

# Unintentional Injuries & Injury Prevention

*Injury is the leading cause of death and a major cause of morbidity among children and youth in Canada.<sup>1</sup> In Huron County, land transport occurrences and unintentional injuries account for significant potential years of life lost (Mortality section).*

Given the impact of injury on morbidity, mortality, and personal and economic cost, preventing injuries is an important public health challenge.

In this section, unintentional injuries in Huron County will be examined for all causes, for injuries caused by falls and land transport occurrences, and for injuries that take place on a farm. In addition, unintentional injuries for children 0-6 years will be reported. The ICD-10 codes used to classify these injuries are shown in Appendix 3. For a complete picture of the impact of unintentional injuries in a population, data presented will include the number and rate of emergency room (ER) visits by age group, as well as crude and age-standardized hospitalization and mortality rates. Lastly, data on the proportion of preventive measures used in Huron County, such as seat belt, booster seat, and bike helmet use, will be reported.

## Risk Factors for Unintentional Injuries

Injuries are often referred to as “accidents”; however, approximately 90% of injuries are predictable and preventable. Many different factors can influence risk of injury. These include income and social status, education and living in a rural area, among others. The Canadian Institute for Health Information (CIHI) has shown that injury-related emergency room visits and hospitalizations are more common among individuals from lower income neighbourhoods.<sup>2</sup> For example, ER visits for 15-24 year olds in households earning less than \$39,500 were 35% higher when compared to those earning \$74,501

or more. Likewise, Canadian studies have demonstrated that the risk of injury in children is higher in families that are economically disadvantaged.<sup>3</sup> Poverty can impact the risk of injury by limiting resources for supervised care or for implementing safety measures in the home. Also, poorer neighbourhoods can have fewer safe areas to play and are often in closer proximity to busier streets.

Recently, it has also been shown that the overall injury-related mortality of Canadians increases with increasing rurality.<sup>4</sup> Specifically, mortality due to motor vehicle collisions represents the leading cause of injury among rural areas, due to the predominance of rural roads, with higher speed limits, increased distance of travel and poorer road conditions; more risky behaviours (such as alcohol use and not wearing a seat belt); and increased time for response of emergency medical services.<sup>4</sup> Farm-related injuries also increase the risk of injury in rural areas.

It is important to understand the factors which contribute to injury occurrence and compliance in protective measures in order to produce effective injury prevention strategies.

## Self-Reported Injury

In 2005, 12.5% (95% CI 9.0-16.0) of Huron County residents aged 12 years and older reported that they suffered an injury serious enough to limit normal activities within the last 12 months.<sup>5</sup> This is not significantly different from Ontario.

# All Unintentional Injuries (All Causes)

Unintentional injuries are injuries that are neither self-directed nor directed at others and often result from motor vehicle collisions, falls, fires and poisonings.

The majority of health care encounters for unintentional injuries take place in the emergency room (ER). In 2005, there were 10,940 ER visits due to unintentional injuries in Huron County, giving a crude rate of 177.8 ER visits per 1,000 population (**Table 1**). Of all age groups, 10-19 year olds had the highest rate of ER visits, with 272.2 ER visits per 1,000 population. Almost two thirds (61.5%) of all ER visits were made by men (data not shown).

