

Snowmobiling Injuries

On average, each month, over 40 people visit an emergency department for injuries from snowmobiling. Males represent the vast majority of these cases.

Results

During the 2005/06 fiscal year, there were a total of 2,096 emergency department visits and 268 hospitalizations for injuries from snowmobiling. (See Methods Section for Data Sources). These numbers translate into provincial rates of 17.5 per 100,000 population for emergency department visits and 2.2 per 100,000 for hospitalizations (Table 1).

Overall, males accounted for over 75% of emergency department visits and 84% of hospitalizations. Further, in Ontario, males 15 to 19 years of age had the highest number and rates of emergency department visits. Males 30 to 34 years of age had the highest number and rates of hospitalizations.

For emergency department visits, injuries to the lower and upper limbs were the most common, accounting for 56% of all visits combined. Injuries to the lower limb were the most common for hospitalizations, accounting for 33% of all hospital admissions. Specifically, injuries to the knee and lower leg were the most frequently presented injury to the lower limb in both emergency department visits and hospitalizations. (Figure 2).

Injury rates varied by region, with the highest rate of both emergency department visits and hospitalizations for injuries due to snowmobiling reported in the Northern region of Ontario (Table 1).

Over 80% of individuals who visited an emergency department for injuries from snowmobiling were discharged to their place of residence. Approximately 10% were admitted as an inpatient to another unit directly from ambulatory care. And finally, close to 5% were admitted as inpatients to critical care or operating rooms. For hospitalized cases, approximately 17% were transferred to another facility providing inpatient hospital care, which includes acute, sub acute, and rehabilitation care. Close to 10% were discharged to a home setting with support services and over 70% were discharged home. Fewer than 1% of individuals died after arrival in the emergency department and fewer than 1% died after hospital admission. The 268 hospitalized cases accounted for

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

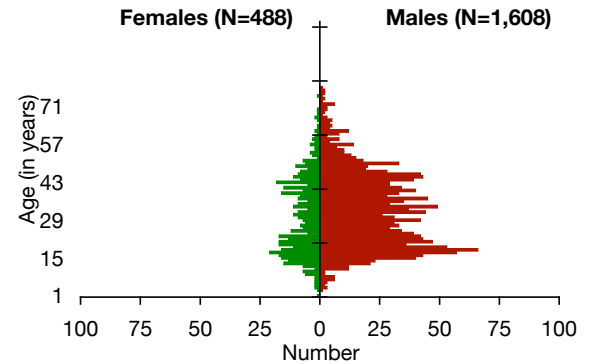
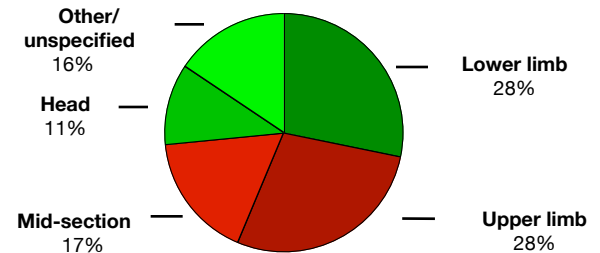


FIGURE 2. Nature of injuries due to snowmobiling (Most responsible diagnosis, Ontario, 2005/2006)

Emergency Department Visits



Hospitalizations

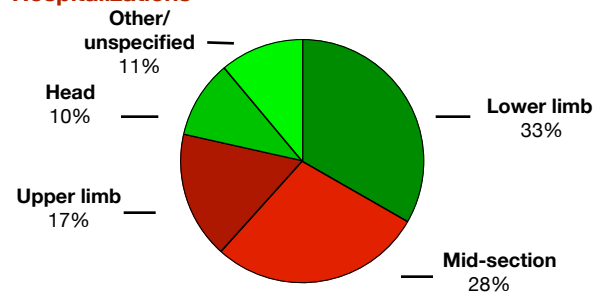
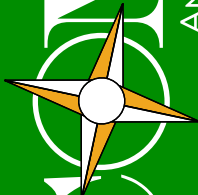


