

THE COST OF INJURY IN CANADA

Summary Report:

Analysis of
Injury Trends
2004 and 2010



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Introduction

Defining Injury and Injury Burden

Preventable injury is the leading cause of death for Canadians between the ages of 1 to 44 and among the top causes of hospitalizations for Canadians of all ages. Injury, which is defined as “the physical damage that results when a human body is subjected to energy that exceeds the threshold of physiological tolerance or results in lack of one or more vital elements, such as oxygen” (WHO, 2008) can be categorized as intentional and unintentional. The categorization differentiates between “whether or not an injury was meant to harm the victim” (Yanchar, Warda, & Fuselli, 2012).

Injury Trends – A Comparison Between 2004 and 2010

An important aspect to understanding the cost of injury in Canada is the ability to see trends and identify areas where the number and rates of injuries have changed. This information can inform priorities, highlight successes, as well as, areas that require more attention.

This compendium to the *Cost of Injury in Canada Report* (2015) provides an overview of the comparisons between 2004 and 2010 injury data, looking at mortalities, hospitalizations, and emergency room visits. Each compares the absolute number and rates, changes based on injury types, and changes by different age categories. This data has been obtained from the 2009 and 2015 ERAT analysis using data from 2004 and 2010, respectively. All external causes of injury have been classified according to the International Classification of Diseases, 10th Revision (ICD-10).

Highlights

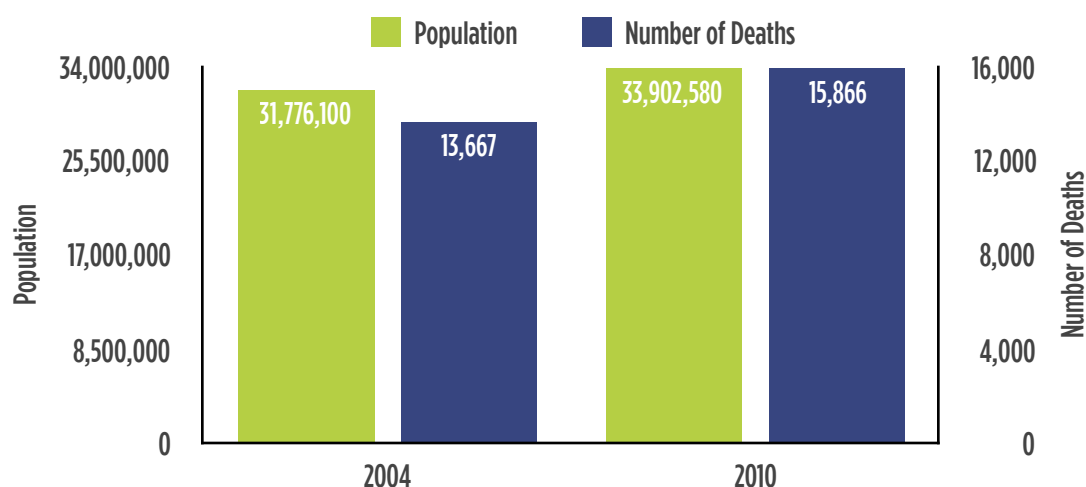
- ❖ The national mortality rate for all injuries deaths per 100,000 population increased by 2.8% from 2004 to 2010.
- ❖ Between 2004 and 2010, all major mechanisms of injury - falls, transport incidents and suicide, experienced a statistically significant change.
- ❖ The largest increase in mortality rate between 2004 and 2010 is due to falls, whereby the age-standardized rate increased by 58% (95% CI = (49.6, 67.1)), followed by unintentional poisonings and drownings.
- ❖ As with injury deaths, hospitalization rates due to falls increased between 2004 and 2010. Conversely, all other major mechanisms of injury-related hospitalizations decreased.
- ❖ Older adults, aged 65 and older experienced an increase in mortality, hospitalizations and emergency room visits between 2004 and 2010.

Injury Mortalities

Figure 1 shows that the number of injury-related deaths increased by 16% (95% CI = (13.4, 18.7)), whereas, the population growth for the same time periods increased by 6.7%.

Figure 1

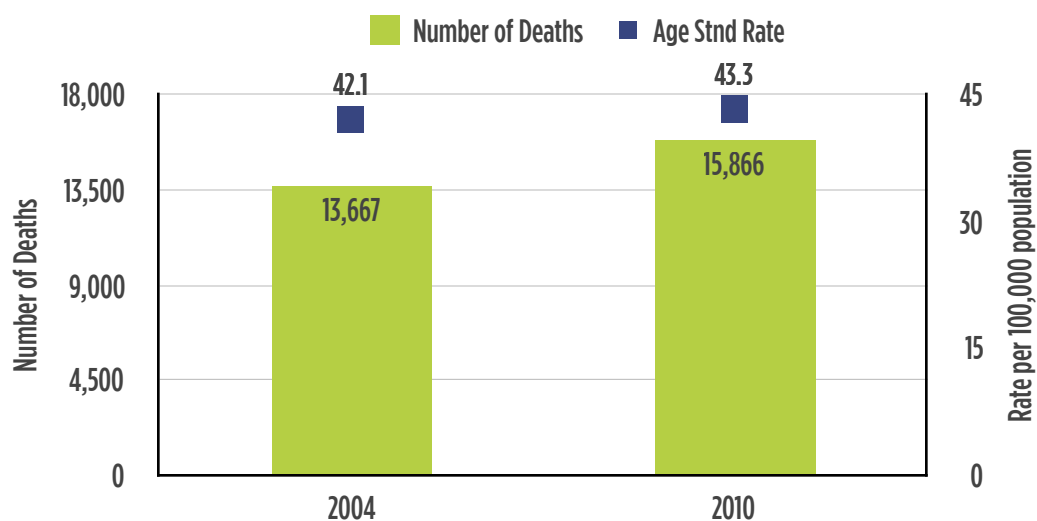
Population and injury-related deaths, 2004 and 2010



The mortality rate deaths per 100,000 population increased by 2.8% from 2004 to 2010 (Figure 2).

