. 5 0.1%	drown/ near drown * *	choking/ suffoc. 6 0.0%	drown/ near drown 5 0.0%	drown/ near drown 6 0.1%	drown/ near drown 6 0.1%	drown/ near drown 6 0.0%	explosions/ firearms * *	explosions/ firearms 0 0.0%
All	**4,867**	**4,215**	**4,610**	**5,787**	**6,720**	**12,998**	**10,725**	**11,410**	**11,933**	**12,836**	**15,438**	**16,006**

Note: 1. foreign body= foreign body natural orifice; Nat./envir./animals= natural/environmental/ animals; choking/suffoc.= choking/suffocation; ovrext./ stren. mmts=overexertion and/or strenuous movements; other spec. unintent.= other specified unintentional; unspec.unintent.= unspecified unintentional; drown/near drown=drowning/near drowning.

2. Frequency less than 5 has been suppressed with an "*". Other cells in the same row and/or column may be suppressed "**" in order to maintain confidentiality.

TABLE 5: RANKING OF CAUSES OF INJURY ED PRESENTATIONS BY AGE GROUPS

RANK	AGE GROUPS (YEARS)											
	0–4 yrs	5–9 yrs	10–14 yrs	15–19 yrs	20–24 yrs	25–34 yrs	35–44 yrs	45–54 yrs	55–64 yrs	65–74 yrs	75–84 yrs	85+ yrs
1 n %	fall 14,309 42.6%	fall 12,409 48.0%	fall 11,996 41.1%	fall 6,338 26.6%	fall 5,217 21.9%	fall 9,258 21.4%	fall 7,579 23.5%	fall 8,478 29.8%	fall 9,497 38.0%	fall 9,863 49.0%	fall 10,655 63.2%	fall 10,283 78.0%
2 n %	hit/struck/crush 5,273 15.7%	hit/struck/crush 4,772 18.5%	hit/struck/crush 7,133 24.4%	hit/struck/crush 6,207 26.0%	hit/struck/crush 5,031 21.1%	hit/struck/ crush 8,347 19.3%	hit/struck/crush 5,595 17.4%	hit/struck/ crush 4,097 14.4%	other spec. unintent 2,980 11.9%	other spec. unintent 2,298 11.4%	other spec. unintent 1,531 9.1%	unspec. unintent 832 6.3%
3 n %	other spec. unintent 5,111 15.2%	other spec. unintent 2,766 10.7%	other spec. unintent 3,617 12.4%	other spec. unintent 3,260 13.7%	cutting/ piercing 3,190 13.4%	cutting/ piercing 6,127 14.2%	other spec. unintent 4,330 13.4%	other spec. unintent 3,590 12.6%	hit/struck/ crush 2,765 11.1%	unspec. unintent 1,713 8.5%	unspec. unintent 1,385 8.2%	other spec. unintent 823 6.2%
4 n %	foreign body 2,624 7.8%	cutting/ piercing 1,278 4.9%	transport 2,502 8.6%	transport 2,332 9.8%	other spec. unintent 3,146 13.2%	other spec. unintent 5,770 13.3%	cutting/ piercing 4,266 13.2%	cutting/ piercing 3,152 11.1%	cutting/ piercing 2,462 9.8%	hit/struck/ crush 1,596 7.9%	hit/struck/ crush 953 5.7%	hit/struck/ crush 414 3.1%
5 n %	unspec. unintent 1,764 5.3%	foreign body 1,216 4.7%	unspec. unintent 1,380 4.7%	cutting/ piercing 2,058 8.6%	transport 2,322 9.8%	transport 4,089 9.5%	transport 3,048 9.5%	transport 2,658 9.3%	unspec. unintent 2,078 8.3%	cutting/ piercing 1,511 7.5%	cutting/ piercing 687 4.1%	transport 224 1.7%
6 n %	cutting/ piercing 1,357 4.0%	unspec. unintent 1,149 4.4%	cutting/ piercing 1,155 4.0%	unspec. unintent 1,493 6.3%	unspec. unintent 1,757 7.4%	unspec. unintent 3,355 7.8%	unspec. unintent 2,660 8.3%	unspec. unintent 2,431 8.5%	transport 1,973 7.9%	transport 1,178 5.9%	transport 642 3.8%	cutting/ piercing 214 1.6%
7 n %	fires/burns/ scalds 1,146 3.4%	transport 1,074 4.2%	foreign body 513 1.8%	foreign body 659 2.8%	foreign body 1,008 4.2%	foreign body 2,394 5.5%	foreign body 1,975 6.1%	foreign body 1,562 5.5%	foreign body 1,227 4.9%	foreign body 821 4.1%	foreign body 353 2.1%	foreign body 133 1.0%
8 n %	Nat./envir./ animals 801 2.4%	Nat./envir./ animals 651 2.5%	Nat./envir./ animals 442 1.5%	Nat./envir./ animals 498 2.1%	Nat./envir./ animals 882 3.7%	Nat./envir./ animals 1,747 4.0%	Nat./envir./ animals 1,220 3.8%	Nat./envir./ animals 1,233 4.3%	Nat./envir./ animals 1,058 4.2%	Nat./envir./ animals 610 3.0%	Nat./envir./ animals 358 2.1%	Nat./envir./ animals 105 0.8%
9 n %	poisoning 610 1.8%	fires/burns/ scalds 295 1.1%	fires/burns/ scalds 271 0.9%	fires/burns/ scalds 426 1.8%	fires/burns/ scalds 498 2.1%	fires/burns/ scalds 940 2.2%	fires/burns/ scalds 702 2.2%	fires/burns/ scalds 577 2.0%	fires/burns/ scalds 426 1.7%	fires/burns/ scalds 226 1.1%	fires/burns/ scalds 123 0.7%	poisoning 63 0.5%
10 n %	transport 407 1.2%	poisoning 135 0.5%	poisoning 147 0.5%	poisoning 384 1.6%	poisoning 437 1.8%	poisoning 651 1.5%	poisoning 408 1.3%	poisoning 334 1.2%	machinery 298 1.2%	machinery 142 0.7%	poisoning 99 0.6%	fires/burns/ scalds 59 0.4%
11 n %	choking/ suffoc. 109 0.3%	choking/ suffoc. 40 0.2%	choking/ suffoc. 32 0.1%	machinery 124 0.5%	machinery 229 1.0%	machinery 462 1.1%	machinery 367 1.1%	machinery 287 1.0%	poisoning 213 0.9%	poisoning 120 0.6%	machinery 59 0.3%	machinery 18 0.1%
12 n %	drown/ near drown 55 0.2%	drown/ near drown 23 0.1%	machinery 25 0.1%	choking/ suffoc. 52 0.2%	choking/ suffoc. 76 0.3%	choking/ suffoc. 81 0.2%	choking/ suffoc. 50 0.2%	choking/ suffoc. 42 0.1%	choking/ suffoc. 34 0.1%	choking/ suffoc. 22 0.1%	drown/ near drown 9 0.1%	drown/ near drown 7 0.1%
13 n %	machinery 15 0.0%	machinery ** **	drown/ near drown 24 0.1%	drown/ near drown 14 0.1%	drown/ near drown 9 0.0%	drown/ near drown 25 0.1%	drown/ near drown 28 0.1%	drown/ near drown 10 0.0%	drown/ near drown ** **	drown/ near drown ** **	choking/ suffoc. 7 0.0%	choking/ suffoc. ** **
14 n %	explosions/ firearms 0 0.0%	explosions/ firearms * *	explosions/ firearms 0 0.0%	explosions/ firearms 6 0.0%	explosions/ firearms 5 0.0%	explosions/ firearms 8 0.0%	explosions/ firearms 7 0.0%	explosions/ firearms 5 0.0%	explosions/ firearms * *	explosions/ firearms * *	explosions/ firearms 0 0.0%	explosions/ firearms * *
All	**33,581**	**25,830**	**29,237**	**23,851**	**23,807**	**43,254**	**32,235**	**28,456**	**25,022**	**20,115**	**16,861**	**13,184**

Note: 1. foreign body= foreign body natural orifice; Nat./envir./ animals= natural/environmental/ animals; choking/suffoc.= choking/suffocation; other spec. unintent.= other specified unintentional; unspec.unintent.= unspecified unintentional; drown/near drown=drowning/near drowning.

2. Frequency less than 5 has been suppressed with an "*". Other cells in the same row and/or column may be suppressed "**" in order to maintain confidentiality.

CHILDREN (0–14 YEARS)

TREND

- During the 10-year period 2012/13 to 2021/22 there were on average 13,578 injury admissions and 91,010 injury ED presentations per year among children aged up to and including 14 years. Average age-standardised injury rates were 1,149 admissions and 7,435 ED presentations per 100,000 children per year.
- The rate of **injury admissions** among children aged 0–14 years did not show a statistically significantly increasing or decreasing trend over the ten year period.
- The rate of **injury ED presentations** among children aged 0–14 years did not show a statistically significantly increasing or decreasing trend over the ten year period.
- The age-specific rates of **injury admissions** and **injury ED presentations** among the age groups 0–4, 5–9 and 10–14 years are shown in Figures 13 and 14, respectively.

FIGURE 13: TREND IN INJURY HOSPITAL ADMISSION RATES PER 100,000 CHILDREN, VICTORIA 2012/13–2021/22

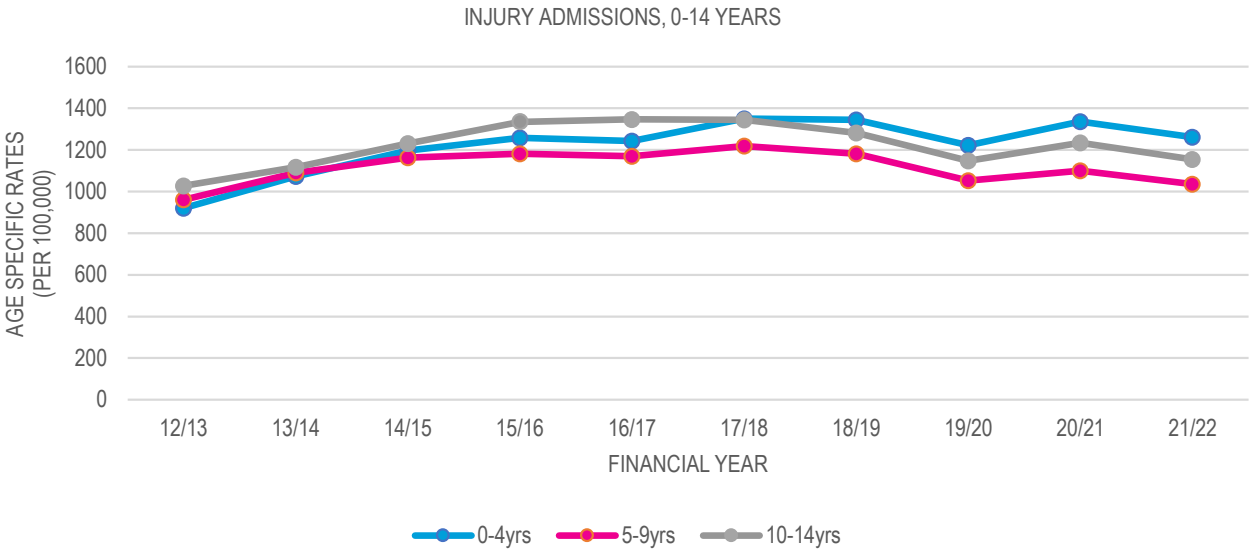
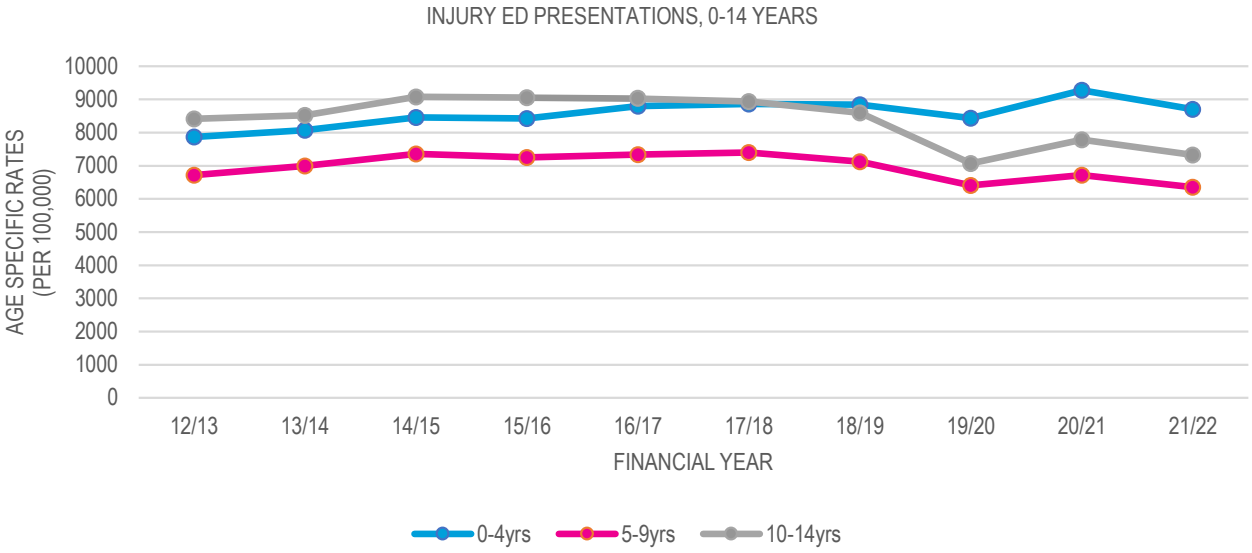


FIGURE 14: TREND IN INJURY ED PRESENTATION RATES PER 100,000 CHILDREN, VICTORIA 2012/13–2021/22



HOSPITAL TREATED INJURY – GENDER AND AGE

- Males were overrepresented in child hospital-treated injury cases, accounting for 62.1% of admissions (n=8,502) and 58.5% of ED presentations (n=51,842) in 2021/22 (Figure 15 & Figure 16).
- Child injury admissions and ED presentations were fairly evenly distributed across the 5-year age groups.
  - Children aged 0–4 years accounted for 35.5% of child admissions and 37.9% of child ED presentations.
  - Children aged 5–9 years accounted for 30.8% of child admissions and 29.1% of child ED presentations.
  - Children aged 10–14 years accounted for 33.6% of child admissions and 33.0% of child ED presentations.

