

Snowmobile Injury-Related Morbidity in the North Bay Parry Sound District Health Unit Region

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Key Highlights

- In 2017, the age-standardized snowmobile injury-related emergency department (ED) visit rate was five times higher in the Health Unit region compared to Ontario.
- Between 2013 and 2017, the snowmobile injury-related ED visit rate was highest among residents of in West and Central Parry Sound area.
- Between 2013 and 2017, about 75% of snowmobile injury-related ED visits and hospitalizations in the Health Unit region were males.
- Between 2013 and 2017, the snowmobile injury-related ED visit was highest among young adults aged 16 to 24 years old, and five times higher compared to the Ontario rate for young adults in the same age group.

Self-Reported Snowmobile Use and Risky Behaviour

No estimates currently exist for measuring only snowmobile use (i.e., excluding motor boat or seadoo use) in Ontario. In 2013/14, an estimated 34.2% of the North Bay Parry Sound District Health Unit (Health Unit) population aged 12 years or older reported riding a snowmobile, motor boat or seadoo, almost two times higher compared to Ontario (Table 1).

For the 2009/10 and 2013/14 years combined, nearly 9.7% of the population reported driving a snowmobile, motor boat, seadoo or ATV after having two or more drinks in the hour before driving. Caution should be applied when interpreting this statistics however, as more than 5% of responses were missing.

Table 1. Age-Standardized Percentage (95% CI) of Individuals Aged 12 Years or Older, by Indicators of Interest Relating to Snowmobile Use, By Region, 2013/14

Indicator	Health Unit Region	Ontario
Driver/passenger – Snowmobile, motor boat or seadoo in past 12 months	34.2* (29.2, 39.7)	19.8 (19.1, 20.5)
Drove a snowmobile, motor boat, seadoo or ATV after having two or more drinks in the hour before driving ^o	9.7 [§] (6.0, 15.5)	7.2 [§] (6.2, 8.3)

Note: Data for indicators marked with (o) are for the 2009/10 and 2013/14 CCHS combined.

*Estimate is significantly different from provincial estimate

E Interpret with caution; the estimate is associated with high sampling variability

§ More than 5% of responses were missing

Trends over Time

Between 2005 and 2017, the age-standardized snowmobile injury-related emergency department (ED) visit rate was almost five times higher in the Health Unit region compared to Ontario (Figure 1; Table 2). In 2017, the age-standardized snowmobile injury-related hospitalization rate was five times higher in the Health Unit region compared to Ontario (Figure 2; Table 3).

Figure 1. Age-standardized Rate per 100,000 Population of Snowmobile Injury-Related ED Visits, By Health Region, 2005 to 2017

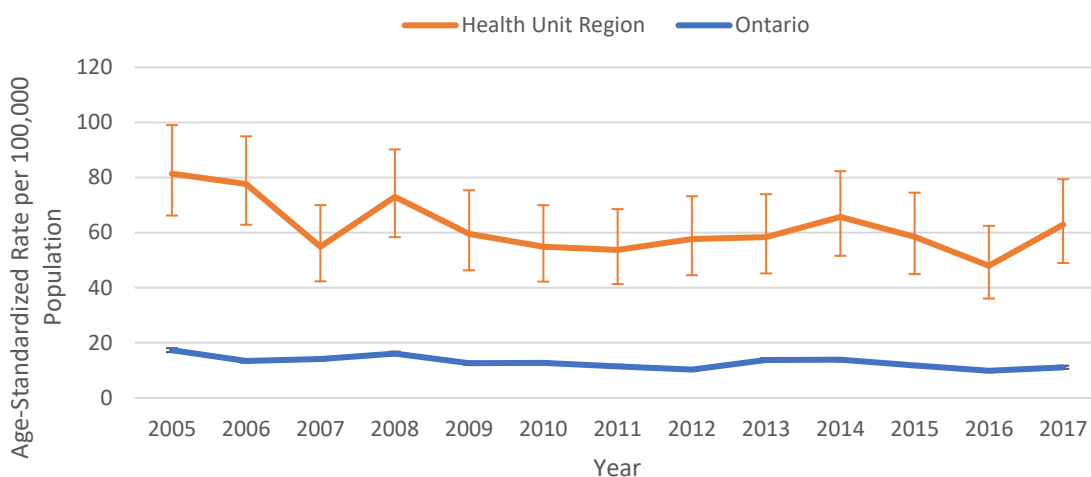


Table 2. Age-standardized Rate per 100,000 Population of Snowmobile Injury-Related ED Visits, By Year and Health Region, 2005 to 2017