Figure 2

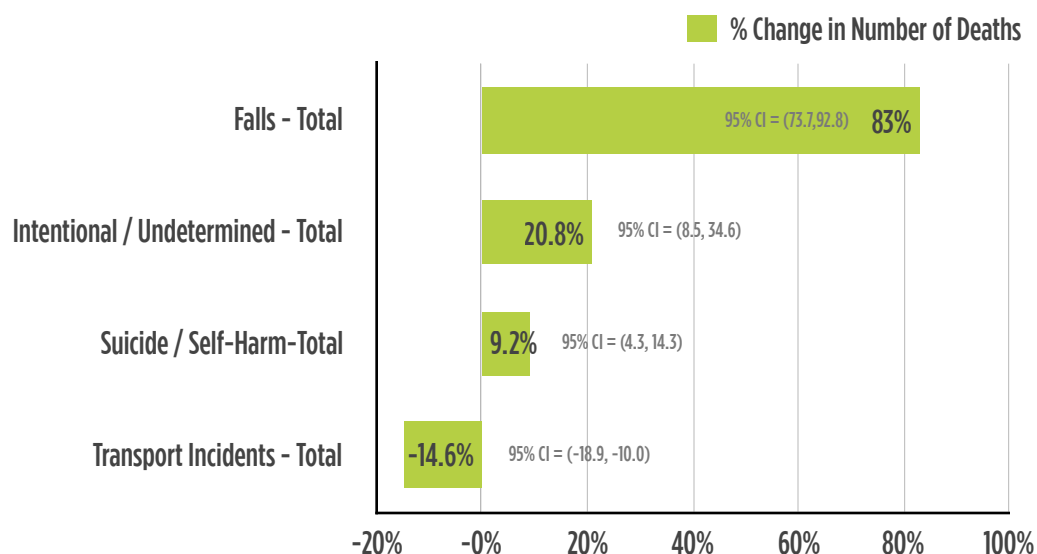
Number and Rate of Deaths due to Injuries 2010 compared to 2004



When the data is compared in terms of type of injury, all the major mechanisms experienced a statistically significant change (Figure 3).

Figure 3

Percentage Change in the Number of Deaths by Type of Injury 2010 compared to 2004



As Figure 4 below shows, the number of fall-related deaths increased by 83% (95% CI = (73.7, 92.8)) from 2,225 deaths in 2004 to 4,071 deaths in 2010. The age-standardized rate increased by 58% (95% CI = (49.6, 67.1)) from 6.3 deaths per 100,000 population in 2004 to 9.9 deaths per 100,000 population in 2010. This increase is reflective of the changing demographics in Canada, specifically the aging population as the 'baby boomers' grow older (Parachute, 2015), which is demonstrated in Figure 5. Between 20% and 30% of older Canadians fall each year, resulting in numerous deaths, hospitalizations and emergency room visits (Public Health Agency of Canada, 2014).

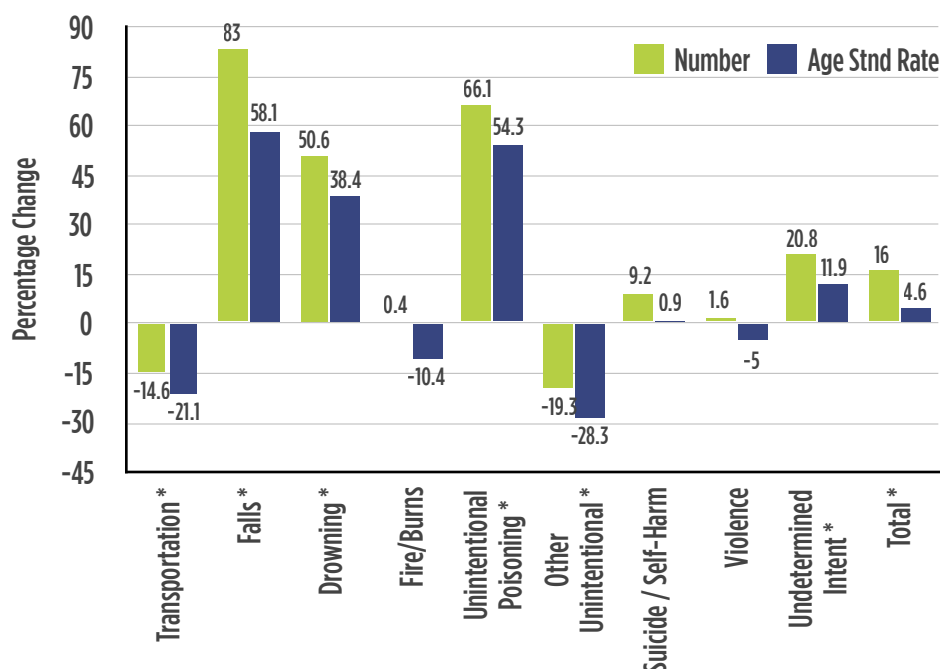
The number of unintentional poisonings increased by 66% (95% CI = (53.1, 80.3)) from 944 deaths in 2004 to 1,568 deaths in 2010. The age-standardized death rate increased by 54% (95% CI = (42.1, 67.5)) from 2.9 deaths per 100,000 population in 2004 to 4.4 deaths per 100,000 population in 2010. While the reasons behind the increase in unintentional poisonings are difficult to identify, information regarding national opioid use may be of interest. At a national level, Canada has the world's second highest prescription opioid consumption rates (Fischer et al. 2014) and as a result opioid-related mortality appears to be on the rise (Dhalla et al., 2009). While national statistics for deaths due to opioids are unavailable, there has been notable increases in opioid-related deaths between 2004 and 2010 at the provincial level (OCC, 2012, Carter & Graham, 2013). Prescription opioid

