

# Forces of Nature.

On average, every month 20 people are hospitalized for a condition related to exposure to excessive heat, cold, and other forces of nature. The majority of cases involve heat exhaustion and heatstroke.

## Results

During the 2005/06 fiscal year, there were a total of 2,572 emergency department visits and 251 hospitalizations for injuries as a result of being exposed to environmental factors, which will be referred to as forces of nature. For this analysis, injuries resulting from exposure to forces of nature including those effects of heat and light, which encompasses heat exhaustion, heatstroke, and sunstroke, among others, as well as incidents resulting in frostbite, hypothermia and burns and corrosions, which includes sunburns were included. (See Methods Section for Data Sources). These numbers translate into provincial rates of 20.9 per 100,000 population for emergency department visits and 1.9 per 100,000 for hospitalizations (Table 1).

For emergency department visits and hospitalizations, peaks in the numbers of injuries from forces of nature were observed in young adults 15-24 years of age as well as seniors over 80 years of age. Rates of hospitalizations were especially high in this older age group. Males in the younger age group comprised a slightly higher representation of emergency department visits and hospitalizations for injuries from forces of nature, whereas females represented a greater proportion of these incidents in the older age group (Figure 1).

The majority of cases in both emergency department visits and hospitalizations were for treatment of conditions due to exposure to heat and light. Heat exhaustion was the most common followed by sunstroke and heatstroke. Frostbite and hypothermia were the next most prevalent, representing 10% and 7% of all emergency department visits and 10% and 15% of all hospitalizations respectively (Figure 2).

Injury rates varied by region, with the highest rates of emergency department visits and hospitalizations for treatment due to exposure to forces of nature found in the Northern region of Ontario (Table 1).

Close to 90% of individuals who visited an emergency department for injuries due to involvement in a motor vehicle collision were discharged to their place of residence. Close to 7% were admitted as an inpatient directly from ambulatory care. For hospitalized cases,

FIGURE 1. Emergency department visits for motor vehicle collisions (Ontario, 2005/2006)

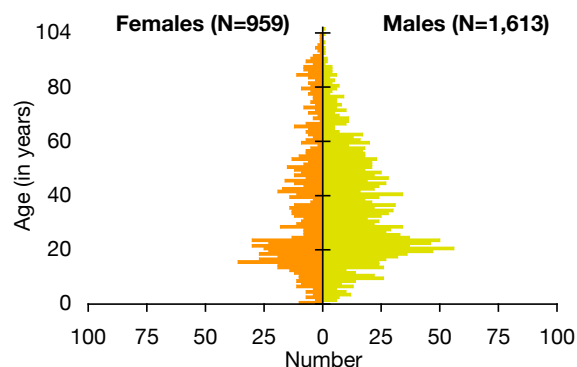
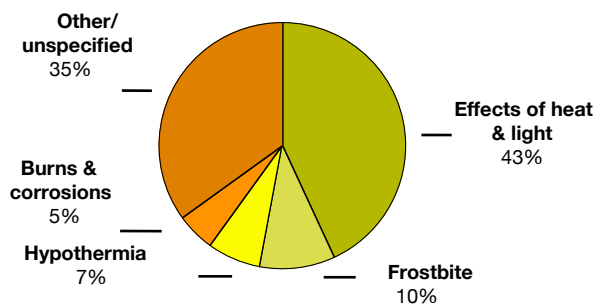


FIGURE 2. Nature of condition due to forces of nature (Most responsible diagnosis, Ontario, 2005/2006)

### Emergency Department Visits



### Hospitalizations

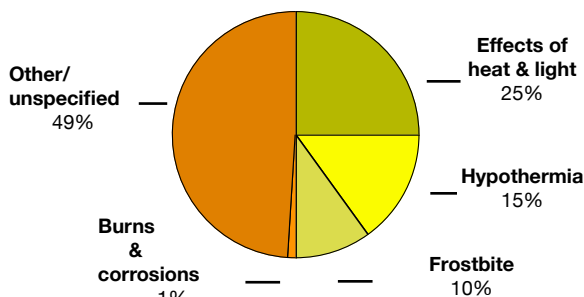


TABLE 1. Regional comparison of injuries due to forces of nature (Ontario, 2005/06)