Year	Number of ED Visits	Health Unit Region Rate (95% CI)	Ontario Rate (95% CI)
2005	102	81.4* (66.2, 99.0)	17.3 (16.6, 18.1)
2006	97	77.7* (62.9, 95.0)	13.4 (12.8, 14.1)
2007	66	54.9* (42.3, 70.0)	14.2 (13.5, 14.8)
2008	87	73.0* (58.4, 90.2)	16.1 (15.4, 16.8)
2009	70	59.6* (46.3, 75.4)	12.6 (12, 13.2)
2010	65	54.8* (42.2, 70.0)	12.8 (12.2, 13.4)
2011	65	53.7* (41.3, 68.5)	11.5 (10.9, 12.1)
2012	67	57.6* (44.6, 73.2)	10.3 (9.8, 10.9)
2013	69	58.3* (45.2, 73.9)	13.8 (13.2, 14.5)
2014	76	65.7* (51.6, 82.3)	13.8 (13.2, 14.5)
2015	65	58.4* (45, 74.5)	11.8 (11.2, 12.4)
2016	56	48.0* (36.1, 62.5)	9.9 (9.4, 10.4)
2017	72	62.9* (49, 79.4)	11.1 (10.6, 11.7)

*Age-standardized rate (ASR) for the Health Unit region is significantly higher compared to Ontario rate during the corresponding calendar year

Figure 2. Age-standardized Rate per 100,000 Population of Snowmobile Injury-Related Hospitalizations, By Health Region, 2005 to 2017

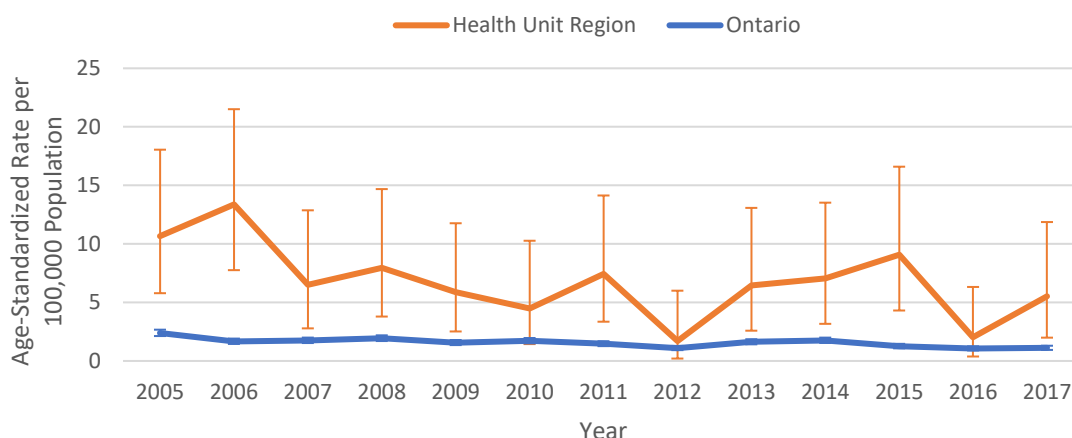


Table 3. Age-standardized Rate per 100,000 Population of Snowmobile Injury-Related Hospitalizations, By Region, 2005 to 2017