related deaths have sharply increased and comprise approximately 50% of annual drug deaths (Cater & Graham, 2013). This increase was first noted in Ontario between 1991 to 2004, when opioid-related deaths doubled and between 1991 and 2007 when prescriptions of oxycodone increased by 850% (Dhalla et al., 2009).

The number of drowning deaths increased by 51% (95% CI = (27.8, 77.7)) from 245 deaths in 2004 to 369 drowning deaths in 2010. The age-standardized drowning death rate increased by 38% (95% CI = (17.7, 62.7)) from 0.8 deaths per 100,000 population in 2004 to 1.1 deaths per 100,000 population in 2010. It is difficult to make assumptions regarding the reasons for changes in drowning rates and it is important to note that drowning rates have decreased over time. However, reasons for the increase seen here could include being alone without supervision among older adults and children ages 0 to 4. The high drowning rate for young adults is often reflective of high risk taking behavior, alcohol consumption prior to entry into the water and being in or near the water after dark.

Figure 4

Percentage Change in Number and Rate of Deaths by Mechanism of Injury 2010 compared to 2004



*= statistically significant change in number and rate

When broken down by age group (Figure 5) the youngest and oldest age groups experienced the largest percentage increase between the two time periods.

Figure 5

Percentage Change in the Number of Death Injuries by Age Group 2010 compared to 2004

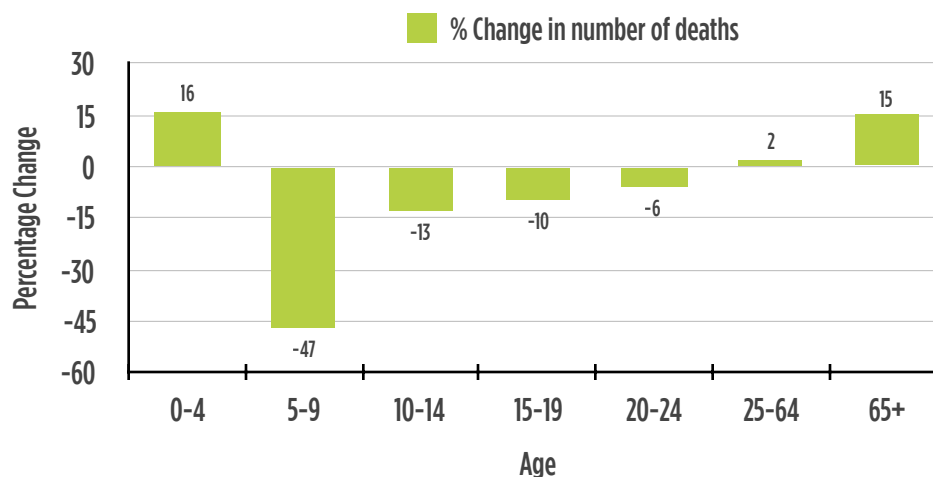
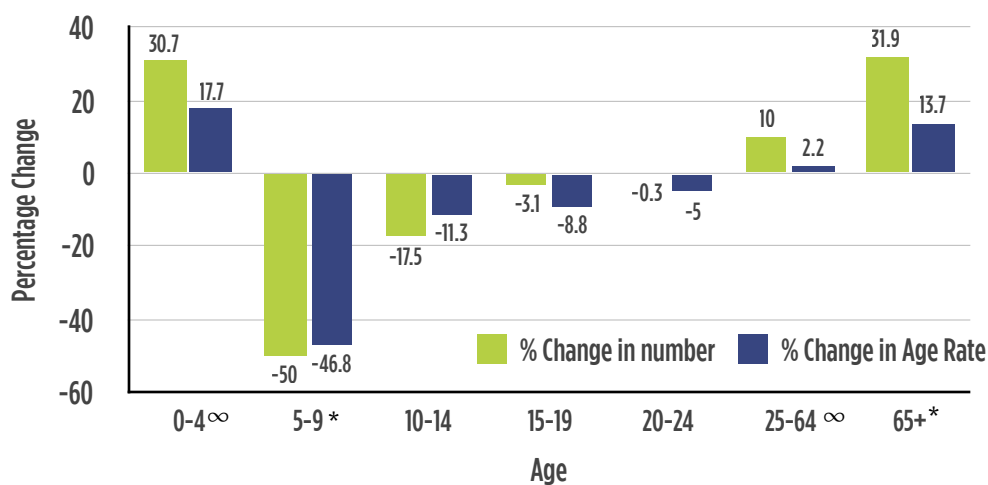


Figure 6 shows that in 2004 there were 114 children between 0 and 4 years of age who died as a result of an injury. In 2010 there were 149 deaths, an increase of 31% (95% CI = (1.7, 53.8)). The death rate for this age group increased 18% (95% CI = (-8.4, 38.6)) from 6.8 deaths per 100,000 population in 2004 to 8.0 deaths per 100,000 population in 2010.

