

Cycling Injuries

On average, each day close to 80 people visit an emergency department for cycling injuries. Children and youth, particularly boys, represent the majority of cases.

Results

During the 2005/06 fiscal year, there were a total of 26,300 emergency department visits and 1,374 hospitalizations for cycling injuries (See Methods Section for Data Sources). These numbers translate into provincial rates of 218.3 per 100,000 population for emergency department visits and 11.1 per 100,000 for hospitalizations (Table 1).

For emergency department visits, peaks in the numbers of cycling injuries were seen in males and females 10- 14 year olds followed by 15-19 year olds and 5-9 year olds (Figure 1).

Falling or being thrown from a pedal cycle was the most common type of injury, representing 64% of all Ontarians hospitalized with a cycling injury, followed by a collision with a motor vehicle, which accounted for close to 20% of all cycling injury hospitalizations.

For emergency department visits and hospitalizations, the most common injuries were those to the upper limb, followed by the head, and lower limb, for each of emergency department visits and hospitalizations respectively (Figure 2). More specifically, open wound of the head was the most common injury seen in emergency departments followed by fracture of forearm and fracture of shoulder/upper arm. For hospitalizations, fracture of the forearm, fracture of lower leg and intracranial injury were most common.

Injury rates varied by region, with the highest rate of emergency department visits for cycling injuries reported in the north and the highest rate of hospitalizations reported in the central south region of Ontario (Table 1). In all regions, the highest rate of emergency department visits were seen among children 10 to 14 years of age. The highest rates of hospitalizations for cycling related injuries were also seen among this age group, with the exception of the northern region, which had a slightly higher rate of hospitalizations among teenagers 15 to 19 years of age (Table 2).

Over 90% of individuals who visited an emergency department for injuries due to cycling were discharged to their place of residence. Approximately 4% were admitted into a reporting facility as an inpatient directly from ambulatory care. For hospitalized

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

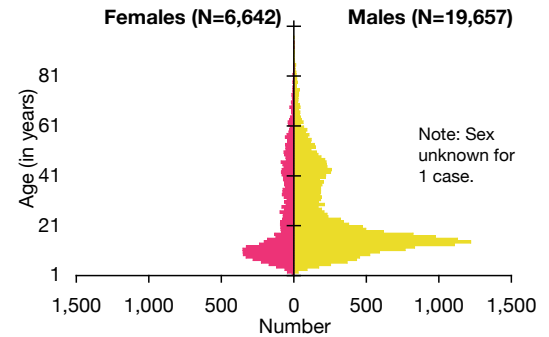


FIGURE 2. Site of injury for cycling injuries (Most responsible diagnosis, Ontario, 2005/2006)

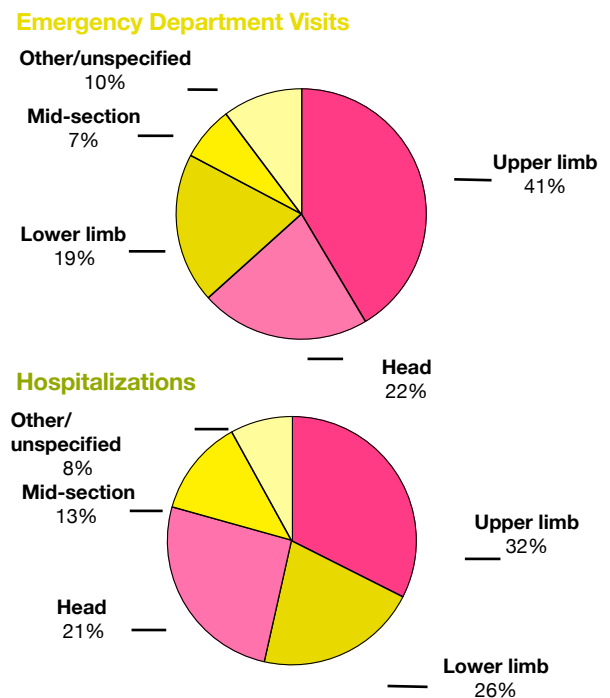


TABLE 1. Regional comparison of cycling injuries (Ontario, 2005/06)

	South West	Central South	Central West	Central East	Toronto	East	North	Ontario
Emergency Department Visits								
Number	4,426	2,904	4,084	4,189	4,205	3,522	2,572	26,300
Rate per 100,000 ^a	289.5	252.8	173.0	189.8	169.5	223.6	312.4	218.3
Average Age	24	25	22	21	29	24	21	24
% Male	74	77	75	75	73	73	77	75
Hospitalizations								
Number	174	178	226	219	253	173	125	1,374
Rate per 100,000 ^a	10.9	14.9	9.5	9.8	9.9	10.3	14.6	11.1
Average Age	34	31	29	28	34	38	26	32
% Male	75	78	78	80	77	72	76	77

a. Age-standardized rate per 100,000 population. Note: Region of residence unknown/outside of Ontario for 398 emergency department visits and 26 hospitalizations.