Year	Number of Hospitalizations	Health Unit Region Rate (95% CI)	Ontario Rate (95% CI)
2005	14	10.7* (5.8, 18.1)	2.4 (2.1, 2.7)
2006	17	13.4* (7.8, 21.5)	1.7 (1.5, 1.9)
2007	8	6.5* (2.8, 12.9)	1.8 (1.5, 2.0)
2008	10	8.0* (3.8, 14.7)	1.9 (1.7, 2.2)
2009	8	5.9* (2.5, 11.8)	1.6 (1.4, 1.8)
2010	5	4.5 (1.4, 10.3)	1.7 (1.5, 2.0)
2011	9	7.4* (3.4, 14.1)	1.5 (1.3, 1.7)
2012	2	1.7 (0.2, 6.0)	1.1 (0.9, 1.3)
2013	7	6.4* (2.6, 13.1)	1.6 (1.4, 1.9)
2014	9	7.1* (3.2, 13.5)	1.8 (1.5, 2)
2015	10	9.1* (4.3, 16.6)	1.3 (1.1, 1.5)
2016	3	2.0 (0.4, 6.3)	1.1 (0.9, 1.3)
2017	6	5.5* (2.0, 11.9)	1.1 (0.9, 1.3)

*Age-standardized rate (ASR) for the Health Unit region is significantly higher compared to Ontario rate during the corresponding calendar year

By Geography

Age-standardized rates for snowmobile injury-related ED visits and hospitalizations were calculated by smaller levels of geography for visits for 2013 and 2017 combined. The snowmobile injury-related ED visit rates in West and Central Parry Sound, and West Nipissing were 42% to 67% higher compared to the Health Unit region overall (Table 4). Snowmobile injury-related ED visit rates were significantly lower among North Bay residents.

Table 4. Age-Standardized Rate per 100,000 Population of Snowmobile Injury-Related ED Visits and Hospitalizations, by Region, 2013 and 2017 combined

Region	ED Visit Rate (95% CI)	Hospitalization Rate (95% CI)
East Nipissing and North East Parry Sound ¹	68.9 (52.5, 88.6)	8.9 (4.0, 17.1)
Nipissing, Unorganized North Part	95.4 (37.9, 195.5)	0.0 (0.0, 46.9)
City of North Bay	29.8 (23.5, 37.2)	3.0 (1.2, 6.1)
Town of Parry Sound	70.6 (41.9, 110.4)	9.7 (1.9, 28.8)
West Nipissing ²	83.6 (63.7, 107.6)	4.9 (1.3, 12.9)
West and Central Parry Sound ³	98.1* (79.3, 119.8)	11.0 (5.4, 19.7)
Health Unit region	58.8 (52.7, 65.5)	6.0 (4.2, 8.4)

¹The East Nipissing & North East Parry Sound region includes Bonfield, Callander, Powassan, Nipissing, East Ferris, Calvin, Mattawa, Mattawan, Papineau-Cameron, Chisholm, Unorganized South Part of Nipissing, and the Unorganized North East Part of Parry Sound

²West Nipissing & Nipissing 10 the Municipality of West Nipissing and Nipissing 10 First Nations reserve

³The Central, West, and South East Parry Sound region includes outlying areas of the Town of Parry Sound, The Archipelago, Henvey Inlet 2 First Nations reserve, Magnetawan 1 First Nations reserve, French River 13 First Nations reserve, Seguin, McDougall, Shawanaga 17 First Nations reserve, McKellar, Carling, Machar, Whitestone, Magnetawan, Joly, Sundridge, Strong, South River, Kearney, Perry, Ryerson, Burk's Falls, McMurrich/Monteith, Armour, and the Unorganized Centre Part of Parry Sound