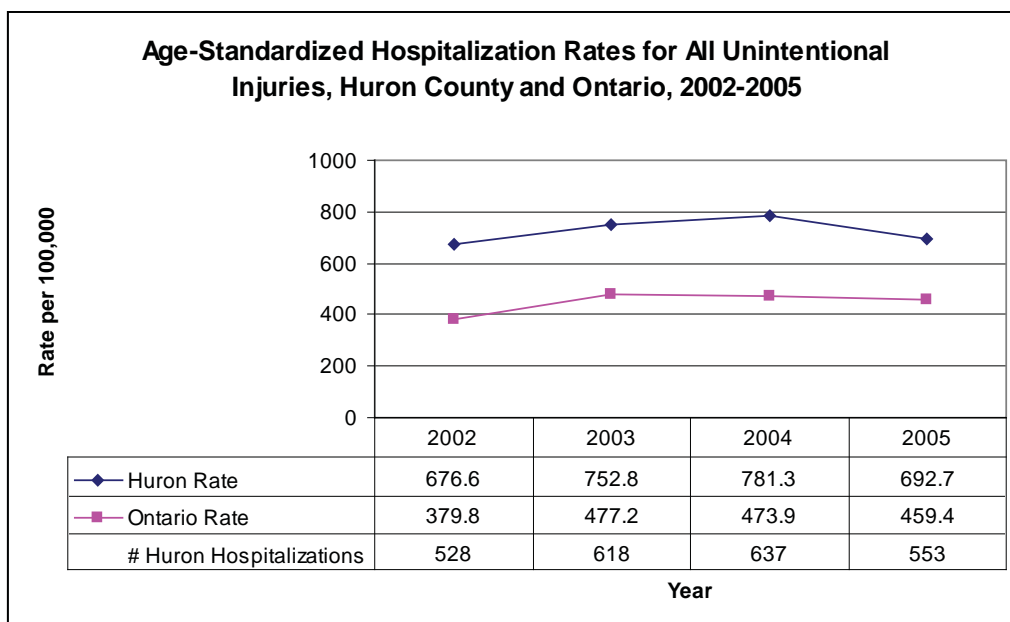
More serious injuries can require hospitalization (i.e. admission to the hospital for more than 24 hours). In 2005, 553 individuals were hospitalized for unintentional injuries (all causes) in Huron County, giving a crude hospitalization rate of 898.8 hospitalizations per 100,000 population.<sup>6</sup> Of those hospitalized, 53.7% were female and 43.2% were 75 years and older. Age-standardized hospitalization rates from 2002-2005 in Huron County are shown in **Figure 1**. From 2004 to 2005, hospitalization rates for unintentional injuries in Huron County decreased 11%. When compared to Ontario, age-standardized hospitalization rates due to unintentional injuries were higher for all four years examined in Huron County.

Injuries can have fatal consequences. In Huron County, there were 33 deaths due to unintentional injuries (all causes) in 2003, resulting in a crude mortality rate of 53.3 deaths per 100,000 population.<sup>6</sup> Over 70% (72.7%) of deaths were in men and 30.3% of all deaths occurred in individuals under the age of 25 years. When standardized for age, the Huron County mortality rate due to unintentional injuries was double that of Ontario, with 44.9 deaths per 100,000 compared to 22.7 deaths per 100,000 in 2003.

Possible explanations for higher hospitalization and mortality rates due to unintentional injuries in Huron County include: higher proportion of rural roads which lead to more serious land

Age Group (years)	# ER Visits	Rate (per 1,000)
0-9	1199	175.1
10-19	2442	272.1
20-44	3903	208.7
45-64	2041	125.3
65-74	555	102.8
75+	800	150.6
Total	10940	177.8

**Table 1.** The number and rate of emergency room (ER) visits due to unintentional injuries per 1,000, by age group, Huron County, 2005. Source: National Ambulatory Care Reporting System and Population Estimates [2005], Provincial Health Planning Database (PHPDB) Extracted: 27/04/2007, Health Planning Branch, Ontario MOHLTC.



**Figure 1.** Age-standardized hospitalization rates for unintentional injuries (all causes) in Huron County and Ontario (2002-2005). Source: Hospital [In-Patient Discharges] Data and Population Estimates [2005], Provincial Health Planning Database (PHPDB) Extracted: 26/04/2007, Health Planning Branch, Ontario MOHLTC.

transport occurrences; higher proportion of farms and potential for farming-related injuries; and increased risky behaviours, such as increased alcohol use and decreased bicycle helmet and seat belt use (see Injury Prevention).

## Selected Causes of Injury

### Falls

In Ontario, falls were the leading cause of ER visits and hospitalization for all age groups, with the exception of 15-24 year olds, for 2002/2003.<sup>2</sup> Mortality due to an unintentional fall is most likely to occur in adults aged 65 years and older. Injuries can also lower the confidence and independence of seniors which can impact themselves and their family, friends, and caregivers.<sup>7</sup>

In 2006, 19.5% (95% CI 16.6-22.4) of Huron County adults aged 18 years and older reported experiencing a fall in the last 12 months.<sup>8</sup> Of those, 37.9% (95% CI 29.8-46.0) reported that their fall resulted in an injury that affected their daily activities. In adults 65 years and older, 16.8% (95% CI 10.8-22.8) reported experiencing a fall in the last 12 months and 33.3%\* (95% CI 14.4-52.2) reported that the injury affected their daily activities.

