

# Motor Vehicle Collisions.

On average, every week more than 100 people are hospitalized for an injury due to involvement in a motor vehicle collision.

## Results

During the 2005/06 fiscal year, there were a total of 66,194 emergency department visits and 4,937 hospitalizations for motor vehicle collisions. For this analysis, transport related incidents involving occupants of motorcycles, cars, vans, pick-up trucks, heavy transport trucks, and buses were included. Transport incidents involving water vehicles, three-wheeled vehicles, pedal cyclists, and vehicles designed for air and space travel were not included. (See Methods Section for Data Sources). These numbers translate into provincial rates of 541.1 per 100,000 population for emergency department visits and 38.6 per 100,000 for hospitalizations (Table 1).

Teenagers and young adults ranging in age from 15 to 24 years of age made up the majority of emergency department visits and hospitalizations for injuries from motor vehicle collisions. Females represented a slight majority of emergency department visits, whereas males represented a slight majority of hospitalizations.

A wide range of injuries result from involvement in a motor vehicle collision; however, for both emergency department visits and hospitalizations, injuries to the mid-section were the most prevalent. More specifically, the most common type of injury to the mid-section which led to a visit to the emergency department was superficial injury of the abdomen, lower back, and pelvis as was dislocation, sprain and strain of joints and ligaments of the lumbar spine and pelvis. For hospitalizations, the most common injuries to the mid-section were fracture of the lumbar spine and pelvis closely followed by injury of the intra-abdominal organs. Injuries to the upper limb were the second most common type of injury for emergency department visits, whereas injuries to the lower limb were the second most common for hospitalizations (Figure 2).

Injury rates varied by region, with the highest rates of emergency department visits for motor vehicle collisions occurring in the Central South region of Ontario. For hospitalizations, the highest rates were reported in the Northern region (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. For hospitalized cases, approximately 17%

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

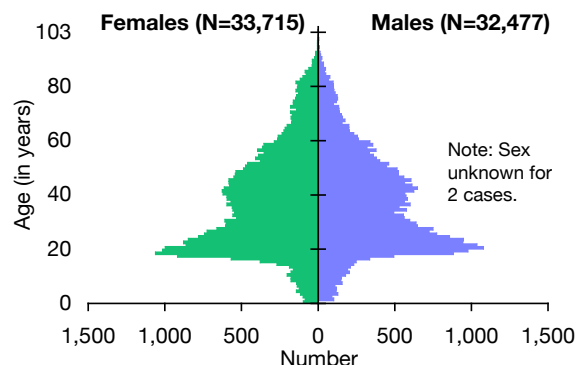
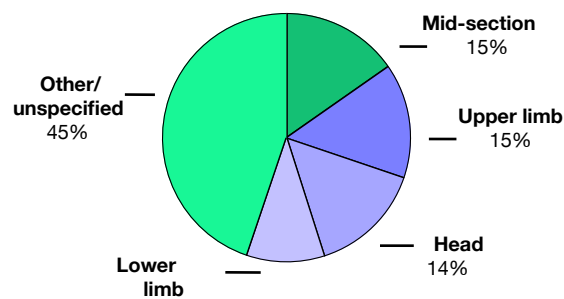


FIGURE 2. Nature of injuries from motor vehicle collisions (Most responsible diagnosis, Ontario, 2005/2006)

### Emergency Department Visits



### Hospitalizations

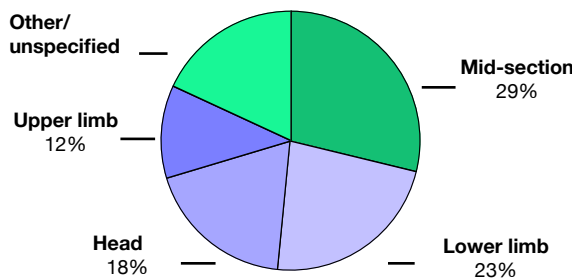
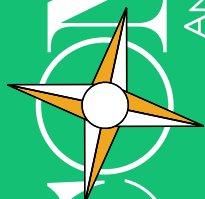