	South West	Central South	Central West	Central East	Toronto	East	North	Ontario
<b>Emergency Department Visits</b>								
Number	424	286	280	413	236	417	452	2,572
Rate per 100,000 <sup>a</sup>	27.4	24.1	12.1	19.4	8.7	26.2	54.1	20.9
Average Age	36	39	34	34	43	34	34	36
% Male	62	62	65	63	59	64	63	63
<b>Hospitalizations</b>								
Number	34	9	34	46	33	21	69	251
Rate per 100,000 <sup>a</sup>	1.9	0.6	1.5	1.9	1.1	1.2	7.1	1.9
Average Age	57	63	55	51	60	48	50	53
% Male	68	78	71	74	67	90	68	72

a. Age-standardized rate per 100,000 population. Note: Region of residence unknown/outside of Ontario for 64 emergency department visits and 5 hospitalizations.



Ontario  
Injury



Ontario Injury Prevention  
Resource Centre

1-888-537-7777  
info@oninjuryresources.ca  
www.OnInjuryResources.ca

Produced by

SMARTRISK



SAUVE QUI PENSE  
preventing injury with smart thinking

## Ontario Injury Compass

is produced by  
**SMARTRISK**  
with support from  
The Government of Ontario



Edited by  
**Philip Groff, PhD**  
Director,  
Research and Evaluation  
Ontario Injury Prevention Resource  
Centre at SMARTRISK  
(416) 596-2718  
pgroff@smartrisk.ca

Principal Analyst  
**Pamela Farmer, MSc**  
Research Associate  
Ontario Injury Prevention Resource  
Centre at SMARTRISK  
(416) 596-2717  
pfarmer@smartrisk.ca



## Ontario Injury Prevention Resource Centre

1-888-537-7777  
info@oninjuryresources.ca  
www.OnInjuryResources.ca

To subscribe to  
Ontario Injury Compass  
please email your request to:  
compass@oninjuryresources.ca

**TABLE 2. Regional comparison of injuries due to forces of nature by age group (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>								
0-14 years	19.2 (56)	17.2 (37)	8.2 (39)	17.6 (75)	6.6 (29)	25.7 (75)	35.4 (54)	16.2 (372)
15-19 years	45.2 (50)	32.9 (27)	26.7 (43)	31.7 (50)	9.5 (14)	50.3 (55)	132.7 (82)	39.8 (330)
20-24 years	50.5 (56)	39.6 (32)	22.6 (37)	33.5 (48)	12.2 (22)	48.8 (54)	102.8 (59)	38.3 (324)
25-79 years	24 (240)	22.3 (172)	10.1 (150)	16 (222)	8.3 (146)	20.1 (216)	43.4 (246)	17.7 (1420)
80+ years	37.2 (22)	37 (18)	20.4 (11)	30.5 (18)	26.9 (25)	29.3 (17)	36.8 (11)	31.4 (126)
<b>Hospitalizations- Rate per 100,000<sup>a</sup> (Number)</b>								
0-14 years	/ (<5)	/ (<5)	/ (<5)	/ (<5)	/ (<5)	/ (<5)	/5 (<5)	0.8 (18)
15-19 years	/ (<5)	/ (<5)	/ (<5)	/ (<5)	/ (<5)	/ (<5)	12.9 (8)	1.8 (15)
20-24 years	/ (<5)	/ (<5)	/ (<5)	/ (<5)	/ (<5)	/ (<5)	/ (<5)	1.2 (10)
25-79 years	2.1 (21)	0.8 (6)	1.5 (22)	2.3 (32)	1.2 (21)	1.7 (18)	7.9 (45)	2.1 (167)
80+ years	15.2 (9)	/ (<5)	13 (7)	10.2 (6)	8.6 (8)	/ (<5)	26.8 (8)	10.2 (41)

a. Age-specific rate per 100,000 population. Note: Region of residence unknown/outside of Ontario for 64 emergency department visits and 5 hospitalizations.