Figure 6

Percentage Change in Number and Death Rate by Age Group 2010 compared to 2004



*= statistically significant change in number and rate

∞= statistically significant change in number but not rate

In 2004 there were 4,842 injury deaths to those 65 years of age and older. In 2010 there were 6,386 deaths, this was a 32% (95% CI = (27.0, 53.9)) increase. The injury death rate for this age group was 117.1 deaths per 100,000 population in 2004 and in 2010 the rate was 133.1 deaths per 100,000 population, an increase of 14% (95% CI = (9.6, 32.7)).

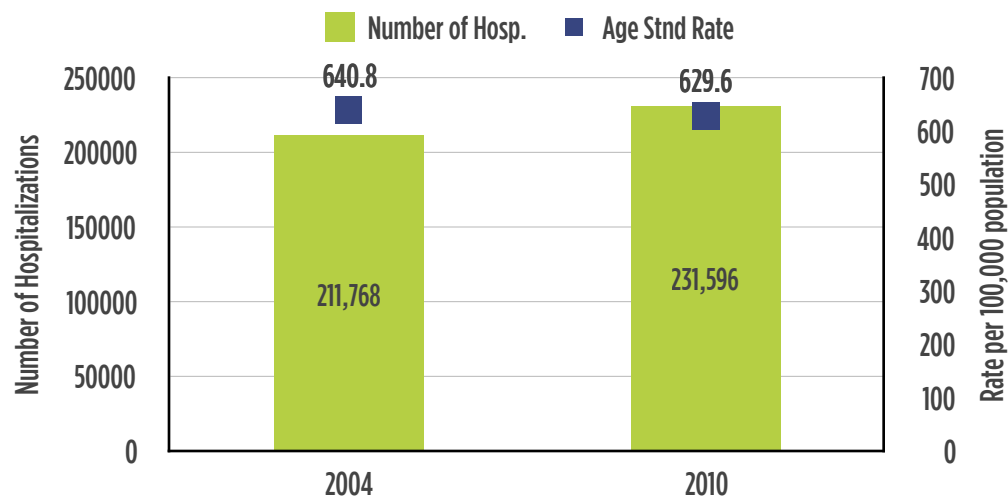
Children between 5 and 9 years of age experienced the largest decrease in both the number and rate of injury deaths. In 2004 there were 80 deaths in this age group. In 2010 there were 40 deaths, a decrease of 50% (95% CI = (-66.7, -31.7)). The injury death rate for this age group decreased 47% (95% CI = (-64.5, -27.3)) from 4.2 deaths per 100,000 population in 2004 to 2.2 deaths per 100,000 population in 2010.

Injury Hospitalizations

Figure 7 shows that between 2004 and 2010 the number of hospitalizations increased by 9% (95% CI = (8.7, 10.0)). The age-standardized hospitalization rate decreased by 1.7% (95% CI = (-2.4, -1.2)).

Figure 7

Number and Rate of Hospitalizations due to Injuries 2010 compared to 2004



As with injury deaths, hospitalizations associated with falls increased. All other types of injuries decreased (Figure 8).

Figure 8

Percentage Change in the Number of Hospitalizations by Type of Injury 2010 compared to 2004

