

THE COST OF INJURY IN CANADA

The clock is ticking...




Parachute
PREVENTING INJURIES. SAVING LIVES.

THE COST OF INJURY IN CANADA

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EXECUTIVE SUMMARY

Introduction

Parachute is pleased to publish *The Cost of injury in Canada, 2015* in collaboration with The Conference Board of Canada and with support from the Public Health Agency of Canada. This Report quantifies the cost of injury to Canadian children, families, our health care system, and to Canadian society.

The 2015 Report updates *The Economic Burden of Injury in Canada* last published in 2009. Using the same methodology, the 2015 Report examines all injuries at the national level, as well as providing provincial breakdowns. New in the 2015 Report are forecasts developed by the Conference Board of Canada that show the potential impact of inaction, as well as what can happen if known, effective interventions are broadly and comprehensively implemented across Canada.

The clock is ticking. In Canada, as this Report shows, preventable injuries resulted in:

- ❖ 15,866 deaths
- ❖ 231,596 Canadians hospitalized
- ❖ Nearly 3.5 million emergency room visits
- ❖ More than 60,000 Canadians either partially or permanently disabled
- ❖ \$15.9 billion in direct health care costs
- ❖ \$26.8 billion in total economic costs

Every hour, 427 people in our country suffer a preventable injury as a result of a fall, a motor vehicle crash, a fire, poisoning, drowning, or other activities.

Preventable injury is the leading cause of death for Canadians aged one to 44, and claims the lives of more children in Canada than all other causes. On a daily basis, more than 10,000 Canadians are injured seriously enough to require medical attention. Of these, approximately 9,567 (93%) are seen in emergency rooms, 43 (0.4%) die, 634 (6%) are hospitalized, and 165 (1.6%) are left partially or totally disabled.

The cost is mounting. In addition to this alarming, and increasing human toll, preventable injuries cost Canadians more than \$26.8 billion a year. The direct costs of injury in 2010 were \$15,890 billion and indirect costs were \$10,906 billion. The injury death rate has increased by 2.8% from 42.06 (per 100,000) to 43.25 (per 100,000).

Preventable injury in 2004 killed 13,000 Canadians. In 2010, the number increased to 15,866. If we continue on the current trajectory, by 2035, preventable injury will kill 26,390 Canadians a year.

The economic cost of injury in Canada has increased by 35% since 2004. By 2035 injuries will cost Canadians \$75 billion a year, an increase of 180%.

The simple fact is, almost all of these injuries and deaths could have been prevented. The vast majority of injuries in Canada are both predictable and preventable. We know that investing wisely in programs for which there is already good evidence makes a difference.

Every dollar spent on	Saves society
Childproof cigarette lighter	\$80
Booster seat	\$71
Bicycle helmet	\$45
Child safety seat	\$42
Zero alcohol tolerance, driver under 21	\$25
Smoke alarm	\$18
Paediatrician counseling	\$9
Poison control centre	\$8

Source: *Children's Safety Network*. Injury prevention: what works? A summary of cost-outcome analysis for injury prevention programs (2014 update) [online] 2014. Available from URL: <http://www.childrencyfetynetwork.org>

Total cost of injury

Injuries cost Canadians \$26.8 billion and 15,866 lives in 2010.

Table 1
Total Cost of Injury, Canada, 2010

Injury Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability	Total Economic Cost of Injury
15,866	231,596	3,492,148	55,717	4,425	\$26.8 billion

The total cost of injury to Canadian society can be divided into direct costs (health care costs arising from injuries) and indirect costs (costs related to reduced productivity from hospitalization, disability, and premature death). The direct costs of injury in 2010 were \$15,890 billion or 59% of total injury costs. The indirect costs were \$10,906 billion or 41% of total costs arising from injury.

Injuries can be a result of events related to, as examples, transportation, falls, drowning, fire/burns, suffocation, being struck by/against, or poisonings, and are generally classified as either unintentional (inadvertent or accidental) or intentional (violence or self-inflicted). Unintentional injuries accounted for 82% of injury costs (\$22.1 billion). Intentional injuries accounted for a further 15% of total costs (\$4.1 billion) and injuries of undetermined intent for the remaining 3% (\$600 million).

What the future may hold...

If we continue on the current trajectory, forecasts show that by 2035 injuries will cost Canadians \$75 billion and 26,390 lives. That's an increase of 180% and over 10 thousand more lives.

Injury by cause

Table 3

Number of injury deaths, hospitalizations, emergency room visits, and related disability cases by cause, Canada, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Transport Incidents	2,620	28,350	290,782	7,204	699
Falls	4,071	128,389	1,036,079	23,236	1,969
Drowning	369	247	1,251	37	4
Fire\Burns	234	2,099	43,684	982	50
Unintentional Poisoning	1,568	7,893	54,245	1,731	109
Struck By \Against Sports Equipment	<5	664	68,355	518	39
Other Unintentional Injuries*	1,792	36,462	1,845,277	15,881	1,132
Suicide\Self-Harm	3,948	16,131	34,677	3,443	175
Violence	515	8,069	97,360	1,933	202
Undetermined Intent\Other	749	3,292	20,438	752	46
TOTAL	15,866	231,596	3,492,148	55,717	4,425

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

What the future may hold...

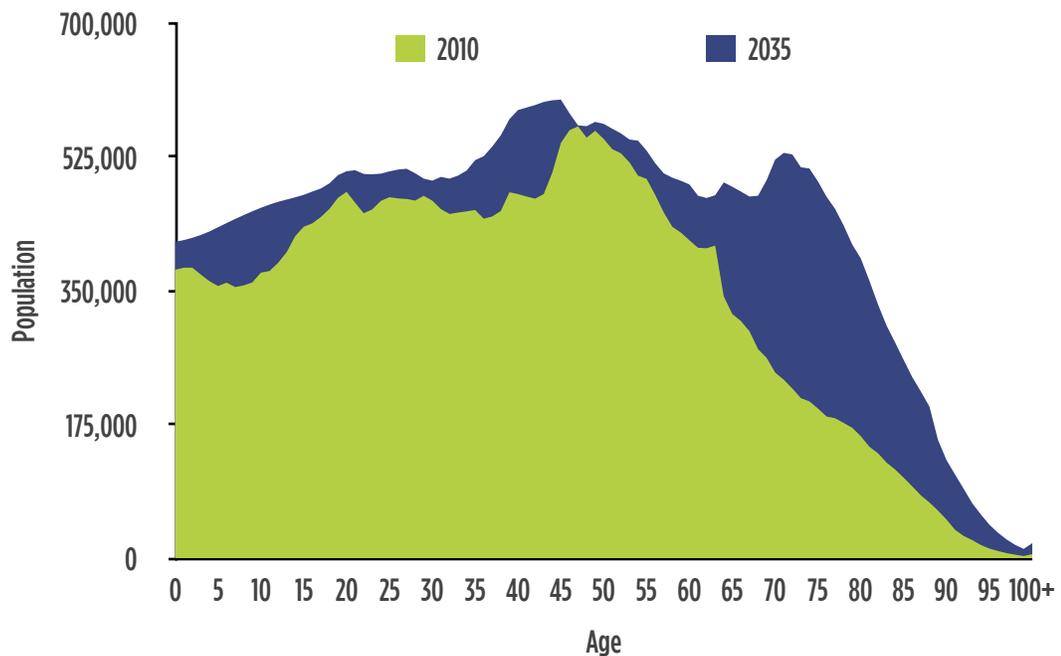
If we continue on the current trajectory, forecasts show that by 2035:

- Deaths will increase by 60% from 15,866 to 26,386
- Hospitalizations will increase by 62% from 231,596 to 375,215
- Emergency room visits will increase by 26% from 3,492,148 to 4,394,681
- Permanent Partial Disability will increase by 36% from 55,717 to 75,883
- Permanent Total Disability will increase by 39% from 4,425 to 6,146

Population by age cohort, Canada, 2010 and 2035

Canada’s population is aging as the ‘baby boomers’ grow older. This graph shows the distribution of the Canadian population by age in 2010 and again in 2035. These changing demographics will have an impact on the cost of injuries in both human and financial tolls

Population by Age Cohort, Canada, 2010 and 2035



Cost of injury by cause

Falls were the leading cause of overall injury costs in Canada in 2010, accounting for \$8.7 billion or 34% of total costs, followed by transport incidents at \$4.3 billion (17%), other unintentional injuries at \$5.5 billion (22%) and suicide/self-harm at \$2.9 billion (12%).

Table 7

Total, direct and indirect costs of injury by cause, Canada, 2010

Description	Total costs (\$ millions)	Direct costs (\$ millions)	Indirect costs (\$ millions)
Transport Incidents	4,289	2,145	2,144
Falls	8,680	6,652	2,029
Drowning	187	13	175
Fire\Burns	366	177	188
Unintentional Poisoning	1,264	396	868
Struck By\Against Sports Equipment	187	97	90
Other Unintentional Injuries*	7,127	4,861	2,265
Suicide\Self-Harm	2,956	829	2,127
Violence	1,142	541	602
Undetermined Intent \Other	598	179	419
TOTAL	26,796	15,890	10,906

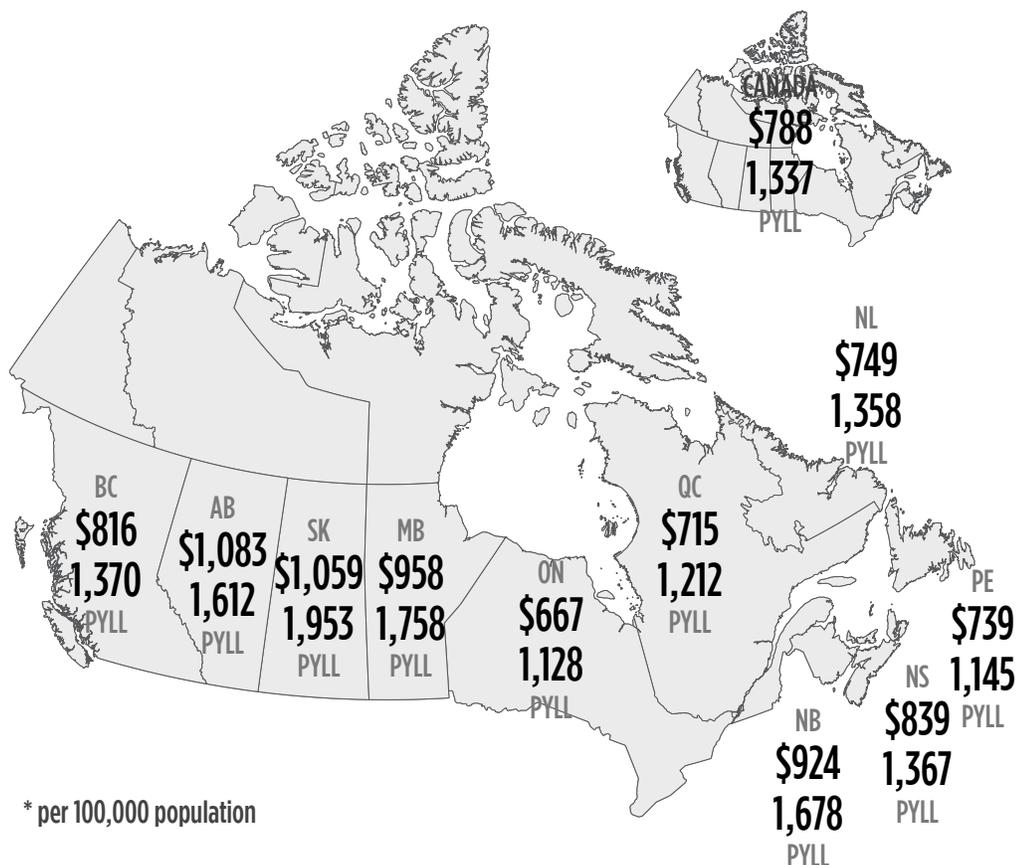
* See Appendix 3 for a detailed breakdown of causes of injury in this category.

Falls accounted for \$6.7 billion or 42% of direct costs of injury in 2010, followed by transport incidents at \$2.1 billion (13%). Other unintentional injuries make up 31% or \$4.9 billion.

Transport incidents were the leading cause of indirect costs of injury, accounting for \$2.1 billion or 20% of total indirect costs, followed by suicide/self-harm at \$2.1 billion (20%) and falls at \$2 billion (19%). Other unintentional injuries combined accounted for the remaining portion of indirect costs at \$2.3 billion (21%).

Injury by province

Figure 1
Economic cost per capita and potential years of life lost (PYLL), Canada and by province, 2010



A comparison of age and sex standardized mortality rates for major causes of injury in 2010 shows significant differences across the provinces. It is not clear to what degree these reflect actual differences in injury rates or, in some cases, differences in injury reporting and tracking. However, it is likely that at least some of the variation is due to actual differences in injury rates and therefore merits attention.

Ontario had the lowest mortality rate from transport incidents – 5.1 per 100,000 (29% lower than the national rate of 7.2), while Saskatchewan had the highest rate at 14.6 (103% above the national rate).

Newfoundland and Labrador had the lowest mortality rate due to falls at 1.5 per 100,000 (33% of the national rate), while Manitoba had from the highest rate – 7.0 (52% higher than the national rate).

Prince Edward Island had the lowest mortality rates from suicide and violence (7.1% and 0.0 respectively), while New Brunswick had the highest suicide rate (13.3 or 22% higher than the national rate), and Manitoba the highest rate due to violence (4.0 or 266% the national rate).

Conclusion

This Report quantifies the staggering cost of injury for Canadian children, seniors, families, our health care system, and to Canadian society. Preventable injury is the leading cause of death for Canadians aged one to 44, and claims the lives of more children in Canada than all other causes.

The costs continue to rise year after year. The loss of 15,866 Canadian lives and \$26.8 billion is unsustainable.

The good news is that the vast majority of the injuries described in this Report are both predictable and preventable. We know when they happen and under what conditions. We know who is at risk and we increasingly know what works and what does not with respect to prevention.

And as our capacity to monitor, report on, and coordinate effective action to prevent injury grows, our rationale for inaction diminishes. We encourage consideration of the costs of current inaction against the backdrop of Canada's aging population, shrinking labour force, and over-costed health care system.

The clock is ticking. Effective action to prevent injury can help to alleviate the human and economic costs we all currently bear. It is time to take comprehensive, effective action that will prevent injuries and save lives.

INTRODUCTION

Parachute is pleased to publish *The Cost of Injury in Canada, 2015* in collaboration with the Conference Board of Canada and with support from the Public Health Agency of Canada. This Report quantifies the cost of injury to Canadian children, families, our health care system, and to Canadian society.

The 2015 Report updates *the Economic Burden of Injury in Canada* last published in 2009. Using the same methodology, the 2015 Report examines all injuries at the national level, as well as providing provincial breakdowns. New in the 2015 Report are forecasts developed by the Conference Board of Canada that show the potential impact of inaction, as well as what can happen if known, effective interventions are broadly and comprehensively implemented across Canada.

More than 3 million Canadians injured and 15,866 killed in 2010

Each year, a staggering 3 million Canadians visit emergency rooms, and another 15,866 are killed as a result of predictable and preventable injuries. Every hour, 427 people in our country suffer a preventable injury as a result of a fall, a motor vehicle crash, a fire, poisoning, drowning, and other activities.

Preventable injury is the leading cause of death for Canadians aged one to 44, and claims the lives of more children in Canada than all other causes. On a daily basis, more than 10,000 Canadians are injured seriously enough to require medical attention. Of these, approximately 9,567 (93%) are seen in emergency rooms, 43 (0.4%) die, 634 (6%) are hospitalized, and 165 (1.6%) are left partially or totally disabled.

The simple fact is, almost all of these injuries and deaths could have been prevented

In addition to this alarming, and increasing human toll, preventable injuries cost Canadians more than \$26.8 billion a year. Whether it is direct costs of care, such as an emergency, trauma, surgical, or general medical costs, or the indirect costs arising from reduced productivity from hospitalization, disability or premature

deaths, the cost is significant, and mounting. The direct costs of injury in 2010 were \$15,890 billion and indirect costs were \$10,906 billion.

The cost is mounting

Preventable injury in 2004 killed 13,000 Canadians. In 2010, the number was 15,866. If we continue on the current trajectory, by 2035, preventable injury will kill 26,390 Canadians a year.

The economic cost of injury in Canada has increased by 35% since 2004. If these trends continue, by 2035 injuries will cost Canadians \$75B a year, an increase of 180%.

Since the last report in 2009, reductions in certain injury areas have been realized. For example, transportation injuries have declined; however, an area of growing injuries is falls amongst seniors, especially those over age 85. With the baby boomer population expanding over the next twenty years, this raises major concerns for significant increases in health care costs, and negative impact on quality of life.

There is good news

The vast majority of injuries in Canada are both predictable and preventable. We know how they happen, and under what conditions. We know who is at risk and we increasingly know what works and what does not with respect to prevention.

We know that investing wisely in programs for which there is already good evidence makes a difference. Since 2004, the injury death rate has increased by 2.8% from 42.06 (per 100,000 population) to 43.25 (per 100,000 population).

We know that no one wants to be injured. No one wants their child or parent to be injured. The trouble is, too many people think “we won’t get hurt”, and that serious injuries only happen to other people. However, they can and do happen – to us and to others around us – at home, at play, at work and on the road.

We all lead busy and hectic lives – taking a moment to *have a word with yourself* about doing the right thing can prevent an injury, save your life, and in the long

run, change societal attitudes and beliefs so that we can prevent injuries and save lives.

The clock is ticking. In Canada, as this Report shows, preventable injuries result in:

- ❖ 15,866 deaths
- ❖ 231,596 Canadians hospitalized
- ❖ Nearly 3.5 million emergency room visits
- ❖ More than 60,000 Canadians either partially or permanently disabled
- ❖ \$15.9 billion in direct health care costs
- ❖ \$26.8 billion in total economic costs

We have the solution

Let's work together to *Stop the Clock* on preventable injuries in Canada.

Methods

This Report is the third of its kind, the previous reports being published in 1998 (using 1995 data) and 2009 (using 2004 data). Due to differences in methodology in collecting the 1995 and 2004 emergency room data, incomplete 1995 hospitalization and mortality data from Ontario, and missing 1995 data from Quebec, it is not possible to draw accurate comparisons with respect to non-hospitalization and hospitalization rates, or disability rates as these are derived using hospitalization rates. Nor is it possible to compare intentional injury rates, as these were not included in the original 1998 study. Thus a direct comparison of the report from 1998 with the 2009 or 2015 reports is not possible.

The analysis underlying this Report was conducted from a societal perspective, using an incidence costing, human capital approach. That is, the population of Canadian residents injured in 2010 was costed over the lifetime of the injured individuals. The costs, both direct and indirect, were discounted to a present value in 2010 at 3% per annum.

Cost-of-illness studies distinguish and measure both direct costs (the value of resources used to treat the persons incurring the illness) and indirect costs (the value lost to society as a result of the illness in question).

Direct costs are composed of all the goods and services used for the diagnosis, treatment, continuing care, rehabilitation, and terminal care of people experiencing a major illness or impairment. These cost categories include expenditures for hospitalization, outpatient care, nursing home care, home care, services of physicians, and other health professionals, pharmaceuticals, rehabilitation, as well as the costs of prostheses, appliances, eyeglasses, hearing aids, and speech devices necessary to help the patient overcome the impairments associated with the major illness. Also included are the administrative costs of third-party payers (public and private) who fund such expenses.

Under the human capital methodology, indirect costs are societal productivity losses, which account for the injured individual's inability to perform his or her major activities. The value of time lost from work and homemaking due to morbidity, disability, and premature mortality is measured by earnings data and the market value of unperformed homemaking services. In accordance with the human capital methodology, this includes only foregone earnings calculated as average earnings, adjusted by the participation rate and unemployment rate, over the relevant period within the working life of an individual from ages 15 to 64 years inclusive. A real wage growth rate of 1% per year was assumed for this study.

As well as these economic costs, there are certain intangible costs associated with injuries, such as pain and suffering, economic dependence, and social isolation. While these costs are difficult to quantify in economic terms, they are costs nonetheless and should at least be identified. Too many Canadians have their lives and those of their families irrevocably changed forever as a result of injury.

This Report did not attempt to quantify these costs and, hence, the indirect costs cited can be considered conservative.

An Electronic Resource Allocation Tool (ERAT) was developed, combining existing data with variables from the literature in order to model full episodic costs for unintentional and intentional injuries. The ERAT is a flexible tool that can be updated as new data become available and according to changes in population, injury incidence, and treatment patterns and costs. As such, it is a

useful resource that can be used by researchers and public health officials at the provincial and local level to support resource allocation, policy development, and decision-making.

The mortality data for this Report were provided by the Canadian Socio-Economic Information Management System (CANSIM), for the 2010 calendar year. The external cause of injury was classified according to the International Classification of Diseases, 10th revision (ICD-10). The Public Health Agency of Canada provided the acute hospital separation data analysis from their holdings of the Canadian Institute for Health Information (CIHI) Hospital Morbidity Database (HMDB). The information in this Report can be considered a conservative estimate given data on doctor visits, clinic visits and toll on individuals are not accounted for. There may be variations in data between this Report and provincial reports. This is due to the date when data are collected. For more details on the economic approach, ERAT, data sources and limitations, readers are encouraged to see Appendix 1 - Methodology.

INJURY IN CANADA

Total cost of injury

Injuries cost Canadians \$26.8 billion and 15,866 lives in 2010.

A further 4,425 individuals were permanently and totally disabled¹ and 55,717 were left with a permanent partial disability², while 231,596 Canadians were hospitalized and another 3,492,148 were treated in emergency departments as a result of injury.

Table 1

Total Cost of Injury, Canada, 2010

Injury Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability	Total Economic Cost of Injury
15,866	231,596	3,492,148	55,717	4,425	\$26.8 billion

Direct and indirect costs

The total cost of injury to Canadian society can be divided into direct costs (health care costs arising from injuries) and indirect costs (costs related to reduced productivity from hospitalization, disability and premature death).