TABLE 1. Regional comparison of motor vehicle collisions (Ontario, 2005/06)

	South West	Central South	Central West	Central East	Toronto	East	North	Ontario
<b>Emergency Department Visits</b>								
Number	9,867	7,607	11,082	12,760	9,490	8,693	5,099	66,194
Rate per 100,000 <sup>a</sup>	646.8	661.2	479.9	602.0	357.9	535.9	614.6	541.1
Average Age	36	36	36	36	39	37	37	37
% Male	49	50	49	49	50	47	49	49
<b>Hospitalizations</b>								
Number	857	580	748	909	533	653	493	4,937
Rate per 100,000 <sup>a</sup>	53.3	47.1	32.3	41.0	19.5	37.7	54.2	38.6
Average Age	43	43	42	44	45	45	45	44
% Male	60	59	63	60	62	58	62	60

a. Age-standardized rate per 100,000 population. Note: Region of residence unknown/outside of Ontario for 1,596 emergency department visits and 164 hospitalizations.



## Ontario Injury Compass

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**TABLE 2. Regional comparison of motor vehicle collisions**

	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>								
15-19 years	1144.3 (1266)	1166.1 (956)	758.6 (1222)	1016.2 (1601)	436 (642)	1068.1 (1167)	1142.4 (706)	929.2 (7708)
20-24 years	1252.9 (1390)	1335.5 (1078)	980 (1602)	1200.5 (1718)	666.2 (1199)	1032.2 (1141)	1033.6 (593)	1054.4 (8922)
25-29 years	992.7 (983)	1069.6 (770)	750.6 (1217)	953.6 (1184)	510.9 (1140)	744.9 (788)	1010.8 (456)	804.7 (6690)
30-34 years	757.9 (769)	791.4 (601)	534.3 (958)	713.8 (1032)	393.8 (928)	600 (676)	802.1 (415)	612.2 (5518)
35-39 years	791.4 (886)	724.3 (635)	525.8 (1058)	614.2 (1082)	411.6 (901)	548.5 (687)	681.5 (407)	591.3 (5800)
<b>Hospitalizations- Rate per 100,000<sup>a</sup> (Number)</b>								
15-19 years	94.9 (105)	80.5 (66)	49.7 (80)	58.4 (92)	29.9 (44)	80.5 (88)	72.8 (45)	64.5 (535)
20-24 years	92.8 (103)	96.6 (78)	48.3 (79)	68.5 (98)	41.1 (74)	55.2 (61)	78.4 (45)	65.2 (552)
25-29 years	61.6 (61)	52.8 (38)	39.5 (64)	50.7 (63)	21.1 (47)	37.8 (40)	62.1 (28)	42.7 (355)
30-34 years	47.3 (48)	44.8 (34)	27.9 (50)	34.6 (50)	14.9 (35)	30.2 (34)	52.2 (27)	31.8 (287)
35-39 years	66.1 (74)	49 (43)	26.3 (53)	35.2 (62)	17.4 (38)	29.5 (37)	55.3 (33)	35.9 (352)

a. Age-specific rate per 100,000 population. Note: Region of residence unknown/outside of Ontario for 1,596 emergency department visits and 164 hospitalizations.

were transferred to another facility providing inpatient hospital care, which includes acute, sub acute, and rehabilitation care. Approximately 60% were discharged home and another 10% were discharged home with support services. Less than 1% of individuals died after arrival in the emergency department and approximately 3% died after hospital admission. The 4,937 hospitalized cases accounted for more than 36,683 days in acute care hospitals with an average length of stay of 7.43 days.

