

# Pedestrian Injuries

On average, each day approximately 20 people visit an emergency department and 3 are admitted to a hospital for a transport-related pedestrian injury. The highest rates for emergency department visits are among teens and the highest hospitalization rates are found among seniors.

## Results

During the 2005/06 fiscal year, there were a total of 6,708 emergency department visits and 967 hospitalizations for transport-related pedestrian injuries. (See Methods Section for Data Sources). These numbers translate into provincial rates of 54.0 per 100,000 population for emergency department visits and 7.5 per 100,000 for hospitalizations (Table 1).

Overall, males represented a slightly higher proportion of emergency department visits and hospitalizations for pedestrian injuries. The highest number and rates of emergency department visits were found among teenagers 15 to 19 years of age, whereas for hospitalizations, adults over 70 years of age had the highest provincial rates.

Injury rates varied by region, with the highest rate of both emergency department visits and hospitalizations for transport related pedestrian injuries, reported in Toronto, Ontario (Table 1).

For emergency department visits and hospitalizations, injuries to the lower limbs were the most common, accounting for 39% and 46% of all injuries respectively (Figure 2). Injuries to the head were the second most common for both emergency department visits and hospitalizations, accounting for 17% and 23% of all injuries respectively. For emergency department visits, injuries occurred from incidents involving collisions with cars, vans, and pick-up trucks followed by incidents involving collisions with pedal cycles. For hospitalizations, injuries were caused most commonly by collisions with cars, vans, and pick-up trucks followed by incidents involving collisions with heavy transport vehicles or buses.

Over 80% of individuals who visited an emergency department for traffic related pedestrian injuries were discharged to their place of residence. Close to 10% were admitted as an inpatient to another unit directly from ambulatory care. For hospitalized cases, approximately 17% were transferred to another facility providing inpatient hospital care, which includes acute, sub acute, and rehabilitation care.

FIGURE 1. Emergency department visits for pedestrian injuries by age and sex (Ontario, 2005/2006)

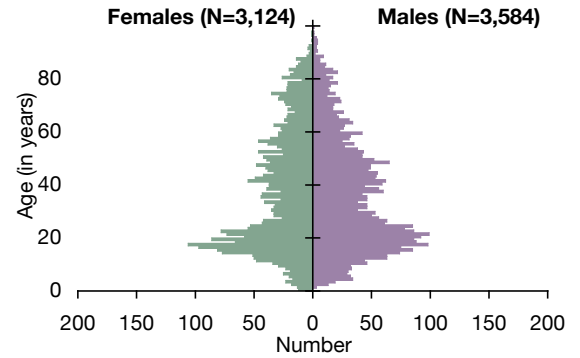
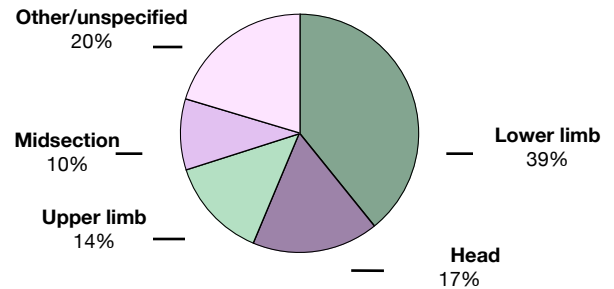


FIGURE 2. Nature of pedestrian injuries (Most responsible diagnosis, Ontario, 2005/2006)

### Emergency Department Visits



### Hospitalizations

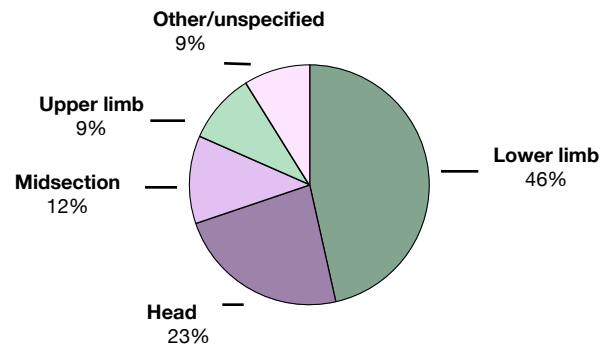


TABLE 1. Regional comparison of pedestrian injuries (Ontario, 2005/06)