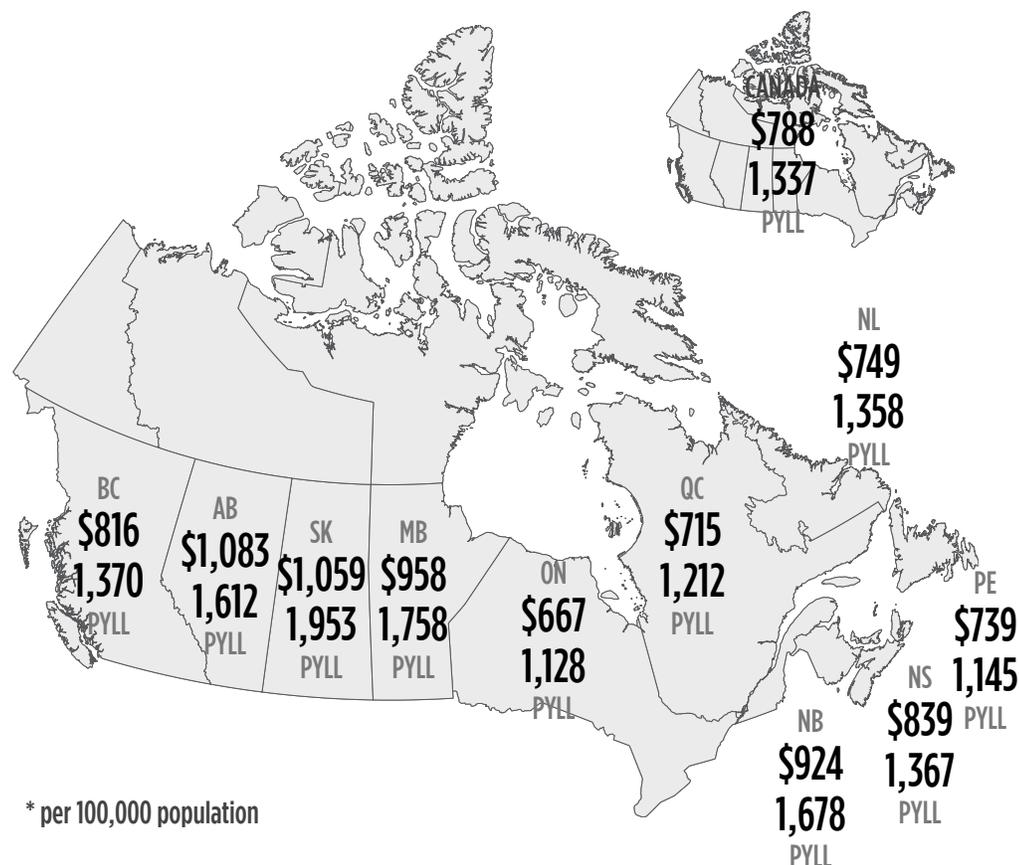
The direct costs of injury in 2010 were \$15.9 billion or 59% of total injury costs. The indirect costs were \$10.9 billion, or 41% of total costs arising from injury.

¹ Permanent total disability is “a condition equivalent to complete and permanent loss of earning power.” Source: T. Miller, N. Pindus, J. Douglass, and S. Rossman. Databook on Nonfatal Injury Incidence, Costs and Consequences, The Urban Institute Press (Washington: 1995), p. 26.

² Permanent partial disability is “a condition that results in a permanent disability from which partial recovery is anticipated, along with a return to some form of employment. Complete loss of earning power is expected prior to recovery, after which the worker is expected to return to employment with wages below pre-injury wages.” Source: Databook on Nonfatal Injury, p.26.

Figure 1

Economic cost per capita and potential years of life lost (PYLL), Canada and by province, 2010

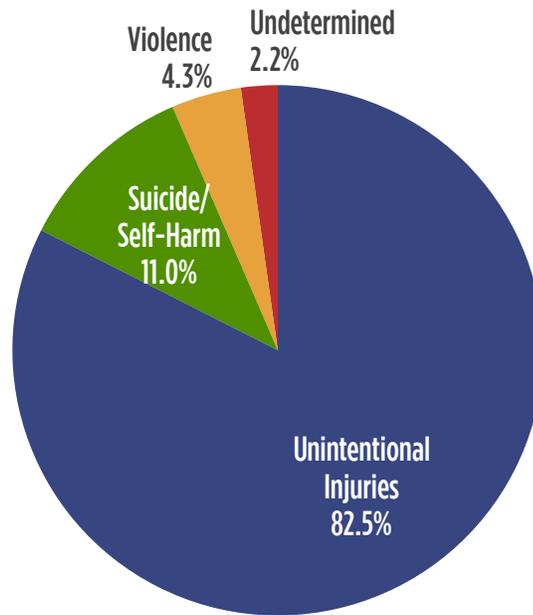


Intentional and unintentional injury

Injuries can be a result of events related to, as examples, transportation, falls, drowning, fire/burns, suffocation, being struck by/against and poisonings, and are generally classified as either unintentional (inadvertent or accidental) or intentional (violence or self-inflicted). (For a detailed classification of injury causes in each of these categories, please see Appendix 2.)

Unintentional injuries accounted for 83% of injury costs (\$22.1 billion). Intentional injuries accounted for a further 15% of total costs (\$4.1 billion) and injuries of undetermined intent for the remaining 2% (\$600 million).

Figure 2
Total costs by intent of injury, Canada, 2010



Unintentional injuries still account for the vast majority of costs when direct and indirect costs are examined separately – \$15.9 billion or 58% of total direct injury costs and \$10.9 billion or 41% of total indirect costs arising from injury.

Figure 3
Direct cost by intent of injury, Canada, 2010

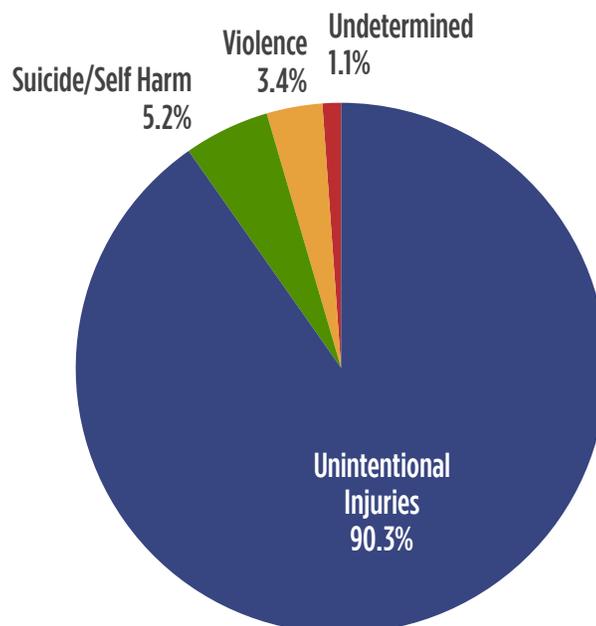


Figure 4
Indirect cost by intent of injury, Canada, 2010

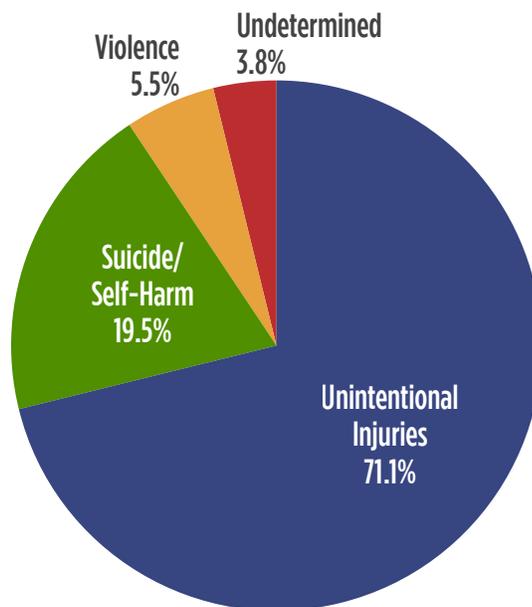


Table 2
Percentage change in standardized injury death rates, 2004 to 2010

Year	Standardized injury death rate (per 100,000 pop.)
2004	42.06
2010	43.25
Increase	2.8%

Table 3
Economic cost of hospitalized injuries, 2010 vs 2004

	2004	2010	% change
Hospital costs	\$1,430,461,325	\$2,425,069,233	69%
Medical costs	\$1,111,351,101	\$1,882,912,267	69%
Rehabilitation costs	\$94,114,331	\$159,780,814	70%
TOTAL	\$2,635,926,757	\$4,467,762,315	69%

Main reasons for increase include:

- ❖ Greater average cost of hospitalization: \$5,162 vs. \$4,269 (21%)
- ❖ Great number of hospitalized injuries (9.4%)
- ❖ Increase in average Resource Intensity Weights (RIW)³ due to aging: from 1.6 to 2 (29%)

Table 4

Economic cost of injuries seen in emergency rooms, 2010 vs 2004

	2004	2010	% change
Medical costs	\$2,548,894,598	\$4,602,767,747	80%
Rehabilitation costs	\$186,141,316	\$337,409,719	81%
TOTAL	\$2,735,035,914	\$4,940,177,467	80%

Main reasons for increase include:

- ❖ Greater average medical cost: \$1,305 vs. \$813 (61%)
- ❖ Greater average rehabilitation cost: \$97 vs. \$59 (63%)
- ❖ Greater number of non-hospitalized injuries (11.4%)

Table 5

Total economic cost, 2010 vs 2004

	2004	2010	% change
Direct costs	\$10,716,087,467	\$15,889,974,380	48%
Indirect Costs	\$9,065,036,405	\$10,906,104,749	20%
TOTAL	\$19,781,123,872	\$26,796,079,129	35%

³ RIW - The relative case weights for CMGs™ used to measure the intensity of resource use (relative cost) associated with different diagnostic, surgical procedure and demographic characteristics of an individual. RIWs™ are assigned according to the case mix group to which an individual is assigned as well as their age, health status, and discharge status and are based upon micro-costing. In this Report, we have used RIWs™ assigned using the CMG with Complexity Overlay (CMG Plx™) methodology. (Source <http://mchp-appserv.cpe.umanitoba.ca/viewDefinition.php?definitionID=103807>)

Injury by cause

Table 6

Number of injury deaths, hospitalizations, emergency room visits and related disability cases by cause, Canada, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Transport Incidents	2,620	28,350	290,782	7,204	699
Falls	4,071	128,389	1,036,079	25,236	1,969
Drowning	369	247	1,251	37	4
Fire\Burns	234	2,099	43,684	982	50
Unintentional Poisoning	1,568	7,893	54,245	1,731	109
Struck By \Against Sports Equipment*	<5	664	68,355	518	39
Other Unintentional Injuries**	1,792	36,462	1,845,277	15,881	1,132
Suicide\Self-Harm	3,948	16,131	34,677	3,443	175
Violence	515	8,069	97,360	1,933	202
Undetermined Intent\Other	749	3,292	20,438	752	46
TOTAL	15,866	231,596	3,492,148	55,717	4,425

* Does not include falls in sports/rec

** See Appendix 3 for a detailed breakdown of causes of injury in this category.

Falls accounted for 26% - 4,071 of all injuries resulting in death, followed by suicide/self-harm 25% - 3,948 and transport incidents 17% - 2,620.

Falls accounted for 55%, 128,389, of all injuries resulting in hospitalization – followed by transport incidents (12% - 28,350), with combined other unintentional injuries at 16% (36,462).

Figure 5
Injury deaths by cause, Canada, 2010

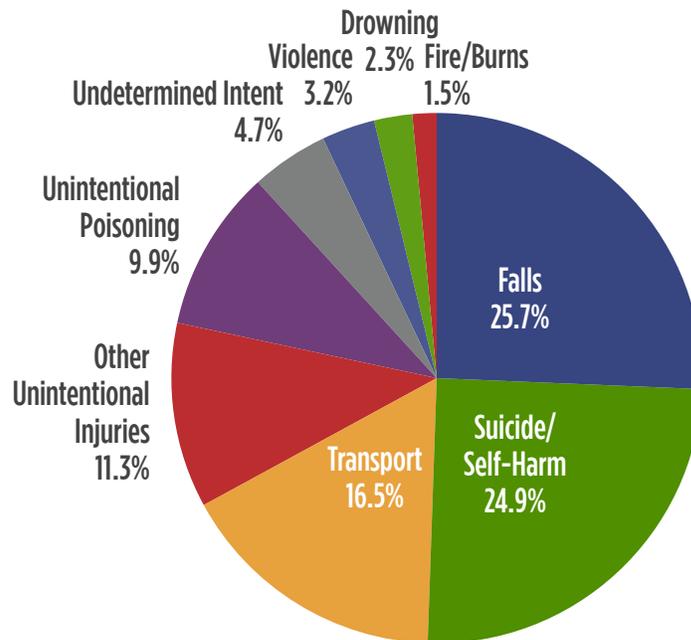


Figure 6
Injury hospitalizations by cause, Canada, 2010

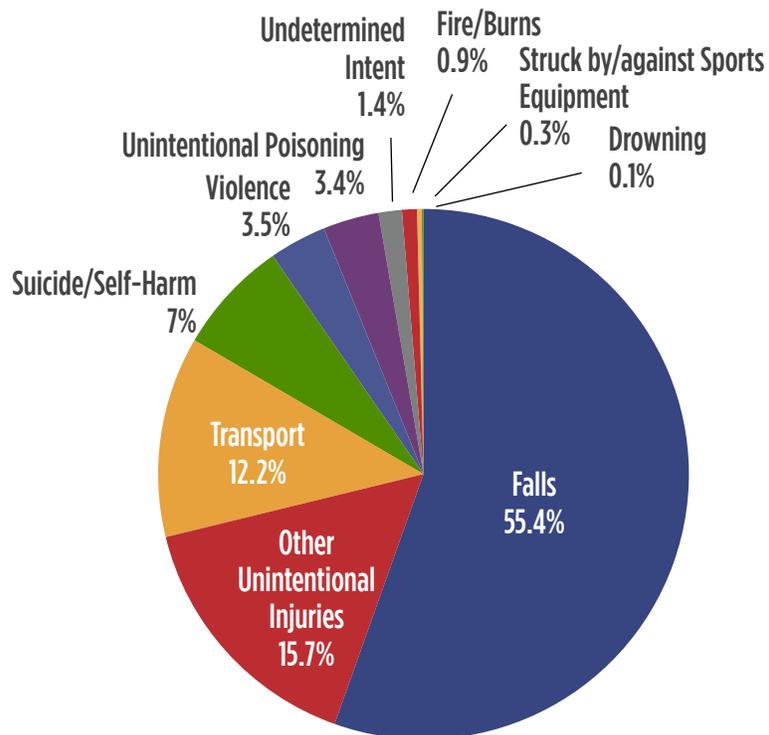
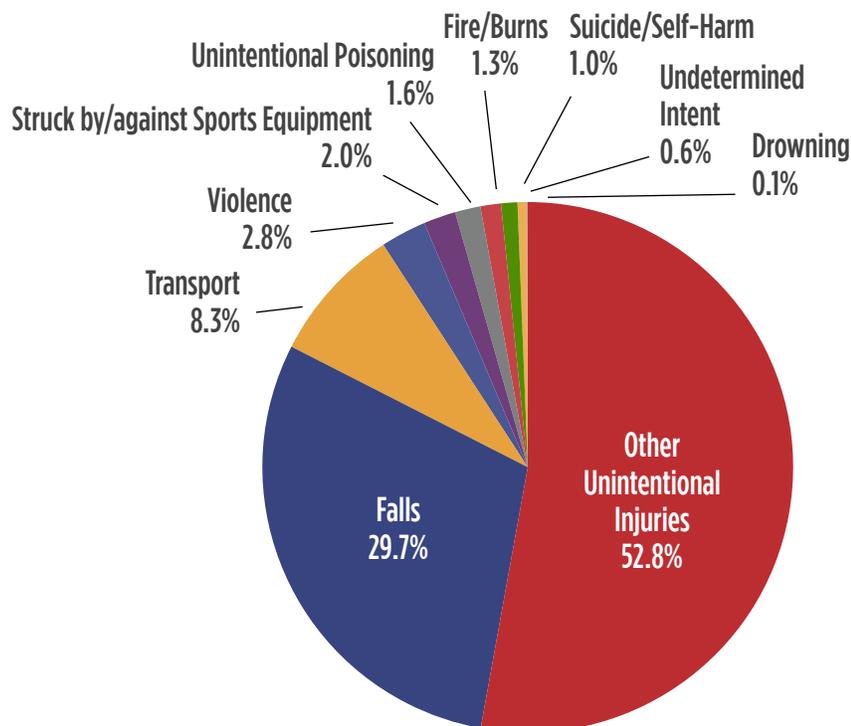


Figure 7

Emergency Room Visits by Injury Cause, Canada, 2010

Many injuries, while not requiring hospitalization, do involve emergency room visits for treatment. Falls were the leading cause of all injury-related emergency room visits (30% - 1,036,079), followed by transport incidents (8% - 290,782).

Falls were the leading cause of injuries resulting in permanent partial disability (45% - 25,236) and total permanent disability (44% - 1,969). Falls were followed in both these cases by transport incidents (13% - 7,204 and 16% - 699 respectively).

Costs of injury by cause

Falls were the leading cause of overall injury costs in Canada in 2010, accounting for \$8.7 billion or 32% of total costs, followed transport incidents at \$4.3 billion (16%), and suicide/self-harm at \$3 billion (11%) (see Table 3).

Table 7

Total, direct and indirect costs of injury by cause, Canada, 2010

Description	Total costs (\$ millions)	Direct costs (\$ millions)	Indirect costs (\$ millions)
Transport Incidents	4,289	2,145	2,144
Falls	8,680	6,652	2,029
Drowning	187	13	175
Fire\Burns	366	177	188
Unintentional Poisoning	1,264	396	868
Struck By\Against Sports Equipment	187	97	90
Other Unintentional Injuries*	7,127	4,861	2,265
Suicide\Self-Harm	2,956	829	2,127
Violence	1,142	541	602
Undetermined Intent \Other	598	179	419
TOTAL	26,796	15,890	10,906

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

Between 2004 and 2010 there was a 48% increase in total direct costs and a 20% increase in indirect costs, resulting in an overall 35% increase in total economic cost.

When these figures are broken down into direct and indirect costs, falls were clearly the major driver of direct costs of injury, accounting for \$6.6 billion or 42% of Canada's total in 2010, followed by other unintentional injuries at \$4.9 billion (31%) and transport injuries at \$2.1 billion (13%).

Transport incidents were the leading cause of indirect costs of injury, accounting for \$2.1 billion or 20% of total indirect costs, followed by suicide/self-harm at \$2.1 billion (20%) and falls at \$2 billion (19%). Other unintentional injuries also accounted for a significant portion of indirect costs at \$2.3 billion (21%).

Figure 8
Injury costs by cause, Canada, 2010

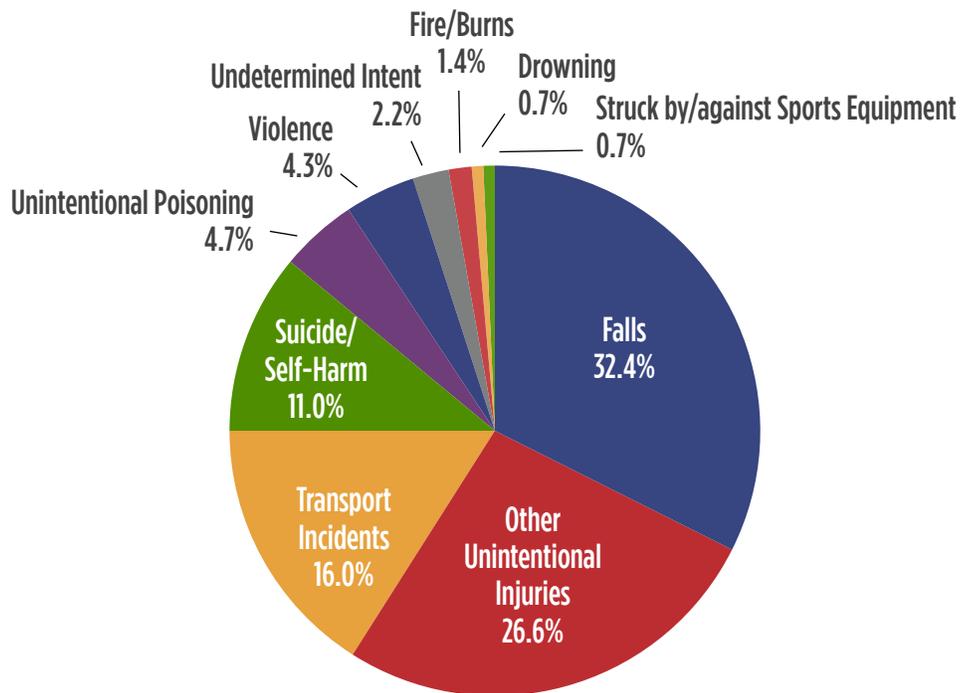
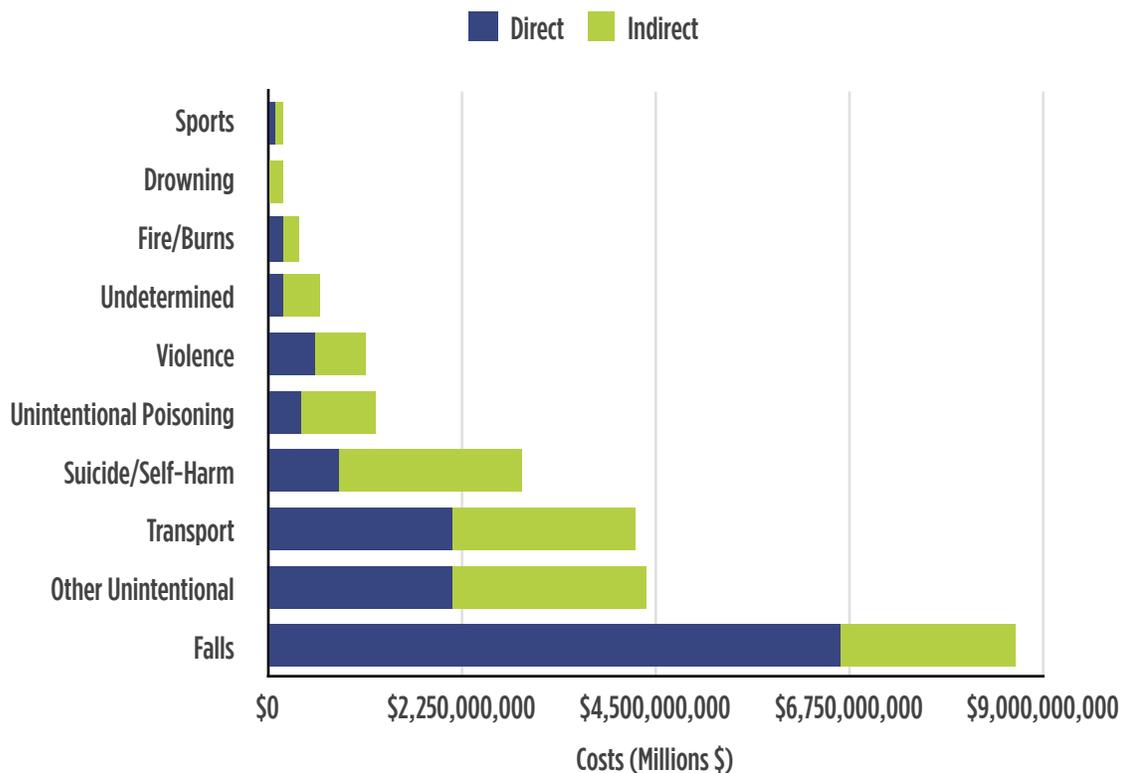


Figure 9
Direct and indirect costs by cause, Canada, 2010



Falls

Falls on stairs were the most frequent cause of fall deaths in 2010 (10% n=393) followed by falls on the same level (8% n=327) and falls from furniture (7% n=281).