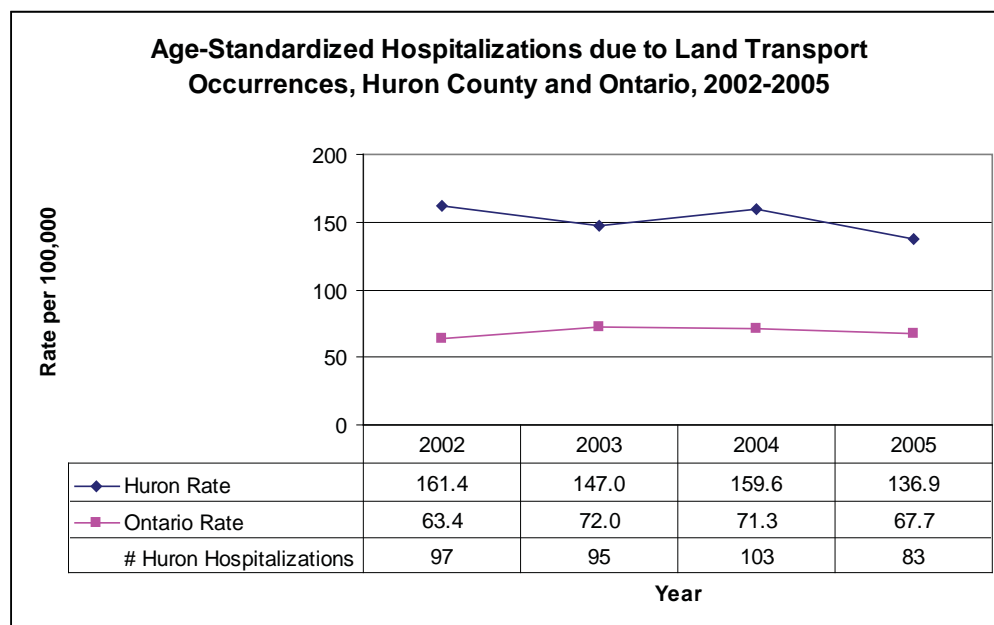
\* High sampling variability. This estimate should be interpreted with caution.

In 2005, there were 2,747 ER visits in Huron County due to injuries caused by falls, resulting in a crude rate of 44.6 ER visits per 1,000 population (Table 2). Rates of ER visits were highest in those aged 0-9 years and 75 and older.

In 2005, there were 325 hospitalizations due to falls, for a crude hospitalization rate of 528.2 hospitalizations per 100,000 population (Figure 2). Of those hospitalized, 70.5% were aged 65 years or older. Age-standardized hospitalization rates due to injuries caused by falls are shown for Huron County and Ontario in Figure 2. From 2002 to 2005, Huron County had higher rates of

Age Group (years)	# ER Visits	Rate (per 1,000)
0-9	429	62.6
10-19	524	58.4
20-44	579	31.0
45-64	503	30.9
65-74	197	36.5
75+	515	97.0
Total	2747	44.6

**Table 2.** The number and rate of emergency room (ER) visits due to injuries caused by falls per 1,000, by age group, Huron County, 2005. Source: National Ambulatory Care Reporting System and Population Estimates [2005], Provincial Health Planning Database (PHPDB) Extracted: 27/04/2007, Health Planning Branch, Ontario MOHLTC.



**Figure 2.** Age-standardized hospitalization rates for unintentional injuries caused by falls in Huron County and Ontario (2002-2005). Source: Hospital [In-Patient Discharges] Data and Population Estimates [2005], Provincial Health Planning Database (PHPDB) Extracted: 26/04/2007, Health Planning Branch, Ontario MOHLTC.

hospitalization due to injuries caused by falls than Ontario, even once standardized for age.

Mortality due to falls most often occurs in individuals aged 65 years and older. Between 2000 and 2003, 20 deaths occurred due to falls among those 65 years and older, giving an age-specific mortality rate of 47.5 deaths per 100,000 population.<sup>6</sup>

## Land Transport Occurrences

While motor vehicle collisions are somewhat less common than falls in Ontario, the resulting injuries are more likely to result in hospitalization or death.<sup>2</sup> In Huron County, land transport occurrences are the 11<sup>th</sup> leading cause of death (see Mortality chapter), which likely results from Huron County being predominantly rural. The Canadian Institute for Health Information (CIHI) has shown that increasing rurality increases the risk of mortality due to a motor vehicle collision, even after controlling for socioeconomic and demographic determinants of health.<sup>4</sup>

In 2005, Huron County had 878 ER visits due to injuries caused by land transport occurrences, resulting in a crude rate of 14.3 ER visits per 1,000 population (**Table 3**). Age-specific rates of ER visits shows that youth aged 10-19 years had the highest rate of visits, followed by those aged 20-44 years.