FIGURE 15: CHILD INJURY HOSPITAL ADMISSIONS BY GENDER AND AGE, VICTORIA 2021/22

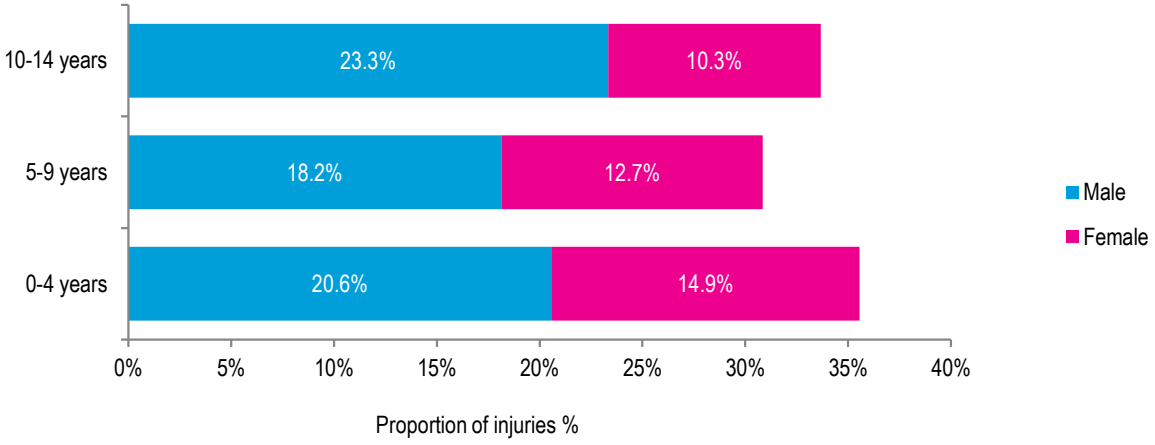
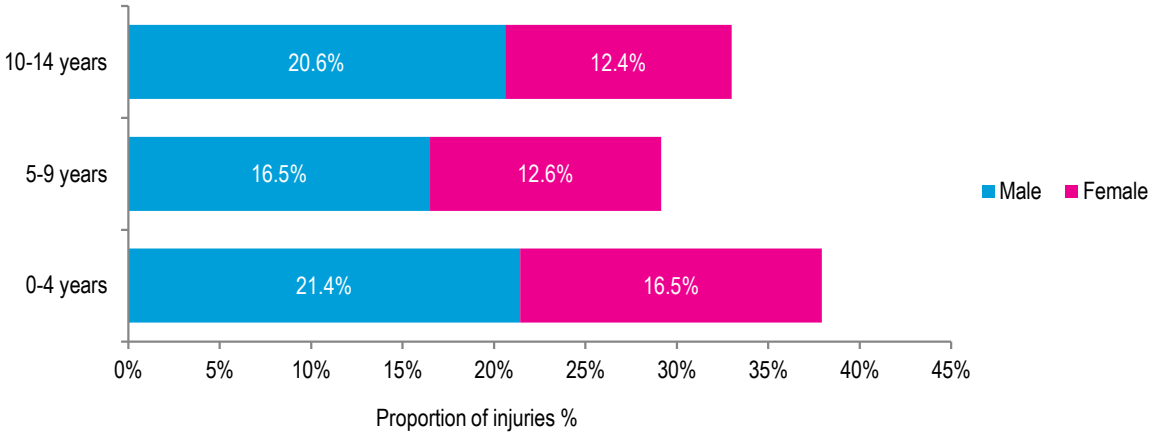


FIGURE 16: CHILD INJURY ED PRESENTATIONS BY GENDER AND AGE, VICTORIA 2021/22



- Child injury admission and ED presentation rates were higher for males than females: 1,390.3 vs 894.3 per 100,000 population (admissions) and 8477.6 vs. 6342.3 per 100,000 population (ED presentations).
- Table 6 shows that age-specific hospital admission rates for children were fairly equal across age groups whereas there was a high rate of ED presentations in the 0–4 age group, followed by the 10–14 age group.

TABLE 6: FREQUENCY AND AGE-SPECIFIC RATE OF INJURY ADMISSIONS AND ED PRESENTATIONS IN CHILDREN BY GENDER AND AGE, VICTORIA 2021/22

AGE GROUP	GENDER	HOSPITAL ADMISSIONS		ED PRESENTATIONS	
		n	RATE PER 100,000 POPULATION	n	RATE PER 100,000 POPULATION
0–4 years	**Male**	2,821	1,428.1	18,999	9,617.8
	Female	2,046	1,085.8	14,582	7,738.5
	All	4,867	1,261.0	33,581	8,700.3
5–9 years	**Male**	2,486	1,189.4	14,630	6,999.6
	Female	1,729	874.8	11,200	5,666.5
	All	4,215	1,036.5	25,830	6,351.6
10–14 years	**Male**	3,195	1,558.8	18,213	8,885.8
	Female	1,415	728.5	11,024	5,675.5
	All	4,610	1,154.8	29,237	7,323.8
All	**Male**	8,502	1,390.3	51,842	8,477.6
	Female	5,190	894.3	36,806	6,342.3
	All	13,692	1,148.8	88,648	7,437.9

LEADING CAUSES OF INJURY

- Four of the five leading causes of child injury were the same for admissions and ED presentations although the ranking on frequency of cases was different (Figure 17 & Figure 18).
- The leading cause of child injury admissions and ED presentations was falls, accounting for 41.5% of hospital admissions (n=5,684) and 43.7% of ED presentations (n=38,714).
- Hit/struck/crush injuries were the next major cause of injury accounting for 15.4% of admissions (n=2,115) and 19.4% of ED presentations (n=17,178).
- Transport accounted for 12.6% of admissions (n=1,725) and only 4.5% of ED presentations (n=3,983).
- Cutting and piercing related injuries accounted for 5.9% of admissions (n=804) and 4.3% of ED presentations (n=3,790).
- Foreign body in a natural orifice, e.g. ear, nose, eye injuries accounted for 4.9% of ED presentations (n=4,353).
- The fifth ranking cause of injury-related admissions was natural/environmental/animals (4.2%, n=579).

FIGURE 17: CHILD INJURY HOSPITAL ADMISSIONS BY CAUSE, VICTORIA 2021/22

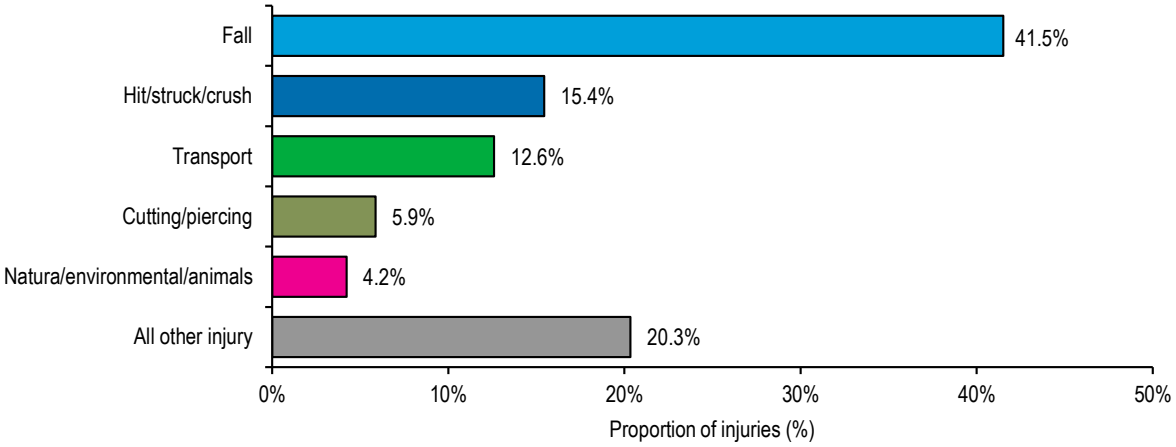
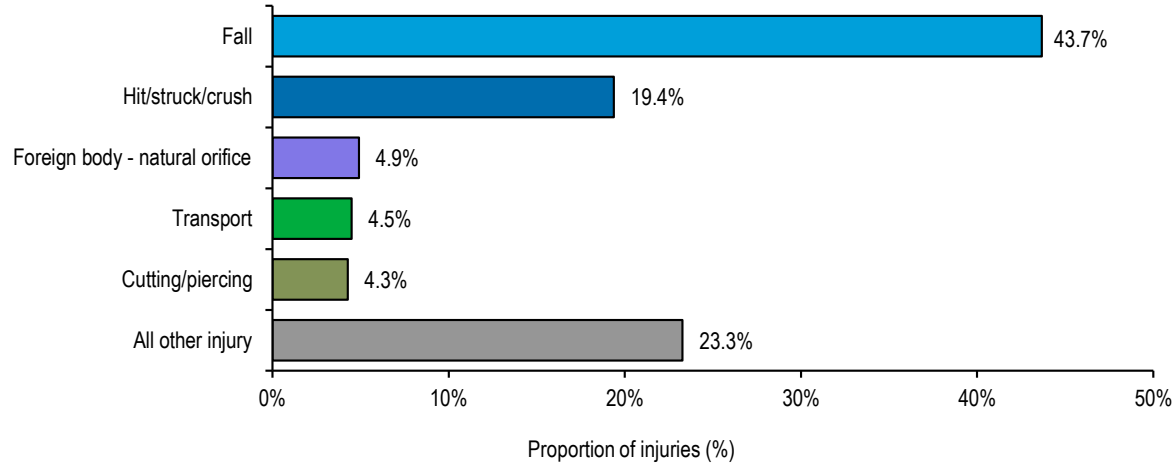


FIGURE 18: CHILD INJURY ED PRESENTATIONS BY CAUSE, VICTORIA 2021/22



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

MAJOR INJURY TYPE (BODY SITE AND NATURE OF INJURY)

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

- Fracture to the upper limb accounted for 26.1% (n=3,575) of admissions and 17.9% (n=15,878) of ED presentations.
- Open wounds to the head/face/neck accounted for 14.3% of admissions (n=1,956) and 10.4% of ED presentations (n=9,254).
- Open wound to the upper limb was common among hospital admissions (6.7%, n=915), as was fracture to the lower limb (6.4%, n=873) and intracranial injury (6.4%, n=871). Other types of injuries most common among ED presentations were dislocations, sprains & strains to the upper limb (8.0%, n=7,117) and the lower limb (5.2%, n=4,630), as well as superficial injury to the head/face/neck (7.8%, n=6,876).

FIGURE 19: MAJOR INJURY TYPE, CHILD HOSPITAL ADMISSIONS, VICTORIA 2021/22

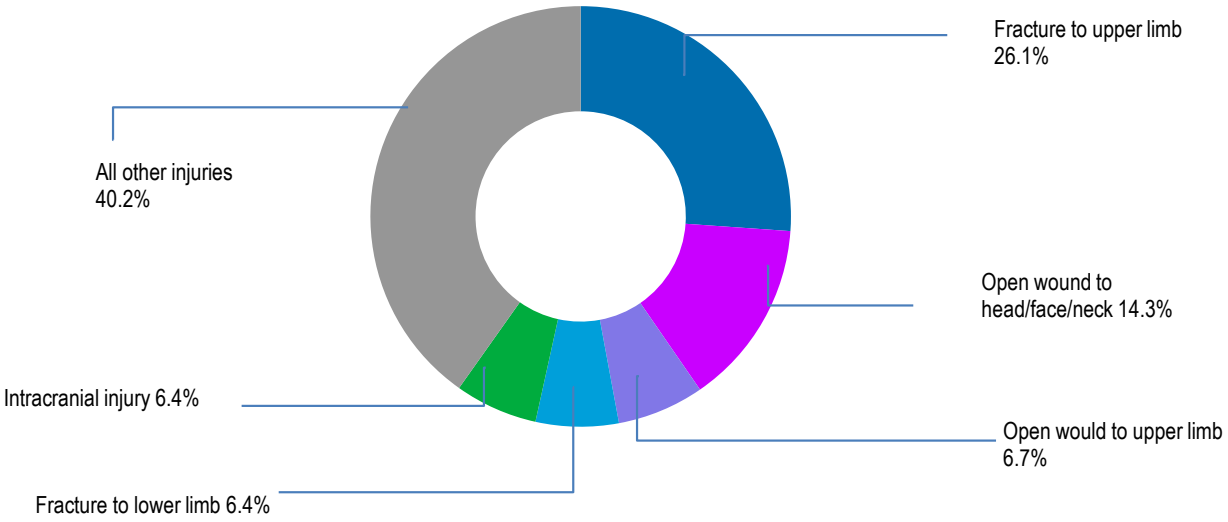
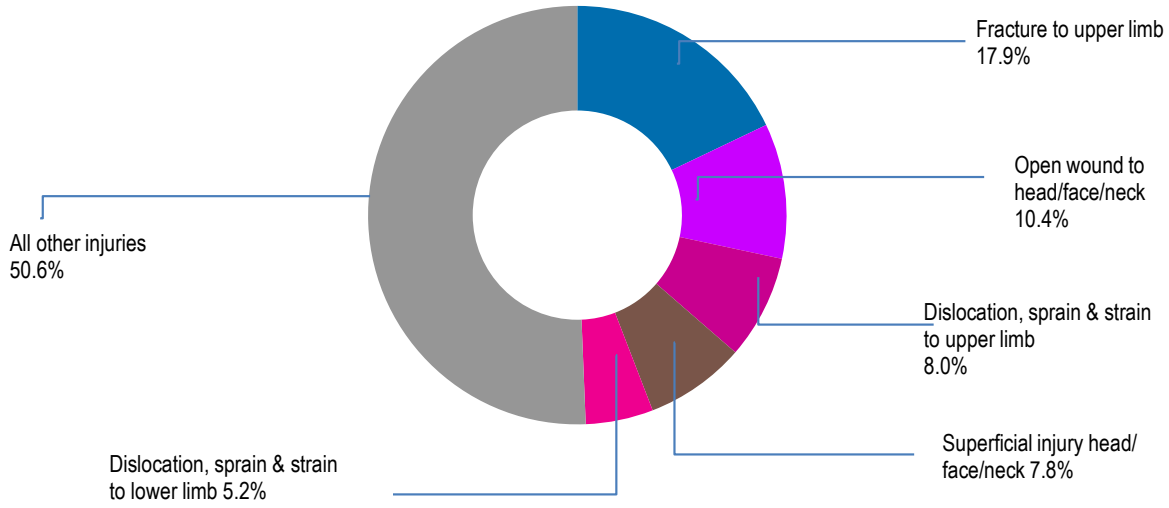


FIGURE 20: MAJOR INJURY TYPE, CHILD ED PRESENTATIONS, VICTORIA 2021/22



SETTING

- Setting where the injury occurred was unspecified in 39.9% of child injury admissions and 6.5% of child injury ED presentations
- Injuries among children requiring hospital admission were most likely to occur in the home, accounting for 30.4% (n=4,163) of admissions and 54.1% (n=47,987) of ED presentations (Figure 21 & 22).
- Children were also commonly injured in schools and other educational settings (10.5% of admissions and 11.8% of ED presentations) and sports settings (6.9% of admissions and 7.3% of ED presentations).