Falls on the same level were the most common cause of hospitalized treatment (29% n=37,660), emergency room visits (32% n=330,199), permanent partial disability (31% n=6,721) and permanent total disability (27% n=492).

Among Canadians aged 85 and older, males were more likely than females of the same age to die from a fall (396.29 vs 327.94 per 100,000), but females were more likely to be hospitalized (6323.72 vs 4277.54 per 100,000). There are some differences in the rates of emergency room visits and permanent partial disability, but males and females aged 85 and older were almost equally likely to suffer from of permanent disability as a result of a fall.

Table 8

Number of injury deaths, hospitalizations, and emergency room visits for falls, Canada, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
On the same level	327	37,660	330,199	7,235	532
From skates, skis, boards, blades	15	4,189	64,597	1,384	106
From furniture	281	7,794	61,863	1,107	93
In playgrounds	<5	1,713	23,870	583	39
On stairs	393	12,404	130,747	2,968	287
From ladders/scaffolding	68	3,771	23,106	1,022	90
Diving	<5	194	3,156	56	10
Other	2,985	60,664	398,540	8,882	812
Total	4,071	128,389	1,036,079	23,236	1,969

Table 9

Rates of injury deaths, hospitalizations, and emergency room visits due to falls by age and sex, Canada, 2010

Description	Rate per 100,000 population				
	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Male 0-4	0.21	151.48	5,845.36	64.83	5.55
Male 5-9	0.11	147.17	3,840.53	58.35	4.21
Male 10-14	0.10	137.50	4,581.92	61.97	4.53
Male 15-19	0.87	125.29	3,082.91	46.19	3.51
Male 20-24	1.44	121.16	2,472.93	41.83	3.52
Male 25-64	3.18	180.63	1,930.32	52.07	4.87
Male 65-74	18.56	552.27	2,786.29	136.69	15.68
Male 75-84	83.54	1,475.65	5,339.16	136.69	15.68
Male 85+	396.29	4,277.54	11,889.13	136.69	15.68
Female 0-4	0.11	118.77	4,844.83	53.03	4.52
Female 5-9	0.00	120.27	3,478.76	51.42	3.57
Female 10-14	0.00	72.91	3,738.57	39.66	3.00
Female 15-19	0.09	54.03	2,412.11	25.26	1.97
Female 20-24	0.44	59.71	1,993.51	25.06	1.86
Female 25-64	0.83	167.01	2,205.58	53.32	3.97
Female 65-74	10.33	783.07	4,036.33	210.74	16.14
Female 75-84	60.01	2,377.57	7,524.40	210.74	16.14
Female 85+	327.94	6,323.72	15,185.41	210.74	16.14

Death rates for falls among men and women aged 85 and older were by far the highest of all the age groups at 396 and 328 per 100,000 population respectively; for hospitalized treatment and emergency room visits women aged 85 and older had higher rates. Forty-eight percent more women are hospitalized than men (6,324 vs 4,278) and have more emergency room visits than males (15,185 vs 11,889).

Table 10

Total, direct, indirect, and per capita cost of falls by age and sex, Canada, 2010

Description	Reference Population	Total Costs (\$ Millions)	Direct Costs (\$ millions)	Indirect Costs (\$ millions)	Per Capita Costs (\$)
Male, all ages	16,847,961	4,138	2,929	1,209	245.63
Female, all ages	17,157,313	4,542	3,722	820	264.73
Both, all ages	34,005,274	8,680	6,651	2,029	510.36
Both 0-4	1,873,393	447	256	190	238.36
Both 5-9	1,791,353	391	217	174	218.30
Both 10-14	1,959,726	410	212	199	209.47
Both 15-19	2,249,523	373	197	177	165.98
Both 20-24	2,322,472	375	205	170	161.44
Both 25-64	19,012,664	3,316	2,197	1,118	174.39
Both 65-74	2,579,541	879	879	N/A	340.93
Both 75-84	1,598,413	1,268	1,268	N/A	793.41
Both 85+	618,189	1,221	1,221	N/A	1,974.45
Male 0-4	959,864	254	147	107	264.77
Male 5-9	920,003	213	117	96	231.94
Male 10-14	1,006,518	255	131	124	253.58
Male 15-19	1,150,163	245	127	118	212.83
Male 20-24	1,178,626	245	134	112	208.28
Male 25-64	9,509,997	1,784	1,132	653	187.61
Male 65-74	1,233,815	369	369	N/A	298.85
Male 75-84	691,899	454	454	N/A	656.03
Male 85+	197,076	318	318	N/A	1,615.82
Female 0-4	913,529	192	109	83	210.61
Female 5-9	871,350	178	99	79	203.90
Female 10-14	953,208	155	80	75	162.88
Female 15-19	1,099,360	129	70	59	116.98
Female 20-24	1,143,846	129	71	59	113.17
Female 25-64	9,502,667	1,531	1,066	466	161.16
Female 65-74	1,345,726	511	511	N/A	379.51
Female 75-84	906,514	814	814	N/A	898.26
Female 85+	421,113	902	902	N/A	2,142.29

* Indirect costs are societal productivity costs, which only include lost earnings if the individual can't perform their job. This presumes no lost earnings for those over 65 because they no longer work.

Males and females of all ages have similar cost per capita at \$243 (males) and \$258 (females). Canadians aged 25-64 accounted for the highest total costs of non-hospitalized injuries due to falls at \$3.3 million. When Canadians aged 85 and over, the per capita costs rise significantly to \$1,885.

Table 11

Direct, indirect, and total costs for falls, Canada, 2010

Cause of Injury – Falls	Direct Costs (\$ millions)	Indirect Costs (\$ millions)	Total Costs (\$ Millions)
On the same level	1,877	471	2,348
From skates, skis, boards, blades	295	221	516
From furniture	424	102	527
In playgrounds	139	100	239
On stairs	696	258	954
From ladders/ scaffolding	205	82	287
Diving	20	14	33
Other	2,996	781	3,778
Total	6,652	2,029	8,680

An examination of cost of falls by cause shows that falls on the same level were the greatest single cause of costs, accounting for \$2.3 million (27% of total costs), \$1.9 million (26%) of direct costs and \$471 million (23%) of indirect costs. Falls on stairs were the second most important cost driver, accounting for \$954 million or 11% of total costs arising from falls, \$696 million (11%) of direct costs, and \$258 million (13%) of indirect costs. While falls from furniture accounted for \$527 million or 6% of direct costs arising from falls and falls involving skates, skis, boards, and blades, are responsible for \$516 million total costs (6%). The combined cost of these four categories was \$4.35 billion, or 50% of total costs of falls in Canada in 2010.

Transport injuries

Motor vehicle collisions accounted for the majority of deaths from transport incidents at 1,119 or 43%, the majority of hospitalized treatment at 14,437 (51%), emergency room visits at 161,977 (56%), permanent partial disability at 3,534 (49%) and permanent total disability at 360 (52%).

In terms of hospitalized treatment, following motor vehicle collisions, injuries sustained by users of ATVs/snowmobiles (4,311/15%) and pedestrians (2,902/10%) are the next leading causes of admissions.

Table 12

Number of injury deaths, hospitalizations, and emergency room visits for transport incidents, Canada, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Pedestrian	369	2,902	17,725	673	76
Pedal Cycle	92	4,112	59,815	1,240	113
Motor Vehicle	1,119	14,437	161,977	3,534	360
ATV, Snowmobile	190	4,311	21,107	1,043	88
Other Transport*	850	2,588	30,159	714	61
Total	2,620	28,350	290,782	7,204	699

* Other Transport includes, for example: railway, animal rider, streetcar, agricultural vehicle, watercraft and air transport (V80 - V85, V87 - V89, V91, V93 - V99).

For emergency room visits, following motor vehicle collisions, pedal cyclists (59,815/21%) and other road users (30,159/10%) are the next leading causes.

Canadian males were far more likely to be involved in a transport incident involving injury than females and 2.5 times more likely to suffer a fatal injury in a transport incident. They were also 1.9 times as likely as females to be hospitalized, 1.3 times as likely to require treatment in an emergency room, 1.9

times more likely to sustain a permanent partial disability, and twice as likely to be permanently totally disabled as a result of a transport incident.

Table 13

Rates of death, hospitalization, non-hospitalization, and permanent disability for transport incidents by age and sex, Canada, 2010

Description	Rate per 100,000 population				
	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Male 0-4	1.67	17.29	286.87	4.25	0.47
Male 5-9	1.30	44.24	674.58	12.06	1.02
Male 10-14	2.09	95.97	1,316.44	26.22	2.28
Male 15-19	17.04	164.76	1,685.55	41.53	4.04
Male 20-24	18.75	164.94	1,607.02	42.03	4.20
Male 25-64	11.24	113.39	929.80	28.69	2.78
Male 65-74	12.89	102.04	530.79	23.18	2.89
Male 75-84	17.34	119.82	514.80	23.18	2.89
Male 85+	26.89	149.69	506.45	23.18	2.89
Female 0-4	1.53	11.93	207.27	3.14	0.30
Female 5-9	1.15	29.95	494.17	8.54	0.73
Female 10-14	1.78	41.54	716.34	12.19	1.18
Female 15-19	8.00	82.05	1,282.97	21.75	2.15
Female 20-24	7.17	71.78	1,379.71	20.81	1.96
Female 25-64	3.70	53.87	797.55	15.15	1.37
Female 65-74	5.28	69.11	485.04	17.14	1.63
Female 75-84	8.71	98.73	456.45	17.14	1.63
Female 85+	9.50	88.57	319.18	17.14	1.63

Males were particularly at risk of transport-related injury, with males aged 85+ experiencing the highest death rate (26.89 per 100,000 population). Young males between the ages of 15-19 (17.04 per 100,000 population) and 20-24 (18.75 per 100,000 population) were the next highest category and the same age ranges (15-19 and 20-24) experiencing the highest rates of hospitalization (164.8 per 100,000 population). In terms of emergency room visits, males aged 15-19 had the highest rates (1,685.55 per 100,000 population), while males aged 20-24 sustained the highest rates of permanent partial disability (42.03 per 100,000 population) and permanent total disability (4.20 per 100,000 population).

The risk of fatal injury in a transport incident was lower among Canadians aged 25-74 compared with younger Canadians. Both males and females over 75 years of age were more likely to be fatally injured in a transport incident than their counterparts aged 25-64; however, males over 85 were more likely to be hospitalized than males aged 25-64, males aged 25-64 were more likely to visit an emergency room, or incur a permanent partial disability from such an injury than males aged 25-64. Females over age 75, however, were more likely than those aged 25-64 to be hospitalized while those over age 25 were almost equally likely to incur a permanent partial or total disability. Females aged 75+ were less likely to receive emergency room visits.

Per capita costs arising from transport-related injuries were double for males (\$169.46) than females (\$83.58). Males aged 20-24 had the highest per capita cost of transport-related injury at \$379.90 – 3.0 times higher than the cost for Canadians in general. The per capita cost for injuries involving males aged 15-19 was almost as high at \$371.77 and also 3.0 times higher than that for Canadians overall.

Per capita costs related to transport incidents also declined with age, despite the fact that Canadians over 65 had a higher rate of fatal injury and hospitalization than those aged 25-64. This may be due in part to the methodology used for this report which assumes retirement from the labour market at age 65 and, therefore, does not assign indirect costs from lost labour market productivity to injury cases in this age group.

Table 14

Total, direct, indirect, and per capita costs of injury due to transport incidents by age and sex, Canada, 2010

Description	Reference Population	Total Costs (\$ Millions)	Direct Costs (\$ millions)	Indirect Costs (\$ millions)	Per Capita Costs (\$)
Male, all ages	16,847,961	2,855	1,360	1,495	169.46
Female, all ages	17,157,313	1,434	785	649	83.58
Both 0-4	1,873,393	56	23	33	29.98
Both 5-9	1,791,353	106	55	51	58.97
Both 10-14	1,959,726	219	108	111	111.66
Both 15-19	2,249,523	649	251	399	288.67
Both 20-24	2,322,472	658	266	392	283.26
Both 25-64	19,012,664	2,356	1,197	1,159	123.92
Both 65-74	2,579,541	128	128	N/A	49.47
Both 75-84	1,598,413	88	88	N/A	55.12
Both 85+	618,189	30	30	N/A	47.75
Both, all ages	34,005,274	4,289	2,145	2,144	253.04
Male 0-4	959,864	30	12	18	31.58
Male 5-9	920,003	62	32	29	67.25
Male 10-14	1,006,518	143	71	72	142.14
Male 15-19	1,150,163	428	157	271	371.77
Male 20-24	1,178,626	448	170	278	379.90
Male 25-64	9,509,997	1,611	785	826	169.42
Male 65-74	1,233,815	76	76	N/A	61.59
Male 75-84	691,899	45	45	N/A	64.95
Male 85+	197,076	12	12	N/A	62.34
Female 0-4	913,529	26	11	14	28.30
Female 5-9	871,350	44	22	21	50.22
Female 10-14	953,208	76	37	39	79.48
Female 15-19	1,099,360	222	94	128	201.72
Female 20-24	1,143,846	210	96	114	183.68
Female 25-64	9,502,667	745	412	333	78.37
Female 65-74	1,345,726	52	52	N/A	38.35
Female 75-84	906,514	43	43	N/A	47.61
Female 85+	421,113	17	17	N/A	40.93

Table 15

Direct, indirect, and total costs for injury from transport incidents, by cause, Canada, 2010 (\$ Millions)

Cause of Injury – Transport	Direct Costs (\$ millions)	Indirect Costs (\$ millions)	Total Costs (\$ Millions)
Pedestrian	234	225	458
Pedal Cycle	293	213	506
Motor Vehicle	1,190	987	2,177
ATV, Snowmobile	262	245	507
Other	167	474	641
Total	2,145	2,144	4,289

Motor vehicle collisions are the greatest single cost totaling \$2.2 billion and accounting for 50% of all transport-related incidents. In terms of direct and indirect costs, again motor vehicle collisions have the highest costs, \$1.2 billion and \$987 million, respectively.

Looking at the other causes of transport incidents in 2010, pedal cyclists account for the next highest direct costs at \$293 million, followed by pedestrians at \$234 million, while ATV/snowmobile users account for the highest indirect costs at \$245 million.

Intentional injuries

While unintentional injuries make up the majority of injuries in Canada, intentional injury comprising violence and suicide/self-harm accounted for 4,463 deaths and over \$4 billion in total costs in 2010.

Suicide/self-harm was the leading cause of intentional injury deaths (88% - 3948/4463), hospitalizations (67% - 16131/24200), and permanent partial disability (64% - 3443/5376).

However, injuries resulting from violence accounted for a much higher proportion of related emergency room visits (74% - 97360/132,037) and a higher proportion (54% - 202/377) of estimated cases of permanent total disability.

Table 16

Injury deaths, hospitalizations, and emergency room visits by intent, Canada, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Unintentional Injuries	10,654	204,104	3,339,673	49,589	4,001
Suicide/Self-Harm	3,948	16,131	34,677	3,443	175
Violence	515	8,069	97,360	1,933	202
Undetermined Intent/Other	749	3,292	20,438	752	46
Total	15,866	231,596	3,492,148	55,717	4,425

Table 17

Injury costs by intent, Canada, 2010 (\$ Millions)

Cause of Injury – Intentional	Direct Costs (\$ millions)	Indirect Costs (\$ millions)	Total Costs (\$ Millions)
Unintentional Injuries	14,341	7,759	22,100
Suicide/Self-Harm	829	2,127	2,956
Violence	541	602	1,142
Undetermined Intent/Other	179	419	598
Total	15,890	10,906	26,796

An analysis of injury costs by intent shows that suicide/self-harm accounted for 12% of total injury costs, 6% of direct injury costs, and 20% of indirect injury costs in Canada in 2010, while violence accounted for 5% of total costs, 4% direct injury costs and 6% of indirect injury costs.

Looking specifically at suicide/self-harm, Canadian males aged 25-64 and 85+ had the highest injury-specific mortality rate of all the population groups. Compared to men aged 15-19 years, females of the same age were 2.6 times more likely to be hospitalized or require emergency room visits, 2.6 times more likely to incur a permanent partial disability, and twice as likely to incur a permanent total disability.

Table 18

Rates of death, hospitalization, non-hospitalization, and permanent disability for suicide/self-harm by age and sex, Canada, 2010

Rate per 100,000 population					
Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Male, all ages	17.69	39.14	79.64	7.97	0.45
Female, all ages	5.64	55.59	123.91	12.24	0.58
Both, all ages	11.61	47.44	101.97	10.13	0.52
Both 5-9	0.00	0.33	1.40	0.07	0.00
Both 10-14	1.63	23.37	55.19	4.09	0.15
Both 15-19	8.76	99.84	286.35	19.07	0.83
Both 20-24	12.40	74.23	214.57	14.86	0.71
Both 25-64	15.32	56.25	110.12	12.43	0.66
Both 65-74	10.43	21.94	26.54	4.62	0.26
Both 75-84	11.20	17.83	18.90	4.64	0.26
Both 85+	11.32	22.65	23.29	4.70	0.25
Male 5-9	0.00	0.54	1.91	0.12	0.01
Male 10-14	1.89	9.54	21.55	1.59	0.08
Male 15-19	12.61	56.60	153.61	10.78	0.55
Male 20-24	19.09	57.35	153.75	10.74	0.58
Male 25-64	22.91	49.24	95.33	10.32	0.58
Male 65-74	17.18	21.72	24.29	4.35	0.28
Male 75-84	21.53	21.10	19.04	4.35	0.28
Male 85+	25.88	31.97	28.94	4.35	0.28
Female 5-9	0.00	0.11	0.86	0.03	0.00
Female 10-14	1.36	37.98	90.72	6.73	0.22
Female 15-19	4.73	145.08	425.22	27.74	1.11
Female 20-24	5.51	91.62	277.24	19.10	0.84
Female 25-64	7.72	63.27	124.91	14.54	0.73
Female 65-74	4.24	22.14	28.60	4.87	0.24
Female 75-84	3.31	15.33	18.79	4.87	0.24
Female 85+	4.51	18.28	20.65	4.87	0.24

* Ages 0-4 excluded

Table 19

Total, direct, indirect, and per capita costs of injury due to suicide/self-harm incidents by age and sex, Canada, 2010

Description	Reference Population	Total Costs (\$ Millions)	Direct Costs (\$ millions)	Indirect Costs (\$ millions)	Per Capita Costs (\$)
Male, all ages	16,847,961	1,775	332	1,443	105.33
Female, all ages	17,157,313	1,181	497	684	68.84
Both, all ages	34,005,274	2,956	829	2,127	175.43
Both 0-4	1,873,393	--	--	--	--
Both 5-9	1,791,353	0.62	0.39	0.23	0.35
Both 10-14	1,959,726	66	26	40	33.49
Both 15-19	2,249,523	367	125	242	163.37
Both 20-24	2,322,472	378	94	285	162.87
Both 25-64	19,012,664	2,102	542	1,559	110.53
Both 65-74	2,579,541	22	22	N/A	8.70
Both 75-84	1,598,413	13	13	N/A	8.31
Both 85+	618,189	5	5	N/A	8.77
Male 0-4	959,864	--	--	--	--
Male 5-9	920,003	0.51	0.32	0.19	0.55
Male 10-14	1,006,518	25	7	18	24.76
Male 15-19	1,150,163	181	36	145	156.95
Male 20-24	1,178,626	233	35	198	198.06
Male 25-64	9,509,997	1,314	233	1,081	138.20
Male 65-74	1,233,815	11	11	N/A	8.90
Male 75-84	691,899	7	7	N/A	9.96
Male 85+	197,076	3	3	N/A	12.86
Female 0-4	913,529	--	--	--	--
Female 5-9	871,350	0.11	0.07	0.04	0.13
Female 10-14	953,208	41	19	21	42.72
Female 15-19	1,099,360	187	89	98	170.09
Female 20-24	1,143,846	145	59	86	126.61
Female 25-64	9,502,667	787	309	478	82.85
Female 65-74	1,345,726	11	11	N/A	8.52
Female 75-84	906,514	6	6	N/A	7.04
Female 85+	421,113	3	3	N/A	6.85

* Ages 0-4 excluded

Among males, adults aged 85 and older were most likely to die from suicide/self-harm (25.88 per 100,000), while those aged 20-24 were most likely to be hospitalized (57.35) and males aged 20-64 were most likely to incur a permanent disability. Males aged 20-24 were most likely to require an emergency room visit (153.75), however, followed closely by those aged 15-19 (153.61).