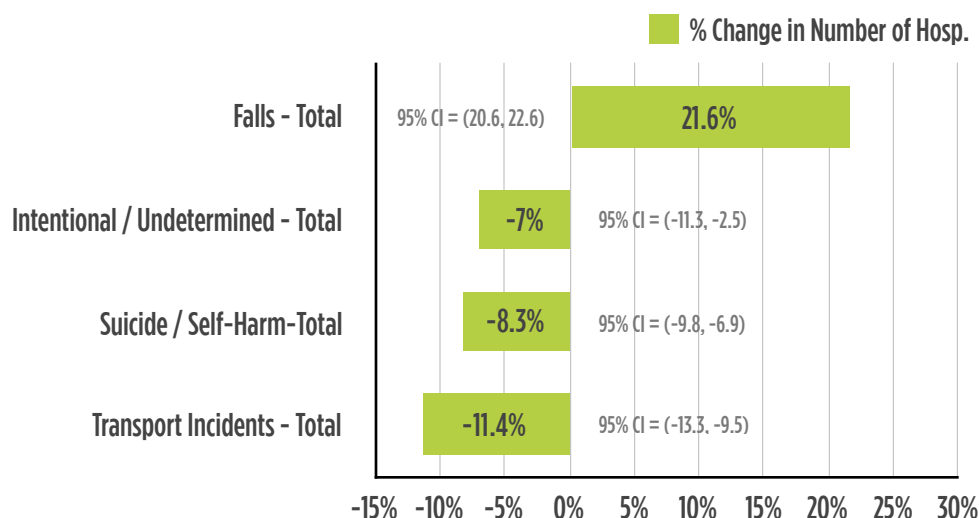
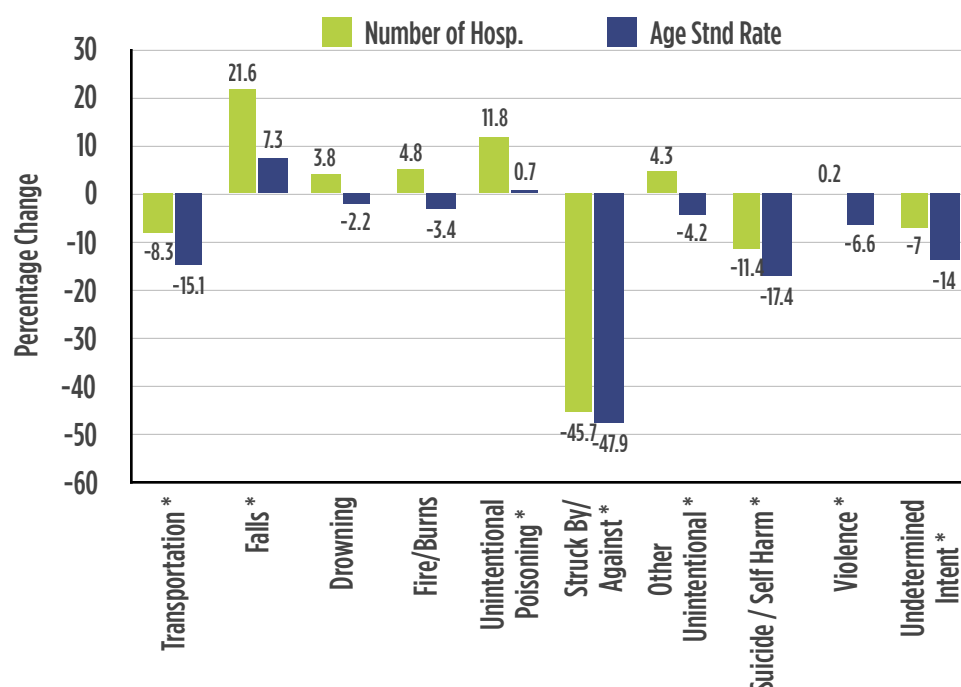


Figure 9 shows that fall-related hospitalizations experienced the largest percentage increase in both the number of hospitalizations and the rate. In 2004 there were 105,565 fall-related hospitalizations and by 2010 this increased 22% (95% CI = (20.6, 22.6)) to 128,389 hospitalizations. The fall-related hospitalization age-standardize rate increased by 7% (95% CI = (6.4, 8.3)) from 310.3 per 100,000 population in 2004 to 333.1 per 100,000 population in 2010.

Figure 9

Percentage Change in Number and Rate of Hospitalization by Mechanism of Injury 2010 compared to 2004



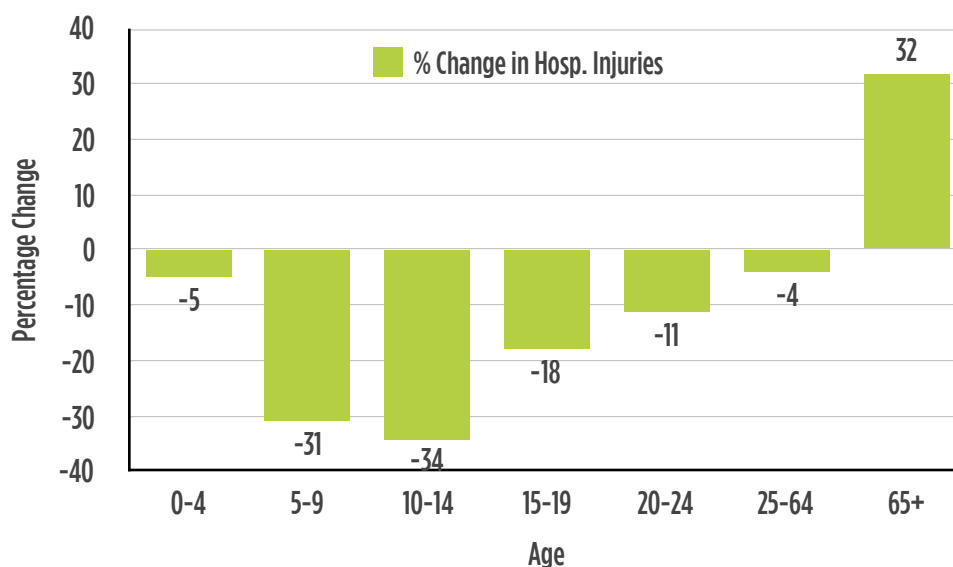
*= statistically significant change in number and rate

Struck by/against an object/person had the largest percent-age change decrease in the number of hospitalizations and the rate. In 2004 there were 1,223 hospitalizations and in 2010 there were 664 hospitalizations, a decrease of 46% (95% CI = (-50.7, -40.3)). The age-standardized rate in 2004 was 3.9 admissions per 100,000 population, and in 2010 the rate was 2.0 admissions per 100,000 population, a decrease of 48% (95% CI = (-52.5, -42.9)).

In Figure 10, only the 65+ age group saw an increase in hospitalizations. This can be attributed to the aging of the population.