FIGURE 21: CHILD INJURY HOSPITAL ADMISSIONS BY SETTING, VICTORIA 2021/22

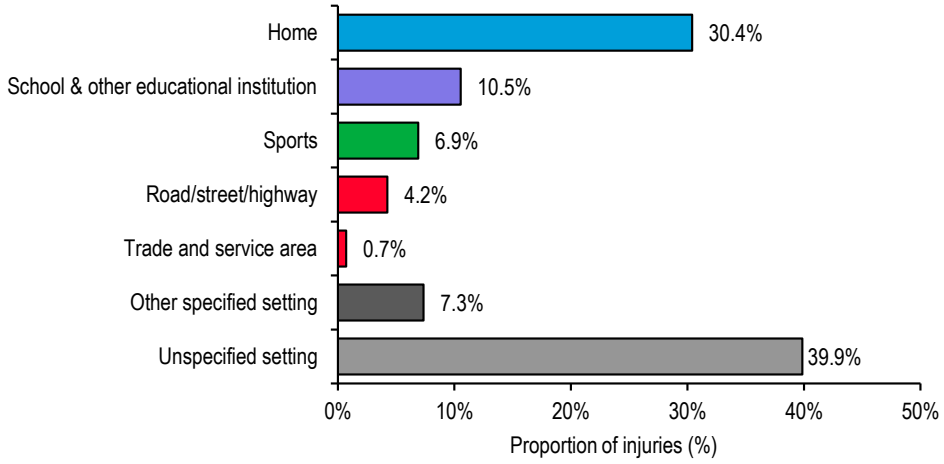
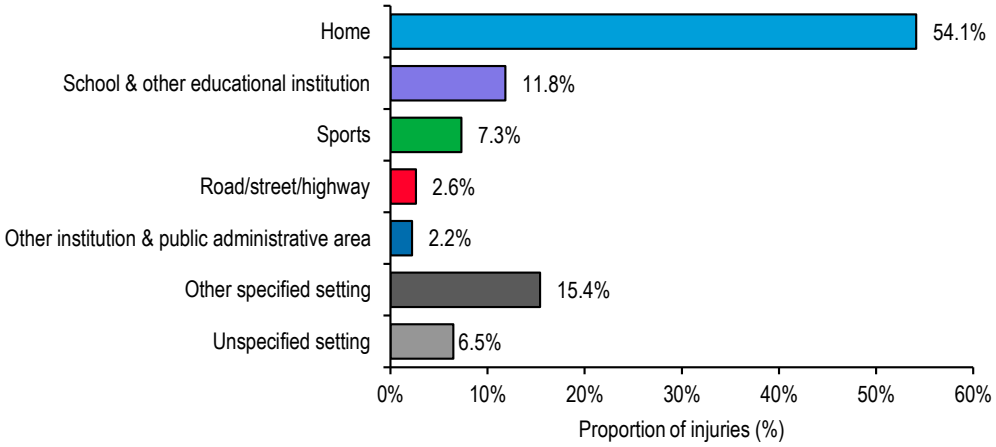


FIGURE 22: CHILD INJURY ED PRESENTATIONS BY SETTING, VICTORIA 2021/22



ADOLESCENTS AND YOUNG ADULTS (15–24 YEARS)

TREND

- During the 10-year period 2012/13 to 2021/22, there were on average 12,788 injury admissions and 52,506 injury ED presentations per year among adolescents and young adults aged 15–24 years. The average age-standardised injury rates were 1,590 admissions and 6,084 ED presentations per 100,000 adolescents and young adults per year.
- The rate of **injury admissions** among adolescents and young adults increased during the ten years. The modelled trend in rate showed a statistically significant annual increase of 1.4% [95% CI 0.4 to 2.4%].
- The rate of **injury ED presentations** among adolescents and young adults decreased during the ten years. The modelled trend in rate showed a statistically significant annual decrease of –2.0% [95% CI –2.6 to –1.4%].
- The age-specific rates of **injury admissions** and **injury ED presentations** among the age groups 15–19 and 20–24 years are shown in figures 23 and 24, respectively.

FIGURE 23: TREND IN INJURY HOSPITAL ADMISSION RATES PER 100,000 ADOLESCENT & YOUNG ADULTS, VICTORIA 2012/13–2021/22

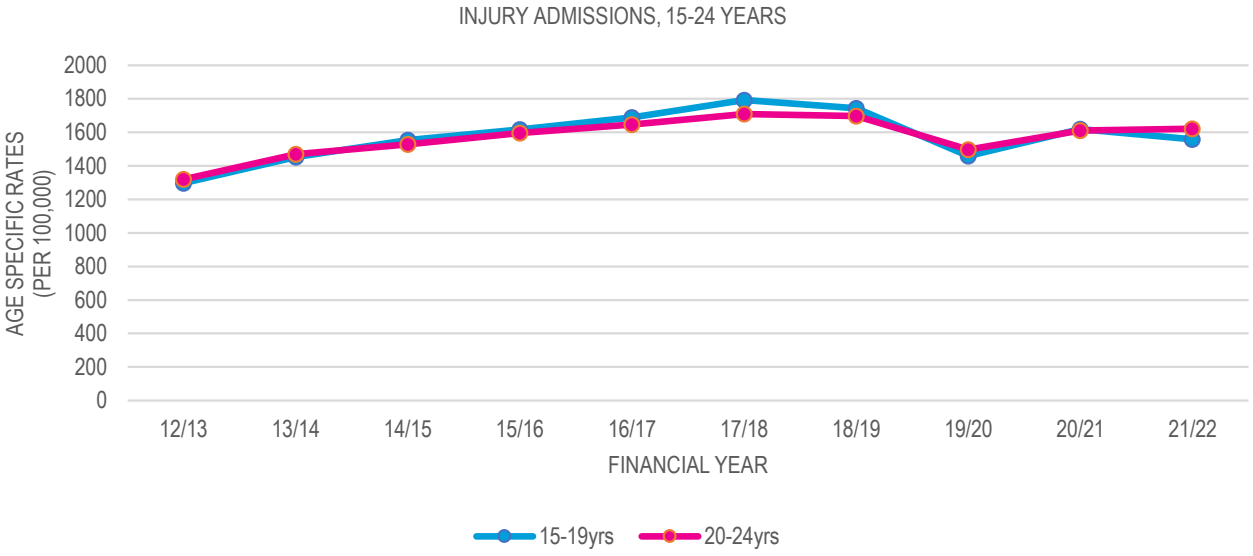
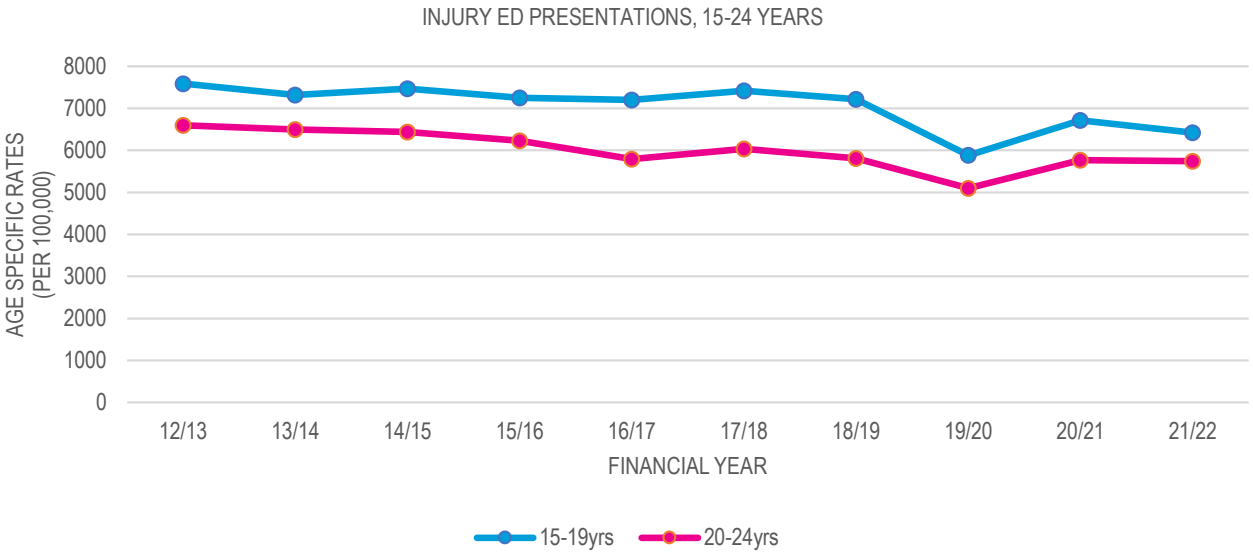


FIGURE 24: TREND IN INJURY ED PRESENTATION RATES PER 100,000 ADOLESCENT & YOUNG ADULTS, VICTORIA 2012/13–2021/22



HOSPITAL TREATED INJURY – GENDER AND AGE

- Males were overrepresented in hospital-treated injury cases among adolescents and young adults, accounting for 71.2% of hospital admissions (n=8,897) and 65.3% of ED presentations (n=31,099) in 2021/22 (Figure 25 & Figure 26).
- Among hospital admissions there was a higher proportion in the 20–24 year age group (53.8%) compared to the 15–19 year age group (46.3%). ED presentations were evenly spread across both the 5-year age groups.

FIGURE 25: ADOLESCENT AND YOUNG ADULT HOSPITAL ADMISSIONS BY GENDER AND AGE, VICTORIA 2021/22

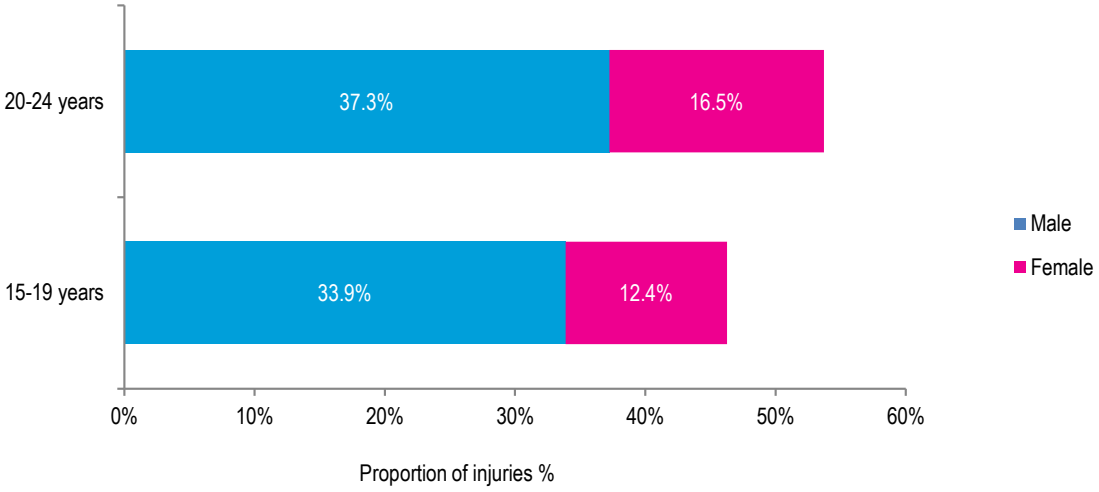
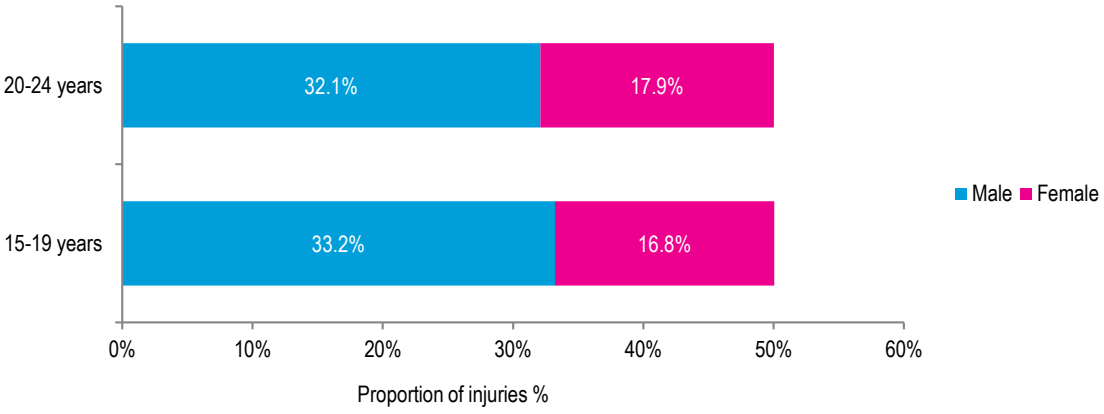


FIGURE 26: ADOLESCENT AND YOUNG ADULT ED PRESENTATIONS BY GENDER AND AGE, VICTORIA 2021/22



- Among adolescents and young adults, age-specific injury admission and ED presentation rates were higher for males than females: 2,194.4 vs. 949.5 per 100,000 population; 7670.4 vs. 4355.3 per 100,000 population (Table 7).
- For admissions the rates per 100,000 population were similar for both age groups, whereas for ED presentations the rates per 100,000 population were higher in the 15–19 year age group than the 20–24 year age group.