	South West	Central South	Central West	Central East	Toronto	East	North	Ontario
<b>Emergency Department Visits</b>								
Number	849	706	1,005	939	1,868	750	479	6,708
Rate per 100,000 <sup>a</sup>	54.1	58.9	43.2	43.4	70.9	45.5	55.7	54.0
Average Age	34	37	34	34	39	36	36	36
% Male	53	54	54	55	53	52	56	53
<b>Hospitalizations</b>								
Number	95	112	120	127	295	129	73	967
Rate per 100,000 <sup>a</sup>	5.5	8.6	5.1	5.7	10.9	7.5	8.4	7.5
Average Age	47	43	40	45	45	45	39	43
% Male	53	52	57	50	57	67	60	57

a. Age-standardized rate per 100,000 population. Note: Region of residence unknown/outside of Ontario for 112 emergency department visits and 16 hospitalizations.



## Ontario Injury Compass

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**TABLE 2. Regional comparison of pedestrian injuries highlighting the most vulnerable age groups for each of emergency department visits and hospitalizations (Ontario, 2005/06)**

	South West	Central South	Central West	Central East	Toronto	East	North	Ontario
<b>Emergency Department Visits- Rate per 100,000<sup>a</sup> (Number)</b>								
10-14 years	68.3 (74)	71.7 (58)	57.2 (96)	63.7 (102)	87.5 (130)	70.3 (77)	79.6 (47)	70.6 (589)
15-19 years	122.9 (136)	114.7 (94)	91.3 (147)	94.6 (149)	99.8 (147)	100.7 (110)	134.3 (83)	105.5 (875)
20-24 years	102.8 (114)	88 (71)	72.2 (118)	72 (103)	107.8 (194)	62.4 (69)	69.7 (40)	85.8 (726)
25-29 years	40.4 (40)	59.7 (43)	36.4 (59)	45.9 (57)	67.7 (151)	48.2 (51)	55.4 (25)	52.6 (437)
30-34 years	44.4 (45)	50 (38)	31.2 (56)	38 (55)	50.1 (118)	35.5 (40)	50.3 (26)	43.3 (390)
<b>Hospitalizations- Rate per 100,000<sup>a</sup> (Number)</b>								
70-74 years	14.6 (8)	15.7 (7)	11.8 (7)	12 (8)	16.1 (14)	11 (6)	8.9 (3)	13.2 (53)
75-79 years	10.7 (5)	30.5 (12)	4.2 (2)	19.5 (10)	25.8 (19)	11.1 (5)	7.4 (2)	16.7 (55)
80-84 years	20.6 (7)	20.9 (6)	24.8 (8)	17.3 (6)	26 (14)	21 (7)	22.6 (4)	22.2 (52)
85-89 years	30.4 (5)	23 (3)	13.7 (2)	18.3 (3)	24.2 (6)	30.4 (5)	12 (1)	22.7 (25)
90+ years	23.1 (2)	0 (0)	28 (2)	25 (2)	13.9 (2)	12 (1)	25.9 (1)	17.5 (10)

a. Age-specific rate per 100,000 population. Note: Region of residence unknown/outside of Ontario for 112 emergency department visits and 16 hospitalizations.

Approximately 50% were discharged home and another 15% were discharged home with support services. Fewer than 1% of individuals died after arrival in the emergency department and approximately 4% died after hospital admission. The 967 hospitalized cases accounted for more than 8,627 days in acute care hospitals with an average length of stay of 8.92 days.