Figure 10

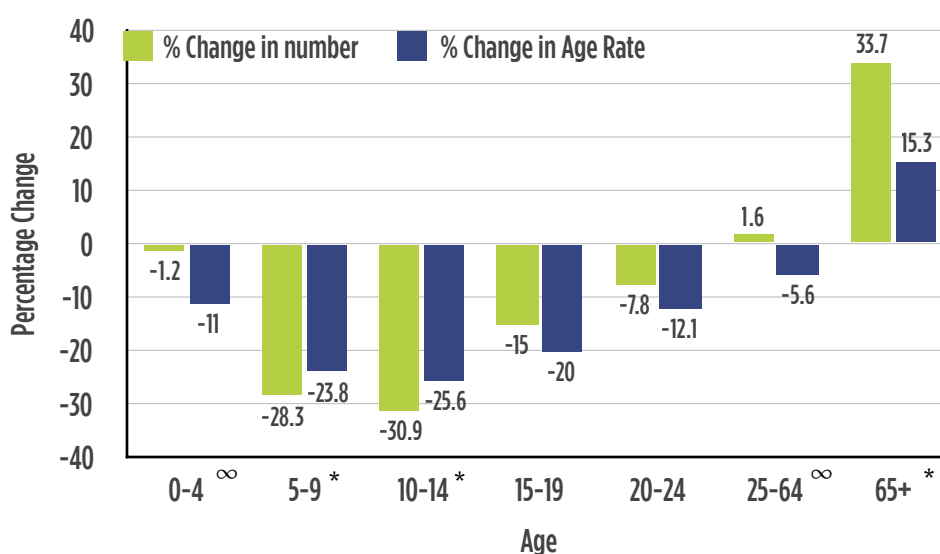
Percentage Change in the Number of Hospitalized Injuries by Age Group 2010 compared to 2004



Those 65 years of age and older experienced a 34% (95% CI = (32.5, 37.7)) increase in the number of injury-related hospitalizations from 76,785 in 2004 to 102,665 in 2010 (Figure 11). There was a 15% (95% CI = (14.2, 18.8)) increase in the rate of hospitalizations from 1,856.3 per 100,000 population in 2004 to 2,140.6 per 100,000 population in 2010.

Figure 11

Percentage Change in Number and Rate of Hospitalization by Age Group 2010 compared to 2004



*= statistically significant change in number and rate

∞= statistically significant change in number but not rate

Youth between the age of 10 and 14 years experienced the largest percentage decrease in the number hospitalizations from 8,742 hospitalizations in 2004 to 6,044 in 2010, a 31% (95% CI = (-33.1, -29.0) decrease. In 2004 the hospitalization rate for this age group was 414.8 per 100,000 population and in 2010 the rate was 308.4 per 100,000 population, a decrease of 26% (95% CI = (-28.1, -23.7)).

Injury Non-Hospitalization (Emergency Room) Visits

Between 2004 and 2010 the number of non-hospitalization visits increased by 11% (95% CI = (11.3, 12.1)). The age-standardized rate increased by 5% (95% CI = (4.2, 5.0)) (Figure 12).

Figure 12

Number and Rate of Non-Hospitalizations due to Injuries 2010 compared to 2004

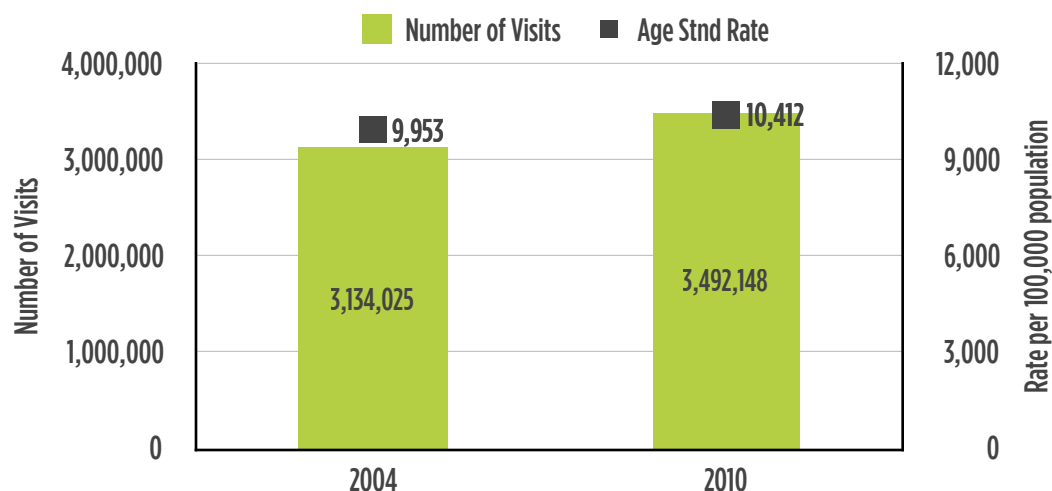


Figure 13 shows that, as with hospitalized injuries, falls are responsible for the biggest increase in number non-hospitalized injuries

Figure 13

Percentage Change in the Number of Non-Hospitalizations by Type of Injury 2010 compared to 2004