6% of patients were transferred to another facility providing inpatient hospital care, which includes acute, sub acute, and rehabilitation care. An additional 10% were transferred to a long term care facility. Approximately 67% were discharged home and another 8% were discharged home with support services. Less than 1% of individuals died after arrival in the emergency department and close to 5% died after hospital admission. The 251 hospitalized cases accounted for more than 1,449 days in acute care hospitals with an average length of stay of 5.8 days.

## Discussion

This Compass highlights patterns of emergency department use and hospitalizations for treatment from being exposed to forces of nature, in particular heat and light. Dehydration, heat exhaustion, heatstroke, and sunstroke are all serious conditions, which, if left untreated, can be potentially life threatening. Children are especially vulnerable to effects of hot summer days, as their small bodies are not able to dissipate heat as well as adults.<sup>1</sup> ([www.aboutkidshealth.ca](http://www.aboutkidshealth.ca)) The elderly, as well as individuals with chronic or acute illnesses are also a vulnerable age group for developing these types of conditions in response to heat. It is therefore important to monitor children in the summer and be able to recognize signs and symptoms of heat related illness (see managing the risk section). Hypothermia and frostbite, although not particularly relevant for this time of year, are also serious conditions. Considering the majority of cases in this Compass were a result of effects of heat and light, the 'Managing the risk' section will be devoted to this topic. It is important; however, to know what to look for and what to do in the event of suffering from frostbite or hypothermia is essential for those living in a climate such as Canada's. Tips for handling these two conditions can be found at: [http://www.smartrisk.ca/seasonal\\_tips/preventing\\_frostbite\\_and\\_hypothermia.html](http://www.smartrisk.ca/seasonal_tips/preventing_frostbite_and_hypothermia.html) as well as at: [http://www.pc.gc.ca/pn-np/hu/auyuittuq/visit/visit6f\\_E.asp](http://www.pc.gc.ca/pn-np/hu/auyuittuq/visit/visit6f_E.asp)

## References

1. Ontario Injury Prevention Resource Centre. Injuries among Seniors in Ontario: A Descriptive Analysis of Emergency Department and Hospitalization Data. Toronto: Ontario Injury Prevention Resource Centre, 2007.
2. Safe Kids Canada. Safe Kids Week 2009. Home Product Safety. <http://www.safekidscanada.ca/safekidsCanada/>
3. Health Canada. Consumer Product Safety. 2009. <http://www.hc-sc.gc.ca/cps-spc/index-eng.php>

## Managing the risk

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

### ❖ Active supervision of children

- Stay within sight and reach of your child when he is in or near water.
- Stay within arms reach if child is < 5 years old or is a weak swimmer.
- Watch older children, even if they can swim closely too.
- Do not rely on an older sibling to supervise.

### ❖ 4-Sided Pool Fencing

- Research shows that proper pool fencing could prevent 7 out of 10 drownings to children < 5.
- Pool fencing should be at least 4 feet (1.2 metres) and have a self-closing, self-latching gate.
- Pool alarms, door alarms, pool covers and door locks are not a safe substitute for a fence. No research shows that these devices will prevent drowning.<sup>1</sup>

### ❖ Lifejackets

- Put children < 5 years old and weak swimmers in properly fitting lifejackets when they are in or near the water or in a boat.
- Check the label to make sure it has been approved by at least one of: Transport Canada, Canadian Coast Guard, Fisheries and Oceans Canada
  - Lifejackets provide extra protection but do **NOT** prevent drowning. Supervision is essential.

### ❖ Training for Adults

- Get trained in CPR, first aid, water rescue and swimming skills.

### ❖ Swimming Lessons

- Enroll your child in lessons to help him/her become comfortable around water.
- Remember that swimming lessons alone cannot prevent your child from drowning. Always supervise.
- Teach your children about currents and water safety rules
- The U.S. Consumer Product Safety Commission Safety Barrier Guidelines for Home Pools. [www.cpsc.gov](http://www.cpsc.gov). The direct link to this Guideline is <http://www.cpsc.gov/CPSC/PUBS/Pool.pdf>