Age-standardized hospitalization rates due to land transport occurrences have decreased 14% from 2004 to 2005 (**Figure 3**). Despite this, Huron County rates of hospitalization continue to be higher than Ontario.

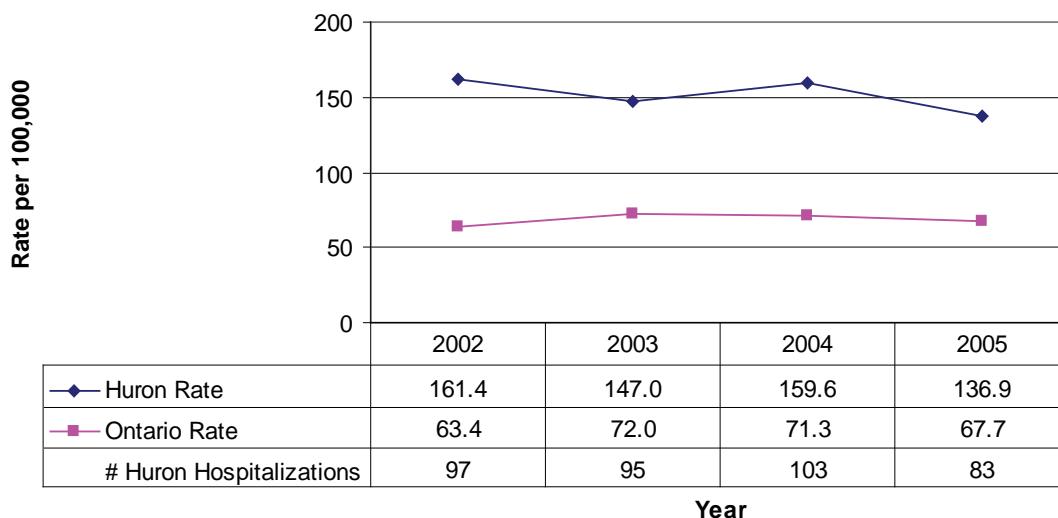
In 2003, there were 18 deaths due to land transport occurrences, resulting in a crude death rate of 29.1 deaths per 100,000 population.<sup>6</sup> Overall, youth aged 15-24 years contributed to 44% of those deaths.

## Injuries Occurring on Farms

Age Group (years)	# ER Visits	Rate (per 1,000)
0-9	70	10.2
10-19	258	28.7
20-44	335	17.9
45-64	147	9.0
65-74	35	6.5
75+	33	6.2
Total	878	14.3

**Table 3.** The number and rate of emergency room (ER) visits due to injuries caused by land transport occurrences per 1,000, by age group, Huron County, 2005. Source: National Ambulatory Care Reporting System and Population Estimates [2005], Provincial Health Planning Database (PHPDB) Extracted: 27/04/2007, Health Planning Branch, Ontario MOHLTC.

**Age-Standardized Hospitalizations due to Land Transport Occurrences, Huron County and Ontario, 2002-2005**



**Figure 3.** Age-standardized hospitalization rates for unintentional injuries caused by land transport occurrences in Huron County and Ontario (2002-2005). Source: Hospital [In-Patient Discharges] Data and Population Estimates [2005], Provincial Health Planning Database (PHPDB) Extracted: 26/04/2007, Health Planning Branch, Ontario MOHLTC.

Huron County has the highest proportion of individuals living in farming households of all counties in southwestern Ontario.<sup>9</sup> In 2001, 16% of all Huron County residents lived in farming households compared to just 2% of Ontarians. In addition, 15% of the labour force in Huron County is engaged in agricultural work.<sup>10</sup> Agricultural workers face more hazards in the workplace than their counterparts from other occupations. In 2000, there were 104 fatalities related to agricultural injuries and almost 1,500 hospitalizations in Canada.<sup>11</sup> Those at highest risk of injury include farm operators and children living on farms.