## Discussion

This Compass highlights patterns of emergency department use and hospitalizations for injuries from motor vehicle collisions in Ontario and its regions. According to Transport Canada, more people have been killed in collisions in the last 50 years than the number of Canadians killed in two world wars.<sup>1</sup> Further, Transport Canada has reported that collisions cost Canada \$62.7 billion each year, with \$17.9 billion in Ontario alone.<sup>1</sup> Teen drivers have been a focus in recent literature, as crash rates are significantly higher among this age group.<sup>2,3</sup> Crash rates are high for young drivers because of their lack of experience combined with immaturity. The crash rate for this age group is especially high during the first months of licensure, when their lack of experience makes it difficult for them to recognize and respond to hazards. In addition, studies have focused on passengers, especially young children, who require different restraints depending on their age, height, and weight. This is a particularly vulnerable age group as more Canadian children die from motor vehicle collisions than any other cause.<sup>4</sup> Without appropriate and correct restraint use, they are at a higher risk of injury and death. (Andrew) In addition, children should be placed away from airbags and in the rear seat.<sup>5</sup> And finally, seniors, especially those experiencing declines in their hearing, vision, and motor skills, are highlighted in the literature as being a vulnerable age group with respect to motor vehicle collisions.

## References

1. Transport Canada. *Analysis and Estimation of the Social Cost of Motor Vehicle Collisions in Ontario*. 2007. [www.tc.gc.ca/roadsafety](http://www.tc.gc.ca/roadsafety)
2. SMARTRISK Navigator. <http://www.smartrisk.ca/home/>
3. Winston FK, Kallan MJ, Senserrick TM, Elliott MR. Risk factors for death among older child and teenaged motor vehicle passengers. *Arch Pediatr Adolesc Med* 2008;162(3):253-60.
4. Howard AW. Automobile restraints for children: a review for clinicians. *CMAJ* 2002;167(7):769-73.
5. Durbin DR, Chen I, Smith R, Elliott MR, Winston FK. Effects of seating position and appropriate restraint use on the risk of injury to children in motor vehicle crashes. *Pediatrics* 2005;115(3):e305-9
6. Subzwari S, Desapriya E, Babul-Wellar S, Pike I, Turcotte K, Rajabali F, Kinney J. Vision screening of older drivers for preventing road traffic injuries and fatalities. *Cochrane Database Syst Rev* 2009;(1):CD006252

## Managing the risk

The design of safe roads, safe vehicles, and the continuous promotion of responsible drivers and passengers are all important factors in making Ontario's roads safer.<sup>1</sup> Public Health can work with road safety organizations, government, and the community, to ensure the following messages are communicated effectively:

- ❖ Ensure all children are in age appropriate restraints and are using them correctly.
- ❖ Place children in the rear seat and away from airbags.<sup>5</sup>
- ❖ Drive sober. Never drink and drive or be under the influence of other drugs while behind the wheel.
- ❖ Observe speed limits.
- ❖ Buckle up. Seat belts save lives (reference).
- ❖ Avoid using a cell phone, even a hands-free one, while driving as it takes one's mind off the road.<sup>1</sup>
- ❖ Get trained. Ensure that new drivers are trained and certified by a reputable driving school.
- ❖ Restrict the number of passengers for teenage drivers.<sup>2</sup>
- ❖ Delay driver licensing age and ensure drivers get initial experience in lower risk conditions (such as with a supervising driver in the front seat, away from busy highways, no alcohol, in daylight hours, etc).<sup>3</sup>
- ❖ Have strict night driving restrictions.<sup>2</sup>
- ❖ Try not to promote single risk factor messages. For example, vision is not necessarily the only predictor for seniors driving safety, and studies have found there is insufficient evidence to determine the effect of vision screening tests in reducing driver crash rates.<sup>6</sup>

## For Further Information

Safe Kids Canada

[www.safekidscanada.ca](http://www.safekidscanada.ca)

Health Canada

<http://www.hc-sc.gc.ca/cps-spc/index-eng.php>

Transport Canada

[www.tc.gc.ca](http://www.tc.gc.ca)

SMARTRISK

[www.smartrisk.ca](http://www.smartrisk.ca)

Ontario Injury Prevention Resource Centre

[www.OnInjuryResources.ca](http://www.OnInjuryResources.ca)

## 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 (V20-V29, V40-V79) was used to isolate all emergency department visits and hospitalizations for motor vehicle collisions. 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.