Among females, women aged 25-64 were most likely to die from suicide/self-harm (7.72 per 100,000), while girls aged 15-19 were most likely to be hospitalized (145.08), -visit the emergency room (425.22), or incur a permanent disability.

The costs of suicide/self-harm are highest for youth aged 15-24. Canadians aged 15-19 of both sexes generated the highest per capita costs of any age group at \$163.37, followed by those aged 20-24 at \$162.87.

Per capita costs of injuries due to suicide/self-harm were 1.5 times higher for males than females, and highest of all for young males age 20-24 (\$198.06), followed closely by young females aged 15-19 (\$170.09).

An examination of injuries arising from violence shows that males were almost three times as likely as females to be killed as a result of violence, 4.4 times more likely to be hospitalized, 2.6 times more likely to present to emergency room, 4.2 times as likely to incur a permanent partial disability and 4.7 as likely to incur permanent total disability.

Canadians aged 20-24 were at the greatest risk of injury from violence. When compared with the average Canadian, they were 2.1 times more likely to die from violence, 2.9 times more likely to be hospitalized, 3.7 times more likely to present to an emergency room, 3.2 times as likely to incur a permanent partial disability, and 2.9 times more likely to be permanently totally disabled.

Table 20

Rates of death, hospitalization, emergency room visits, and permanent disability for violence by age and sex, Canada, 2010

Rate per 100,000 population					
Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Male, all ages	2.27	38.88	413.37	9.23	0.98
Female, all ages	0.78	8.85	161.54	2.20	0.21
Both, all ages	1.51	23.73	286.31	5.69	0.59
Both 0-4	1.39	11.00	28.48	1.78	0.36
Both 5-9	0.11	1.51	34.14	0.41	0.05
Both 10-14	0.20	4.39	174.51	1.61	0.17
Both 15-19	2.00	44.19	818.63	12.11	1.14
Both 20-24	3.19	69.06	964.00	17.97	1.69
Both 25-64	1.71	25.51	265.17	5.92	0.62
Both 65-74	0.74	4.73	35.50	0.98	0.18
Both 75-84	0.69	7.38	28.92	0.94	0.17
Both 85+	1.29	9.87	31.78	0.86	0.15
Male 0-4	1.77	12.92	27.13	1.96	0.50
Male 5-9	0.22	1.96	45.75	0.57	0.07
Male 10-14	0.10	4.97	241.99	2.21	0.22
Male 15-19	3.13	74.60	1,170.23	19.73	1.86
Male 20-24	5.01	117.59	1,466.21	30.06	2.86
Male 25-64	2.58	41.66	367.04	9.45	1.02
Male 65-74	1.05	6.65	46.42	1.34	0.28
Male 75-84	0.72	7.37	33.97	1.34	0.28
Male 85+	2.03	10.15	36.83	1.34	0.28
Female 0-4	0.99	8.98	29.90	1.59	0.21
Female 5-9	0.00	1.03	21.87	0.24	0.02
Female 10-14	0.31	3.78	103.27	0.99	0.11
Female 15-19	0.82	12.37	450.79	4.13	0.38
Female 20-24	1.31	19.06	446.52	5.51	0.49
Female 25-64	0.85	9.36	163.23	2.38	0.22
Female 65-74	0.45	2.97	25.49	0.64	0.09
Female 75-84	0.66	7.39	25.06	0.64	0.09
Female 85+	0.95	9.74	29.41	0.64	0.09

Table 21

Total, direct, indirect, and per capita costs of injury due to violence by age and sex, Canada, 2010

Description	Reference Population	Total Costs (\$ Millions)	Direct Costs (\$ millions)	Indirect Costs (\$ millions)	Per Capita Costs (\$)
Male, all ages	16,847,961	912	435	477	54.13
Female, all ages	17,157,313	230	105	125	13.43
Both, all ages	34,005,274	1,142	540	602	33.59
Both 0-4	1,873,393	40.19	14.84	25.35	21.45
Both 5-9	1,791,353	7.19	4.17	3.02	4.01
Both 10-14	1,959,726	21	11	10	10.66
Both 15-19	2,249,523	175	77	98	77.83
Both 20-24	2,322,472	254	109	144	109.28
Both 25-64	19,012,664	627	306	321	32.97
Both 65-74	2,579,541	9	9	N/A	3.57
Both 75-84	1,598,413	7	7	N/A	4.20
Both 85+	618,189	2	2	N/A	3.72
Male 0-4	959,864	25.38	8.87	16.51	26.44
Male 5-9	920,003	6.06	3.45	2.62	6.59
Male 10-14	1,006,518	11	5	6	10.94
Male 15-19	1,150,163	146	65	80	126.53
Male 20-24	1,178,626	214	94	120	181.35
Male 25-64	9,509,997	500	249	252	52.62
Male 65-74	1,233,815	6	6	N/A	4.51
Male 75-84	691,899	3	3	N/A	4.61
Male 85+	197,076	1	1	N/A	5.00
Female 0-4	913,529	14.81	5.97	8.84	16.21
Female 5-9	871,350	1.13	0.73	0.40	1.29
Female 10-14	953,208	10	5	5	10.37
Female 15-19	1,099,360	30	12	17	26.89
Female 20-24	1,143,846	40	16	25	35.02
Female 25-64	9,502,667	126	57	69	13.31
Female 65-74	1,345,726	4	4	N/A	2.71
Female 75-84	906,514	4	4	N/A	3.89
Female 85+	421,113	1	1	N/A	3.12

Canadians aged 20-24 were the most likely to present to emergency room visits for injuries due to violence (964 per 100,000 population).

While children were typically at lower risk of injuries from violence than adults or Canadians generally, very young children age 0-4 suffered significantly higher rates of mortality and hospitalization due to violence than children aged 5-14.

Canadians aged 20-24 had the highest per capita costs due to violence at \$109.28 – 3.3 times higher than for Canadians overall. They were followed by youth aged 15-19, with a per capita cost of \$77.83 – 2.3 times the average for all Canadians.

Violence related injury costs for males (\$54.13 per capita) were 4.0 times higher than those for females (\$13.43) and 1.61 times higher than those for Canadians overall.

Provincial comparison of age/sex standardized injury mortality rates

Table 22

Age/sex standardized mortality rates by cause of injury, Canada and by province, 2010

Jurisdiction	Transport	Falls	Suicide	Violence
Alberta	9.1	2.6	12.0	1.7
British Columbia	7.7	4.8	10.5	1.4
Manitoba	8.2	7.0	11.5	4.0
New Brunswick	12.1	4.3	13.3	1.3
Newfoundland and Labrador	8.7	1.5	11.5	0.9
Nova Scotia	6.5	6.3	10.2	2.1
Ontario	5.1	6.2	8.5	1.4
Prince Edward Island	5.8	3.1	7.1	0.0
Quebec	7.0	2.2	13.0	0.9
Saskatchewan	14.6	6.1	11.9	2.4
Canada	7.2	4.6	10.9	1.5

The comparison of provincial age and sex-standardized rates for the four major causes of injury in 2010 illuminates some important differences between provinces.

The lowest mortality rate for transport deaths was in Ontario (5.1 deaths per 100,000), 29% below the national average and nearly three times less than the highest transport mortality rate observed in Saskatchewan (14.6 deaths per 100,000).

In 2010 Newfoundland and Labrador had the lowest mortality rate due to falls at 1.5 deaths per 100,000 (33% the national rate of 4.6 per 100,000). The highest rate of death — 7.0 deaths per 100,000 — was observed in Manitoba.

In Canada in 2010, the suicide mortality rate was 10.9 deaths per 100,000 citizens. Prince Edward Island experiences the lowest suicide rate at 7.1 deaths per 100,000 (65% of the national average) and New Brunswick had the highest rate at 13.3 deaths per 100,000 (1.2 times the national average).

Prince Edward Island also experienced the lowest rate of violent death (0.0 deaths/100,000). Manitoba experienced in 2010 the highest rate of deaths due to violence at 4.0 deaths per 100,000 (2.7 times the national average of 1.5 deaths per 100,000).

Table 23

Age/sex standardized injury mortality rates by cause, Canada, highest and lowest province, 2010

Cause of injury	Lowest provincial rate	National rate	Highest provincial rate
Transport	5.1 Ontario	7.2	14.6 Saskatchewan
Falls	1.5 Newfoundland and Labrador	4.6	7.0 Manitoba
Suicide	7.1 Prince Edward Island	10.9	13.3 New Brunswick
Violence	0.0 Prince Edward Island	1.5	4.0 Manitoba

Cost of injury by province

Table 24

Economic cost, health care costs & potential years of life lost, Canada & by province, 2010

Jurisdiction	Economic cost (per capita)	Health care costs (per capita)	Potential years of lost life (per 100,000 population)
Alberta	\$1,083	\$553	1,612
British Columbia	\$816	\$495	1,370
Manitoba	\$958	\$554	1,758
New Brunswick	\$924	\$531	1,678
Newfoundland and Labrador	\$749	\$477	1,358
Nova Scotia	\$839	\$579	1,367
Ontario	\$667	\$390	1,128
Prince Edward Island	\$739	\$504	1,145
Quebec	\$715	\$450	1,212
Saskatchewan	\$1,059	\$576	1,953
Canada	\$788	\$467	1,337

Table 25

Economic cost, direct costs, and PYLL of injury, Canada and highest and lowest province, 2010

	Lowest provincial rate	National rate	Highest provincial rate
Economic cost (per capita)	\$667 Ontario	\$788 per capita	\$1,083 Alberta
Health care costs (per capita)	\$390 Ontario	\$467 per capita	\$579 Nova Scotia
Potential years of lost life (per 100,000 population)	1,128 Ontario	1,337 per 100,000 population	1,953 Saskatchewan

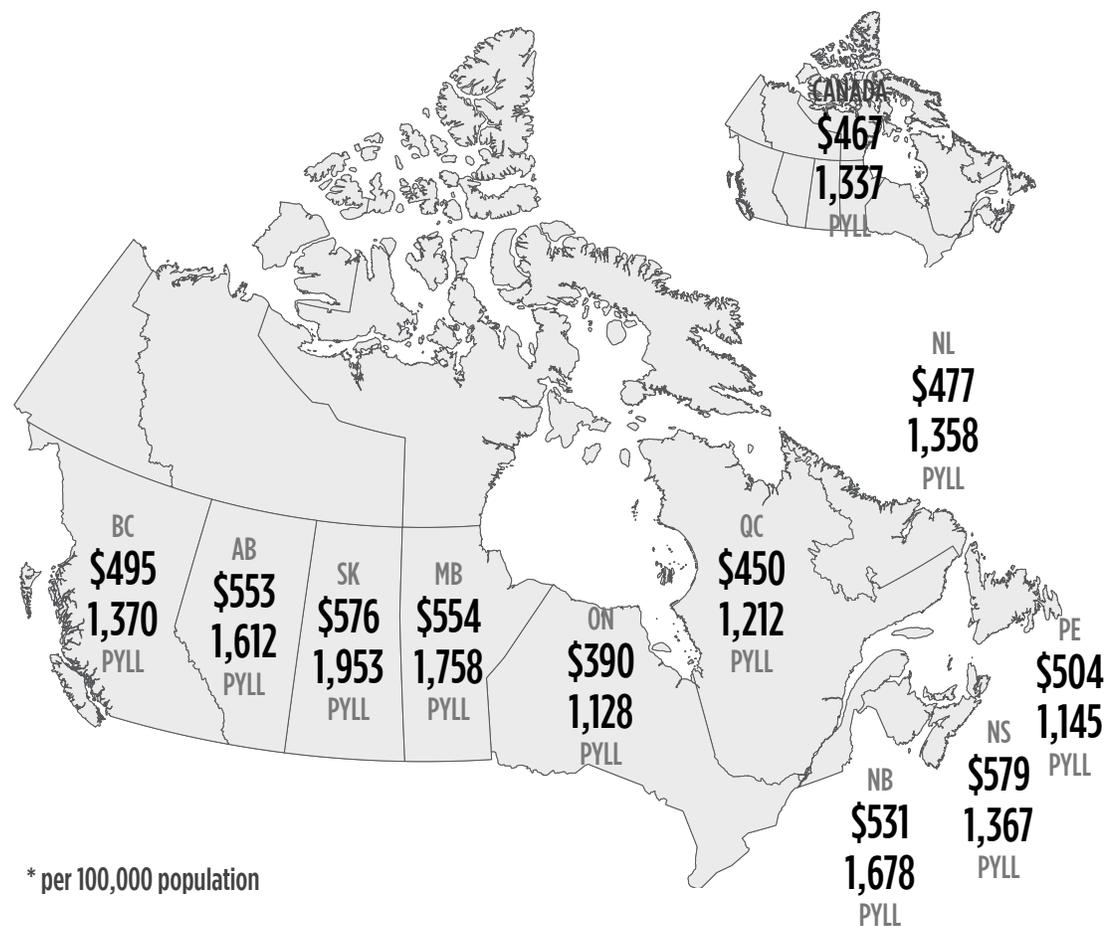
In 2010, the national economic cost of injury was \$788 per capita. Overall per capita costs were lowest in Ontario (\$667 per capita, 15% below the national average) and highest in Alberta (\$1,083 per capita, nearly 1.4 times the national average).

Ontario also had the lowest per capita health care costs at \$390 (16% below the national average) while Nova Scotia invested the highest, spending \$579 per capita on injury-related health care costs (24% above the national average).

The lowest rate of potential years of life lost per 100,000 people was observed in Ontario – 1,128 (16% below the national average). Saskatchewan, where the rate was 1,953 per 100,000 (1.5 times the national average), had the highest rate of potential years of life lost.

Figure 10

Health care costs per capita and potential years of life lost (PYLL)* by province, 2010



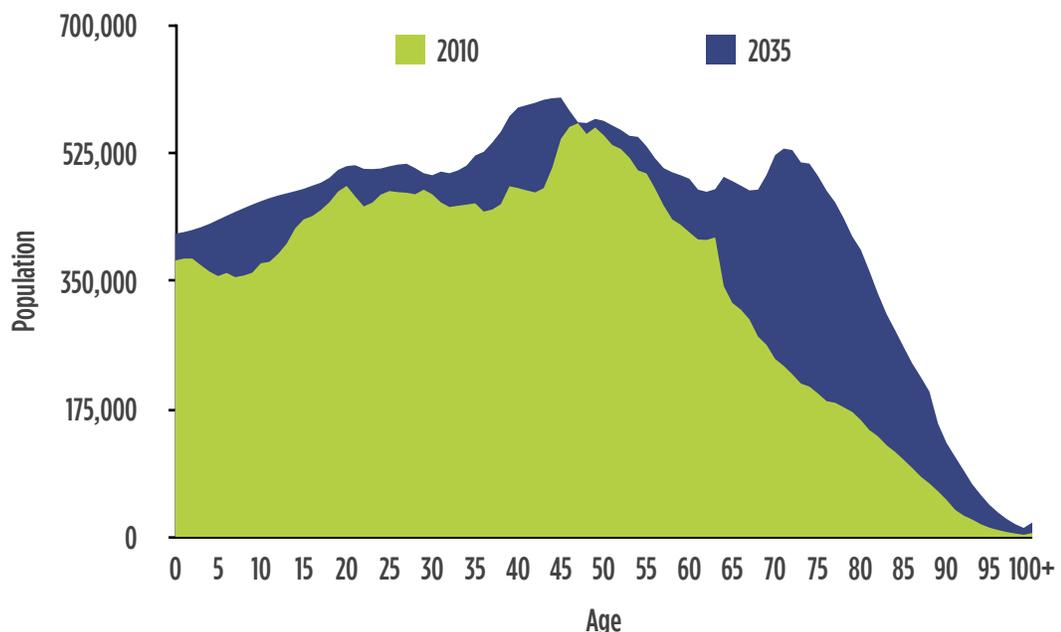
Forecasting the Future

Investing wisely in programs for which there is already good evidence will make a difference. Using the models presented in The Cost of Injury In Canada Report, if we reduce injuries by an average of 10% each year over 10 years (this target is very achievable with some injury areas and less so in others), we can expect an average annual reduction of \$3.6 billion in total economic costs from the impact of preventable injuries. After 20 years the cost reduction increases to \$4.4 billion every year. With an achievable goal of 25% reduction we could see \$11 billion in savings every year after 20 years.

Population by age cohort, Canada, 2010 and 2035

Canada’s population is aging as the ‘baby boomers’ grow older. This graph shows the distribution of the Canadian population by age in 2010 and again in 2035. These changing demographics will have an impact on the cost of injuries in both human and financial tolls.

Figure 11
Population by age cohort, Canada, 2010 and 2035



The following forecast scenarios were developed using the ERAT model, augmented by the Conference Board of Canada to include an injury forecast from 2011 to 2035. These scenarios are new to this 2015 Report. They focus on three major areas: seniors' falls, speed reduction in transport incidents and head injuries in sports and recreation.

The forecasts take into account changes in population over time. With input from Statistics Canada's demographic division, the Conference Board produces a full population forecast (until 2035) by age cohort for Canada, the ten provinces, and the three territories. This population forecast shows a significant aging of the population from now until 2035. This same population forecast is used for the standard ERAT and for the scenarios as well.

In addition, the Conference Board's forecast for wages and inflation were used to create the forecast for hospital costs, medical costs, rehabilitation costs and foregone wages. Rest assured that these variables are applied to each year from 2011 to 2035, and not only applied to the year 2035.

By including a full population forecast, a full wage and inflation forecast, as well as an incidence forecast (for each injury) based on actual historical data, *The Cost of Injury in Canada* forecast is extremely robust.

The forecasts for all hospital, medical, and rehabilitation costs are calculated on a cost-per-case basis. As a result, a change in the incidence rate for a particular injury will lead to an identical change in the economic burden of that injury. For example, a 10% reduction in motor vehicle incidents over the forecast period will lead to a 10% decrease in the total cost of motor vehicle incidents.

Seniors' falls

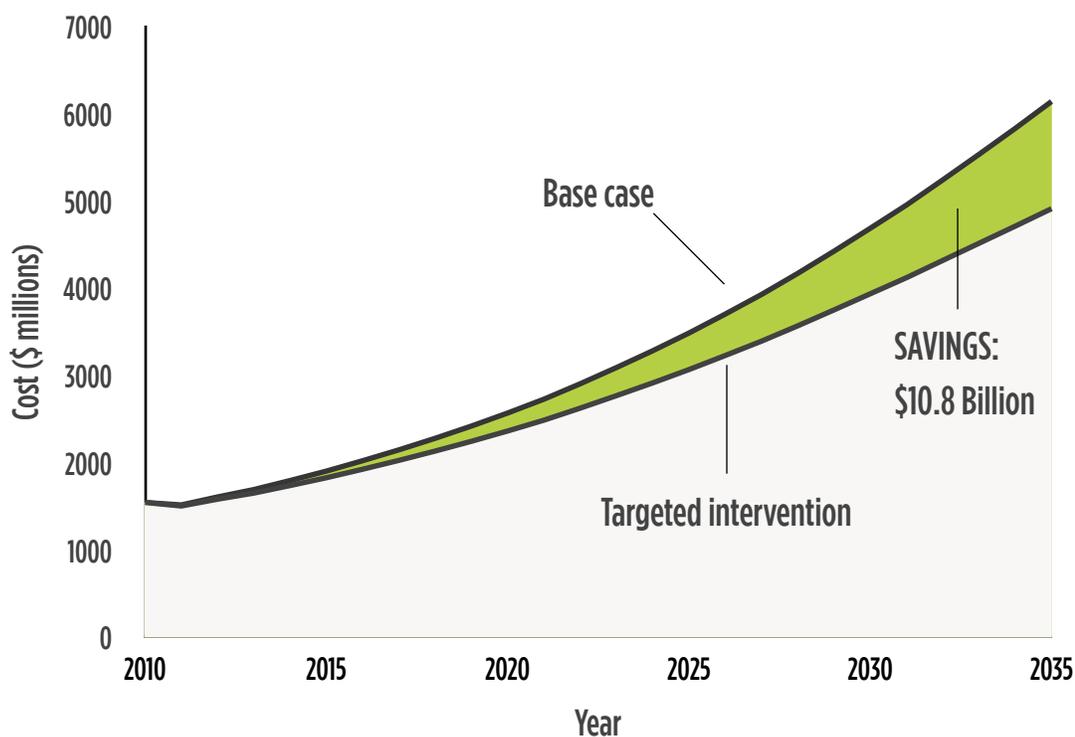
As noted in this Report, falls were the leading cause of overall injury costs in Canada in 2010, accounting for \$8.7 billion of the \$26.8 billion. Falls accounted for \$6.7 billion of direct costs of injury in 2010. A recent report from the Public Health Agency of Canada showed that between 20% and 30% of seniors fall each year. Research suggests that falls are the direct cause of 95% of all hip fractures,

leading to death in 20% of cases.⁴ The same report stated that majority of available systematic reviews agree that, in most cases, the best approach to fall prevention among older adults includes a multifactorial falls risk assessment and a subsequent management program tailored to an individual's risk factors and setting.

The following forecast is based on a 20% reduction in injury incidents to 2035, taking the most conservative expected proportionate reduction according to recent systematic review and meta-analysis results. Included in the forecast are both males and females aged 65+, total costs, direct costs and indirect costs (this focus will eliminate injuries from falls from skates, skis, boards, blades, from furniture, in playgrounds, from ladders/scaffolding, diving and other which presumably are not affecting those over 65+ in large numbers).

It is forecasted that achieving a 20% reduction in falls among adults aged 65+ between 2010 and 2035 would result in 4,400 lives saved and a total of \$10.8 billion costs avoided.

Figure 12
Forecasted reduction in cost of falls, Canada, age 65+



⁴ Public Health Agency of Canada. (2014) Falls in Canada: Second Report.