The only local source of farm-related injuries (i.e. injuries sustained in the process of agricultural production) is the 2001 Census of Agriculture. In the census, farmers were asked to report whether they had sustained any injuries in the previous 12 months that required medical attention or time off work. In Huron, 2.9% of all farm operators (n=3,955) reported having been injured compared to 2.7% of farm operators (n=85,015) in Ontario.<sup>12</sup>

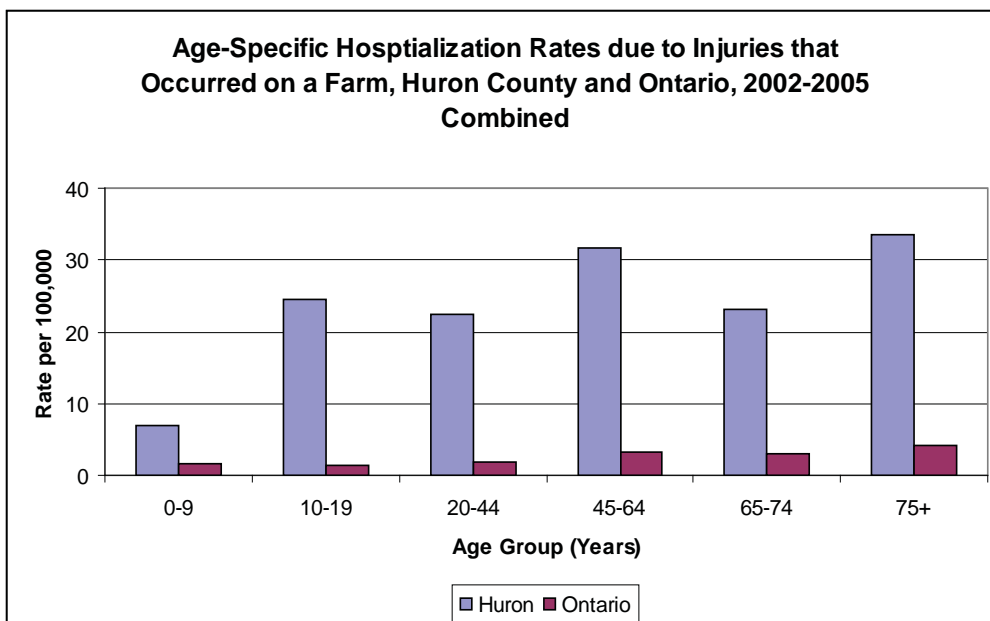
In this chapter, injuries that occurred on a farm are reported (ICD10-CA Code U987). This includes any injuries that were sustained on a farm, regardless of whether or not agricultural production was happening at the time of the injury.

Over 200 ER visits were made in 2005 in Huron County due to injuries that occurred on a farm (Table 4). The rate of ER visits was highest for those aged 20-44 years (5.8 visits per 1,000 population).

In 2005, 13 individuals were hospitalized due to unintentional injuries that occurred on a farm. When looking at age-specific hospitalization rates for 2002-2005 combined, Huron County had higher rates of hospitalization for all age groups when compared to Ontario (Figure 4). This is expected as Huron County has a higher proportion of farms than Ontario.

Age Group (years)	# ER Visits	Rate (per 1,000)
0-9	14	2.0
10-19	28	3.1
20-44	109	5.8
45-64	37	2.3
65-74	12	2.2
75+	5	0.9
Total	205	3.3

**Table 4.** The number and rate of emergency room (ER) visits due to unintentional injuries that occurred on a farm per 1,000, by age group, Huron County, 2005. *Source: National Ambulatory Care Reporting System and Population Estimates [2005], Provincial Health Planning Database (PHPDB) Extracted: 27/04/2007, Health Planning Branch, Ontario MOHLTC.*



**Figure 4.** Age-specific hospitalization rates due to unintentional injuries that occurred on a farm in Huron County and Ontario (2002-2005 combined). *Source: Hospital [In-Patient Discharges] Data and Population Estimates [2002-2005], Provincial Health Planning Database (PHPDB) Extracted: 27/04/2007, Health Planning Branch, Ontario MOHLTC.*

# Unintentional Injuries in Children 0-6 years

Unintentional injuries are the leading cause of death in children aged six years and younger. Most home injuries in children are caused by falls, burns and scalds, and poisonings, all of which are preventable through the removal of hazards in the home and close parental supervision.<sup>13</sup>

In 2003-2004, Huron County individuals aged 18 years and older were asked about their beliefs and perceptions of childhood injuries.<sup>14</sup> Overall, 58.9% (95% CI 54.4-63.4) correctly identified that childhood injuries were the leading cause of death among children 1-6 years of age in Ontario. Over 50% (54.4%, 95% CI 49.8-59.0) thought that injuries to children were very or completely preventable and 84.8% (95% CI 81.5-88.1) of individuals believed the best way to prevent injuries was by active supervision by an adult.