TABLE 7: FREQUENCY AND AGE-SPECIFIC RATE OF INJURY ADMISSIONS AND ED PRESENTATIONS IN ADOLESCENTS AND YOUNG ADULTS BY GENDER AND AGE, VICTORIA 2021/22

AGE GROUP	GENDER	HOSPITAL ADMISSIONS		ED PRESENTATIONS	
		n	RATE PER 100,000 POPULATION	n	RATE PER 100,000 POPULATION
15–19 years	**Male**	4,238	2,220.2	15,829	8,292.3
	Female	1,549	858.7	8,022	4,446.9
	All	5,787	1,558.6	23,851	6,423.9
20–24 years	**Male**	4,659	2,171.5	15,270	7,117.0
	Female	2,061	1,031.5	8,537	4,272.6
	All	6,720	1,621.8	23,807	5,745.4
All	**Male**	8,897	2,194.4	31,099	7,670.4
	Female	3,610	949.5	16,559	4,355.3
	All	12,507	1,591.9	47,658	6,066.1

LEADING CAUSES OF INJURY

- Four of the five leading causes of adolescent and young adult injury were the same for admissions and ED presentations although the ranking on frequency of cases was different (Figure 27 & Figure 28).
- Transport was the leading cause of adolescent and young adult hospital admissions (23.3%, n=2,914) but only accounted for 9.8% of ED presentations (n=4,654).
- Falls was the second most common cause of hospital admissions (18.3%, n=2,290) and the leading cause of ED presentations (24.2%, n=11,555) in this age group.
- Hit/struck/crush injuries accounted for 14.3% of hospital admissions (n=1,786) and were the second most common cause of ED presentations (23.6%, n=11,238).
- Cutting and piercing injuries accounted for 11.6% of admissions (n=1,452) and 11.0% of ED presentations (n=5,248).
- The fifth ranking cause of adolescent and young adult hospital admissions was natural, environmental, animals (3.8%, n=478), whereas for ED presentations it was injuries caused by a foreign body in a natural orifice e.g. ear, nose, eye (3.5%, n=1,667).

FIGURE 27: ADOLESCENT AND YOUNG ADULT INJURY HOSPITAL ADMISSIONS BY CAUSE, VICTORIA 2021/22

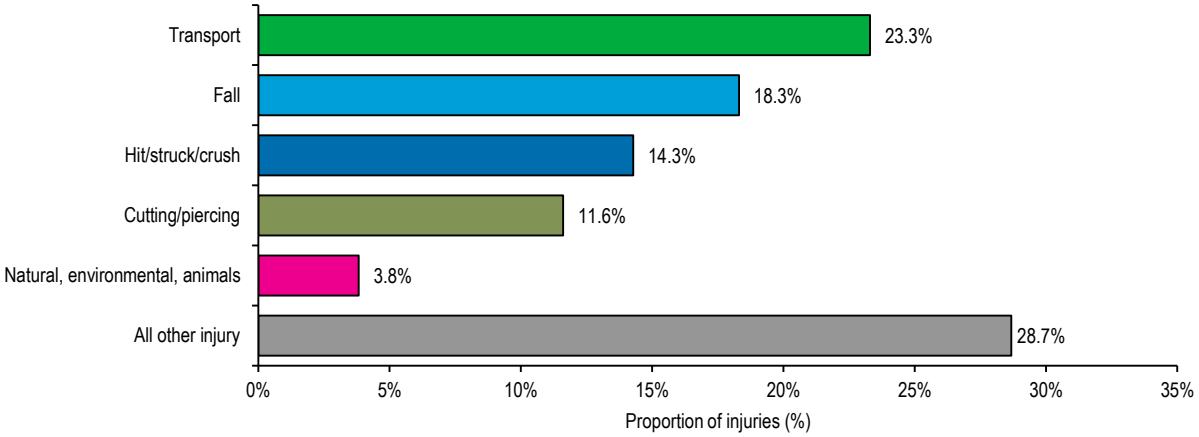
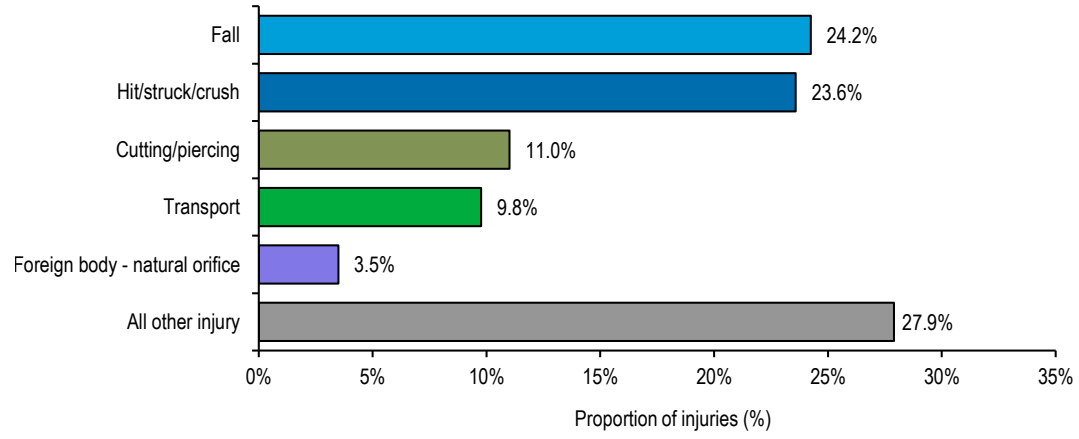


FIGURE 28: ADOLESCENT AND YOUNG ADULT INJURY ED PRESENTATIONS BY CAUSE, VICTORIA 2021/22



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

MAJOR INJURY TYPE (BODY SITE AND NATURE OF INJURY)

Figure 29 & Figure 30 show the five most common injury types for adolescent and young adult hospital admissions and ED presentations.

- Fracture to the upper limb accounted for 18.9% (n=2,370) of injury admissions and 10.4% of ED presentations (n=4,954).
- Dislocations, sprains and strains to the lower limb were common among admissions (8.1%, n=1,018) and were the most common type of injury among ED presentations (11.9%, n=5,651).
- Open wounds to the upper limb were common among admissions (9.7%, n=1,214) and ED presentations (8.6%, n=4,094). Fractures to the lower limb (8.8%, n=1,104) were common among admissions and accounted for 4.6% of ED presentations (n=2,179).
- Dislocations, sprains and strains to the upper limb were also common among ED presentations (8.5%, n=4,029).
- Intracranial injuries accounted for 5.1% of admissions (n=636).

FIGURE 29: MAJOR INJURY TYPE, ADOLESCENT AND YOUNG ADULT HOSPITAL ADMISSIONS, VICTORIA 2021/22

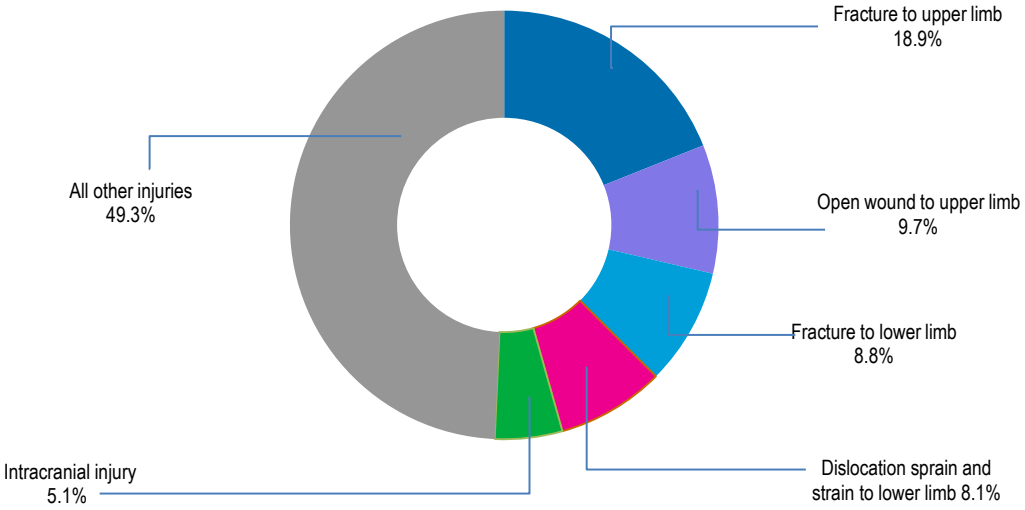
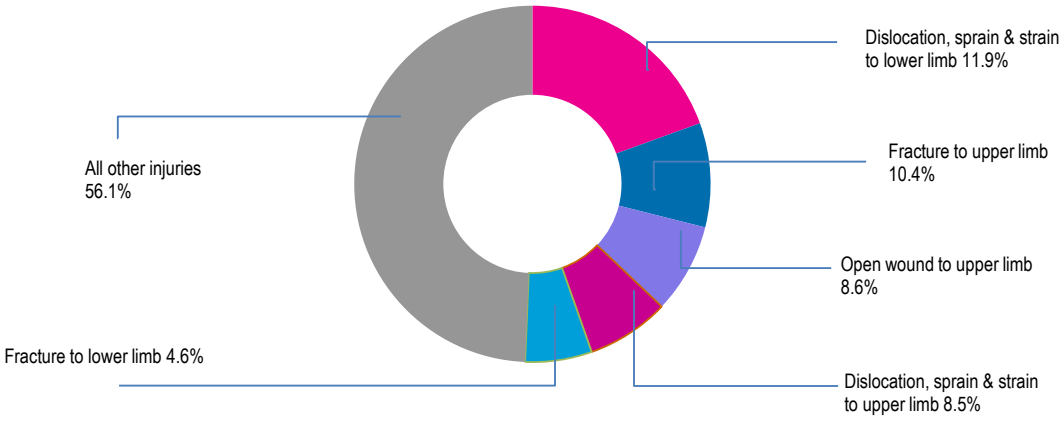


FIGURE 30: MAJOR INJURY TYPE, ADOLESCENT AND YOUNG ADULT ED PRESENTATIONS, VICTORIA 2021/22



SETTING

- Setting where the injury occurred was unspecified in 47.7% of adolescent and young adult injury admissions and 11.7% of ED presentations.
- Sports and athletics areas (15.9%, n=1,991) and the road, street and highway (15.2%, n=1,902) were the most common settings resulting in hospital admissions (Figure 31). Another common setting among admissions was the home (9.2%, n=1,156).
- Among ED presentations, the home (29.1%, n=13,876) and sports and athletics areas (16.9%, n=8,073) were the most common places of injury occurrence (Figure 32). Another common setting was the road, street and highway (8.0%, n=3,801).

FIGURE 31: ADOLESCENT AND YOUNG ADULT INJURY HOSPITAL ADMISSIONS BY SETTING, VICTORIA 2021/22

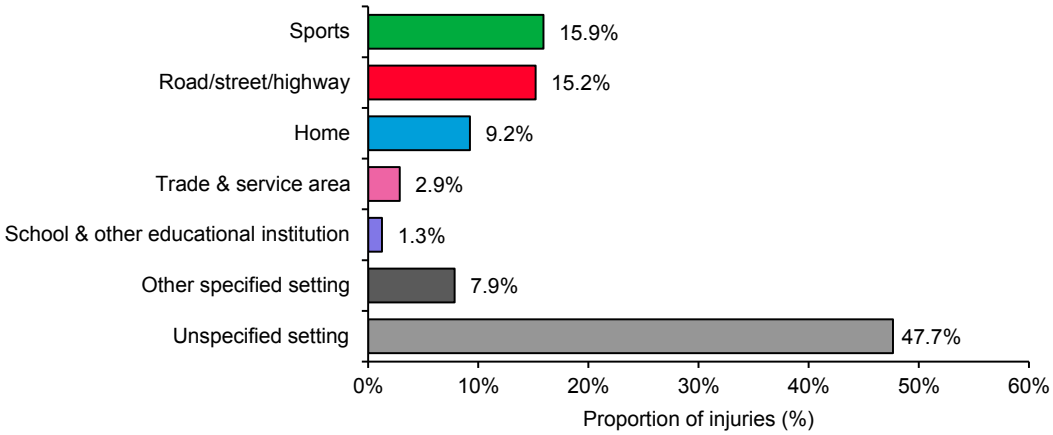
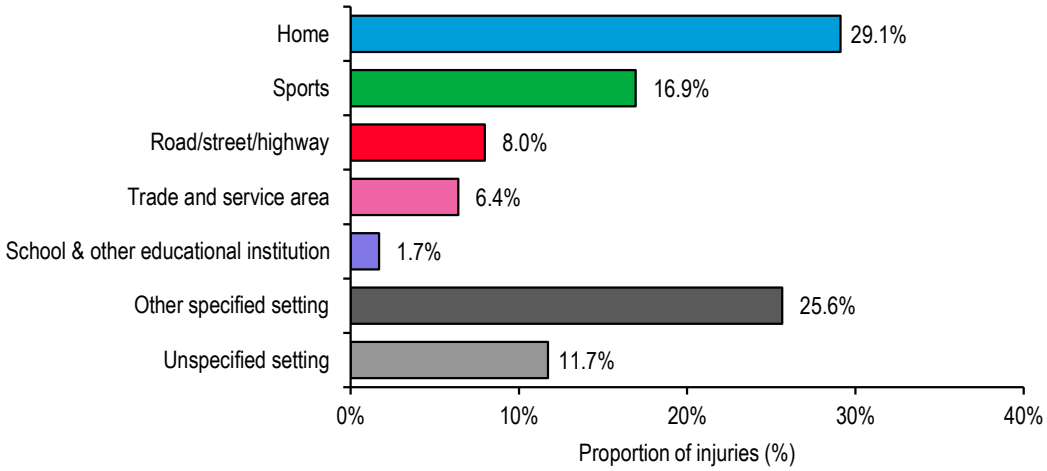


FIGURE 32: ADOLESCENT AND YOUNG ADULT INJURY ED PRESENTATIONS BY SETTING, VICTORIA 2021/22



ADULTS (25–64 YEARS)

TREND

- During the 10-year period 2012/13 to 2021/22, there were on average 42,850 injury admissions and 130,005 injury ED presentations per year among adults aged 25-64 years. The average age-standardised injury rates were 1,333 admissions and 3,690 ED presentations per 100,000 adults per year.
- The rate of **injury admissions** among adults increased during the ten years. The modelled trend in rate showed a statistically significant annual increase of 2.9% [95% CI 2.1 to 3.8%].
- The rate of **injury ED presentations** among adults did not show a statistically significant consistent upward or downward trend over the ten year period.
- The age-specific rates of **injury admissions** and **injury ED presentations** among the age groups 25–29, 30–34, 35–39, 40–44, 45–49, 50–54, 55–59, and 60–64 years are shown in figures 33 and 34, respectively.