Speed reduction (transportation)

Speed reduction has the potential to impact the majority of road users – pedestrians, cyclists and motor vehicle occupants. For example, the speed of a vehicle that strikes a pedestrian is a significant factor related to whether pedestrian survives the collision or dies. According to Transport Canada, for each 1.6 km reduction in average speed the chance of a collision with a pedestrian is reduced by 5%. For occupants of motor vehicles, the risk of a vehicle collision doubles at 5 km/h over the speed limit in a 60 km/h zone.⁵⁻⁶

Speed control (calming), and speed-camera networks in particular are effective at reducing speed related injury and death, and should be central to road safety and injury prevention initiatives. Speed control is a central tenet in Canada's road safety vision to have the "safest roads in the world"⁷. This requires that sufficient resources can and will be provided to support enforcement of road safety laws to realize their full benefit; however, there is a strong cost effective case for this investment. Previous studies have demonstrated an average return of investment (ROI) of 5:1 after 1 year and 25:1 after 5 years. The benefit from avoided injuries was more than four times the cost of enforcement.⁸

The following two scenarios outline two different interventions. The first is based on the intervention of speed cameras with a projected 15% decrease in death and injury (Figure 13) while the second scenario is based a speed calming intervention with a 30% decrease in deaths and a 50% reduction in injuries (Figure 14). Again, the approach used the most conservative expected proportionate reductions according to the recent research analyses.

Achieving a 15% reduction between 2010-2035 in injuries and deaths related to transport incidents will result in 3,200 lives saved and a total of \$11.4 billion in costs avoided.

5 Institute for Road Safety Research. (2009). SWOV Fact Sheet: The Relation Between Speed and Crashes.

6 Gavin, A., Walker, E., Murdoch, C., Graham, A., Fernandes, R., Job, R.F.S. (YEAR) Is a focus on low level speeding justified? Objective determination of the relative contributions of low and high level speeding to the road toll. Australasian Road Safety, Research, Policing and Education Conference, August – 3 September 2010, Canberra, Australian Capital Territory

7 Transport Canada. 2011. Road Safety in Canada: Making Canada's Roads the Safest in the World. Government of Canada; Ottawa, Ontario.

8 Gains A, Heydecker B, Shrewbury J, Robertson S. 2004. The national safety camera programme: three-year evaluation report. http://www.dft.gov.uk/stellent/groups/dft_rdsafety/documents/page/dft_rdsafety_029193.hcsp

Figure 13

Forecasted reduction in cost of transport-related injuries and deaths from speed camera intervention, Canada, all ages

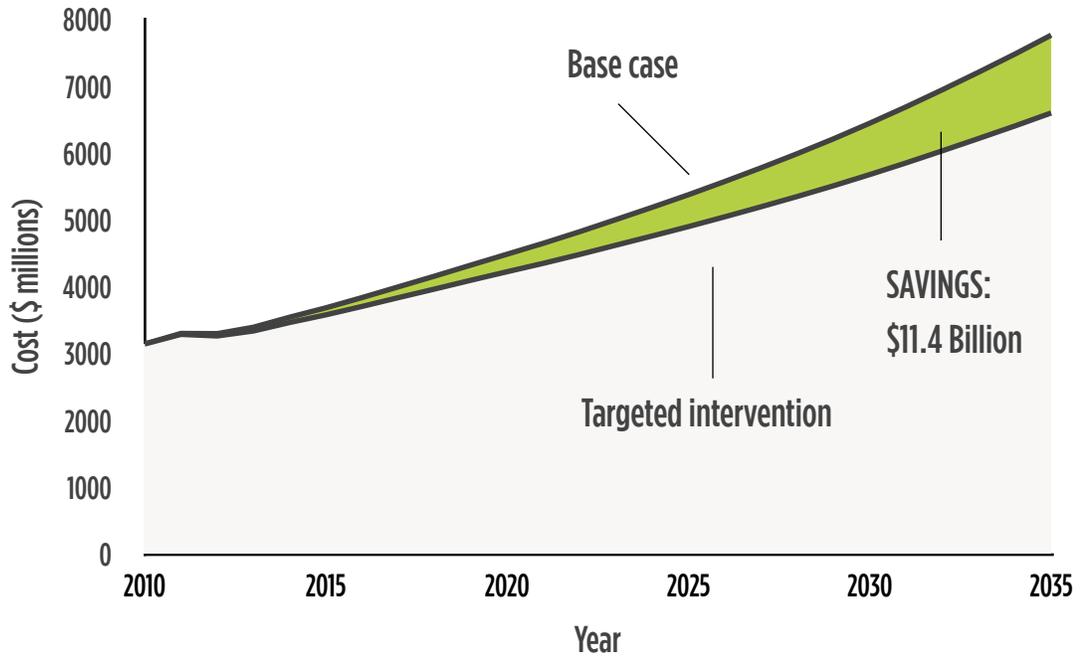
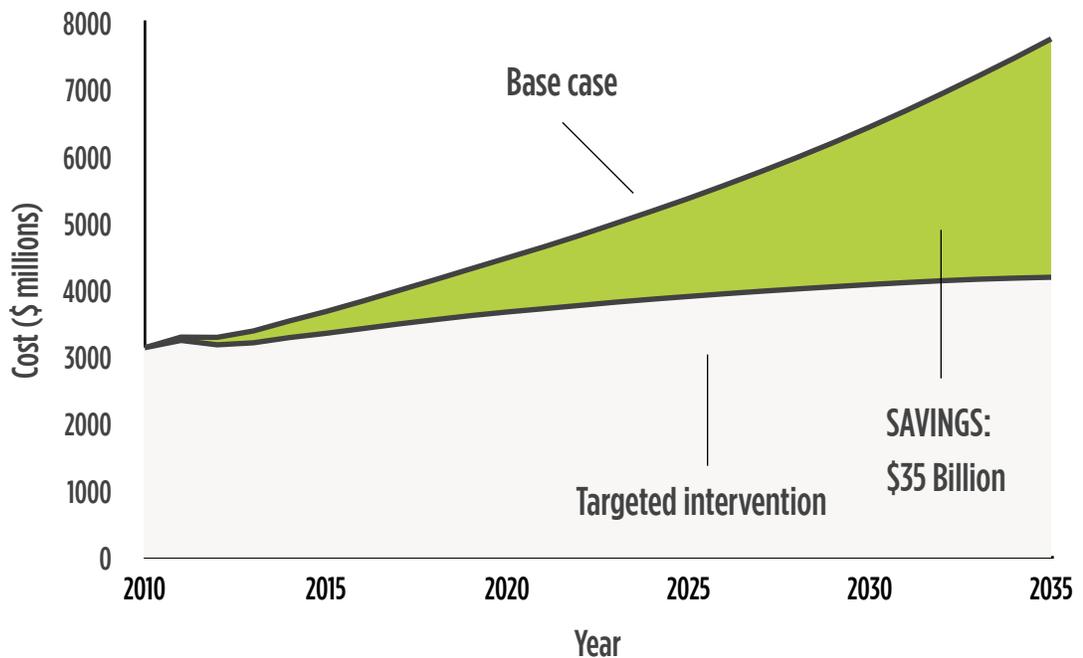


Figure 14

Forecasted reduction in cost of transport-related injuries and deaths from speed calming intervention, Canada, all ages



Achieving a 30% reduction in deaths and a 50% reduction in injuries related to transport incidents between 2010 and 2035 will result in 6,300 lives saved and a total of \$35 billion transport costs avoided.

Sports & recreation (head injury)

The introduction of standards and legislation for bicycle helmets was a logical progression after the successful introduction of motorcycle helmet legislation. Current legislation varies in other jurisdictions despite support from the medical community. Bicycle helmet legislation appears to be effective in increasing helmet use and decreasing head injury rates in the applicable populations.

A series of systematic reviews, including several Cochrane reviews, found that helmets reduced risk of head injuries while cycling. In one Cochrane review, helmets were estimated to reduce the risk of head and brain injuries by 69%, severe brain injuries by 74% and facial injuries by 65%, with similar effects for cyclists in collisions with motor vehicles and across all age groups. Another study found that helmets reduced head injury risk by 60%, brain injury risk by 58%, facial injuries by 47% and fatal injury by 73%. A reanalysis of this second study in 2011, which included more recent studies and adjustment for potential sources of bias, confirmed the protective effect of helmets on head injuries and facial injuries, although the effects were weakened.

Alpine skiing and snowboarding are popular winter activities worldwide, enjoyed by participants of all ages and skill levels. There is some evidence that the incidence of traumatic brain injury (TBI) and spinal cord injury (SCI) in these activities may be increasing coincidental with the development and acceptance of acrobatic and high-speed activities on the mountains.⁹ Head injuries are the most common cause of death among skiers and snowboarders, and young male snowboarders are especially at risk of death from head injury.

Skiers and snowboarders with a helmet were significantly less likely than those without a helmet to have a head injury.¹⁰ There is evidence that helmets reduce the risk of head injury by 22–60%.¹¹

9 A Ackery, B E Hagel, C Prowidenza, C H Tator An international review of head and spinal cord injuries in alpine skiing and snowboarding. *Inj Prev* 2007;13:368-375 doi:10.1136/ip.2007.017285

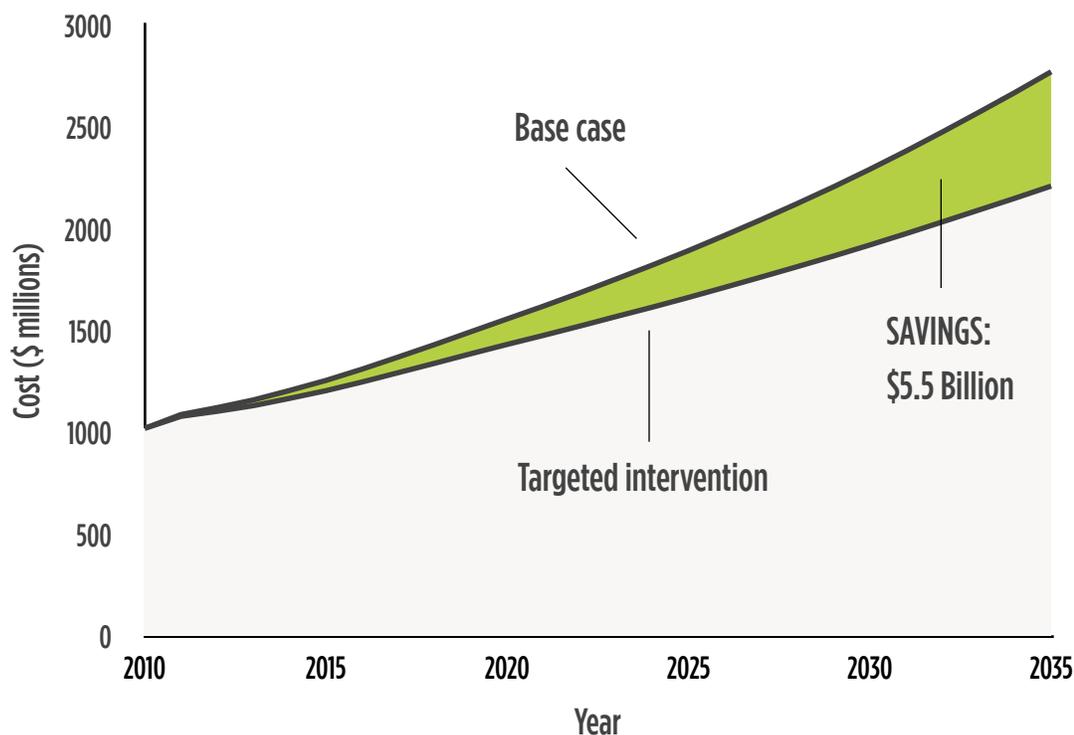
10 Kelly Russell, Josh Christie, Brent E. Hagel. The effect of helmets on the risk of head and neck injuries among skiers and snowboarders: a meta-analysis. *CMAJ* March 9, 2010 vol. 182 no. 4 First published February 1, 2010, doi:10.1503/cmaj.091080 (In the studies included in this review, only one specified 'diagnosed concussion' as included within the definition of head injury. Research suggests that helmet use does not prevent concussion.)

11 Ibid

The following forecast is a hybrid scenario developed to forecast a reduction in injury costs associated with sports and recreation. This scenario is based on a 25% reduction in risk of head injuries due to use of bicycle helmets among youth 5-19 year when blading, biking or skating and a 35% reduction in risk of head injuries due to use of ski/snowboard helmets¹² among 0-64 year olds. Again, taking conservative approach, these are the expected proportionate reductions according to the recent research analyses.

Achieving a 25% reduction in injuries associated with sports and recreation for ages 5-19 and a 35% reduction in injuries from skiing falls for ages 0-64 between 2010 and 2035 has the potential to result in 76,000 fewer hospitalizations or 1.4 million fewer hospitalization and emergency room visits combined and avoid a total of \$5.5 billion in costs.

Figure 15
Forecasted reduction in injury costs from helmet use in sports and recreation injuries



12 In the studies included in this review, only one specified 'diagnosed concussion' as included within the definition of head injury. Research suggests that helmet use does not prevent concussion.

Provinces

The following chapters focus on the Canadian provinces. Each introduction has been provided by a representative(s) from that province who is a member of the Canadian Collaborating Centres for Injury Prevention (CCCIP) and outlines the state of injury prevention efforts as well as the different agencies and organizations responsible for injury prevention in that province. This information was gathered through the following survey questions:

- ❖ What is the structure of injury prevention in your province?
- ❖ Is there an injury prevention organization (e.g. BCIRPU)? If so, how is it funded?
- ❖ What injury issues does your province focus on?
- ❖ Does your province have stated priorities? Measurements? Targets?
- ❖ What is the investment in injury prevention?
- ❖ Who are the key players in injury prevention in your province?
- ❖ Is it led by a sector, e.g. transportation?
- ❖ Do the different fields/sectors communicate, conduct joint projects, etc.? If so can you provide an example?

Territories

Due to the small cell sizes that affect the ability to report data and compromise privacy as well as the issue of non-comparable data, make it difficult to present information on the three territories therefore they are not included in this report.

Alberta's health care delivery organization, Alberta Health Services, provides injury prevention policy direction and supports to health care delivery personnel through its Provincial Injury Prevention Program. Coordination of programs and initiatives to avoid duplication of efforts is ensured through on-going dialogue between Alberta Health Services, the Injury Prevention Centre and the Ministry of Health. Key areas of focus for Alberta Health Services are suicide prevention, motor vehicle-related injuries and falls.

The Office of the Chief Medical Officer of Health is a significant advocate of injury prevention and will soon be releasing a report *Preventing Injuries in Alberta: Taking Action*. The goal of the report is to enrol every Albertan in injury prevention.

Alberta Transportation's Alberta Traffic Safety Plan: Saving Lives on Alberta's Roads, a comprehensive strategy to reduce traffic-related deaths and injuries in the province outlines key initiatives to prevent motor vehicle collisions, build safer roads, establish and enforce traffic laws, and educate Albertans on traffic safety. The implementation of the plan continues to drive traffic safety in the Province.

The Ministry of Jobs, Skills, Labour and Training is responsible for workplace injury prevention and promotes health and safety through partnerships, resources, education and enforcement of the *Occupational Health and Safety Act* of Alberta.

The Injury Prevention Centre (formerly the Alberta Centre for Injury Control & Research), was established in 1998 by the Ministry of Health in recognition that injury prevention is a key component of public health and the role of injury prevention has in achieving a sustainable and effective health system. The Injury Prevention Centre is a catalyst for action by supporting communities and decision-makers with knowledge and tools and raising awareness about preventable injuries as an important component of life-long health and wellness.

The Centre's current priorities focus on increasing awareness about preventable injuries along with reducing the incidence and severity of injuries that are common in Alberta, including falls, self-harm and suicide, poisoning and motor

vehicle-related injuries. The Centre also works to reduce the impact of catastrophic injury on vulnerable populations, such as children, youth and rural & remote populations. Annual targets are set and monitored for changes in attitudes, knowledge, behaviours and reductions in mortality and morbidity. The Centre works collaboratively with partners and allies from multiple sectors.

The Centre for Suicide Prevention, a branch of the Canadian Mental Health Association, is an education centre with the largest English language library dedicated to the collection and dissemination of suicide prevention, intervention and post-vention resources. The Centre provides training workshops, online courses, webinars, literature scans and reviews, and knowledge translation publications. The Centre educates people with the information, knowledge and skills necessary to respond to the risk of suicide. They teach prevention because prevention is the only solution to suicide.

While each of these key players has a unique focus, every effort is made to build on and collaborate on initiatives when it makes sense to do so. For example, the issue of seniors' falls is a priority of both the Injury Prevention Centre and Alberta Health Services. The development of a provincial wide initiative was coordinated and funded by the Injury Prevention Centre with input from multiple interested parties including Alberta Health Services; the initiative is widely delivered through Alberta Health Services personnel. Similar, collaborations between key players occur in the areas of suicide prevention, traffic safety, and raising awareness about the injury issue.

Total cost of injury

Injuries cost Albertans \$4 billion and 1,740 lives in 2010.

A further 599 people were totally and permanently disabled and 7,474 were left with a permanent partial disability, while 30,870 were hospitalized and another 386,116 were treated in emergency rooms as a result of injury.

Based on Alberta's 2010 population of 3,732,573 this translates into an annual death rate of 47 people per 100,000 population, an estimated 1,612 potential years of life lost, and \$1,083 in total injury costs for every Albertan due to injury.

Table 26

Summary of findings, all injury, Alberta, 2010

Injury Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability	Total Economic Cost of Injury
1,740	30,870	386,116	7,474	599	\$4 billion

Direct and indirect costs

The direct (health care) costs of injury in Alberta were \$2.1 billion or \$553 for every Albertan, and represents 51% of all injury costs, while indirect costs amounted to another \$1.9 billion and another \$530 for every Albertan.

Intentional and unintentional injury

Table 27

Injury by intent, Alberta, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Unintentional	845	26,900	368,823	6,634	535
Intentional	540	3,545	15,003	744	58
Undetermined Intent/Other	355	425	2,290	96	6
TOTAL	1,740	30,870	386,116	7,474	599

Most injuries incurred by Albertans in 2010 were unintentional injuries. Forty nine percent of deaths, 87% of hospitalizations, 96% of emergency room visits, and 89% of all cases of permanent disability (total and partial) arising from injury were caused by unintentional injury. Intentional injuries accounted for just 31%

of deaths, 11% of hospitalizations, 4% of emergency room visits, and 10% of all cases of permanent disability arising from injury. The remaining incidents are of undetermined intent.

Table 28

Total, direct and indirect costs by intent of injury, Alberta, 2010

Description	Total costs (\$ millions)	Direct costs (\$ millions)	Indirect costs (\$ millions)
Unintentional	\$3,132	\$1,838	\$1,294
Intentional	\$667	\$202	\$466
Undetermined Intent/ Other	\$244	\$25	\$219
TOTAL	\$4,043	\$2,065	\$1,979

It is not surprising then, that unintentional injuries accounted for \$3.13 billion or 77% of Alberta's \$4 billion total injury costs in 2010. Unintentional injuries were also responsible for \$1.84 billion or 89% of Alberta's \$2.1 billion in direct injury costs and \$1.3 billion or 65% of its \$2 billion in indirect costs.

Intentional injuries were responsible for 16% of total costs, 10% of direct costs, and 24% of indirect costs arising from injury, while injuries of other or undetermined intent accounted for 6% of total costs, 1% of direct costs, and 11% of indirect costs.

Injury by cause

In 2010, suicide/self-harm and transport incidents were the leading causes of death by injury in Alberta, accounting for 27% and 21% of deaths respectively. Injuries of undetermined intent accounted for a further 20% of injury deaths. Among the remaining deaths, falls were responsible for 11%, violence for 4%, unintentional poisoning for 2%, and drowning for 1%.

Hospitalizations due to injury were most often because of falls (48%), followed by transport incidents (14%) and suicide/self-harm (6%). Violence accounted for an additional 5% and unintentional poisoning resulted in 4%, while fire/burns and undetermined injuries each accounted for 1%.

Table 29

Injury deaths, hospitalizations, and emergency room visits by cause, Alberta, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Transport Incidents	360	4,414	32,379	1,062	103
<i>Pedestrian</i>	50	301	1,938	74	8
<i>Pedal Cycle</i>	14	488	6,803	143	13
<i>Motor Vehicle</i>	152	2,144	17,889	500	52
<i>ATV, Snowmobile</i>	27	852	2,400	195	17
<i>Other</i>	118	629	3,349	150	13
Falls	185	14,848	110,219	2,997	251
<i>On the same level</i>	15	5,021	34,368	1,053	78
<i>From skates, skis, boards, blades</i>	<5	735	7,348	215	16
<i>From furniture</i>	11	786	6,903	126	11
<i>In playgrounds</i>	<5	242	2,887	79	5
<i>On stairs</i>	20	1,443	14,079	361	34
<i>From ladders/scaffolding</i>	5	458	2,505	123	11
<i>Diving</i>	<5	21	363	6	<5
<i>Other</i>	132	6,142	41,766	1,034	94
Drowning	25	25	144	<5	<5
Fire\Burns	15	302	4,960	120	6
Unintentional Poisoning	40	1,315	6,101	270	16
Struck By\Against Sports Equipment	<5	107	7,830	65	5
Other Unintentional Injuries*	220	5,889	207,190	2,116	154
Suicide\Self-Harm - Poisoning	113	1,593	2,979	349	16
Suicide\Self-Harm - Other	362	297	894	48	<5
Violence	65	1,655	11,130	347	38
Undetermined Intent \Other	355	425	2,290	96	6
TOTAL	1,740	30,870	386,116	7,474	599

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

The most frequent defined causes of emergency room visits to treat injury were falls (29%) and transport incidents (8%). The remaining causes of emergency room visits were violence (3%), unintentional poisoning (2%), being struck by/against sports equipment (2%), fire/ burns (1%), and suicide/self-harm (1%).

Falls were the leading cause of permanent partial disability (40%) and permanent total disability (42%) arising from injury, followed by other unintentional injury (28% and 26% respectively), and transport incidents (14% and 17%). Less frequent causes included suicide/self-harm poisoning (5% and 3%), violence (5% and 6%), unintentional poisoning (4% and 3%), and injuries of undetermined intent (1% in both cases also).