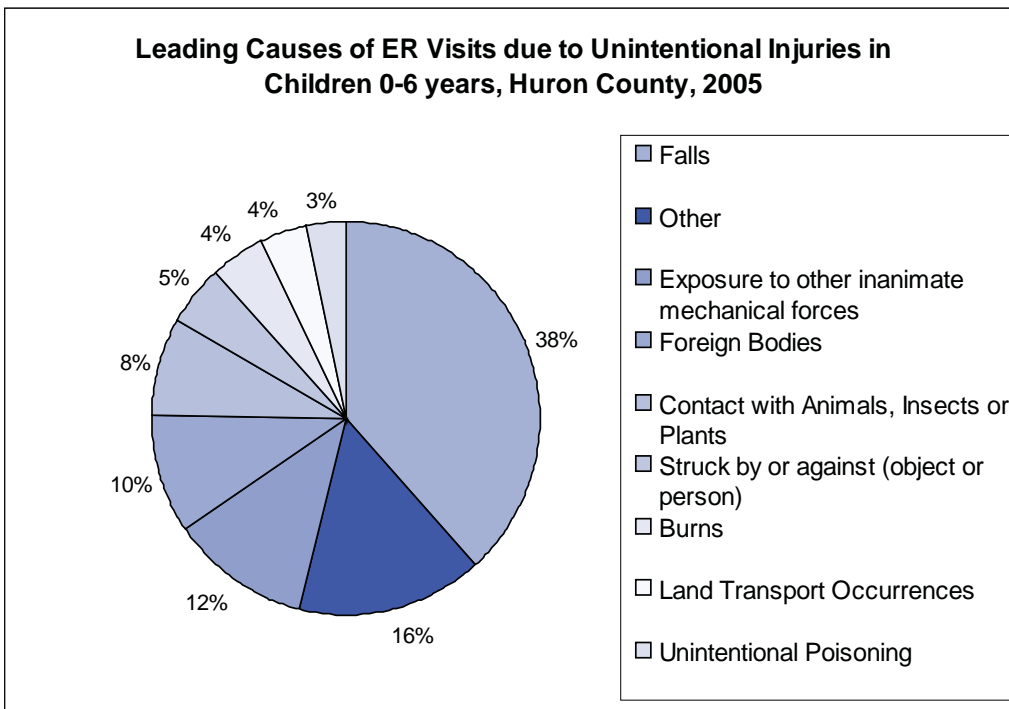
More recently, a national survey by Safe Kids Canada has shown that 86% of Canadian parents believe that swimming lessons are the best way to protect a child from drowning.<sup>15</sup> However, active supervision of parents, adult training in CPR, First Aid and water rescue, fencing surrounding the pool and using lifejackets are also important steps that need to be taken in order to reduce mortality and hospitalization due to drowning.

In 2005, there were 843 visits to the ER by children 0-6 years and 11 hospitalizations (Table 5). Of all Huron County children aged 0-6 years, there were zero deaths due to unintentional injuries in 2003.

Of all ER visits reported in 2005 for Huron County children 0-6 years, 38.3% of visits were due to falls (Figure 5). Falls are also the leading cause of ER visits among Ontario children.<sup>2</sup> Exposure to inanimate mechanical forces, such as contact with sharp objects or explosion of materials, also contributed to a large proportion of ER visits (11.3%). There was one ER visit due to drowning in Huron County in 2005.

**Table 5.** The number and rate of emergency room (ER) visits and hospitalizations per 1,000 due to unintentional injuries in children aged 0-6 years, Huron County, 2005. The number of deaths and mortality rate is also reported for 2003. Source: National Ambulatory Care Reporting System, Ontario Mortality Data and Population Estimates [2003, 2005], Provincial Health Planning Database (PHPDB) Extracted: 27/04/2007, Health Planning Branch, Ontario MOHLTC.

	Number (#)	Rate (per 1,000)
ER Visits	843	190.6
Hospitalizations	11	2.5
Deaths (2003)	0	0



**Figure 5.** The leading causes of ER visits due to unintentional injuries in children 0-6 years, Huron County, 2005 (n=843). Source: National Ambulatory Care Reporting System and Population Estimates [2005], Provincial Health Planning Database (PHPDB) Extracted: 30/04/2007, Health Planning Branch, Ontario MOHLTC.