*Rate is significantly higher compared to overall Health Unit region

Age- and Sex-Specific Rates

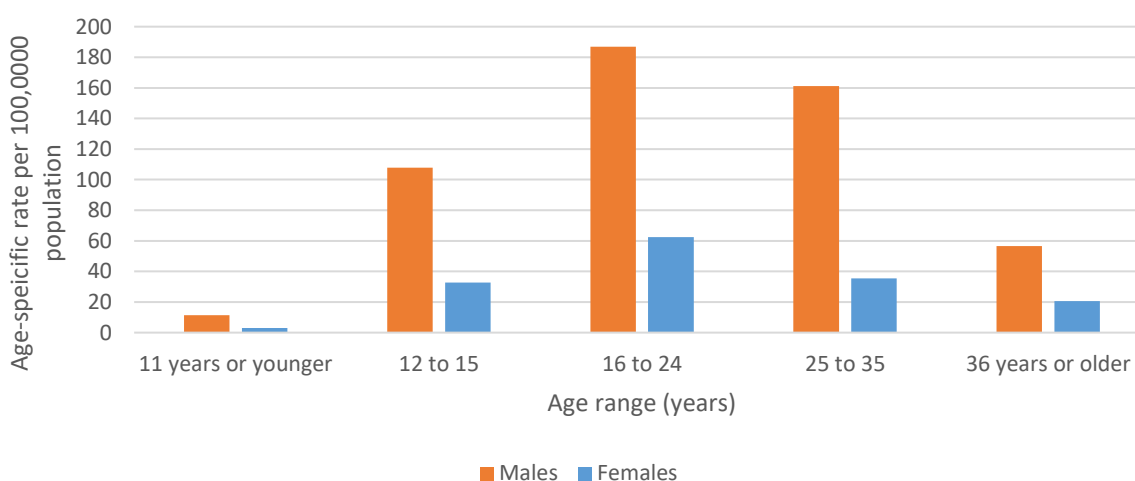
Age-specific rates for snowmobile injury-related ED visits and hospitalizations were calculated for visits from 2013 and 2017 combined. Overall, approximately 75% of snowmobile injury-related ED visits were made by males (Figure 3; Table 6). The snowmobile injury-related ED visit rate was highest among young adults aged 16 to 24 years, adults aged 25 to 35 years old, and children aged 12 to 15 years old with the rates for all three age groups being about five times higher than the Ontario rates for the same age groups (Table 5).

Snowmobile injury-related hospitalizations in the Health Unit region were highest among youth and adults aged 16 to 35 years, and these rates were five times higher compared to Ontario rates among the same age groups (Table 7).

Table 5. Age-Specific Rates of Snowmobile Injury-Related ED Visits per 100,000 Population, by Age Group and Region, 2013-2017 combined.

Age group (years)	Health Unit Region Rate (95% CI)	Ontario Rate (95% CI)
11 years or younger	7.2 (2.4, 16.9)	2.8 (2.4, 3.1)
12 to 15	71.4* (42.3, 112.9)	15.5 (14.2, 17.0)
16 to 24	125.3* (100.1, 154.9)	22.6 (21.6, 23.6)
25 to 35	98.3* (77.7, 122.7)	18.1 (17.3, 19)
36 years or older	38.1* (32.3, 44.7)	9.7 (9.4, 10)

*Age-specific rate is significantly higher compared to the Ontario rate for the corresponding age group

Figure 3. Age-Specific Rates of Snowmobile Injury-Related ED Visits per 100,000 Population, By Age Group & Sex, Health Unit region, 2013-2017 Combined**Table 6. Age-Specific Rates of Snowmobile Injury-Related ED Visits per 100,000 Population, by Age Group and Sex, Health Unit Region, 2013-2017 combined.**

Age group (years)	Rate among Males (95% CI)	Rate among Females (95% CI)
11 years or younger	11.3 (3.1, 29.0)	3.0 (0.1, 16.5)
12 to 15	107.7 (58.9, 180.7)	32.8 (8.9, 83.9)
16 to 24	186.9* (143.9, 238.7)	62.5 (38.7, 95.5)
25 to 35	161.1* (124.1, 205.7)	35.4 (19.3, 59.3)
36 years or older	56.6* (46.5, 68.2)	20.6 (14.8, 27.8)

*Age-specific rate for males is significantly higher than the female rate for the corresponding age group.

Table 7. Age-Specific Rates of Snowmobile Injury-Related Hospitalizations per 100,000 Population, by Age Group and Region, 2013-2017 combined

Age group (years)	Health Unit Region Rate (95% CI)	Ontario Rate (95% CI)
11 years or younger	1.4 (0.0, 8.1)	0.3 (0.2, 0.4)
12 to 15	7.9 (1.0, 28.7)	1.3 (0.9, 1.8)
16 to 24	10.3* (4.1, 21.3)	1.9 (1.6, 2.2)
25 to 35	8.8* (3.5, 18.2)	1.8 (1.6, 2.1)
36 years or older	4.5* (2.7, 7.1)	1.3 (1.2, 1.5)

*Age-specific rate is significantly higher than the Ontario rate for the corresponding age group.