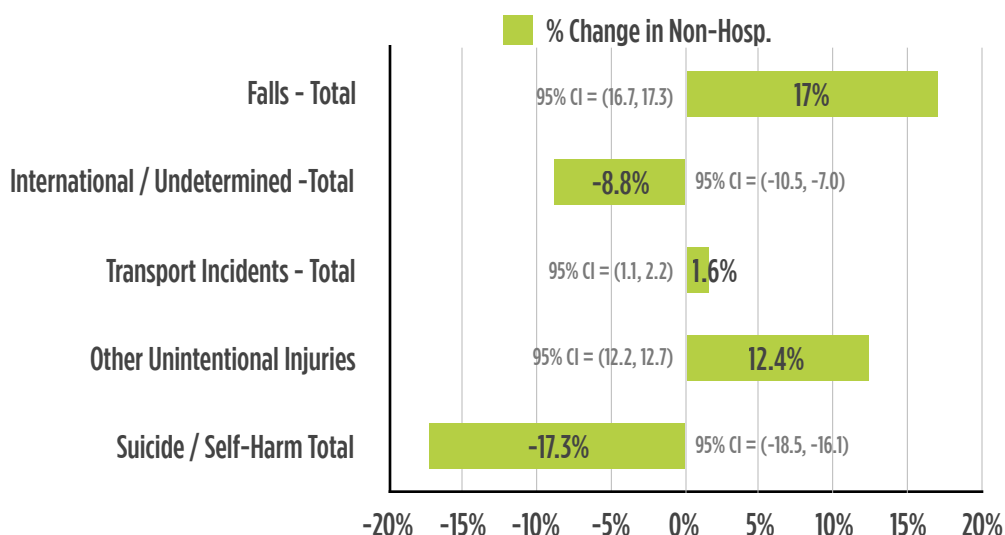
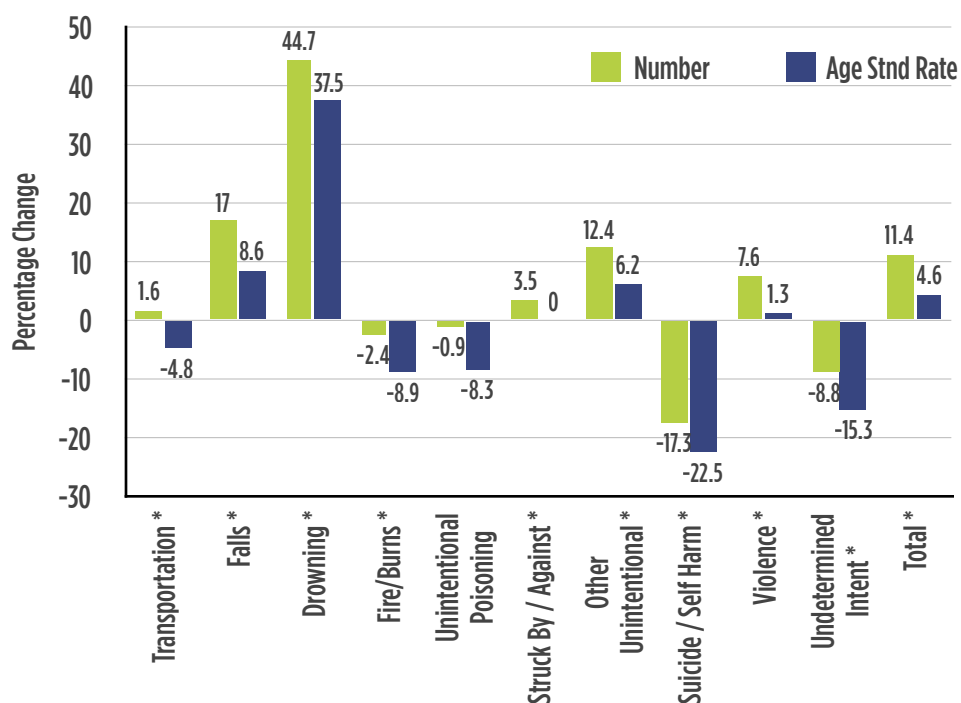


Figure 14 reveals that drowning-related non-hospitalizations experienced the largest percentage increase in number and rate between the two time periods. In 2004 there were 865 non-hospitalizations and in 2010 there were 1,251 non-hospitalizations, a 45% (95% CI = (32.6, 58.0)) increase. The rate increased 38% (95% CI = (26.4, 49.6)) from 2.9 per 100,000 population in 2004 to 3.9 per 100,000 population in 2010.

Suicide/self-harm experienced large percentage decreased in number and rate of non-hospitalizations between the two time periods. In 2004 there were 41,930 non-hospitalizations and in 2010 there were 34,677, a 17% (95% CI = (-18.5, -16.1)) decrease. The rate decreased 23% (95% CI = (-23.6, -21.4)) from 130.9 non-hospitalizations per 100,000 population in 2004 to 101.5 per 100,000 population in 2010.

Figure 14

Percentage Change in Number and Rate of Non-Hospitalization by Mechanism of Injury 2010 compared to 2004