FIGURE 33: TREND IN INJURY HOSPITAL ADMISSION RATES PER 100,000 ADULTS, VICTORIA 2012/13–2021/22

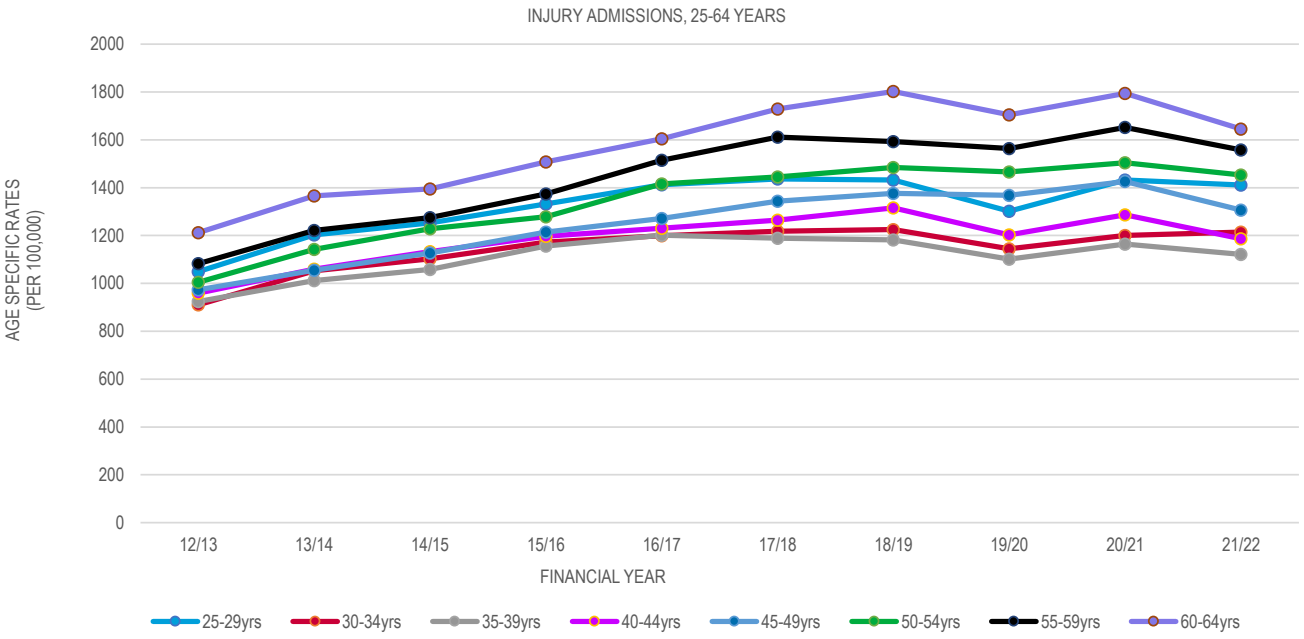
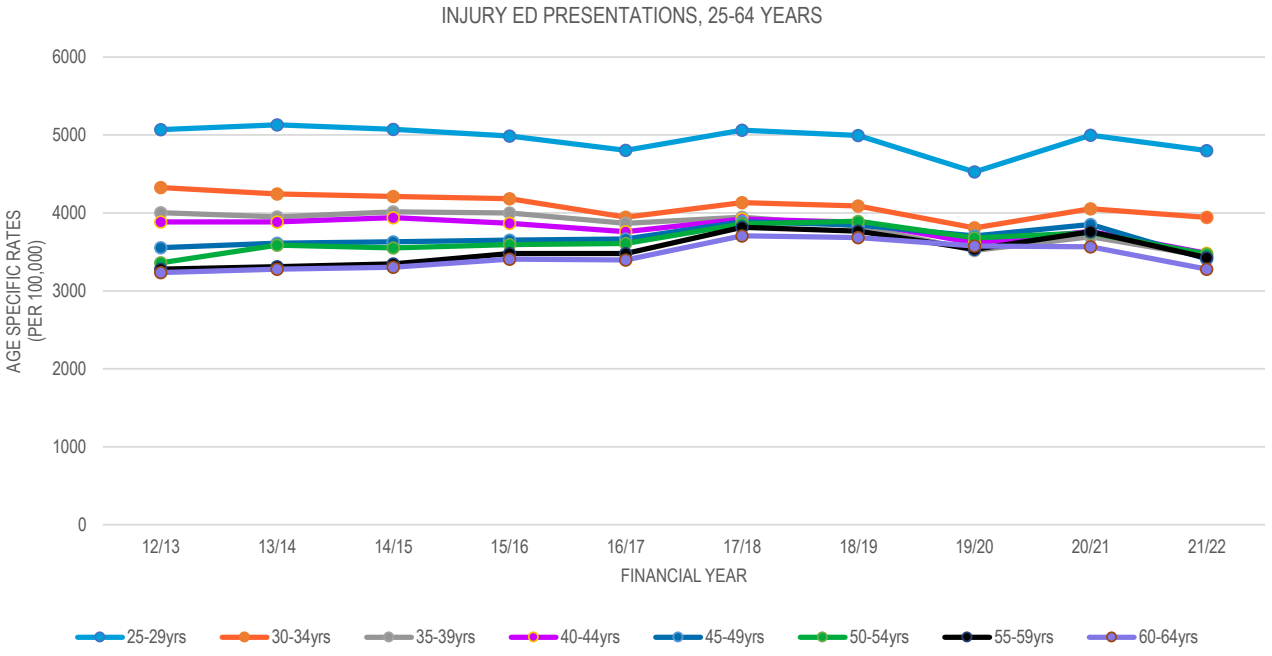


FIGURE 34: TREND IN INJURY ED PRESENTATION RATES PER 100,000 ADULTS, VICTORIA 2012/13–2021/22



HOSPITAL TREATED INJURY – GENDER AND AGE

- Males were overrepresented in hospital injury data for adults aged 25 to 64 years, accounting for 61.4% of hospital admissions (n=28,925) and 59.6% of ED presentations (n=76,719) in 2021/22 (Figure 35 & Figure 36).
- The proportion of injuries was fairly evenly distributed among all age groups for admissions whereas a decrease can be seen with increasing age for ED presentations.

FIGURE 35: ADULT INJURY HOSPITAL ADMISSIONS BY GENDER AND AGE, VICTORIA 2021/22

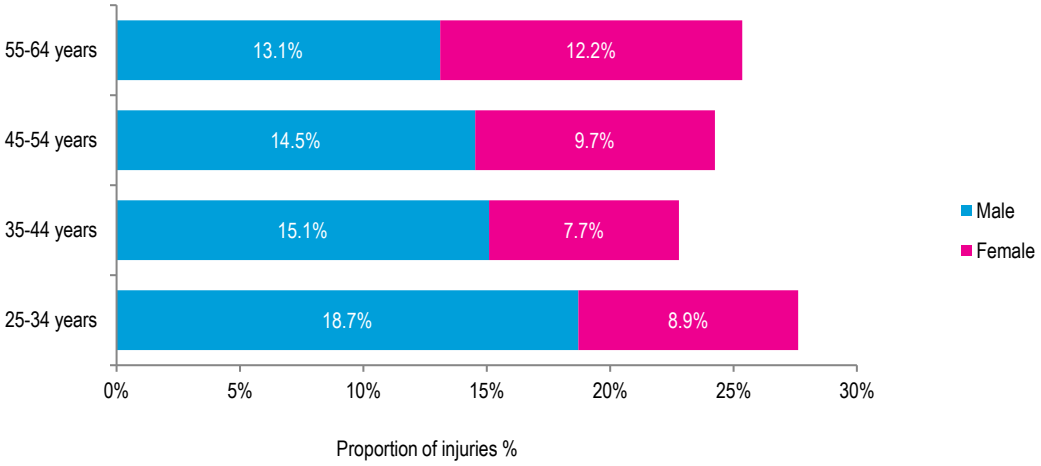
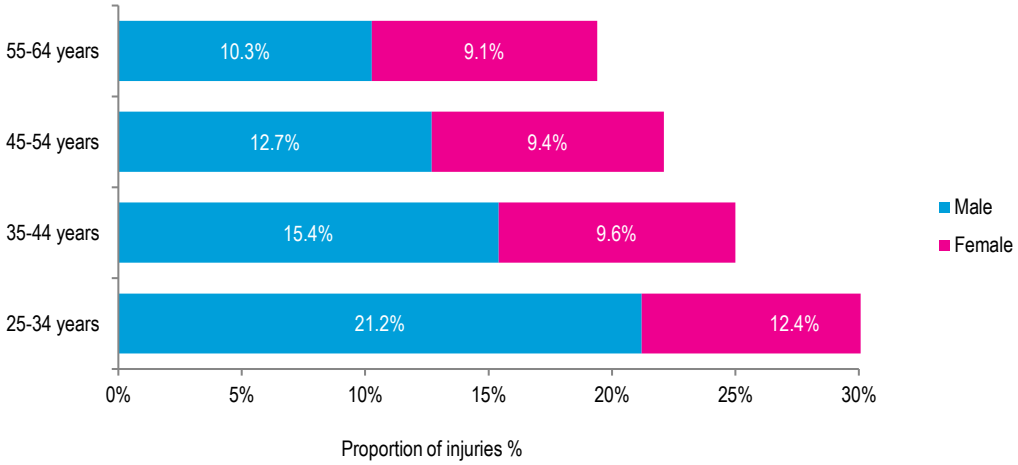


FIGURE 36: ADULT INJURY ED PRESENTATIONS BY GENDER AND AGE, VICTORIA 2021/22



- The total age-specific injury admission and ED presentation rates were higher for males compared with females: 1,676.9 vs. 1,024.0 per 100,000 population (admissions) and 4,447.8 vs. 2,949.3 per 100,000 population (presentations).
- Overall rates (male and female combined) were highest in the 55–64 years age group for admissions and in the 25–34 years group for ED presentations (Table 8).

TABLE 8: FREQUENCY AND AGE-SPECIFIC RATE OF INJURY ADMISSIONS AND ED PRESENTATIONS IN ADULTS BY GENDER AND AGE, VICTORIA 2021/22

AGE GROUP	GENDER	HOSPITAL ADMISSIONS		ED PRESENTATIONS	
		n	RATE PER 100,000 POPULATION	n	RATE PER 100,000 POPULATION
25–34 years	**Male**	8,809	1,774.9	27,292	5,499.1
	Female	4,189	844.7	15,962	3,218.8
	All	12,998	1,310.0	43,254	4,359.4
35–44 years	**Male**	7,106	1,539.6	19,870	4,305.2
	Female	3,619	770.0	12,365	2,630.8
	All	10,725	1,151.3	32,235	3,460.4
45–54 years	**Male**	6,839	1,686.9	16,313	4,023.7
	Female	4,571	1,084.1	12,143	2,880.0
	All	11,410	1,379.6	28,456	3,440.6
55–64 years	**Male**	6,171	1,706.5	13,244	3,662.4
	Female	5,762	1,500.5	11,778	3,067.0
	All	11,933	1,600.4	25,022	3,355.8
All	**Male**	28,925	1,676.9	76,719	4,447.8
	Female	18,141	1,024.0	52,248	2,949.3
	All	47,066	1,346.1	128,967	3,688.5

LEADING CAUSES OF INJURY

- Four of the five leading causes of adult injury were the same for admissions and ED presentations although the ranking on frequency of cases was different (Figure 37 & Figure 38).
- The leading cause of adult injury admissions and ED presentations was falls, accounting for 30.1% (n=14,160) of hospital admissions and 27.0% (n=34,812) of ED presentations.
- Transport accounted for 19.2% of admissions (n=9,059) but only 9.1% of ED presentations (n=11,768).
- Cutting and piercing injuries accounted for 11.1% of admissions (n=5,236) and 12.4% of ED presentations (n=16,007).
- Hit/struck/crush injuries accounted for just 8.5% of admissions (n=4,018) but 16.1% of ED presentations (n=20,804).
- The fifth ranking cause of hospital admissions was natural/environmental/animals related injury (5.5%, n=2,609) whereas for ED presentations it was injuries caused by a foreign body in a natural orifice e.g. ear, nose, eye (5.6%, n=7,158).

FIGURE 37: ADULT INJURY HOSPITAL ADMISSIONS BY CAUSE, VICTORIA 2021/22

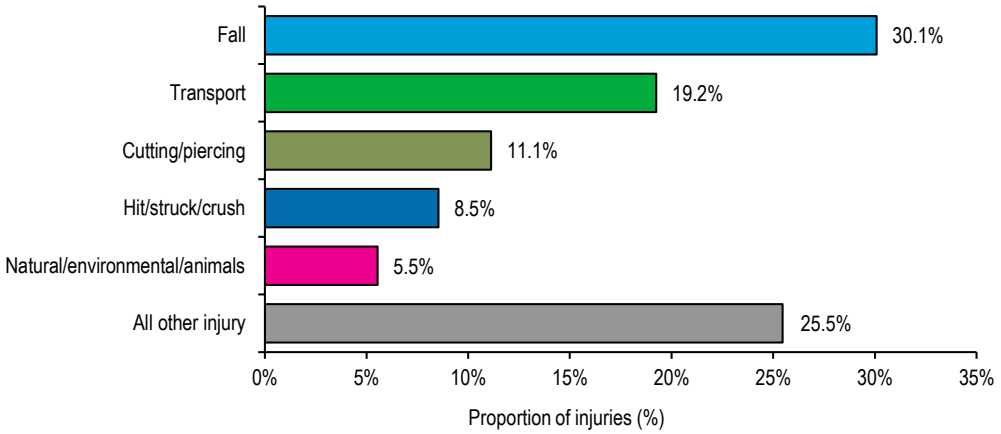
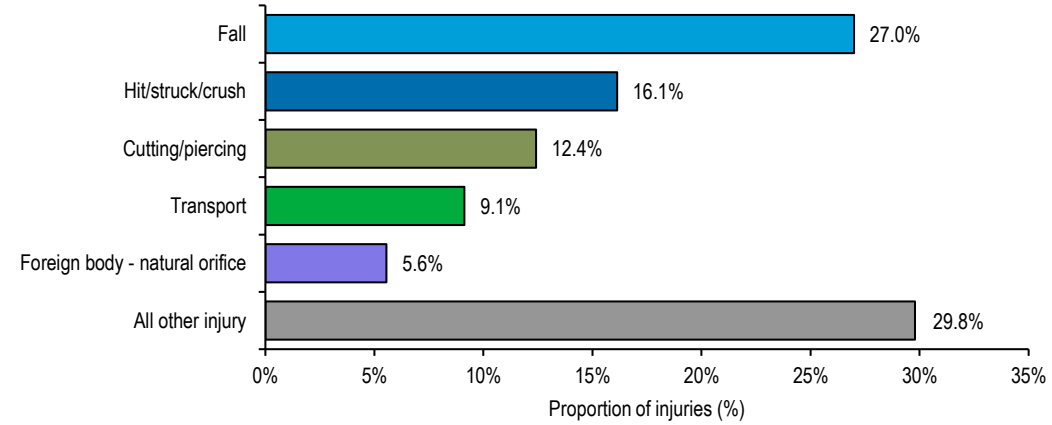


FIGURE 38: ADULT INJURY ED PRESENTATIONS BY CAUSE, VICTORIA 2021/22



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

MAJOR INJURY TYPE (BODY SITE AND NATURE OF INJURY)

- Figure 39 and Figure 40 show the five most common injury types for adult hospital admissions and ED presentations.
- Fracture to the upper limb accounted for 17.0% (n=7,988) of admissions. Fracture to the lower limb was the second most common type of injury requiring hospital admission (11.2%, n=5,281), followed by open wound to upper limb (10.4%, n=4,879).
- Open wound to the upper limb (10.3%, n=13,282), fracture to the upper limb (8.8%, n=11,412) and dislocation, sprain and strain to the lower limb (8.1%, n=10,392) were the most common types of injury among ED presentations.