Table 30

Mortality, crude death rates (per 100,000 pop.) and total cost per capita by cause, Alberta, 2010

Cause	Deaths	Death rate (per 100,000)	Total Costs	Costs per capita
Transport Incidents	360	9.6	\$718 million	\$192
Falls	185	5.0	\$1,154 million	\$309
Suicide/Self-Harm	475	12.7	\$447 million	\$120
Violence	65	1.7	\$220 million	\$59

While suicide/self-harm was responsible for the most injury deaths per capita (12.7 per 100,000 population), falls generated the greatest per capita cost to Albertans – \$309.

The four leading causes of injuries accounted for 63% of the total costs of injury in Alberta. Falls accounted for 29%, transportation incidents 18% followed by suicide/self harm with 11% and violence with 5%.

Falls were also the leading cause of health care or direct costs due to injury, accounting for 38% of all direct injury costs in 2010, followed by other unintentional injuries at 31% and transport incidents at 15%. Suicide and violence accounted for a further 5% each of direct costs, unintentional poisoning 3%, and fire/burns 1%.

Table 31

Total, direct, and indirect costs of injury by cause, Alberta, 2010

Description	Total costs (\$ millions)	Direct costs (\$ millions)	Indirect costs (\$ millions)
Transport Incidents	\$718	\$312	\$406
<i>Pedestrian</i>	\$65	\$25	\$40
<i>Pedal Cycle</i>	\$71	\$35	\$36
<i>Motor Vehicle</i>	\$345	\$164	\$181
<i>ATV, Snowmobile</i>	\$106	\$50	\$55
<i>Other</i>	\$130	\$36	\$94
Falls	\$1,154	\$788	\$366
<i>On the same level</i>	\$341	\$244	\$98
<i>From skates, skis, boards, blades</i>	\$93	\$49	\$44
<i>From furniture</i>	\$60	\$44	\$16
<i>In playgrounds</i>	\$36	\$19	\$17
<i>On stairs</i>	\$124	\$80	\$44
<i>From ladders/scaffolding</i>	\$38	\$24	\$14
<i>Diving</i>	\$6	\$3	\$2
<i>Other</i>	\$456	\$325	\$131
Drowning	\$20	\$2	\$18
Fire\Burns	\$44	\$23	\$22
Unintentional Poisoning	\$125	\$66	\$59
Struck By\Against Sports Equipment	\$27	\$13	\$14
Other Unintentional Injuries*	\$1,044	\$636	\$409
Suicide\Self-Harm - Poisoning	\$197	\$82	\$115
Suicide\Self-Harm - Other	\$250	\$20	\$230
Violence	\$220	\$100	\$121
Undetermined Intent\Other	\$244	\$25	\$219
TOTAL	\$4,043	\$2,065	\$1,979

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

Transport incidents were the leading cause of indirect costs arising from injury at 21%, followed by falls (18%) and suicide/self-harm (17%). Other causes included injuries of undetermined intent (11%), violence (6%), unintentional poisoning (3%), and fire/burns and drowning (1% each).

Transport-related injuries by cause and associated costs

Motor vehicle incidents caused 42% of all transport-related injury deaths in Alberta in 2010 and accounted for half of all hospitalizations (49%), emergency room visits (55%), and cases of permanent partial disability (47%) and permanent total disability (50%) arising from transport-related injuries.

The remaining deaths due to transport incidents were attributed to pedestrian incidents (14%), ATV/snowmobile incidents (8%), and cycling incidents (4%). Other transport-related causes of hospitalization included ATV/snowmobiles (19%), cycling (11%), and pedestrian incidents (7%). Other emergency room visits were due to cycling (21%), ATV/snowmobile (7%), and pedestrian incidents (6%).

Motor vehicle incidents accounted for approximately half of total costs (48%), direct costs (53%), and indirect costs (45%) arising from injuries due to transport incidents in Alberta in 2010. Remaining direct costs were due to injuries arising from ATV/snowmobile (15%), cycling (10%), and pedestrian (9%) incidents. Remaining indirect costs were due to ATV/snowmobile (14%), pedestrian (10%), and cycling (9%) incidents.

Fall-related injuries by cause and associated costs

After other (non-specified) falls, stairs were the leading cause of death by falls in Alberta in 2010, accounting for 11% of all deaths by falling. Other types of falls resulting in death included falls on the same level (8%), from furniture (6%), and from ladders/scaffolding (3%). The vast majority (71%) of deaths by falls however, are from other (non-specified) types of falls.

However, other (non-specified) types of falls accounted for the leading cause of hospitalizations (41%), emergency room visits (38%), cases of permanent partial disability (35%) and permanent total disability (37%). Falls on the same level were the next leading cause of hospitalization (34%), emergency room visits

(31%), cases of permanent partial disability (35%) and permanent total disability (31%). Causes of hospitalizations from falls also included falls from stairs (10%), from furniture and skates/skis/boards/blades (5%), playgrounds (2%), and diving (less than 1%).

Emergency room visits due to falls also included falls from stairs (13%), from skates/skis/boards/blades (7%), from furniture (6%), playgrounds (3%), from ladders/scaffolding (2%), and diving (less than 1%). Other (non-specified) types of falls accounted for the remaining 38% of emergency room visits in 2010.

Falls on the same level were also the single greatest cause of costs due to falls, accounting for 30% of total costs, 31% of direct costs, and 27% of indirect costs in 2010, followed by falls from stairs (11% of total costs, 10% of direct costs, and 12% of indirect costs), and falls from skates/skis/boards/blades (8% of total costs, 6% of direct costs). Other (non-specified) falls accounted for 40% of total costs, 41% of direct costs, and 36% of indirect costs.

Intentional injuries by cause and associated costs

Suicide/self-harm other than poisoning accounted for 67% of intentional death. Suicide/self-harm by poisoning accounted for 21% of death, followed by violence at 12%.

Suicide/self-harm by poisoning and violence were almost equally responsible for the majority of hospitalizations (45% and 47% respectively), followed by suicide/self-harm – other (8%), while injury due to violence was responsible for the vast majority of emergency room visits (74%), followed by suicide/self-harm – poisoning (20%) and suicide/self-harm by other means (6%). Permanent partial disability was due equally to violence (47%) and suicide/self-harm by poisoning (47%), followed by suicide/self-harm by other means (6%). Permanent total disability was a result of violence in 66% of cases, followed by suicide/self-harm by poisoning (28%). Suicide/self-harm by other means was too small (less than 7%) to report.

Suicide/self-harm (including poisoning) accounted for the majority of costs arising from intentional injury in 2010 – 67% of total costs, 50% of direct costs, and 74% of indirect costs. A more detailed breakdown shows that total costs were divided almost evenly between violence (33%), suicide/self-harm by other means (37%), and suicide/self-harm by poisoning (30%). While violence was also

responsible for the greatest share of direct costs (50%), it was followed closely by suicide/self-harm by poisoning (41%), with suicide/self-harm by other means accounting for the remaining 10%.

Indirect costs showed still another pattern with 49% of costs attributable to suicide/self-harm by other means, 26% to violence, and 25% to suicide/self-harm by poisoning.

BRITISH COLUMBIA

Under the leadership of the Provincial Health Officer, Public Health plays a variety of roles in British Columbia focused on maintaining and improving the health of the population, including injury prevention, which is articulated in, *Promote, Protect, Prevent: Our Health Begins Here – BC’s Guiding Framework for Public Health* (Guiding Framework). The injury prevention community in British Columbia represents multiple disciplines and sectors, and includes doctors, nurses, trauma specialists, public health inspectors, mental health and addictions specialists, community health and safety professionals, emergency services workers, policy makers and researchers, among others. This community responds to the goals and objects for injury prevention, as well as addressing local and regional priorities.

The BC Ministry of Health and the Health Authorities provide strong leadership and policy direction, which is supported by strong networks and communities of practice, across sectors and disciplines. The BC Injury Prevention Policy Advisory Committee (BCIP-PAC) provides guidance and recommendations on injury surveillance and prevention policies to the Ministry of Health and the Office of the Provincial Health Officer and programs by liaison with the Provincial Public Health Committee. The Committee provides a forum for health authority representatives holding responsibility for injury prevention as well as Ministry of Health representatives responsible for injury prevention surveillance, programs and policy.

Injury Prevention relies on collaborative partnerships in order to support service delivery in BC. Strong connections across sectors and levels of government, within communities, schools and workplaces, with academia and community-based and NGOs are vital. Partnerships at the local level play an important role in injury prevention. It is at the local level that citizens, NGOs, First Nations and Aboriginal groups, the private sector and government can come together to address local priorities. Collaboration with NGOs is a vital component in the formulation and delivery of many injury prevention initiatives.

The BC Injury Prevention Leadership Action Network (BCiPLAN) is an independent strategic alliance of organizations supporting injury prevention priorities and activities across British Columbia. BCiPLAN provides a forum for

organizations and leaders to advise and assist one another regarding research, strategies, policies and programs, identify and promote injury prevention priorities where evidence supports that progress can be made in injury reduction, coordinate and collaborate among member organizations on activities addressing significant injury issues, and provide collaborative leadership thinking and action on injury prevention in BC. Within BCiPLAN, there are a number of coalitions that provide focus on specific injury issues, including the BC Falls Prevention Coalition, the Sport and Recreation Injury Prevention Group, the BC Concussion Advisory Network, and others.

Central to these networks and coalitions, and providing leadership, secretariat and communications support is the BC Injury Research and Prevention Unit (BCIRPU). BCIRPU was established in August, 1997 as part of a province-wide partnership between the Child and Family Research Institute at BC Children's Hospital, BC Ministry of Health and the University of British Columbia to address the following critical gaps in the injury prevention field in BC:

- i) the need for quality and comprehensive injury data
- ii) the need for quality injury prevention research
- iii) the need to co-ordinate injury prevention efforts throughout BC.

BCIRPU was established as a strategic entity, blending the need for research and evidence with best practices and the development of policies and programs to reduce injury in BC. It is located within a research environment, closely connected to the Ministry of Health and health care services, and readily accessible to health authorities and other injury prevention agencies and organizations throughout BC.

Supporting *Promote, Protect, Prevent: Our Health Begins Here – BC's Guiding Framework for Public Health* (Guiding Framework), BCIRPU is responsive to Goal 5 and the associated injury prevention objectives and targets outlined. Serving as a provincial 'hub', BCIRPU works in collaboration with Health Authorities, NGOs and communities to focus on three priority objectives:

1. To **build a culture of safety at work, home and play** by increasing awareness of injury risks, implementing prevention education and taking priority actions, such as designing and developing safe environments, systems and products.

2. To **reduce the incidence of falls, fall-related injuries and fall-related risk factors among seniors** in BC through surveillance, enhanced community capacity, public information and evidence-based prevention measures.
3. To **reduce the incidence of injuries among children and youth** in BC through physical and social environmental modifications and increased awareness of safety-promoting behaviours.

Supporting the injury prevention networks and coalitions, BCIRPU employs four strategic focus areas specifically developed to align with, and support the injury prevention priorities and objectives of the Guiding Framework: **surveillance, research, knowledge synthesis and translation, and public information.**

The purpose of injury prevention in BC is to safeguard the health and well-being of individuals and communities and to reduce the need for emergency and health care services. Collaboration by governments, Health Authorities, First Nations and Aboriginal groups, BCIRPU, NGO's and communities throughout BC provide the channels for injury prevention initiatives. BCIP-PAC and BCiPLAN provide the forums for exchange, networking, ideas generation and collaborative work to act on the goals and objectives within the Guiding Framework. This collective impact contributes to the relief of unnecessary suffering and enables citizens to live longer, fuller, happier lives, while relieving pressure on the healthcare system.

Total cost of injury

Injuries cost British Columbians \$3.6 billion and 2,070 lives in 2010.

Injury also led to the hospitalization of 35,816 British Columbians, resulted in 456,347 visits to the emergency room, caused 643 cases of permanent total disability, and led to 8,065 cases of permanent partial disability.

Given a 2010 provincial population of 4,465,924, injuries caused 46 deaths per 100,000, 1,307 potential years of life lost per 100,000 residents, and came with a per capita price tag of \$816.

Table 32

Summary of findings, all injury, British Columbia, 2010

Injury Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability	Total Economic Cost of Injury
2,070	35,816	456,390	8,065	643	\$3.6 billion

Direct and indirect costs

In 2010 the direct costs associated with injury were \$2.2 billion, representing 60% of total costs and \$495 for every British Columbian. Indirect costs amounted to an additional \$1.4 billion – \$322 per resident.

Intentional and unintentional injury

Table 33

Injury by intent, British Columbia, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Unintentional	1,460	31,197	436,433	7,064	577
Intentional	570	4,077	17,272	881	59
Undetermined Intent/Other	40	542	2,686	120	7
TOTAL	2,070	35,816	456,390	8,065	643

Most injuries suffered by British Columbians were unintentional. Unintentional injuries accounted for 71% of injury-related deaths, 87% of injury hospitalizations and 96% of emergency room visits. Of the 8,708 cases of permanent partial and total disability caused by injury in 2010, 88% were unintentional. Intentional injuries accounted for 28% of all injury deaths, 11% of hospitalizations, 4% of

emergency room visits and 11% of the cases of partial and total disability arising from injury. Remaining injury-related events were of undetermined intent.

Table 34

Total, direct, and indirect costs by intent of injury, British Columbia, 2010

Description	Total costs (\$ millions)	Direct costs (\$ millions)	Indirect costs (\$ millions)
Unintentional	\$3,030	\$1,966	\$1,065
Intentional	\$562	\$217	\$345
Undetermined Intent/ Other	\$54	\$27	\$27
TOTAL	\$3,646	\$2,210	\$1,436

In 2010, unintentional injuries cost the province a total of \$3 billion or 83% of all injury-related costs. While unintentional injuries account for 89% direct injury costs, they make up under three-quarters (74%) of indirect costs occurring due to injury. Intentional injuries are responsible for 15% of total costs, 10% of direct costs, and 24% of indirect costs associated with injuries. Just 1% of total costs are due to injuries of undetermined cause.

Injury by cause

In 2010, falls were the leading cause of death due to injury in British Columbia accounting for 27% of all deaths. Suicide/self-harm accounted for a further 25% of injuries, while transport incidents led to 18% of injuries. A further 17% of deaths occurred due to unintentional poisonings, 5% resulted from other unintentional causes, 3% were due to violence, 2% resulted from drowning, 2% from injuries of undetermined intent, and 1% from fires or burns.

The majority (56%) of injury-related hospitalizations were due to falls, 14% resulted from transportation incidents and 8% were related to suicide or self-harm. Other less common reasons for hospitalization were other unintentional injuries (13%), unintentional poisoning (4%), violence (3%), fire or burns (1%), and injuries of undetermined intent (2%).

Table 35

Injury deaths, hospitalizations, and emergency room visits by cause, British Columbia, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Transport Incidents	375	4,879	38,153	1,179	117
<i>Pedestrian</i>	54	569	2,331	126	15
<i>Pedal Cycle</i>	13	985	7,743	253	24
<i>Motor Vehicle</i>	161	2,428	21,370	565	58
<i>ATV, Snowmobile</i>	26	477	2,751	122	10
<i>Other</i>	121	420	3,957	111	9
Falls	555	19,916	135,993	3,356	285
<i>On the same level</i>	46	6,368	43,737	1,090	80
<i>From skates, skis, boards, blades</i>	<5	844	8,297	247	19
<i>From furniture</i>	37	1,167	7,869	148	13
<i>In playgrounds</i>	<5	245	2,925	80	5
<i>On stairs</i>	55	1,714	17,206	400	39
<i>From ladders/scaffolding</i>	9	666	3,092	178	16
<i>Diving</i>	<5	33	406	9	2
<i>Other</i>	406	8,879	52,460	1,204	112
Drowning	50	53	161	7	1
Fire\Burns	30	285	5,670	130	7
Unintentional Poisoning	355	1,393	7,051	286	17
Struck By\Against Sports Equipment	<5	99	8,789	70	5
Other Unintentional Injuries*	95	4,579	240,615	2,036	145
Suicide\Self-Harm - Poisoning	122	2,517	3,506	543	24
Suicide\Self-Harm - Other	388	338	1,033	55	5
Violence	60	1,222	12,732	283	30
Undetermined Intent\Other	40	542	2,686	120	7
TOTAL	2,070	35,816	456,390	8,065	643

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

In British Columbia falls were the leading cause of both permanent partial (42%) and permanent total (44%) disability. Other intentional injuries account for 25% of permanent partial and 23% of permanent total disability due to injury, while transport incidents explain 15% of permanent partial and 18% of permanent total cases of disability in 2010. Less frequent causes of permanent partial and total disability were suicide or self-harm (7% and 4%, respectively), violence (4% and 5%, respectively), unintentional poisoning (4% and 3%, respectively), and injuries of undetermined intent, and being struck by or against sports equipment (1% each).

Table 36

Mortality, crude death rates (per 100,000 pop.) and total cost per capita by cause, British Columbia, 2010

Cause	Deaths	Death rate (per 100,000)	Total Costs	Costs per capita
Transport Incidents	375	8.4	\$640 million	\$143
Falls	555	12.4	\$1,215 million	\$272
Suicide/Self-Harm	510	11.4	\$410 million	\$92
Violence	60	1.3	\$152 million	\$34

In 2010 in British Columbia, falls were responsible for the highest death rate (12.4 deaths per 100,000 residents), and were associated with the highest per capita cost (\$272).

Cost of injury by cause

In British Columbia in 2010 more than one-third of all injury-related costs were due to falls (33%) and transport incidents (18%). Total costs also resulted from un-specified unintentional injuries (23%), suicide or self-harm (11%), unintentional poisoning (7%), violence (4%), injuries of undetermined intent (1%), drowning (1%), fire or burns (1%), and being struck by / against sports equipment (1%).

Table 37

Total, direct, and indirect costs of injury by cause, British Columbia, 2010

Description	Total costs (\$ millions)	Direct costs (\$ millions)	Indirect costs (\$ millions)
Transport Incidents	\$639	\$344	\$295
<i>Pedestrian</i>	\$73	\$41	\$32
<i>Pedal Cycle</i>	\$103	\$63	\$40
<i>Motor Vehicle</i>	\$321	\$187	\$134
<i>ATV, Snowmobile</i>	\$56	\$28	\$28
<i>Other</i>	\$87	\$25	\$62
Falls	\$1,215	\$943	\$272
<i>On the same level</i>	\$332	\$271	\$61
<i>From skates, skis, boards, blades</i>	\$91	\$55	\$36
<i>From furniture</i>	\$70	\$58	\$12
<i>In playgrounds</i>	\$33	\$20	\$13
<i>On stairs</i>	\$123	\$90	\$33
<i>From ladders/scaffolding</i>	\$46	\$33	\$13
<i>Diving</i>	\$4	\$2	\$2
<i>Other</i>	\$516	\$415	\$102
Drowning	\$24	\$2	\$21
Fire\Burns	\$43	\$22	\$21
Unintentional Poisoning	\$243	\$63	\$180
Struck By\Against Sports Equipment	\$24	\$13	\$11
Other Unintentional Injuries*	\$842	\$579	\$264
Suicide\Self-Harm - Poisoning	\$226	\$123	\$103
Suicide\Self-Harm - Other	\$184	\$18	\$166
Violence	\$152	\$76	\$76
Undetermined Intent \Other	\$54	\$27	\$27
TOTAL	\$3,646	\$2,210	\$1,436

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

The leading cause of direct costs was falls (43%) followed by unintentional injuries (26%), transport incidents (16%) and suicide and self-harm (6%). Direct health care costs also resulted from violence (3%), unintentional poisonings (3%), fire or burns (1%), other injuries of undetermined intent (1%) and being struck by / against sports equipment (1%). Indirect costs were most often associated with transport incidents (21%), falls (19%), other unintentional injuries (18%), suicide and self-harm (19%), and unintentional poisonings (13%). The remaining indirect costs were split between violence (5%), drowning (1%), fire/burns (1%), being struck by / against sports equipment (1%), and other injuries of undetermined intent (2%).

Transport-related injuries by cause and associated costs

Motor vehicle deaths comprised 43% of all transport-related injury deaths in British Columbia in 2010 and accounted for 50% of hospitalizations, 56% of emergency room visits, 48% of permanent partial disability and 50% of permanent total disability arising from transport injuries.

Transport-related deaths also comprised other non-specified types of transport injury (32%), pedestrian injuries (14%), ATV or snowmobile events (7%), and cycling events (3%). Other causes of hospitalization due to transportation incidents were cycling incidents (20%), pedestrian events (12%), ATV or snowmobile events (10%), and other transport-related causes (9%). Twenty percent of transport-related injury visits to the emergency room were due to cycling events, 10% from other non-specified causes, 7% due to ATV or snowmobile incidents and 6% due to pedestrian events.

In 2010, of the total \$640 million cost of transport incidents, 50% was due to motor vehicle incidents. Motor vehicle-related injuries accounted for 54% of direct costs, and 45% of indirect costs. The remaining total costs were divided between cycling related injuries (16%), other unspecified types of transport incidents (14%), pedestrian injuries (11%) and injuries related to ATV and snowmobile use (9%). Remaining direct costs accrued as a result of incidents related to cycling (18%), pedestrians (12%), ATV or snowmobiles (8%) and other transport (7%). After motor vehicle incidents, indirect costs resulted from other non-specific transport incidents (21%), cycling (13%), pedestrian injury (11%) and ATV or snowmobile events (9%).

Fall-related injuries by cause and associated costs

In 2010 in British Columbia the majority (73%) of deaths due to fall-related injuries were due to unspecified causes. The leading identified cause of death was falls on stairs (10%) followed by falls on the same level (8%), falls from furniture (7%) and falls from ladders or scaffolding (2%).

Hospitalizations due to fall-related injuries were dominated by events without a defined cause (45%), and falls from the same level (32%). Fall-related hospitalizations also occurred due to incidents on stairs (9%), falls from furniture (6%), falls from skates, skis, boards or blades (4%), falls from ladders or scaffolding (3%), and falls in playgrounds (1%). Falls without a defined cause made up 39% of emergency room visits followed by falls from the same level (32%), on stairs (13%), from skates/skis/boards/blades (6%), on playgrounds (2%), and from ladders or scaffolding (2%).