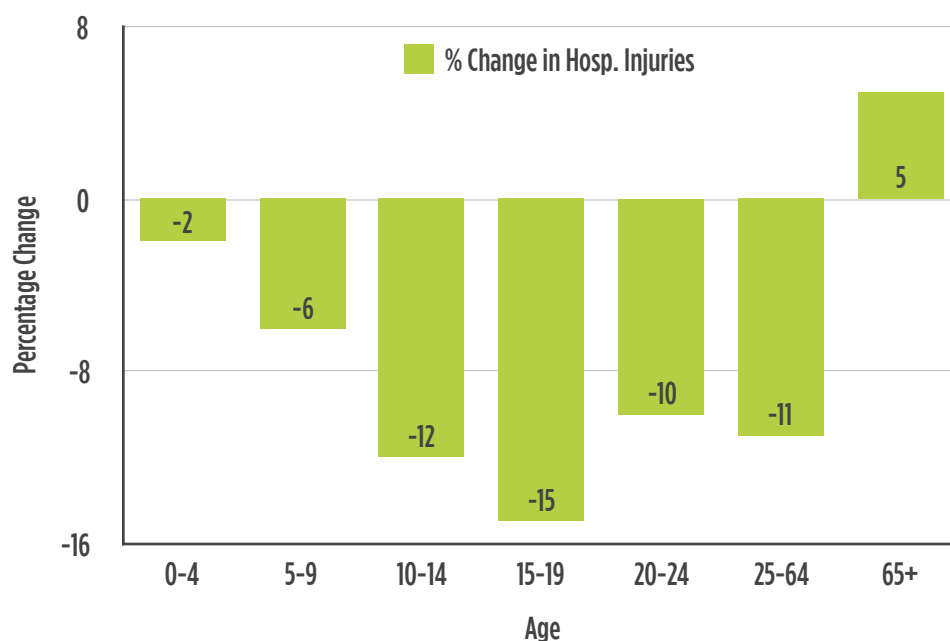


*= statistically significant change in number and rate

There was a decrease in the percentage change in the number of non-hospitalized injuries across all age groups, except for those aged over 65 years (Figure 15).

Figure 15

Percentage Change in the Number of Non-Hospitalized Injuries by Age Group 2010 compared to 2004



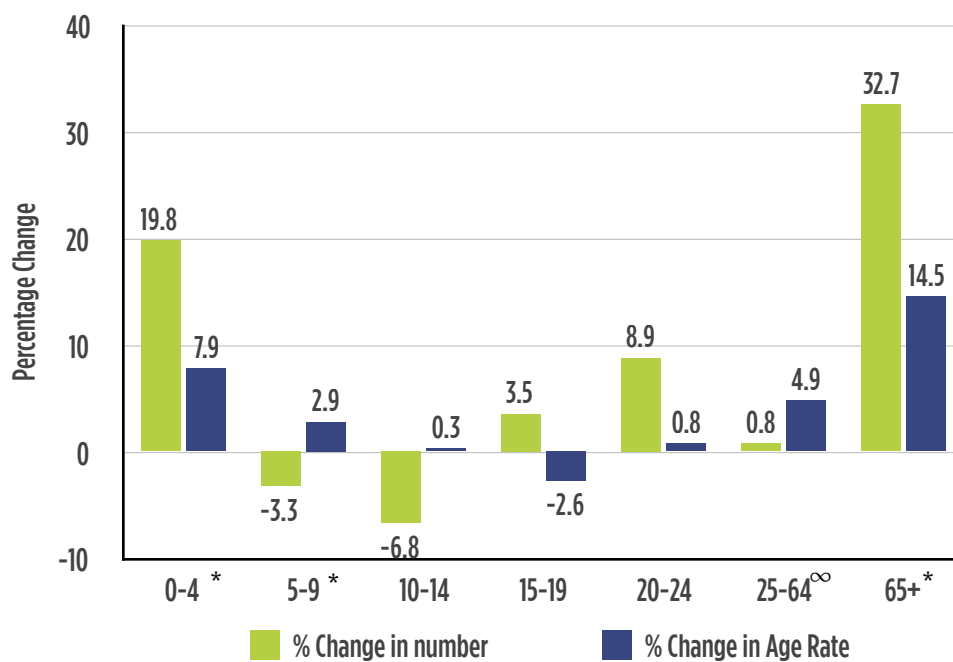
The youngest and oldest age groups experienced the largest increase in percentage change of both the number of non-hospitalizations and the rate (Figure 16).

In 2004 children between 0 and 4 years of age had 199,213 non-hospitalizations. This increased 20% (95% CI = (19.1, 20.4)) in 2010 to 238,686 non-hospitalizations. The rate of non-hospitalizations increased 8% (95% CI = (7.3, 8.4)) from 11,805.0 per 100,000 population in 2004 to 12,740.8 per 100,000 population in 2010.

Those 65 years of age and older experienced a 33% (95% CI = (32.2, 33.6)) increase in the number of non-hospitalizations from 358,535 in 2004 to 475,921 non-hospitalizations in 2010. The non-hospitalization rate increased 15% (95% CI = (14.0, 15.2)) from 8,667.8 per 100,000 population in 2004 to 9,923.0 per 100,000 population in 2010.

Figure 16

Percentage Change in Number and Rate of Non-Hospitalization by Age Group 2010 compared to 2004



*= statistically significant change in number and rate

[∞]= statistically significant change in number but not rate

Conclusion

The analysis of injury deaths, hospitalizations and emergency room visits in 2004 and 2010 has revealed notable progress and areas for improvement in injury prevention in Canada. Overall, the mortality rate due to injury has increased from 2004 to 2010 by nearly 3%. According to forecasted numbers in the *Cost of Injury Report (2015)*, these numbers are projected to increase even further over time.

Since 2004, decreases have been achieved in deaths and hospitalizations from transport incidents. There has also been a decrease in hospitalizations and emergency room visits due to suicide/self-harm. However, increases in death rates due to falls, unintentional poisonings, and drownings between 2004 and 2010 were uncovered.

When analyzing injury by age category, specific age groups have seen a decline in mortality rate, specifically among individuals between the ages of 10-64. Conversely, older adults 65+ years have experienced an increase in mortality, hospitalizations and emergency room visits.

Overall, the findings from this compendium highlight the need for increased investment in prevention efforts, with a specific focus on the older adult population and in relation to falls.

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