FIGURE 39: MAJOR INJURY TYPE, ADULT HOSPITAL ADMISSIONS, VICTORIA 2021/22

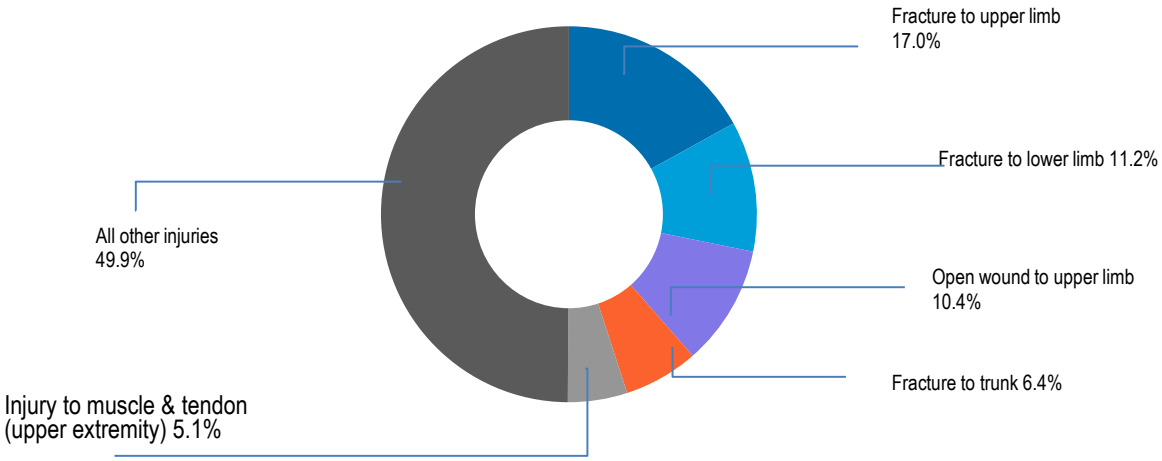
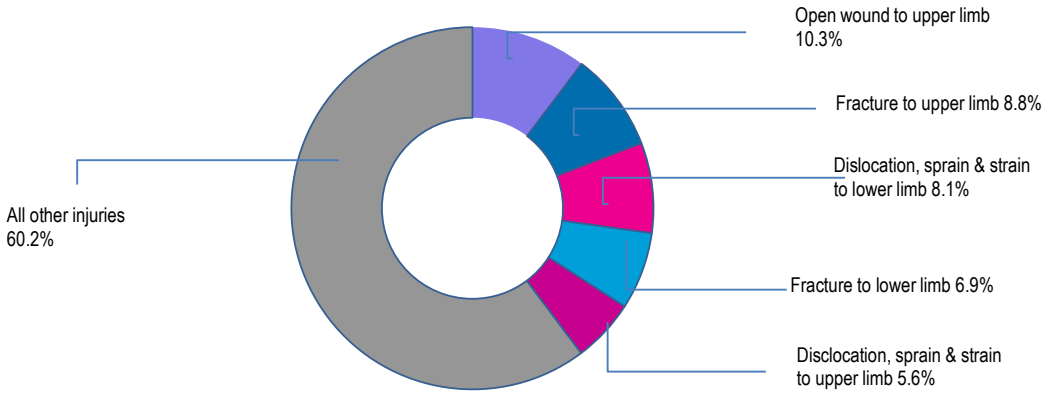


FIGURE 40: MAJOR INJURY TYPE, ADULT ED PRESENTATIONS, VICTORIA 2021/22



SETTING

- Setting where the injury occurred was unspecified in 48.8% of adult injury admissions and 15.0% of adult injury ED presentations.
- Twenty percent of injuries requiring hospital admission (n=9,480) and 42.5% of injuries resulting in ED presentation (n=54,853) occurred in the home (Figure 41 & Figure 42).
- Other settings where injuries to adults commonly occurred were:
  - Roads, streets and highways (14.3% of admissions (n=6,712) and 8.9% of ED presentations (n=11,524)
  - Sports and athletics setting (4.9% of admissions (n=2,319) and 5.2% of ED presentations (n=6,704)
  - Trade and service areas (2.7% of admissions (n=1,293) and 6.4% of ED presentations (n=8,214)

FIGURE 41: ADULT INJURY HOSPITAL ADMISSIONS BY SETTING, VICTORIA 2021/22

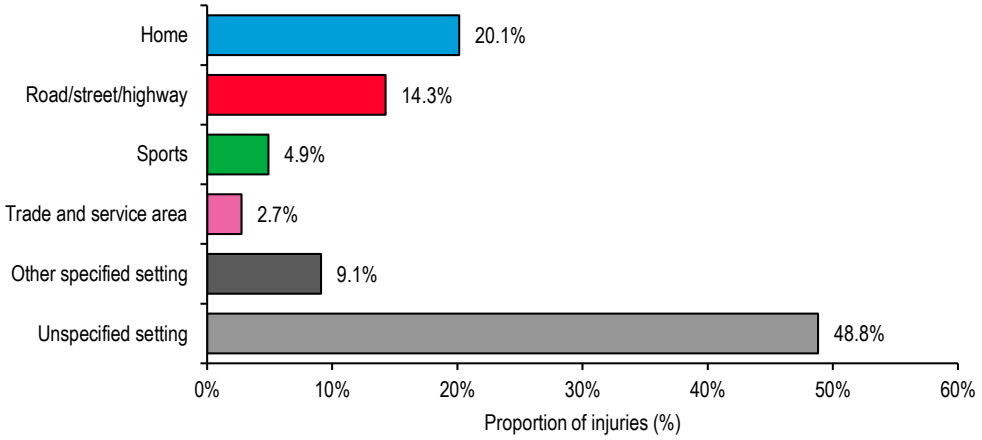
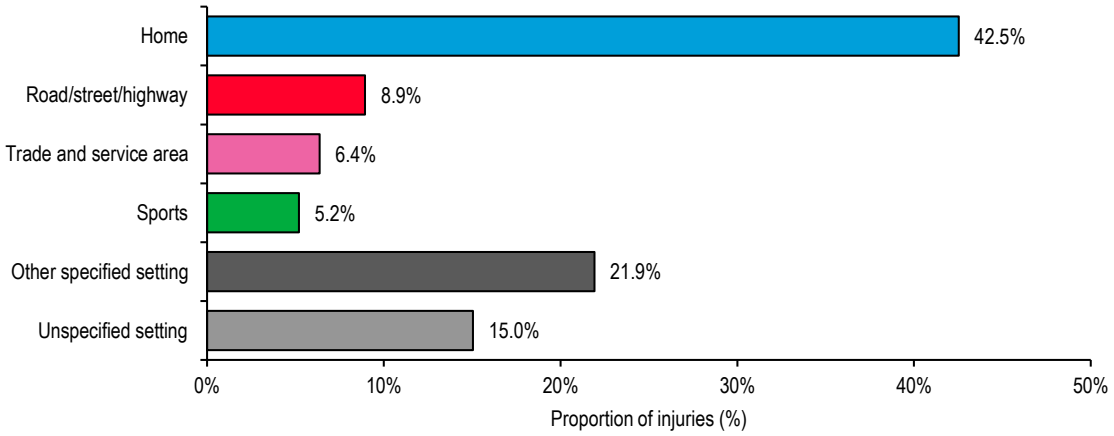


FIGURE 42: ADULT INJURY ED PRESENTATIONS BY SETTING, VICTORIA 2021/22



OLDER ADULTS (65 YEARS AND OLDER)

TREND

- During the 10-year period 2012/13 to 2021/22, there were on average 38,578 injury admissions and 47,692 injury ED presentations per year among older adults aged 65 years and above. The average age-standardised injury rates were 3,936 admissions and 4,526 ED presentations per 100,000 older adults per year.
- The rate of **injury admissions** among older adults increased during the ten years. The modelled trend in rate showed a statistically significant annual increase of 2.5% [95% CI 1.9 to 3.0%].
- The rate of **injury ED presentations** among older adults did not show a statistically significant consistent upward or downward trend over the ten-year period.
- The age-specific rates of **injury admissions** and **injury ED presentations** among the age groups 65–69, 70–74, 75–79, 80–84 and 85+ years are shown in figures 43 and 44, respectively.

FIGURE 43: TREND IN INJURY HOSPITAL ADMISSION RATES PER 100,000 OLDER ADULTS, VICTORIA 2012/13–2021/22

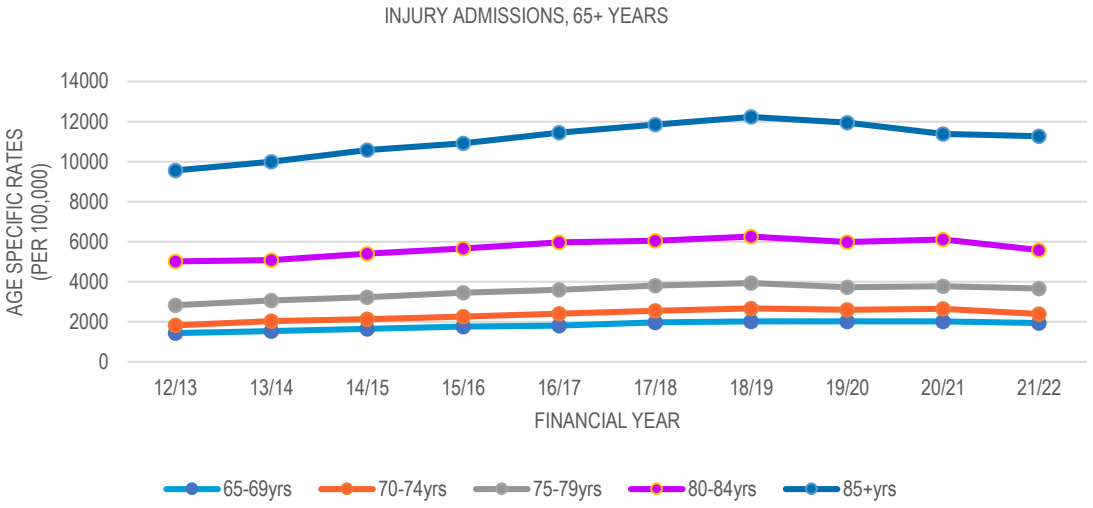
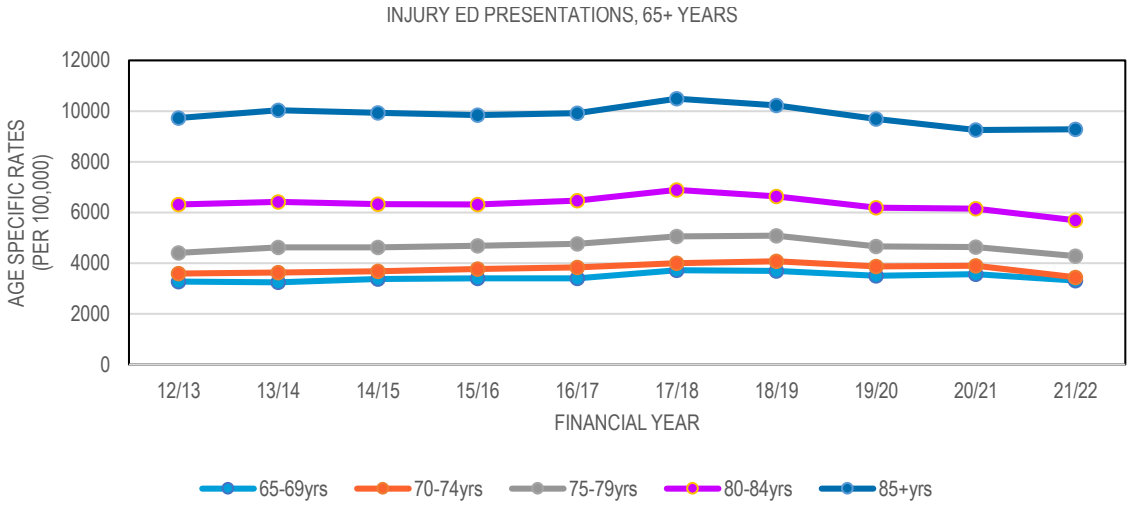


FIGURE 44: TREND IN INJURY ED PRESENTATION RATES PER 100,000 OLDER ADULTS, VICTORIA 2012/13–2021/22



HOSPITAL TREATED INJURY – GENDER AND AGE

- Females were overrepresented in hospital injury data for persons aged 65 years and older. They accounted for 60.7% of hospital admissions (n=26,864) and 55.5% of ED presentations (n=27,823) in 2021/22 (Figure 45 & Figure 46).
- The highest proportion of admissions to hospital occurred among those aged 75-84 years (34.9%, n=15,438) and those aged 85-94 years accounted for 31.3% of admissions (n=13,852). Persons aged 65–74 years accounted for 42.1% (n=21,998) of the injury ED presentations among older adults. The number of ED presentations declined with increasing age.