## Discussion

This Compass highlights patterns of Ontario emergency department visits and hospitalizations for pedestrian injuries. The high rates observed among those in their teen years as well as in seniors warrants, at times, very different strategies and techniques to prevent injuries and death in these distinct age groups. With Ontario's aging population, pedestrian injuries among seniors are an especially important consideration.<sup>1</sup>

Older adults who suffer an injury as a pedestrian often spend the longest time in the hospital and have the worst outcomes, compared to other age groups.<sup>2</sup>

On a positive note, the Canadian Institute for Health Information reported that hospital admissions for pedestrian injuries are declining, especially in children.<sup>2</sup> This decline may be a result of speed limit reductions around child-dense areas such as schools and playgrounds as well as education regarding the dangers of walking between parked cars and awareness of children in driveways.<sup>2</sup>

Pedestrian injuries among older teenagers have been associated with numerous individual, interpersonal, and environmental factors.<sup>3</sup> For example, carrying a backpack while crossing a street has been found to reduce an individual's walking speed, be associated with leaving less safe time to spare after crossing, and experiencing more hits or close calls with traffic when crossing.<sup>3</sup> Similar findings have been found when looking at the association between cell phone use by child pedestrians and crossing a street.<sup>4</sup>

## References

1. Government of Ontario. Ontario Road Safety Annual Report 2003. Toronto: Safety Policy & Education Branch, Ministry of Transportation; 2005.
2. Ontario Injury Prevention Resource Centre. CIHI report highlights pedestrian injury, 2007. [www.oninjuryresources.ca/news\\_archive/cihi\\_report\\_highlights\\_pedestr.htm](http://www.oninjuryresources.ca/news_archive/cihi_report_highlights_pedestr.htm)
3. Schwebel DC, Pitts DD, Stavrinou D. The influence of carrying a backpack on college student pedestrian safety. *Accid Anal Prev* 2009; 41(2):352-6.
4. Stavrinou D, Byington KW, Schwebel DC. Effect of cell phone distraction on pediatric pedestrian injury risk. *Pediatrics* 2009; 123(2):e179-85.
5. Oxley J, Congiu M, Whelan M, D'Elia A, Charlton J. Teaching young children to cross roads safely. *Annu Proc Assoc Adv Automot Med*. 2008;52:215-23.

## Managing the risk

Pedestrian injuries affect people of all ages. Public health can work with communities in developing strategies to encourage people to:

- ❖ Walk on the sidewalk. If there is no sidewalk, walk facing traffic.
- ❖ Cross at crosswalks or intersections and obey traffic signals. Look left, right, and then left again for traffic before crossing. Watch for traffic turning at intersections and leaving driveways.
- ❖ See and be seen. Make eye contact with drivers when crossing busy streets. Wear bright colours or reflective clothing to be seen.
- ❖ Supervise children when they are near traffic. Teach and reinforce proper techniques for crossing the road and walking near traffic.

Examples of preventive strategies, which public health can help to implement in their communities:

- ❖ Area-wide traffic calming, such as slowing down and redistributing traffic or changes to the road environment
- ❖ Safety education for pedestrians, especially children<sup>5</sup>
- ❖ Education on increasing visibility of pedestrians, such as reflective clothing or flashing lights

## For Further Information

Ontario Ministry of Transportation- Pedestrian Safety

[www.mto.gov.on.ca/english/safety/quicknotes/pedestrian.htm](http://www.mto.gov.on.ca/english/safety/quicknotes/pedestrian.htm)

SMARTRISK Catalogue of Best Practices

[www.smartrisk.ca/ListingSections.aspx?dd=4&sd=207](http://www.smartrisk.ca/ListingSections.aspx?dd=4&sd=207)

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Retting RA, Ferguson SA, McCart AT. A review of evidence-based traffic engineering measures designed to reduce pedestrian-motor vehicle crashes. *Am J Public Health* 2003;93:1456-63.

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## Methods

Emergency department data were obtained from the National Ambulatory Care Reporting System and acute care hospitalization data were obtained from the Discharge Abstract Database at the Canadian Institute for Health Information for the 2005/06 fiscal year. ICD-10 coding (V01-V09) was used to isolate all emergency department visits and hospitalizations for transport related pedestrian injuries. Note that some persons were seen in an emergency department and then admitted to hospital; however, persons can be admitted to hospital without visiting an emergency department. Regions were defined according to place of residence using the Ontario Ministry of Health Region Codes. Deaths occurring outside of the hospital setting were not included in this analysis.