# Injury Prevention

Most injuries can be prevented. Education campaigns, legislative changes and product modifications have all worked to reduce injuries.<sup>16</sup>

## Seat Belt and Booster or Car Seat Use

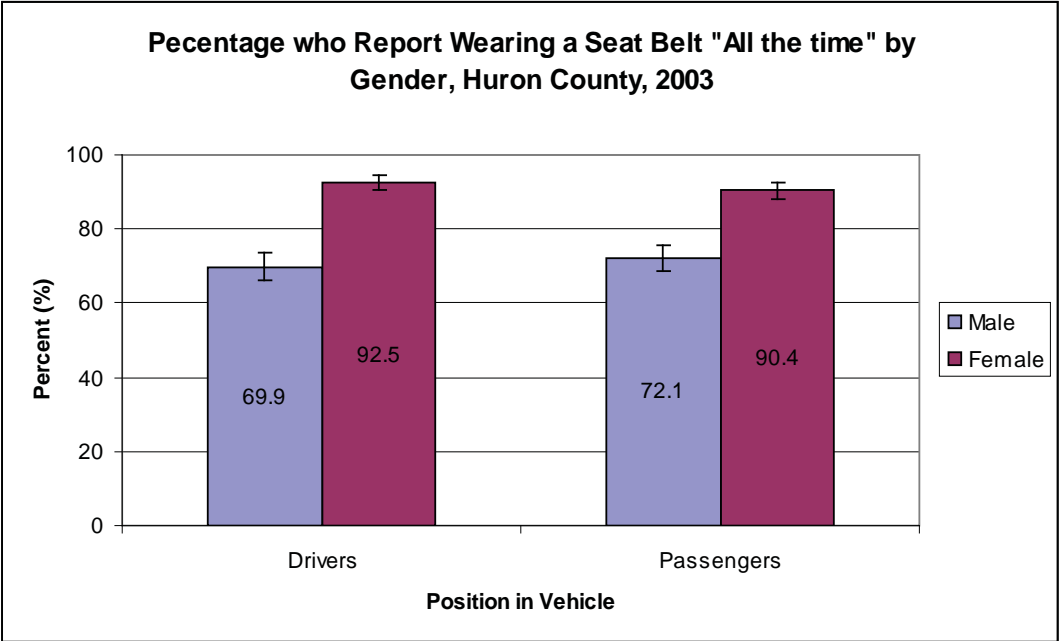
Using a seat belt is the single most effective way to reduce the risk of injury or death in a motor vehicle collision.<sup>17</sup> For every 1% increase in seat belt use, five lives in Canada are saved (Transport Canada). By law, all Ontario residents who occupy a seating position in a motor vehicle for which a seat belt is provided must wear a seat belt or use a child safety seat.<sup>17</sup> In addition, it is also mandatory for Ontario children who are under the age of eight, and who weigh between 18-36 kg and are less than 145 cm tall, to be seated in a booster seat.<sup>18</sup>

In 2003, 81.2% (95% CI 78.9-83.5) of Huron County adults aged 18 years and older reported that they wear a seat belt "all of the time" when they drive.<sup>19</sup> When a passenger in a vehicle, 81.7% (95% CI 79.5-83.9) reported that they wore their seat belt "all the time".

When looking at seat belt use by gender, it is apparent that women drivers and passengers are significantly more likely to always wear a seat belt when compared to men (Figure 5). In Huron County, 92.5% (95% CI 90.3-94.7) female drivers reported wearing a seat belt "all the time" versus only 69.9% (95% CI 65.7-73.5) of male drivers (p<0.0001).

In 2005, 73.9% (95% CI 61.2-86.6) of households with a child aged 4-7 years responded that the child usually travels in a booster (or car) seat and always in the back of the vehicle.<sup>20</sup> Among households with a child aged 8-11 years, 52.9% (95% 41.2-64.6) report that the child usually uses a seat belt with a lap and shoulder belt combination (or a booster seat and seat belt) and always travels in the back of the vehicle.

The health unit, along with other partners, checks car seats for incorrect installation and usage. The majority of car seats inspected are installed and used incorrectly. In 2005, 90.0% of car seats inspected in Huron County were used incorrectly and in 2006, 77.5% were used incorrectly.<sup>21</sup>



**Figure 5.** The frequency of reported seat belt use among those who drive vehicles (n=1117) or are passengers in vehicles (n=1212) in Huron County, by gender, 2003. Source: Rapid Risk Factor Surveillance System, January-December 2003.