FIGURE 45: OLDER ADULT INJURY HOSPITAL ADMISSIONS BY GENDER AND AGE, VICTORIA 2021/22

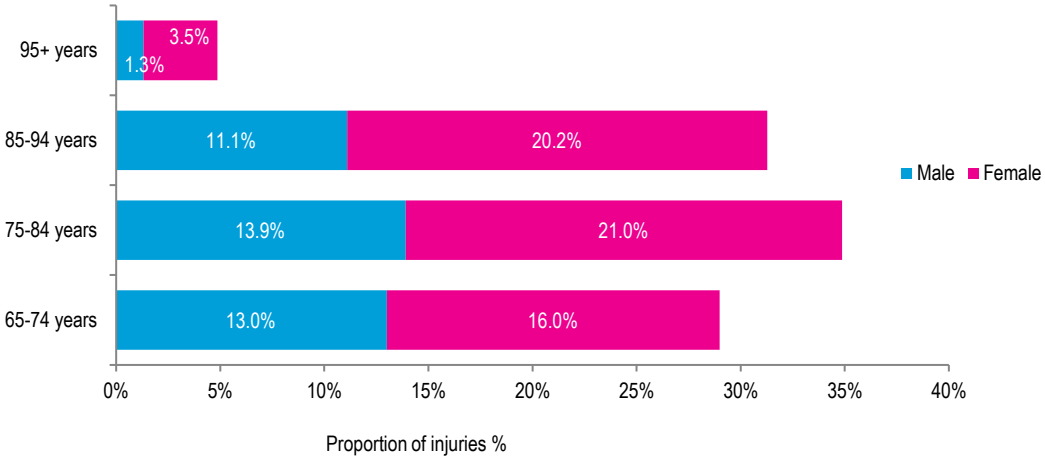
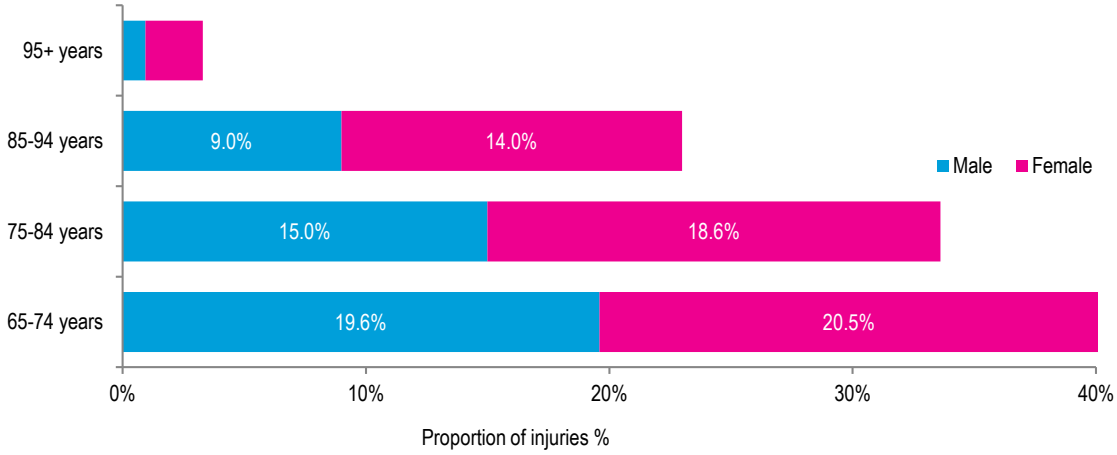


FIGURE 46: OLDER ADULT INJURY ED PRESENTATIONS BY GENDER AND AGE, VICTORIA 2021/22



Proportions for 95+ years: Males 0.9%, Females 2.4%

- The overall age-specific rate of injury admission and ED presentation was higher for females than males: 4,597.4 vs. 3,471.6 per 100,000 population (admissions) and 4,761.1 vs. 4,452.5 per 100,000 population (presentations) (Table 9).
- The rate of admissions and ED presentations increased with age among older adults.

TABLE 9: FREQUENCY AND AGE-SPECIFIC RATE OF OLDER ADULT INJURY HOSPITAL ADMISSIONS AND ED PRESENTATIONS BY GENDER AND AGE, VICTORIA 2021/22

AGE GROUP	GENDER	HOSPITAL ADMISSIONS		ED PRESENTATIONS	
		n	RATE PER 100,000 POPULATION	n	RATE PER 100,000 POPULATION
65–74 years	Male	5,758	2,025.7	9,829	3,457.9
	Female	7,078	2,264.0	10,286	3,290.1
	All	12,836	2,150.5	20,115	3,370.0
75–84 years	Male	6,157	3,800.5	7,521	4,642.5
	Female	9,281	5,001.8	9,340	5,033.6
	All	15,438	4,441.9	16,861	4,851.3
85–94 years	Male	4,915	9,571.8	4,513	8,788.9
	Female	8,937	11,663.4	7,018	9,159.0
	All	13,852	10,824.2	11,531	9,010.5
95+	Male	586	14,391.0	474	11,640.5
	Female	1,568	16,468.9	1,179	12,383.2
	All	2,154	15,846.4	1,653	12,160.7
All	Male	17,416	3,471.6	22,337	4,452.5
	Female	26,864	4,597.4	27,823	4,761.1
	All	44,280	4,077.3	50,160	4,618.8

LEADING CAUSES OF INJURY

- The leading cause of injury admissions and ED presentations for older adults was falls. Falls accounted for more than three-quarters of hospital admissions (78.4%, n=34,731) and more than half of ED presentations (61.4%, n=30,801) in this age group (Figure 47 & Figure 48).
- Transport was the second most common cause of hospital admission (4.7%, n=2,077) and the cause of 4.1% of ED presentations (n=2,044). The second most common cause for ED presentations among older adults was hit/struck/crush (5.9%, n=2,963).
- Hit/struck/crush and cutting/piercing both accounted for 2.3% of admissions (n=1,019 and 1,001 respectively).
- Natural/Environmental/Animals injuries accounted for around 1.7% of admissions (n=765), while injuries caused by a foreign body in a natural orifice, e.g. ear, nose, eye, accounted for 2.6% (n=1,307) of ED presentations.

FIGURE 47: OLDER ADULT INJURY HOSPITAL ADMISSIONS BY CAUSE, VICTORIA 2021/22

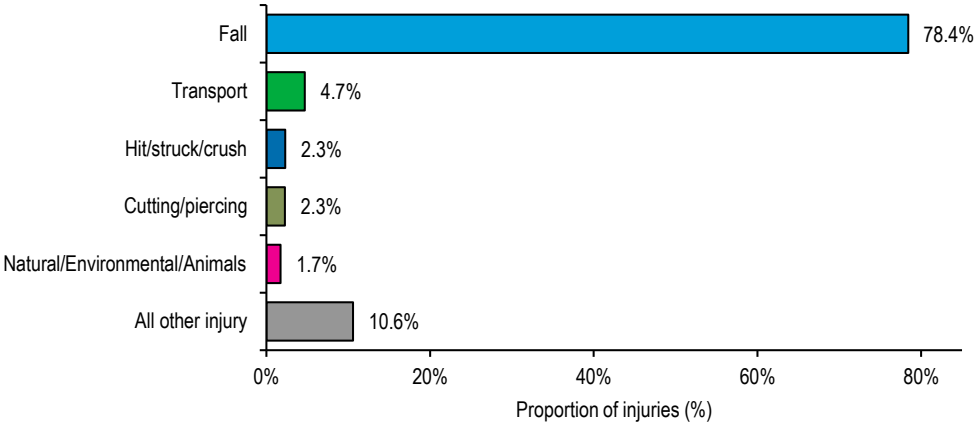
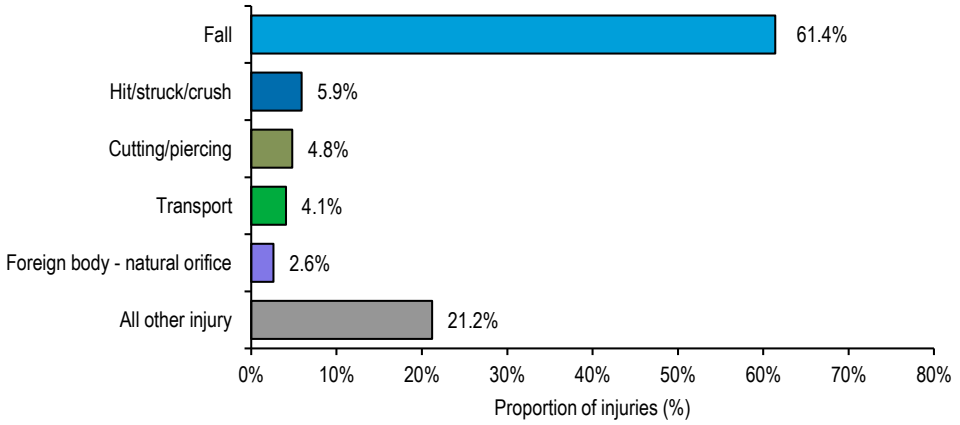


FIGURE 48: OLDER ADULT INJURY ED PRESENTATIONS BY CAUSE, VICTORIA 2021/22



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

MAJOR INJURY TYPE (BODY SITE AND NATURE OF INJURY)

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

- Fracture to the lower limb accounted for 18.1% of injury hospital admissions (n=8,028) and 12.5% (n=6,249) of ED presentations.
- Fractures to the trunk accounted for 14.0% of hospital admissions (n=6,208) and 5.8% of ED presentations (n=2,908).
- Fracture to the upper limb accounted for 12.5% (n=5,520) of hospital admissions and 10.3% (n=5,157) of ED presentations.
- Open wounds to the head/face/neck accounted for 7.5% (n=3,315) of hospital admissions and 5.2% (n=2,604) of ED presentations.
- Superficial injuries to the head/face/neck accounted for 5.2% (n=2,308) of hospital admissions.
- Open wounds to the upper limb (5.3%, n=2,646) were also common among ED presentations.

FIGURE 49: MAJOR INJURY TYPE, OLDER ADULT HOSPITAL ADMISSIONS, VICTORIA 2021/22

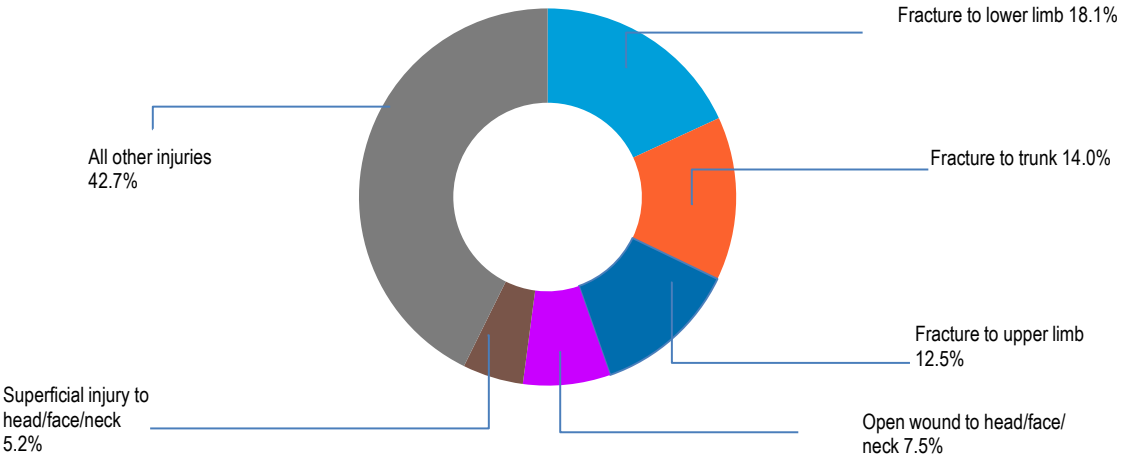
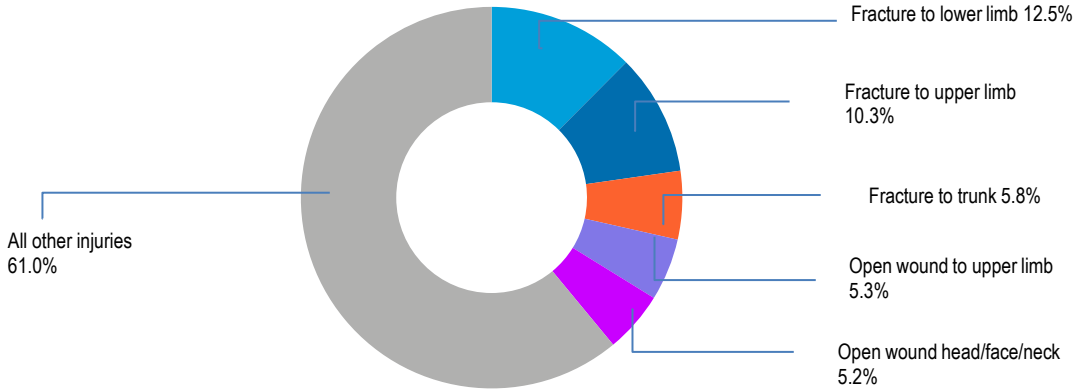


FIGURE 50: MAJOR INJURY TYPE, OLDER ADULT ED PRESENTATIONS, VICTORIA 2021/22



SETTING

- Setting where the injury occurred was unspecified in 24.6% of older adult injury admissions and 12.4% of older adult injury ED presentations.
- Around 46% of older adult injuries requiring hospital admission (n=20,287) and more than half of ED presentations (61.1%, n=30,626) occurred in the home (Figure 51 & Figure 52).
- Other settings where injuries to older adults commonly occurred were:
  - Residential institutions (15.4% of admissions (n=6,803) and 7.4% of ED presentations (n=3,705)
  - Roads, streets and highways (6.8% of admissions (n=3,022) and 6.1% of ED presentations (n=3,047)
  - Trade and service areas (2.5% of admissions, n=1,093) and 1.2% of ED presentations (n=585)