TABLE 1. Regional comparison of injuries from snowmobiling (Ontario, 2005/06)

	South West	Central South	Central West	Central East	Toronto	East	North	Ontario
Emergency Department Visits								
Number	269	89	177	483	42	295	684	2,096
Rate per 100,000 ^a	18.3	8.3	7.6	23.0	1.6	18.8	86.4	17.5
Average Age	30	34	31	32	32	32	31	31
% Male	84	80	68	79	79	79	74	77
Hospitalizations								
Number	30	13	14	69	6	31	85	268
Rate per 100,000 ^a	2.0	1.1	0.6	3.3	0.2	2.1	10.5	2.2
Average Age	35	46	37	37	44	33	33	35
% Male	83	92	86	83	100	90	87	84

a. Age-standardized rate per 100,000 population. Note: Region of residence unknown/outside of Ontario for 57 emergency department visits and 20 hospitalizations.



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TABLE 2. Regional comparison of injuries from snowmobiling (Ontario, 2005/06)

	South West	Central South	Central West	Central East	Toronto	East	North	Ontario
Emergency Department Visits- Number (Rate per 100,000^a)								
15-19 years	42.5 (47)	12.2 (10)	13 (21)	42.5 (67)	2 (3)	52.2 (57)	199 (123)	40.5 (336)
20-24 years	33.4 (37)	8.7 (7)	14.7 (24)	43.3 (62)	1.7 (3)	27.1 (30)	184.8 (106)	32.4 (274)
25-29 years	25.2 (25)	18.1 (13)	11.7 (19)	37 (46)	3.6 (8)	29.3 (31)	135.2 (61)	24.8 (206)
30-34 years	28.6 (29)	21.1 (16)	11.2 (20)	32.5 (47)	3.4 (8)	29.3 (33)	127.6 (66)	25.5 (230)
35-39 years	31.3 (35)	8 (7)	10.4 (21)	34.1 (60)	1.8 (4)	20 (25)	122.2 (73)	23.2 (228)
Hospitalizations- Number (Rate per 100,000^a)								
15-19 years	2.7 (3)	0 (0)	0.6 (1)	1.9 (3)	0 (0)	1.8 (2)	29.1 (18)	3.5 (29)
20-24 years	0 (0)	0 (0)	0.6 (1)	8.4 (12)	0 (0)	2.7 (3)	13.9 (8)	3.1 (26)
25-29 years	6.1 (6)	0 (0)	1.2 (2)	4.8 (6)	0 (0)	5.7 (6)	19.9 (9)	3.6 (30)
30-34 years	3 (3)	4 (3)	0.6 (1)	5.5 (8)	0.4 (1)	7.1 (8)	13.5 (7)	4 (36)
35-39 years	3.6 (4)	2.3 (2)	1 (2)	5.7 (10)	0.5 (1)	0.8 (1)	10 (6)	2.7 (26)

a. Age-specific rate (and number) per 100,000 population. Note: Region of residence unknown/outside of Ontario for 57 emergency department visits and 20 hospitalizations.

more than 1,576 days in acute care hospitals with an average length of stay of 5.88 days.

Discussion

This Compass highlights patterns of Ontario emergency department visits and hospitalizations for snowmobiling injuries.