Injury Location

The number and percentage of snowmobile injury-related ED visits and hospitalizations and their location of where the injury took place were calculated for visits from 2013 and 2017 combined. The majority of snowmobile injury-related ED visits and hospitalizations were a result of incidents that occurred in non-highway environments (e.g., private property, recreational trails, etc.) (Table 8).

Table 8. Number and Percentage of Snowmobile Injury-Related ED Visits and Hospitalizations, by the Location Where the Injury Took Place and region, 2013 and 2017 combined

Injury location	Health Unit Region ED Visits (Percentage)	Ontario ED Visits (Percentage)	Health Unit Region Hospitalization (Percentage)	Ontario Hospitalization (Percentage)
Highway	20 (6.0%)	882 (10.8%)	7 (20.0%)	139 (15.0%)
Non-highway	318 (94.0%)	7326 (89.3%)	28 (80.0%)	788 (85.0%)

Most Common Injured Regions of the Body

The number and percentage of snowmobile injury-related ED visits and hospitalizations and the regions of the body injured were calculated for visits from 2013 and 2017 combined. Multiple regions of the body may be injured for each ED visit or hospitalization.

- For snowmobile injury-related ED visits, the most common body injuries were to the upper extremity (i.e., arms and shoulders) and the lower extremity (i.e., hips, legs and feet; Table 9).
- For snowmobile injury-related hospitalizations, the trunk (i.e., abdomen, thorax, spine, pelvis, and lower back, and shoulders) were the body regions most commonly injured. Approximately half of trunk injuries were fracture injuries.

Table 9. Number and Percentage of Snowmobile Injury-Related ED Visits and Hospitalizations, by Injured Region of the Body, 2013 and 2017 combined.

Injured Region of the Body	ED visits (percentage)	Hospitalizations (percentage)
Head/Neck	50 (15%)	4 (11%)
Lower Extremity	104 (31%)	13 (37%)
Trunk	70 (21%)	14 (40%)
Upper Extremity	103 (30%)	5 (14%)

Definitions and Data Sources

Definition

Snowmobile injury-related emergency department visits, including the location of the incident: Emergency department visits that included unscheduled visits to the emergency department with all problem external causes relating to operation of a snowmobile, including driving, a passenger of, unspecified occupant of a snowmobile where an injury occurred (select codes under V86; International Statistical Classification of Health Problems, 10th Revision (ICD-10CA)).

Snowmobile injury-related hospitalizations, including the location of the incident: Hospitalizations all problem external causes relating to operation of a snowmobile, including driving, a passenger of, unspecified occupant of an all-terrain or other off road motor vehicle where an injury occurred (select codes under V86; International Statistical Classification of Health Problems, 10th Revision (ICD-10CA)).

Injured body region: Identified for snowmobile injury-related emergency department visits and hospitalizations using ICD-10-CA codes S-section and T-section.

Data sources:

1. Snowmobile injury-related emergency department visit data: Ambulatory Emergency External Cause [2005-2017], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: [2019/1/14].
2. Snowmobile injury-related hospitalization data: Discharge Abstract Database (DAD) [2005-2017], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH ONTARIO, Date Extracted: [2019/1/14].
3. Population estimates: Population Estimates [2007-2016], Ontario Ministry of Health and Long-Term Care, IntelliHEALTH Ontario, Date Extracted: [2017/11/03].
4. Canadian Community Health Survey 2009/10, 2013/14, Statistics Canada, Share File, Ontario Ministry of Health and Long-Term Care.

Analysis:

Age-standardized rate:

The age-standardized rate was calculated by using the Direct Method and standard 2011 Canadian population.

Confidence intervals:

Confidence intervals (CI) and variances were estimated using the Poisson distribution in STATA IC/14.2 (2014) for all regions.

Interpretation of a significant difference:

A statistic interpreted as 'significantly different' from another is an estimate found to be statistically meaningful; the difference is unlikely due to chance. Error ranges noted in tables within this report illustrate 95% confidence intervals. If there is no overlap in range between confidence intervals, the difference can be described as statistically significant.