FIGURE 51: OLDER ADULT INJURY HOSPITAL ADMISSIONS BY SETTING, VICTORIA 2021/22

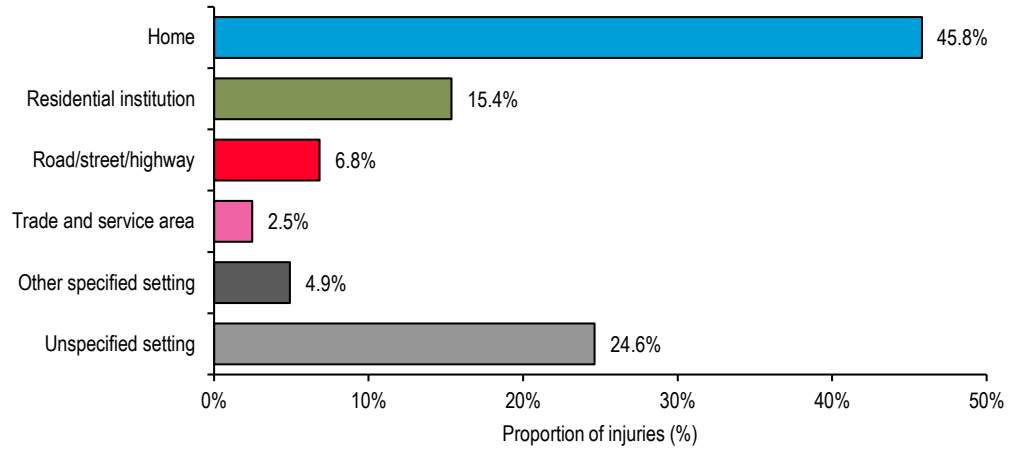
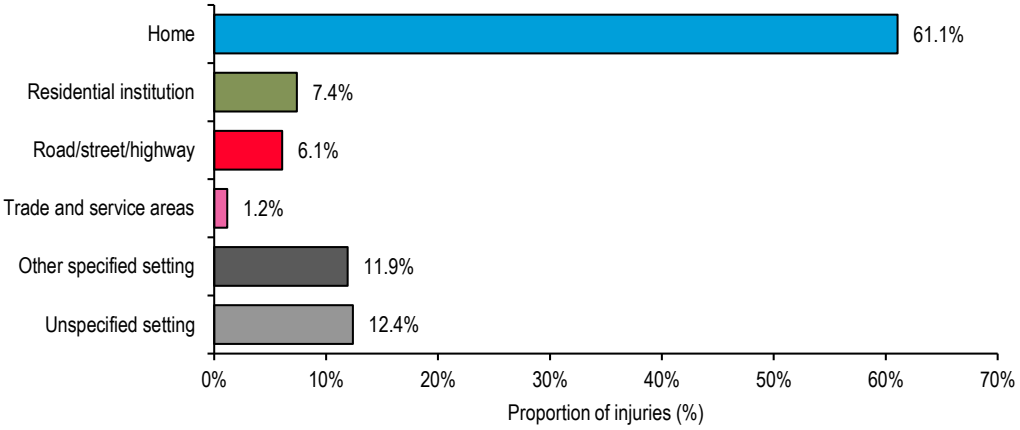


FIGURE 52: OLDER ADULT INJURY ED PRESENTATIONS BY SETTING, VICTORIA 2021/22



APPENDIX 1

VISU DEFINITIONS

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

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

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

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

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

BOX 1: DEFINITION OF SETTINGS (PLACE OF OCCURRENCE) AND INJURY SEVERITY

SETTINGS DEFINITIONS

The settings are mutually exclusive. For hospital admissions all settings are defined exclusively by place of occurrence. For ED presentations text descriptions were also used to identify some settings that were not covered by existing location or activity coding (i.e., area of still water/ stream of water/ large area of water/ beach & forest/ desert/ other specified countryside).

1. 'Home' includes injuries occurring in homes, drive-ways, apartments, boarding houses, caravans, farmhouses, swimming pools/tennis courts in private residences.
2. 'Sports setting' includes injuries occurring at any sports and athletics area.
3. 'Road/street/highway' includes injuries occurring on roadways, sidewalks and cycle-ways next to roads.
4. 'Residential institution' includes injuries occurring in prisons, juvenile detention centres, military camps, orphanages, aged care facilities (nursing home/old people's home/retirement village). Most hospital admissions for this setting were for injury occurring in aged care facilities (95%).
5. 'Health service area' includes injuries occurring to any person (i.e., patient, visitor) in hospitals, health centres, day procedure centres, hospices, outpatient clinics. Data presented here exclude 'medical injuries' as is normal practice for VISU injury reports.
6. 'Trade and service area' includes injuries occurring in shops/stores, commercial garages, office buildings, cafes/ hotels/restaurants, airports, bus/radio/railway/television stations.
7. 'School & other educational institution' includes injuries occurring in boarding/residential schools, colleges, day nurseries, institutes for higher education/universities, kindergartens.
8. 'Other institution & public administrative area' includes injuries occurring in buildings (including adjacent grounds) used by the general public such as assembly hall, church, cinema, clubhouse, court house, dancehall, gallery, library, movie house, museum, music hall, opera house, public hall, theatre, youth centre.
9. 'Area of still water/ stream of water/ large area of water/ beach" includes injuries occurring at a dam, fen, marsh/ swamp, pond, pool, reservoir, brook, canal, creek, river, stream, bay, lake, ocean, sea, foreshore, sand dunes.
10. 'Farm' includes injuries occurring in farm buildings/ranches or on land under cultivation, excluding the farm home.
11. 'Forest/ desert/ other specified countryside" includes injuries occurring in a forest, desert, cave, gorge, mountain, outback, prairie, and wilderness. Note that within this report categories 9, 10, and 11 are included in 'other specified location'.
12. 'Other specified location' includes injuries occurring in campsites, public place NOS, park NOS, railway line, zoo, parking lot, town camps.
13. 'Unspecified setting' includes injuries occurring in an unspecified place of occurrence.

INJURY SEVERITY: DEFINITION OF 'SERIOUS' INJURY

Each hospital admission record was given an International Classification of Disease (ICD)-based Injury Severity Score (ICISS). These were newly-developed ICISS scores derived from hospital admissions data as well as linked death data (Berecki-Gisolf et al., 2022). The ICISS is a score between 0 and 1 and involves estimating probability of death for ICD injury diagnosis codes in a patient's hospital record (Osler et al., 1996). Determining an ICISS score involves calculating a Diagnosis-specific Survival Probability (DSP) for each individual injury diagnosis, using a large sample of injured people. A DSP is the proportion of cases with a certain injury diagnosis in which the patient does not die, or in other words, a given DSP represents the likelihood that a patient will survive a particular injury. Each patient's final ICISS score can be calculated by multiplying the probabilities of surviving each of their injuries individually or by using only the probability of surviving the 'worst' injury: in this report, the 'worst injury' method is used. A severity threshold of ICISS ≤0.941 is used to classify hospitalisations as 'serious': this is equivalent to a survival probability of 94.1% or less (Davie et al., 2007). For this edition the severity scores have been calculated using DSPs derived using Victorian data (Berecki-Gisolf et al., 2022); the worst injury, age-specific ICISS scores are applied.

Nota bene: the newly derived DRGs are based on recent Victorian data: these DRGs are lower than those applied to calculate ICISS in previous E-Bulletins. Serious injury rates presented in this E-Bulletin are relatively low. Serious injury frequencies and rates can be used for comparing groups within each report but should not be used for comparisons across reports that utilise different versions of ICISS.

Berecki-Gisolf, J, Fernando, D T, & Elia, A. (2022). International classification of disease based injury severity score (ICISS): A data linkage study of hospital and death data in Victoria, Australia. Injury. 53:904-911.

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

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

BOX 2: COMMUNITY INJURY

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

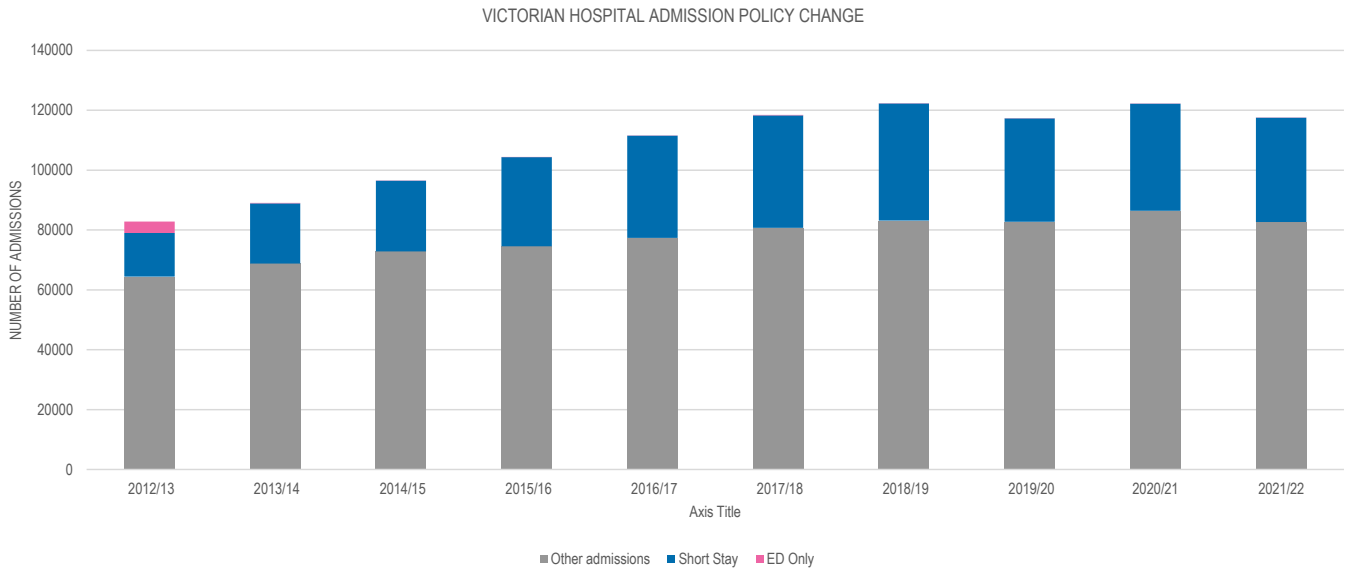
Australian Institute of Health and Welfare, McKenna, K & Harrison, JE (2012). Hospital separations due to injury and poisoning, Australia, 2008-09. Injury research and statistics series no. 65. Cat. No. INJCAT 141. Canberra:AIHW.

BOX 3: VICTORIAN HOSPITAL ADMISSION POLICY

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

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

FIGURE A1. NUMBER OF UNINTENTIONAL INJURY ADMISSIONS TO VICTORIAN HOSPITALS IN 2012/13 TO 2021/22. ADMISSIONS THAT WERE LIMITED TO STAY IN THE ED AND ADMISSIONS THAT WERE LIMITED TO STAY IN SHORT STAY OBSERVATION UNITS ARE SHOWN SEPARATELY.



APPENDIX 2

VISU DATA SOURCES AND CASE SELECTION

1. HOSPITAL ADMISSIONS

1.1 Source: Victorian Admitted Episodes Dataset (VAED)

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

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

The VAED data items held by VISU include:

1.1.1 Demographic/administrative items

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

1.1.2 Injury surveillance items

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

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

1.2 Case selection (for this report):

Case selection for incidents

- Victorian hospital admissions recorded on the VAED occurring 1 July 2021 to 30 June 2022, coded according to the 11th edition of ICD-10-AM (NCCH, July 2019).
- Cases with a gender coded as ‘Indeterminate’ or ‘Other’ have been removed from this report due to data confidentiality concerns related to small numbers.
- Cases with an external cause of morbidity in ICD-10-AM range V00-X59 (i.e. unintentional section of Chapter XX External causes of morbidity and mortality).
- Cases with a community injury (in ICD-10-AM range S00-T75 or T79) in the first diagnosis code (see Box 2 in Appendix 1).
- Mode of admission has any value except those indicating that transfer from another hospital has occurred or that the record is a ‘statistical separation’- a change of care type within a hospital. The aim of these omissions is to reduce over-counting of cases and to provide an estimated incidence of admission.
- Patients admitted for day-treatments for the same injury within a course of 30 days, with an admission type indicating it was a “planned” admission were removed. These included, for example, procedures such as hyperbaric oxygen therapy and removal of catheters etc.
- VAED cases recorded as not having spent the entire episode in the ED (see Box 3 in Appendix 1).

Case selection for bed-days

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

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

2. EMERGENCY DEPARTMENT PRESENTATIONS

2.1 Source: Victorian Emergency Minimum Dataset (VEMD)

The Victorian Injury Surveillance System began in the Royal Children's Hospital in 1988. It expanded to adult hospitals over time with a large boost in 1995 when the Department of Human Services absorbed the injury surveillance minimum dataset into the Victorian Emergency Minimum Dataset (VEMD) that collects demographic, administrative and clinical data from public hospitals. From January 2004, VEMD data are collected by all Victorian public hospitals that provide a 24-hour ED service. In July 2011 Bass Coast Regional Health began contributing to the VEMD taking the total contributing hospitals to 39.

Emergency Department presentations for injury are extracted from the VEMD by the Victorian DH and are supplied annually in unit record format to VISU. Data for this edition of the E-Bulletin were coded to the Victorian Emergency Minimum Dataset (VEMD) User Manual 26th Edition, published by the DH. Prior to the hospital admission policy change in 2012/13, the VEMD contained cases that were treated and discharged from the ED within 4 hours from the time patient management commenced (i.e. 'non-admissions') and cases that were defined as 'admissions' according to the Victorian hospital admission policy at the time (cases physically transferred to another unit in the same hospital and those treated entirely within the ED for longer than 4 hours). Post 2012/13 cases that are treated entirely within the ED for longer than 4 hours are not considered as admissions (see Box 3 in Appendix 1).

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

The VEMD data items held by VISU include:

2.1.1 Demographic/administrative items

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

2.1.2 Injury surveillance items

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

2.2 Case selection (for this report)

- Victorian hospital ED presentations recorded on the VEMD occurring 1 July 2021 to 30 June 2022 coded according to the Victorian Emergency Minimum Dataset (VEMD) User Manual 26th edition.
- Cases with a gender coded as 'Indeterminate' or 'Other' have been removed from this report due to data confidentiality concerns related to small numbers.
- Cases coded as unintentional injury (VEMD human intent=1).
- Incident cases (excludes return visits and pre-arranged visits).

MONASH University

ACCIDENT RESEARCH CENTRE

How to access VISU data

VISU collects and analyses information on injury problems to underpin the development of prevention strategies and their implementation. VISU analyses are publicly available for teaching, research and prevention purposes. Requests for information can be lodged via the data request form on the VISU website (www.monash.edu/muarc/visu) or by contacting the VISU office by phone (03 9905 1805).

VISU staff

Director: Associate Professor Janneke Berecki-Gisolf
Senior Research Fellow: Dr Dianne Sheppard
Senior Research Officer: Voula Stathakis
Data Analyst: Dr Jane Hayman
Data Analyst: Ehsan Rezaei-Darzi
Statistical Advisor: Dr Angelo D'Elia
Administration Officer: Samantha Bailey

Contact us

Monash University Accident Research Centre
Building 70, 21 Alliance Lane
Monash University, Clayton Campus
Victoria, 3800
Phone: (03) 9905 1805
Email: visu.enquire@monash.edu

Other information regarding VISU, all E-Bulletins and other VISU publications can be found on our internet home page

www.monash.edu/muarc/visu

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VICTORIA State Government | Department of Health

VISU has developed three injury atlases:

- Hospital-treated unintentional injury in Victoria 2008/09–2020/21, available at: https://vicinjuryatlas.org.au/unintentional/
- Hospital-treated transport injury in Victoria 2008/09–2020/21, available at https://vicinjuryatlas.org.au/transport/
- Hospital-treated sport injury in Victoria 2008/09–2020/21, available at https://vicinjuryatlas.org.au/sport/