# Bike Helmet Use

Wearing a helmet can reduce risk of head injury by up to 85%.<sup>22</sup> In Ontario, every cyclist under the age of 18 years is required to wear an approved bicycle helmet.<sup>22</sup>

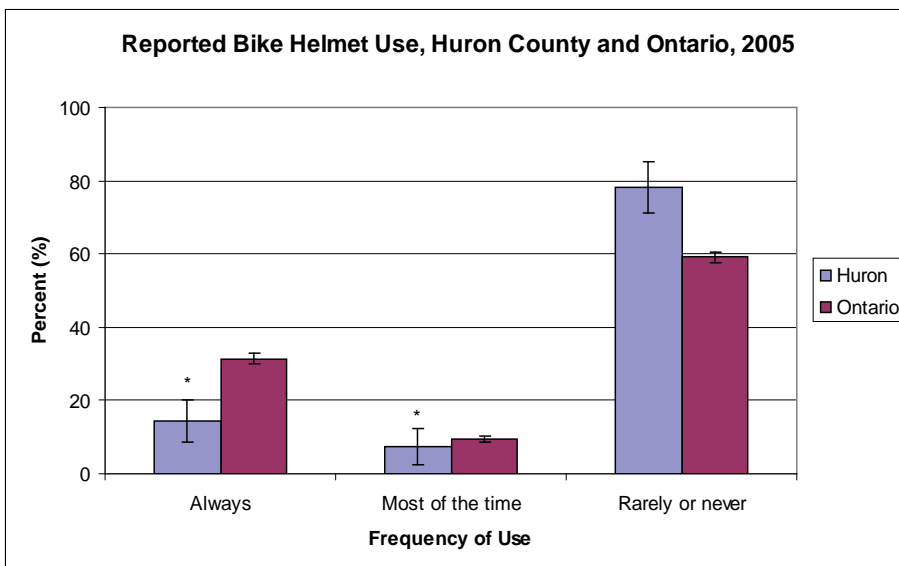
Of all Huron County residents (12+ years) who reported bicycle use in 2005, only 14.5%\* (95% CI 8.6-20.3) reported that they always wear a helmet compared to 78.1% (95% CI 71.2-85.1) who rarely or never wear a helmet (**Figure 6**). By contrast, 31.4% (95% CI 30.1-32.7) of Ontarians report that they always wear a helmet, which is significantly higher than Huron. When looking at bike helmet use by age group, 40.7%\* (95% CI 21.6-59.8) of 12-17 year olds report always using a bike helmet compared to only 7.4%\* (95% CI 2.8-12.0) of adults aged 18 years and older.

# Conclusion

Huron County experiences higher hospitalization and mortality rates for unintentional injuries than Ontario, even when standardized for age. Possible explanations include: higher proportion of rural roads which lead to more serious land transport occurrences, higher proportion of farms and potential for farming-related injuries, and increased risky behaviours. The highest rate of emergency room visits in Huron County is in the 10-19 years age group, both for all causes of unintentional injuries and for land transport occurrences. This is an important target group to share prevention messages and strategies with. While Huron County has higher rates of injuries that occur on farms than Ontario (likely due to the higher proportion of farms in Huron County), self-reported farm-related injuries were comparable in farm operators in Huron and Ontario.

When it comes to preventing injuries, a lower percentage of males in Huron County report wearing a seat belt when compared to women. In addition, not all households with children under the age of 8 years report that the child travels in a booster seat in the back of the car as is required by law. Lastly, a lower percentage of individuals report wearing a bicycle helmet when cycling than Ontario and only 41% of those under the age of 18 years report that they always wear a bicycle helmet. Further education efforts must be made to increase awareness and promote behavioural changes in order to decrease the incidence of unintentional injuries in Huron County.

\* High sampling variability. This estimate should be interpreted with caution.



**Figure 6.** The frequency of reported bicycle helmet use among those who ride bicycles in Huron County (n=151) and Ontario (n=9,614), 2005. \* Indicates that there is high variability and that the estimate should be interpreted with caution. Source: Canadian Community Health Survey, Cycle 3.1 [2005], Statistics Canada, Share File, Knowledge Management and Reporting Branch, Ontario MOHLTC..

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