Ontario Injury Prevention Resource Centre



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TABLE 2. Regional comparison of cycling injuries, by age group (Ontario, 2005/06)

	South West	Central South	Central West	Central East	Toronto	East	North	Ontario
Emergency Department Visits- Rate per 100,000^a								
0-4 years	166.6 (139)	116.9 (71)	108.3 (157)	95.7 (115)	82.8 (119)	127.9 (108)	135.3 (57)	114.8 (780)
5-9 years	537.9 (534)	542.8 (397)	431.2 (704)	491.1 (717)	335.4 (500)	457.5 (450)	694.2 (357)	476.1 (3716)
10-14 years	1065.8 (1155)	820.1 (663)	648.6 (1089)	788.5 (1263)	408.4 (607)	793.9 (870)	1353.9 (799)	782 (6526)
15-19 years	689.7 (763)	578.2 (474)	348.3 (561)	429.7 (677)	288.6 (425)	501.6 (548)	804.2 (497)	480.9 (3989)
Hospitalizations- Rate per 100,000^a								
0-4 years	/ (<5)	/ (<5)	3.4 (5)	/ (<5)	/ (<5)	/ (<5)	/ (<5)	3.2 (22)
5-9 years	18.1 (18)	26 (19)	15.9 (26)	26 (38)	17.4 (26)	11.2 (11)	25.3 (13)	19.3 (151)
10-14 years	31.4 (34)	37.1 (30)	28 (47)	26.2 (42)	20.9 (31)	16.4 (18)	47.4 (28)	28.4 (237)
15-19 years	9.9 (11)	35.4 (29)	19.9 (32)	17.1 (27)	12.2 (18)	21.1 (23)	48.5 (30)	21 (174)

a. Age-specific rate per 100,000 population. Note: Region of residence unknown/outside of Ontario for 398 emergency department visits and 26 hospitalizations.

cases, approximately 7% were transferred to another facility providing inpatient hospital care, which includes acute, sub acute, and rehabilitation care. Approximately 80% were discharged home and another 7% were discharged home with support services. Fewer than 1% of individuals died after arrival in the emergency department and approximately 1% died after hospital admission. The 1,374 hospitalized cases accounted for more than 5,060 days in acute care hospitals with an average length of stay of 3.68 days.

Discussion¹

This Compass highlights patterns of emergency department visits and hospitalizations for injured cyclists in Ontario and its regions. The majority of cycling incidents resulting in emergency department visits and hospitalizations were noncollisions, such as falling from or being thrown from a pedal cycle. Collisions with motor vehicles were the next most common type of incident, representing 20% of cases.

Patterns of cycling injury in Ontario have also been examined in published studies.²⁻⁵

While more than 1,200 injured cyclists are admitted to hospital in Ontario each year, thousands more cyclists present for medical care in the emergency department. During the 2002/03 fiscal year, more than 13,000 people visited an emergency department in Ontario with a cycling injury.⁶

Cycling injuries are a concern for all ages. These injuries occur across the age spectrum but it is not surprising that injuries are more frequent among children and youth, since bicycle use is highest among these age groups. There has been a decline in the number of children and youth hospitalized with cycling injuries over time; however, there has been an increase in the number of injuries for adult and senior cyclists.⁷

References

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6. Canadian Institute for Health Information (CIHI). Ontario Trauma Registry Analytic Bulletin: Injury Hospitalizations and Emergency Visits by County and Health Planning Region in Ontario, 2002-2003. Toronto: CIHI, 2005.
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Managing the risk¹

❖ Cycling is a popular recreational activity. Ways for managing the risk while keeping active include:

- **Bicycle helmet use** - Helmets are effective for cyclists of all ages and for all types of crashes. Helmets, worn properly, reduce risks for brain injury by 88%, head injury by 85%, and upper and mid facial injury by 65%.
- **Bicycle helmet legislation** - Cycling-related head injuries among children decreased by 45% in provinces with legislation (ON, NB, BC, NS) compared to a 27% reduction in provinces without legislation.
- **Bicycle helmet promotion** - Community-based campaigns with free helmets and education increase helmet use. School programs and subsidized helmet campaigns may also increase helmet use but to a lesser degree than community or free helmet programs.
- **Bicycle Lanes** - It may prove valuable to separate cyclists from other traffic by creating a network of dedicated trails and/or lanes for cyclists.

For Further Information

Cochrane Injuries Group

<http://www.cochrane-injuries.lshtm.ac.uk/>

SMARTRISK Catalogue of Best Practices

<http://www.smartrisk.ca/ListingSections.aspx?dd=4&sd=207>

Ontario Ministry of Transportation-Cycling Skills

<http://www.mto.gov.on.ca/english/pubs/cycling/cyclingskills.htm>

Published Studies

Irvine A, Rowe BH, Sahai V. Bicycle helmet-wearing variation and associated factors in Ontario teenagers and adults. *Can J Public Health* 2002;93:368-73.

Macpherson AK, To TM, Macarthur C, Chipman ML, Wright JG, Parkin PC. Impact of mandatory helmet legislation on bicycle-related head injuries in children: a population-based study. *Pediatrics* 2002;110:e60.

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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 (V10-V19) was used to isolate all emergency department visits and hospitalizations for cycling 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.