During the winter season, many individuals across Canada use snowmobiles as a mode of transportation as well as for recreational purposes. From the time they were developed, snowmobiles have also been used extensively in instances of emergency when conventional cars and trucks have been unable to access certain areas because of large amounts of snow.¹

As of 2006, there were approximately 700,000 registered snowmobiles in Canada and in excess of 160,000 km of snowmobile trails.² Unfortunately, many individuals, when using these machines which can weigh up to 270 kgs and travel at speeds over 140 km/hour¹, become injured, often with serious consequences, especially when used for recreational purposes.³ Human error is responsible for many snowmobiling injuries.^{3,4} and thus, these injuries are, for the most part, preventable.³ Young males, those in their late teens, as well as young adults, are at the highest risk of injury, often due to excessive speed as well as lack of appropriate equipment use. Other causes of snowmobiling injuries are alcohol consumption, poor lighting, young age, and inappropriate terrain/riding on non designated trails.^{1,6} Drivers, as opposed to passengers, represent the majority of those getting injured and one study found that most injuries are a result of collisions and falling off the machine.⁴ Prevention efforts should be aimed at drivers, in particular, as the driver controls the majority of risk factors associated with snowmobiling injuries. Young children are also at risk of injury as in some cases, the laws restricting the use of these vehicles for this age group, are not enforced, are non-existent or do not apply to use on private property.⁵

References

1. Pierz JJ. Snowmobile injuries in North America. *Clin Orthop Relat Res* 2003; (409):29-36.
2. Transport Canada. Safe Snowmobiling. Road Safety and Motor Vehicle Regulation Transport Canada; Road Safety Fact Sheet 2006.
3. Stewart RL, Black GB. Snowmobile trauma: 10 years' experience at Manitoba's tertiary trauma centre. *Can J Surg* 2004; 47(4):304.
4. Hamdy CR, Dhir A, Cameron B, Jones H, Fitzgerald GW. *J Trauma* 1988; 28(8):1232-7.
5. Hoey J. Snowmobile Injuries. *CMAJ* 2003; 168(6):739.
6. Chaze B, McDonald P. Head injuries in winter sports: downhill skiing, snowboarding, sledding, snowmobiling, ice skating and ice hockey. *Neurol Clin* 2008; 26(1):325-32.
7. Red Cross urges snowmobile safety this winter. Canadian Red Cross. 1999-2008.

Managing the risk

- ❖ Plan your route and ensure all areas are designated as safe for snowmobile travel.⁷
- ❖ Check with authorities to ensure bodies of water are safe for travel. According to the Canadian Red Cross, ice must be at least 25 cm or 10 inches thick.⁷
- ❖ Wear appropriate protective equipment including a properly fitted certified helmet.⁶
- ❖ Pack a first aid & survival kit, tool kit, as well as adequate food and water. In addition, wear layers of warm clothing.
- ❖ Ensure you have a map, compass, extra socks and mittens, boot liners, flares, and extra fuel.⁷
- ❖ Make sure the snowmobile has adequate fuel and ensure safety features are all working properly. For example,
 - Check that the steering is working properly.⁷
 - Make sure the throttle works and returns to the idle position with ease.⁷
 - Be sure the brake system works properly.⁷
 - Ensure headlights and taillights are working and are free of snow.⁷
- ❖ Check weather conditions and avalanche conditions in high risk areas² (www.avalanche.ca).
- ❖ Ride within skill level.²
- ❖ Reduce speed when necessary (unfamiliar areas, crossing roadways & railways, at night, etc).²
- ❖ Take a certified First Aid training course prior to any snowmobile excursion.⁷
- ❖ Let a responsible person know your route and when you plan to return.⁷
- ❖ Snowmobilers should **never**:
 - drive while under influence of alcohol or drugs.²
 - ride on railway tracks.²
 - ride alone.²
 - travel with babies or leave children unattended on a snowmobile.²

For Further Information

Canadian Red Cross www.redcross.ca

Ontario Federation of Snowmobile Clubs <http://www.ofsc.on.ca>

Ontario Ministry of Transportation <http://www.mto.gov.on.ca>

Centre for Addiction and Mental Health: Blazing Trails- www.camh.net

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 (V86.00, V86.10, V86.30, V86.50, V86.51, V86.60, V86.61, V86.90, V86.91) was used to isolate all emergency department visits and hospitalizations for snowmobiling 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.