Injuries related to falls cost the province of British Columbia \$1.2 billion dollars in 2010. The largest cost category for fall-related injuries were events without an unidentified cause. These injuries account for 43% of total fall spending, 44% of health care costs and 38% of indirect costs. Falls that occurred on the same level accounted for 27% of total costs, 29% of health care costs and 22% of indirect costs while the costs of falls on stairs made up 10% of total costs, 10% of direct costs, and 12% of indirect costs. Of the total cost, falls from skates, skis, boards, or blades made up 7% (6% of direct costs, 13% of indirect costs); falls from furniture made up 6% (6% of direct costs, 4% of indirect costs); falls from ladders or scaffolding are attributed with 4% (4% of direct costs, 5% of indirect costs); and falls in playgrounds made up 3% (2% of direct costs, 5% of indirect costs).

Intentional injuries by cause and associated costs

Suicide and self-harm resulted in the majority (89%) of intentional injury deaths in British Columbia in 2010. Suicide or self-harm by means other than poisoning was the leading (68%) cause of death, followed by suicide or self-harm – poison (21%), and violence (11%).

In 2010, suicide or self-harm by poison was responsible for almost two thirds (62%) of intentional injury hospitalization. The remainder of hospitalizations occurred due to violence (30%) and suicide or self-harm by means other than poisoning (8%). Violence resulted in the most intentional injury-related

emergency room visits accounting for 74% of visits, followed by suicide or self-harm – poison (20%) and suicide or self-harm by means other than poisoning (6%).

Permanent partial disability occurred most often due to suicide or self-harm poison (62%) while permanent total disability resulted most frequently from violence (51%). Partial disability was also caused by violence (32%) and suicide or self-harm by means other than poisoning (6%) while the other cases of total disability resulted from suicide or self-harm – poison (40%) and suicide or self-harm by means other than poisoning (8%).

In 2010 in British Columbia suicide or self-harm was responsible for 73% of total spending on intentional injury, including 65% of direct costs and 78% of indirect costs. Overall costs were dominated by suicide or self-harm by poisoning (40%), followed by suicide or self-harm by means other than poisoning (33%) and violence (27%). Health care costs occurred overwhelmingly due to poison-related suicide or self-harm (57%), followed by violence (35%), and suicide or self-harm by means other than poisoning (8%). Indirect costs were incurred mostly in relation to suicide or self-harm by means other than poisoning (48%), with the remaining half of spending split between suicide or self-harm – poison (30%) and violence (22%).

MANITOBA

The responsibility for injury prevention is shared amongst several stakeholders. Lead departments and organizations include: Manitoba Public Insurance, Manitoba Infrastructure and Transportation, Manitoba Health, Healthy Living and Seniors, Manitoba Family Services and Labour and regional health authorities.

Under the leadership of Manitoba Health, Healthy Living and Seniors, a five year Manitoba Injury Prevention Strategy was established in 2006 to create a safe and injury free Manitoba and identified leading causes of injury, death and hospitalization. Government departments, regional health authorities and key stakeholders were engaged to collectively move the strategy forward. Specific frameworks were developed for falls, drowning and suicide. In addition, frameworks were developed for each regional health authority in the province and by First Nations. During this time, many successful initiatives were implemented, but more work needs to be done to reduce injury in Manitoba. A new five-year plan for the department of Manitoba Health, Healthy Living and Seniors will renew the focus on injury prevention in Manitoba and will build on the achievements and progress made since the introduction of the Manitoba Injury Prevention Strategy in 2006. Four focus areas of the plan include: motor vehicle collisions, poisoning, falls and drowning. When released, information related to the plan will be available on the Government of Manitoba's Healthy Living website.

Manitoba Infrastructure and Transportation (MIT) is responsible for the development of transportation policy and legislation, and for the management of the province's vast infrastructure network. To meet these responsibilities, the department delivers a wide range of programs and services that play a critical role in sustaining the contributions of the transportation sector. For example, MIT has provided a *Guide for Establishing Reduced-Speed School Zones* to assist municipalities in implementing speed reduction in school zones.

Manitoba Public Insurance (MPI) is a non-profit Crown Corporation that is dedicated to keep Manitoba's roads safe. MPI works with road safety partners to provide funding and people power to fuel vital programs, particularly those aimed at seatbelt use, impaired driving, speeding and aggressive driving, and distracted driving. These activities are designed to help Manitobans gain the

knowledge and awareness they need to protect themselves and others behind the wheel.

Manitoba Family Services is responsible for a comprehensive range of social services and regulatory programs. Some of these programs and services are delivered directly by the department, while others are provided in partnership with a variety of organizations and community-based groups. The Child and Family Services Division works with Child and Family Services Authorities, child welfare agencies, community-based agencies, regional offices, community access area teams, and others, to keep children safe and protected, and to provide assistance to people affected by family violence and family disruption. For example, Manitoba Family Services runs the Family Violence Prevention Program (FVPP) plans and develops community programs to help stop family violence. The program supports special services for abused women and their children and for men living with family violence.

Manitoba Labour and Immigration plays an important role in contributing to Manitoba's growth and development by protecting the rights of workers, ensuring public safety. The Ministry is responsible for the effective delivery of programs and services pertaining to workplace safety and health, employment standards, labour relations, pension plans and public safety. Workplace Safety and Health enforces *The Workplace Safety and Health Act* and its associated regulations in order to protect the safety and health of workers in Manitoba. Workplace Safety and Health's inspection and investigation activity focuses on improving legislative compliance in order to eliminate workplace fatalities, injuries and illnesses.

Total cost of injury

In 2010 injury claimed the lives of 725 Manitobans and cost the province 1.2 billion.

Alongside the fatalities, 2,463 individuals incurred permanent total or partial disabilities due to injury, 10,044 were hospitalized, and 127,543 were treated in emergency departments due to injury.

Based on the Manitoba's 2010 population of 1,220,930, 59 people per 100,000 died due to injury that amounts to approximately 1,758 of potential years of life lost per 100,000 residents. The cost of injury was \$958 per capita.

Table 38

Summary of findings, all injury, Manitoba, 2010

Injury Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability	Total Economic Cost of Injury
725	10,044	127,543	2,278	185	\$1.2 billion

Direct and indirect costs

In 2010 the direct health care costs associated with injury made up \$676 million (\$554 per capita), or 58% of the total \$1.2 billion spent on injuries. Indirect costs accounted for the remaining 42%, totalling \$493 million, or \$404 for every Manitoban.

Intentional and unintentional injury

Table 39

Injury by intent, Manitoba, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Unintentional	500	8,343	122,064	1,935	158
Intentional	195	1,475	4,752	296	25
Undetermined Intent/Other	30	226	727	47	3
TOTAL	725	10,044	127,543	2,278	185

In 2010 the majority of injuries suffered by Manitobans were unintentional. Sixty-nine percent of injury-related deaths were unintentional, as were 83% of injury

hospitalizations, 96% of emergency room visits, and 85% of cases of both permanent partial and permanent total disability. Of all injury related deaths, 27% were intentional in nature. Intentional injuries also accounted for 15% of injury hospitalizations, 4% of injury emergency room visits, and 13% of cases of both permanent partial and total disability. The remaining reported incidents were of undetermined intent.

Table 40

Total, direct, and indirect costs by intent of injury, Manitoba, 2010

Description	Total costs (\$ millions)	Direct costs (\$ millions)	Indirect costs (\$ millions)
Unintentional	\$914	\$584	\$331
Intentional	\$223	\$81	\$142
Undetermined Intent/ Other	\$32	\$11	\$21
TOTAL	\$1,169	\$676	\$493

In 2010, unintentional injuries also accounted for most of the \$1.2 billion Manitoba spent addressing the impacts of injury. Of the overall cost of dealing with injuries, \$914 million or 78% was due to unintentional injuries, while \$223 million or 19% resulted from intentional injuries. Unintentional injuries made up 86% of direct health care costs and 67% of indirect costs while intentional injuries generated 12% of direct costs and 29% of indirect costs. The remaining 3% of total costs, including 2% of direct costs and 4% of indirect costs, resulted from events with undetermined intent.

Injury by cause

In 2010 the leading causes of death due to injury in Manitoba were falls and suicide and self-harm, which caused 29% and 20% of all injury deaths, respectively. An additional 14% of injury-related deaths were transportation-related, 13% were due to unintentional poisoning and 10% resulted from other (non-specified) unintentional injuries. Among the other causes of death were violence (7%), injuries of undetermined intent (4%), drowning (1%) and fire or burns (1%).

Table 41

Injury deaths, hospitalizations, and emergency room visits by cause, Manitoba, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Transport Incidents	105	1,245	10,442	300	29
<i>Pedestrian</i>	13	115	637	28	<5
<i>Pedal Cycle</i>	<5	138	2,224	43	<5
<i>Motor Vehicle</i>	46	611	5,732	141	14
<i>ATV, Snowmobile</i>	7	274	770	61	5
<i>Other</i>	36	107	1,079	27	<5
Falls	210	5,209	38,339	915	78
<i>On the same level</i>	17	1,648	12,005	286	21
<i>From skates, skis, boards, blades</i>	<5	95	2,453	37	<5
<i>From furniture</i>	15	332	2,419	49	<5
<i>In playgrounds</i>	<5	53	975	20	<5
<i>On stairs</i>	21	493	4,704	121	12
<i>From ladders/scaffolding</i>	<5	171	798	45	4
<i>Diving</i>	<5	12	118	<5	<5
<i>Other</i>	154	2,405	14,866	355	32
Drowning	10	9	47	<5	<5
Fire\Burns	10	123	1,589	41	<5
Unintentional Poisoning	95	253	1,972	57	<5
Struck By\Against Sports Equipment	<5	30	2,581	21	<5
Other Unintentional Injuries*	70	1,474	67,095	600	43
Suicide\Self-Harm - Poisoning	35	503	950	111	5
Suicide\Self-Harm - Other	110	114	288	18	<5
Violence	50	858	3,514	167	18
Undetermined Intent\Other	30	226	727	47	<5
TOTAL	725	10,044	127,543	2,278	185

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

The majority of injuries requiring hospitalization in Manitoba were due to falls (52%), followed by transportation incidents (12%), other unintentional injuries (15%), and violence (9%). Hospitalization for injuries also resulted from suicide or self-harm (6%), unintentional poisoning (3%), injuries of undetermined intent (2%), and fire or burns (1%).

Injury-related visits to the emergency room in 2010 occurred most frequently due to non-specific unintentional causes (53%), falls (30%), and transportation incidents (8%). Manitobans also visited the emergency room for injuries resulting from violence (3%), unintentional poisoning (2%), being struck by or against sporting equipment (2%), fire and burns (1%), suicide or self-harm (1%), and injuries of undetermined intent (1%).

Permanent partial disability and permanent total disability resulted most often from falls (40% and 42%, respectively.) The other causes of permanent partial and total disability due to injury were other non-specific unintentional causes (26% and 23%, respectively), transportation incidents (13% and 16%, respectively), violence (7% and 10%, respectively), suicide or self-harm (6% and 4% respectively), unintentional poisoning (3% and 2% respectively), fire/burns (2% and 1% respectively), injuries of undetermined intent (2% and 1% respectively), and being struck by / against sports equipment (both 1%).

Table 42

Mortality, crude death rates (per 100,000 pop.) and total cost per capita by cause, Manitoba, 2010

Cause	Deaths	Death rate (per 100,000)	Total Costs	Costs per capita
Transport Incidents	105	8.6	\$189 million	\$154
Falls	210	17.2	\$345 million	\$283
Suicide/Self-Harm	145	11.9	\$114 million	\$93
Violence	50	4.1	\$109 million	\$89

The highest injury-related death rate in Manitoba in 2010 was falls; 17.2 deaths occurred for every 100,000 Manitobans. Falls were also the most expensive cause of injury with a per capita cost of \$283.

Table 43

Total, direct, and indirect costs of injury by cause, Manitoba, 2010

Description	Total costs (\$ millions)	Direct costs (\$ millions)	Indirect costs (\$ millions)
Transport Incidents	\$189	\$91	\$98
<i>Pedestrian</i>	\$18	\$9	\$10
<i>Pedal Cycle</i>	\$18	\$10	\$7
<i>Motor Vehicle</i>	\$94	\$50	\$45
<i>ATV, Snowmobile</i>	\$29	\$16	\$13
<i>Other</i>	\$29	\$7	\$22
Falls	\$345	\$262	\$83
<i>On the same level</i>	\$98	\$77	\$20
<i>From skates, skis, boards, blades</i>	\$14	\$8	\$6
<i>From furniture</i>	\$25	\$20	\$4
<i>In playgrounds</i>	\$8	\$4	\$3
<i>On stairs</i>	\$41	\$29	\$12
<i>From ladders/scaffolding</i>	\$11	\$8	\$3
<i>Diving</i>	\$2	\$1	\$1
<i>Other</i>	\$147	\$115	\$32
Drowning	\$3	\$0	\$2
Fire\Burns	\$19	\$9	\$10
Unintentional Poisoning	\$63	\$14	\$49
Struck By\Against Sports Equipment	\$7	\$4	\$4
Other Unintentional Injuries*	\$288	\$203	\$85
Suicide\Self-Harm - Poisoning	\$53	\$26	\$27
Suicide\Self-Harm - Other	\$61	\$6	\$55
Violence	\$109	\$50	\$59
Undetermined Intent \Other	\$32	\$11	\$21
TOTAL	\$1,169	\$679	\$493

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

In 2010, almost one third (30%) of Manitoba's \$1.2 billion spending on injury was incurred due to fall injuries. Other unintentional injuries accounted for a further 25% of these total costs while transportation incidents generated 16%, suicide and self-harm accounted for 10% and violence for 9%. Other causes affecting overall costs were unintentional poisoning (5%), undetermined intent (3%), fire / burns (2%), and sports injuries (1%).

In 2010 in Manitoba direct health care costs (\$679 million) resulted most often from falls (39%), other unintentional injuries (30%) and transport incidents (13%). The remaining nineteen percent of direct costs arose due to violence (7%), suicide or self-harm (5%), unintentional poisoning (2%), other injuries of undetermined intent (2%), fire / burns (1%), and being struck by or against sport equipment (1%).

The three main causes of \$493 million in indirect costs associated with injury were transport incidents (20%), suicide and self-harm (17%) and falls (17%). An additional 17% of costs were associated with other non-specific unintentional injuries, 12% resulted from violence, 10% from unintentional poisonings, 4% from injuries of undetermined intent, 2% from fire or burns, and a final 1% was due to being struck by / against sports equipment.

Transport Incidents causes and associated costs

In Manitoba in 2010 the leading cause of transport injury-related death was motor vehicle incidents. Motor vehicle incidents were associated with 44% of all transport incidents resulting in death and were the cause of 49% of transport injury hospitalizations, 55% of emergency room visits, 47% of permanent partial disability and 50% of permanent total disability due to transport incidents.

Among the other causes of transport-related injury deaths were: other (non-specific) transport events (34%), pedestrian events (13%), ATV or snowmobile incidents (7%) and cycling (3%). Twenty two percent of hospitalizations due to transport-related injury were the result of ATV or snowmobile incidents, followed by cycling incidents (11%), pedestrian incidents (9%) and finally other non-specific events (9%). After motor vehicle-related emergency room visits, transport-related visits occurred due to cycling (21%), other non-specific transport incidents (10%), ATV or snowmobiles (7%) and pedestrian injury events (6%).

In 2010, the total cost of injuries related to transport incidents was \$189 million. Half of this cost was due to motor vehicle incidents while the other half resulted from ATV or snowmobile incidents (15%), other (un-specified) transport incidents (15%), pedestrian incidents (10%), and cycling incidents (10%). Direct health care costs arose most often due to transport incidents of the motor vehicle variety (55%) but were also related to incidents involving ATVs or snowmobiles (17%), bicycles (11%), pedestrians (10%) and other incidents (7%). Indirect costs were dominated by motor vehicle-related costs (46%) as well as other (non-specific) incidents (23%) and ATV / snowmobile events (14%). Pedestrian incidents were associated with 10% of indirect costs while cycling incidents made up the remaining 7%.

Falls by cause and associated costs

After falls of an unspecified nature, which accounted for 73% of fall-related deaths, fall deaths occurred most often due to falls on stairs (10%). Death also resulted from falls on the same level (8%), from furniture (7%), and from ladders or scaffolding (1%).

Almost one in three (32%) hospitalizations due to fall-related injuries occurred due to falls on the same level and falls of other unspecified nature were the cause of 46% of hospitalizations. Hospitalizations resulting from falls were also due to falls on stairs (9%), from furniture (6%), from ladders or scaffolding (3%), from skates/skis/boards/blades (2%) and in playgrounds (1%). The leading causes of emergency room visits were falls from the same level (31%) and other (unspecified) types of falls (39%) followed by falls on stairs (12%), falls from sports equipment (6%), falls from furniture (6%), falls in playgrounds (3%) and falls from ladders or scaffolding (2%).

After falls due to other (non-specific) causes (43%), falls on the same level make up the biggest portion (28%) of the \$345 million spend on fall injuries. Overall costs were also due to falls on stairs (12%), from furniture (7%), from stakes/skis/boards/blades (4%), from ladders/scaffolding (3%), and in playgrounds (1%). Direct health care costs arose most often from falls on the same level (29%) and other (unspecific) falls (44%) while indirect costs were usually a result of falls from the same level (25%) and other (non-specific) falls (38%). Direct costs also arose from falls on stairs (11%), falls from furniture (8%), falls from ladders/scaffolding (3%), falls from sports equipment (3%) and falls in playgrounds (1%).

Fifteen percent of the indirect costs of falls resulted from falls on stairs while 8% was due to falls from stakes / skis / boards / blades, 5% from furniture-related falls, 4% from falls in playgrounds, 4% from falls from scaffolding / ladders and 1% from diving.

Intentional injuries by cause and associated costs

In Manitoba during 2010, suicide and self-harm were the leading cause of death due to intentional injury. Deaths due to intentional injury resulted from suicide or self-harm by methods other than poisoning (57%), followed by violence (26%) and suicide or self-harm – poison (18%).

Hospitalizations resulting from intentional injury were overwhelmingly due to violence (58%), while suicide or self-harm – poison resulted in 34% of related hospitalizations, and suicide or self-harm - other for the remaining 8%. Nearly three quarters (74%) of emergency room visits due to intentional injuries were the result of violence. Suicide or self-harm by poison resulted in 20% of emergency visits, and 6% were the result of suicide / self-harm by other methods. Cases of permanent partial and permanent total disability were caused mainly by violence (56% and 74%, respectively) but also occurred due to suicide and self-harm - other (37% and 20%, respectively), and suicide and self-harm - poison (6% and 8%, respectively).

In 2010 the costs of intentional injuries totalled \$223 million. Almost half (49%) of these costs resulted from injuries due to violence, while 27% of these costs were due to suicide and self-harm by means other than poison, and 24% resulted from suicide and self-harm – poison. Costs associated with violence were the largest segment of both health care (61%) and indirect costs (42%). Direct health care costs also accrued due to suicide and self-harm – poison (32%) and suicide and self-harm by means other than poison (7%). Indirect costs due to suicide and self-harm were split between poison-related cases (19%) and other causes (39%).

NEW BRUNSWICK

Since release of the 2009 Economic Burden of Injury Report, New Brunswick has implemented both structures and processes to help reduce the cost of injury in the province.

In 2010, the New Brunswick Trauma Program (NBTP) was established as a formalized partnership among Horizon Health Network, Vitalité Health Network, Ambulance New Brunswick and the New Brunswick Department of Health with a mandate that includes providing leadership and coordination to injury prevention initiatives across the province.

A provincial Injury Prevention Subcommittee was established with representation from a wide variety of both governmental and non-governmental stakeholders, including the NB Department of Public Safety, the Office of the Chief Medical Officer of Health (OCMOH), Work Safe NB and Safety Services New Brunswick. The province also ensured continued representation on both Atlantic Canadian and national injury prevention organizations, including the Atlantic Collaborative on Injury Prevention and the Canadian Collaborating Centres for Injury Prevention.

The NBTP and OCMOH collaborated to release the province's first injury prevention strategy in 2012. The Framework for the Prevention of Unintentional Injury in New Brunswick sets out four strategic goals that would help lower the cost of injury in the population and reduce health inequalities:

1. To promote a common vision whereby everyone can contribute to the reduction of unintentional injuries.
2. To build the evidence base on unintentional injury, its root causes and impacts.
3. To promote the development of evidence-informed legislation, policies, programs and standards, with attention to population groups who may be at increased risk of unintentional injury.
4. To strengthen partnerships among stakeholders from different sectors, thus leveraging resources and efforts for optimal injury prevention results.

Efforts have continued on a provincial scale to deepen our understanding of the injury cost and to reduce the injury rate among priority populations. In 2014, the NB Trauma Program implemented a comprehensive, integrated provincial trauma registry. The NB Trauma Registry captures emergency department and admission data for trauma patients seen at all regional hospitals. Together with reports from the Office of the Chief Medical Officer of Health, the NB Health Council and published research on the epidemiology of severe trauma in New Brunswick, specific areas of interest in injury prevention include ongoing efforts on road safety, the reduction of falls in children, the reduction of falls in seniors, and the promotion of safe risk behaviours among youth.

Total cost of injury

In 2010, injuries cost 420 New Brunswickers their lives, and the province a total of \$696 million.

In the same year injuries resulted in 6,215 hospitalizations, almost 77,000 emergency room visits and more than the permanent partial or total disability of 1,555 citizens.

Based on New Brunswick's 2010 population of 753,044, this translates into an annual death rate due to injury of 56 per every 100,000 residents, an estimated 1,678 potential years of life lost per 100,000 people, and \$924 in injury-related spending for every citizen of the province.

Table 44

Summary of findings, all injury, New Brunswick, 2010

Injury Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability	Total Economic Cost of Injury
420	6,215	76,801	1,440	115	\$696 million

Direct and indirect costs

Of the total \$696 million spent to address injuries in 2010 in New Brunswick, direct (health care) costs amounted to \$400 million (\$531 per capita) or 57% of total spending. Indirect costs accounted for the remaining 43%, totaling \$296 million (\$393 per capita).

Table 45

Injury by intent, New Brunswick, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Unintentional	300	5,454	73,483	1,269	104
Intentional	115	604	2,869	138	9
Undetermined Intent/Other	5	157	449	33	<5
TOTAL	420	6,215	76,801	1,440	115

Intentional and unintentional injury

In 2010 most injuries that occurred in New Brunswick were unintentional. Almost three quarters (71%) of deaths resulting from injury were unintentional, as were 88% of hospitalizations, 96% of emergency room visits, and 88% of permanent partial and 91% of permanent total disabilities. Intentional injuries accounted for 27% of deaths, 10% of hospitalizations, 4% of emergency room visits, 10% of permanent partial disabilities and 7% of permanent total disability. Injuries with undetermined intent made up the remaining events in all categories.

In 2010 in New Brunswick the majority of injury costs were also due to unintentional injuries. Eighty-four percent of the total cost, 89% (\$354 million) of direct health care costs, and 78% (\$230 million) of the indirect costs were spent addressing unintentional injuries. Costs related to intentional injuries made up 14% of the total injury costs, 9% of direct costs and 21% of indirect costs. Injuries with undetermined causes accounted for 2% of total spending.

Table 46

Total, direct, and indirect costs by intent of injury, New Brunswick, 2010

Description	Total costs (\$ millions)	Direct costs (\$ millions)	Indirect costs (\$ millions)
Unintentional	\$584	\$354	\$230
Intentional	\$98	\$38	\$61
Undetermined Intent/ Other	\$13	\$8	\$5
TOTAL	\$696	\$400	\$296

Injury by cause

In 2010 suicide and self-harm was the greatest cause of death by injury (25%), followed by transport incidents (23%), and falls (20%). Deaths due to other (non-specific) unintentional causes made up 15% of all injury related deaths, unintentional poisonings were responsible for 10%, violence and drowning accounted for 2% each of deaths, while fire/burns, and events of undetermined intent each caused 1% of deaths.

Falls explained over half (55%) of all hospitalizations for injury while transport incidents accounted for 13%, other unintentional causes for 15% and suicide or self-harm for 8%. The categories of unintentional poisonings, and injuries with undetermined intent each accounted for 3% of hospitalizations, violence for 2% and fire or burns for 1%.

Emergency rooms visits for injuries totaled 76,801 in 2010. More than 40,300 (or 53%) of these visits were due to non-defined unintentional causes, while 30% resulted from falls and 8% were preceded by transport incidents. Among other causes of emergency room visits were violence (3%), unintentional poisoning (2%), being struck by or against sports equipment (2%), fire or burns (1%), suicide or self-harm (1%), and injuries of undetermined intent (1%).

Table 47

Injury deaths, hospitalizations, and emergency room visits by cause, New Brunswick, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Transport Incidents	95	830	6,388	200	20
<i>Pedestrian</i>	12	65	392	14	<5
<i>Pedal Cycle</i>	<5	59	1,292	21	<5
<i>Motor Vehicle</i>	41	491	3,583	112	12
<i>ATV, Snowmobile</i>	7	181	458	41	<5
<i>Other</i>	32	34	662	12	<5
Falls	85	3,443	23,139	617	53
<i>On the same level</i>	7	1,107	7,472	196	14
<i>From skates, skis, boards, blades</i>	<5	102	1,382	33	<5
<i>From furniture</i>	6	260	1,335	34	<5
<i>In playgrounds</i>	<5	54	485	16	<5
<i>On stairs</i>	8	392	2,913	91	9
<i>From ladders/scaffolding</i>	<5	101	524	27	<5
<i>Diving</i>	<5	<5	67	<5	<5
<i>Other</i>	63	1,423	8,962	218	20
Drowning	10	9	27	<5	<5
Fire\Burns	5	50	948	22	<5
Unintentional Poisoning	40	196	1,183	44	<5
Struck By\Against Sports Equipment	<5	15	1,464	11	<5
Other Unintentional Injuries*	65	911	40,334	374	27
Suicide\Self-Harm - Poisoning	24	428	586	95	<5
Suicide\Self-Harm - Other	81	42	172	8	<5
Violence	10	134	2,111	35	<5
Undetermined Intent\Other	5	157	449	33	<5
TOTAL	420	6,215	76,801	1,440	115

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

The leading cause of both permanent partial and permanent total disability was falls (43%, and 46%, respectively). Transport incidents were responsible 14% of the cases of permanent partial disability and 17% of the cases of permanent total disability, and other non-specific unintentional causes were the reason for — respectively — 26% and 24% of partial and total permanent disability. Less frequent causes of partial disability were suicide or self-harm (7%), unintentional poisoning (3%), violence (2%), fire or burns (2%) or injuries of undetermined intent (2%). Total permanent disability also resulted from suicide or self-harm (4%), violence (3%), unintentional poisoning (2%), injuries of undetermined intent (2%), fire/burns (1%) and being struck by or against sport equipment (1%).

Table 48

Mortality, crude death rates (per 100,000 pop.) and total cost per capita by cause, New Brunswick, 2010

Cause	Deaths	Death rate (per 100,000)	Total Costs	Costs per capita
Transport Incidents	95	12.6	\$120 million	\$160
Falls	85	11.3	\$248 million	\$330
Suicide/Self-Harm	105	13.9	\$78 million	\$103
Violence	10	1.3	\$21 million	\$28

In 2010 in New Brunswick suicide and self-harm was responsible for the most injury deaths per capita (13.9 per 100,000 citizens), while the greatest injury-related per capita cost (\$330 per person) resulted from falls.

Costs of injury by cause

In New Brunswick the total costs of injuries was \$696 million. Falls were responsible for the largest fraction of these costs making up 36% of totals costs, 43% of direct costs and 26% of indirect costs. Other unintentional injuries generated 24% of total costs, 28% of direct costs and 20% of indirect costs while transport incidents accounted for a further 17% of total costs, 14% of direct costs and 22% of indirect costs. Other causes of injury contributing to the overall costs were suicide and self-harm (11% total costs, 6% direct costs, 18% indirect costs); unintentional poisoning (4% total, 2% direct, 6% indirect); violence (3% total costs, 3% direct costs, 3% indirect costs); and injuries of undetermined intent (2% total, 2% direct, 2% indirect).

Table 49

Total, direct, and indirect costs of injury by cause, New Brunswick, 2010

Description	Total costs (\$ millions)	Direct costs (\$ millions)	Indirect costs (\$ millions)
Transport Incidents	\$120	\$54	\$66
<i>Pedestrian</i>	\$11	\$4	\$7
<i>Pedal Cycle</i>	\$8	\$5	\$4
<i>Motor Vehicle</i>	\$65	\$33	\$32
<i>ATV, Snowmobile</i>	\$18	\$10	\$8
<i>Other</i>	\$18	\$2	\$16
Falls	\$248	\$172	\$76
<i>On the same level</i>	\$64	\$52	\$11
<i>From skates, skis, boards, blades</i>	\$11	\$7	\$4
<i>From furniture</i>	\$16	\$12	\$4
<i>In playgrounds</i>	\$6	\$4	\$2
<i>On stairs</i>	\$25	\$18	\$7
<i>From ladders/scaffolding</i>	\$7	\$5	\$2
<i>Diving</i>	\$1	\$0	\$0
<i>Other</i>	\$118	\$73	\$45
Drowning	\$6	\$0	\$5
Fire\Burns	\$9	\$5	\$4
Unintentional Poisoning	\$27	\$10	\$18
Struck By\Against Sports Equipment	\$4	\$2	\$2
Other Unintentional Injuries*	\$170	\$111	\$59
Suicide\Self-Harm - Poisoning	\$40	\$22	\$18
Suicide\Self-Harm - Other	\$38	\$4	\$34
Violence	\$21	\$12	\$9
Undetermined Intent \Other	\$13	\$8	\$5
TOTAL	\$696	\$400	\$296

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

Transport-related injuries by cause and associated costs

Motor vehicles were responsible for 44% of injury-related deaths, and led to 59% of hospitalizations, 56% of emergency room visits, 56% of permanent partial disability and 59% of permanent total disability resulting from transport-related injuries.

Injury-related transport deaths also occurred due to non-specific transport incidents (34%), pedestrian injuries (13%), ATV or snowmobile events (7%) and cycling incidents (3%). After motor vehicles, 22% of hospitalizations for transport-related injuries resulted from ATV/snowmobile events, followed by pedestrian incidents (8%), cycling (7%), and other transit events (4%). The remaining reasons for transport-injury emergency room visits were incidents related to cycling (20%), other non-specific incidents (10%), ATVs or snowmobiles (7%) and pedestrians (6%).

In 2010, the cost of injuries due to transport incidents totaled \$120 million, of which more than half (54%) was spent addressing injuries from motor vehicle related events. Injuries from motor vehicle events accounted for 60% of the health care cost of transport injuries, and 48% of indirect costs. Costs also occurred due to ATV and snowmobile incidents (15% of total, 19% of direct, 12% indirect), other non-specific incidents (15% total, 4% direct, 24% indirect), pedestrian incidents (9% total, 8% direct, 10% indirect) and cycling events (7% total, 9% direct, 6% indirect).

Fall-related injuries by cause and associated costs

Nearly three quarters (74%) of fall-related deaths occurred due to non-specific types of falls, as did 41% of hospitalizations, 39% of emergency room visits, and 36% of permanent partial and total disabilities. Other causes of fall-related deaths were falls on stairs (9%), falls on the same level (8%), falls from furniture (7%), and falls from ladders/scaffolding (1%).

Other reasons for fall-related hospitalizations were falls on the same level (32%), falls on stairs (11%), falls from furniture (8%), falls from skates/skis/boards/blades (3%), falls from ladders/scaffolding (3%), and falls on playgrounds (2%). Fall-related injury emergency room visits also resulted from falls from the same level (32%), on stairs (13%), from skates/skis/boards/blades or from furniture (each 6%), in playgrounds (2%), and from ladders or scaffolding (2%).

The greatest overall costs due to falls can be attributed to non-specific fall events which made up 48% of the total costs, 43% of direct costs, and 59% of indirect spending. After non-specific reasons, falls on the same level accounted for the greatest portion (26%) of total fall-related injury costs (30% of direct costs and 15% indirect costs). Spending on fall-related injuries also went to address falls on stairs (10% total, 11% of direct and 9% of indirect), falls from furniture (6% total, 7% of direct and 5% of indirect), falls from skates/ski/boards/blades (4% total, 4% of direct and 6% of indirect), falls in playgrounds (3% total, 2% of direct and 3% of indirect), and falls from ladders or scaffolding (3% total, 3% of direct and 3% of indirect).

Intentional injuries by cause and associated costs

Suicide and self-harm deaths account for 91% of all intentional injury deaths in New Brunswick in 2010. The leading cause of death was suicide or self-harm by method other than poison, while suicide by poisoning caused 21% of intentional deaths and violence the remaining 9%.

Suicide and self-harm injuries were responsible for 78% of intentional injury hospitalizations in 2010. The leading cause of hospitalization was suicide or self-harm – poison (71%), followed by violence (22%) and suicide or self-harm – other. Violence-related injuries led to almost three quarters (74%) of intentional injury emergency room visits while suicide/self-harm made up the remaining quarter (20% poison-related, 6% other causes). Suicide or self-harm by poison was the leading case of permanent partial and permanent total disability (69% and 49%, respectively) followed by violence (25% and 43%, respectively) and suicide or self-harm by other methods (6% and 8%, respectively).

More than \$98 million was spent in 2010 in New Brunswick to address the direct and indirect costs associated with intentional injury. Forty percent of total costs addressed suicide or self-harm due to poisoning, 38% addressed suicide or self-harm by other means, and 21% addressed injuries due to violence. Of the direct health care costs associated with intentional injury, suicide or self-harm by poison resulted in 58% of the spending, other methods of suicide or self-harm precipitated 10% and the remaining 32% addressed injuries due to violence. Indirect costs were due 30% to suicide or self-harm using poison, 56% to other suicide or self-harm and 14% to violence.

NEWFOUNDLAND AND LABRADOR

Injury prevention is one of the priority areas identified in Newfoundland and Labrador's provincial Wellness Plan, *Achieving Health and Wellness: Provincial Wellness Plan for Newfoundland and Labrador (2006-2008)*. The goal of the Wellness Plan is "to keep people healthy through the promotion of initiatives and support for people and communities". The Wellness Plan represents a shared responsibility between government departments, regional health authorities, provincial networks, community organizations, and coalitions, who work together to implement legislation and initiatives, as well as provide additional support and direction for injury prevention.

Actions within the Wellness Plan fall under the Department of Seniors, Wellness and Social Development in the Healthy Living Division. Other departments, such as the Department of Service NL, are responsible for legislation and regulations for injury-related areas.

Unintentional injuries remain the focus for injury prevention within the Wellness Plan, with recent years particularly focusing on helmet use, distracted driving, child passenger safety, pedestrian safety and seniors falls prevention. Intentional injuries are addressed through other government initiatives such as the provincial Violence Prevention Initiative of the provincial Women's Policy Office, or through the Department of Justice. Workplace injuries are addressed through the provincial Workplace, Health and Safety Compensation Commission.

Newfoundland and Labrador continues to build on the work of injury prevention networks in the province networks, and with Atlantic and national injury prevention collaborations. The Provincial Government continues to invest annually in the Newfoundland and Labrador Injury Prevention Coalition (NLIPC) and in partnership with the other Atlantic Provinces contributes funding for the Atlantic Collaborative for Injury Prevention (ACIP). In-kind support is provided to the NLIPC by Safety Services NL and other NLIPC members.

Total cost of injury

In 2010 injury cost the province of Newfoundland and Labrador \$391 million and took the lives of 235 individuals.

In the same year injuries also resulted in 3,495 hospitalizations, nearly 52,666 visits to the emergency room, 893 cases of permanent partial disability and 70 cases of permanent total disability.

Based on the 2010 population of 541,761, injuries caused 43 deaths and 1,358 potential years of life lost per 100,000 residents and cost \$749 per capita in direct and indirect expenditures.

Table 50

Summary of findings, all injury, Newfoundland and Labrador, 2010

Injury Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability	Total Economic Cost of Injury
235	3,495	52,666	893	70	\$391 million

Direct and indirect costs

In Newfoundland and Labrador the overall costs of injuries in 2010 was \$391 million. Nearly two thirds (64%) of the total costs were direct health care costs: \$249 million (\$476 per capita). Indirect costs totalled \$142 million (\$273 per capita).

Intentional and unintentional injury

Most injuries that occurred in Newfoundland and Labrador in 2010 were unintentional. Unintentional injuries led to 66% of injury-related deaths, 85% of injury hospitalization, 96% of emergency room visit due to injury and 87% of injuries resulting in permanent partial or total disability. Intentional injuries were responsible for 30% of injury deaths, 12% of hospitalizations, 4% of emergency room visits, 11% of permanent partial disability and 8% of permanent total disability.

Table 51

Injury by intent, Newfoundland and Labrador, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Unintentional	155	2,957	50,369	776	63
Intentional	70	427	1,984	94	6
Undetermined Intent/Other	10	111	312	23	<5
TOTAL	235	3,495	52,666	893	70

Table 52

Total, direct, and indirect costs by intent of injury, Newfoundland and Labrador, 2010

Description	Total costs (\$ millions)	Direct costs (\$ millions)	Indirect costs (\$ millions)
Unintentional	\$323	\$221	\$102
Intentional	\$57	\$22	\$35
Undetermined Intent/Other	\$11	\$5	\$6
TOTAL	\$391	\$249	\$142

Unintentional injuries accounted for 83% of total spending on injuries including 89% of direct costs, and 71% of indirect costs. Costs due to intentional injuries made up 15% of total costs (9% direct and 25% indirect) while the remaining 3% of costs were due to injuries of undetermined intent.

Injury by cause

In Newfoundland and Labrador in 2010 the leading causes of death due to injury were suicide or self-harm, and injuries resulting from other (non-specified) unintentional causes. Suicide and self-harm accounted for 28% of all injury deaths while death due to other unintentional causes made up 26%. Deaths due to injury also resulted from transportation incidents (21%), falls (6%), drowning (9%), unintentional poisonings (2%), violence (2%), fires or burns (2%), and injuries of undetermined intent (4%).

Table 53

Injury deaths, hospitalizations, and emergency room visits by cause, Newfoundland and Labrador, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Transport Incidents	50	489	4,432	124	12
<i>Pedestrian</i>	7	34	271	18	<5
<i>Pedal Cycle</i>	<5	29	889	11	<5
<i>Motor Vehicle</i>	21	262	2,495	64	7
<i>ATV, Snowmobile</i>	<5	131	318	30	<5
<i>Other</i>	17	33	461	10	<5
Falls	15	1,899	15,575	377	31
<i>On the same level</i>	<5	792	5,048	145	11
<i>From skates, skis, boards, blades</i>	<5	43	943	16	<5
<i>From furniture</i>	<5	141	880	21	<5
<i>In playgrounds</i>	<5	17	331	6	<5
<i>On stairs</i>	<5	202	2,004	50	5
<i>From ladders/scaffolding</i>	<5	59	367	17	<5
<i>Diving</i>	<5	<5	46	<5	<5
<i>Other</i>	10	644	5,956	121	11
Drowning	20	<5	19	<5	<5
Fire\Burns	5	39	657	16	<5
Unintentional Poisoning	5	102	818	25	<5
Struck By\Against Sports Equipment	<5	12	1,001	8	<5
Other Unintentional Injuries*	60	415	27,868	225	16
Suicide\Self-Harm - Poisoning	15	291	409	63	<5
Suicide\Self-Harm - Other	50	37	119	6	<5
Violence	5	99	1,457	25	<5
Undetermined Intent\Other	10	111	312	23	<5
TOTAL	235	3,495	48,966	879	70

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

More than half of injuries resulting in hospitalization were due to falls (54%). Transport incidents were the cause of 14% of hospitalization, followed by other unintentional injuries (12%), suicide or self-harm (9%), unintentional poisoning (3%), events of undetermined intent (3%), violence (3%) and fire/burns (1%).

The two main reasons for injury-related visits to the emergency room were other (non-specific) unintentional injuries (53%), and falls (30%). Additional reasons for emergency room visits were transport incidents (8%), violence (3%), unintentional poisoning (2%), being struck by or against sporting equipment (2%), fire or burns (1%), suicide or self-harm (1%), and events of unspecified intent (1%).

Falls were the leading cause of both permanent partial disability (42%), and permanent total disability (45%). Other reasons for these two outcomes included transport incidents (14% of partial disability and 17% of total disability) as well as other non-specific unintentional injuries (25% of partial disability and 23% of total disability). Less frequent causes of partial disability include suicide or self-harm (8%), violence (3%), intentional poisoning (3%), fire/burns (2%) and events of indeterminate intent (3%).

Table 54

Mortality, crude death rates (per 100,000 pop.) and total cost per capita by cause, Newfoundland and Labrador, 2010

Cause	Deaths	Death rate (per 100,000)	Total Costs	Costs per capita
Transport Incidents	50	9.2	\$66 million	\$123
Falls	35	6.7	\$137 million	\$263
Suicide/Self-Harm	65	12.5	\$46 million	\$88
Violence	5	0.9	\$13 million	\$23

In Newfoundland and Labrador the suicide/self harm was responsible for the highest injury-related death rate (12.5 per 100,000) while the highest per capita costs (\$263) resulted from falls.

Costs of injury by cause

Table 55

Total, direct, and indirect costs of injury by cause, Newfoundland and Labrador, 2010

Description	Total costs (\$ millions)	Direct costs (\$ millions)	Indirect costs (\$ millions)
Transport Incidents	\$66	\$35	\$31
<i>Pedestrian</i>	\$6	\$3	\$3
<i>Pedal Cycle</i>	\$6	\$4	\$2
<i>Motor Vehicle</i>	\$33	\$19	\$15
<i>ATV, Snowmobile</i>	\$12	\$7	\$5
<i>Other</i>	\$9	\$2	\$7
Falls	\$137	\$111	\$26
<i>On the same level</i>	\$50	\$42	\$7
<i>From skates, skis, boards, blades</i>	\$5	\$3	\$2
<i>From furniture</i>	\$9	\$7	\$2
<i>In playgrounds</i>	\$2	\$1	\$1
<i>On stairs</i>	\$16	\$12	\$4
<i>From ladders/scaffolding</i>	\$4	\$3	\$1
<i>Diving</i>	\$0	\$0	\$0
<i>Other</i>	\$51	\$41	\$9
Drowning	\$7	\$0	\$7
Fire\Burns	\$10	\$6	\$3
Unintentional Poisoning	\$9	\$5	\$4
Struck By\Against Sports Equipment	\$3	\$2	\$1
Other Unintentional Injuries*	\$92	\$63	\$29
Suicide\Self-Harm - Poisoning	\$25	\$14	\$10
Suicide\Self-Harm - Other	\$21	\$2	\$19
Violence	\$11	\$6	\$5
Undetermined Intent \Other	\$11	\$5	\$6
TOTAL	\$391	\$249	\$142

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

In 2010 injury costs in Newfoundland and Labrador were most often attributable to falls. Falls accounted for 35% of all costs, 44% of direct health care costs and 19% of indirect costs. Total costs also resulted from other non-specified unintentional injuries (24%), transport incidents (17%), suicide or self-harm (12%), violence (3%), cases with undetermined intent (3%), fire/burns (2%), drowning (2%), unintentional poisoning (2%), and being struck by/against sporting equipment (1%).

After falls, the main causes of direct costs were other (non-specific) unintentional injuries (25%), transportation incidents (14%) and suicide or self-harm (6%). Injury-related direct costs also accrued due to injuries from violence (2%), fire/burns (2%), unintentional poisoning (2%), undetermined intent (2%) and being struck by or against sporting equipment.

The primary causes of indirect injury costs were transportation events (22%), suicide and self-harm (21%), falls (19%) and other unintentional injuries (20%). The remaining 18% of indirect costs resulted from drowning (5%), violence (4%), injuries of undetermined intent (4%), unintentional poisonings (3%), fire or burn injuries (2%) and injuries due to being struck by or against sporting equipment (1%).

Transport-related injuries by cause and associated costs

Motor vehicle incidents were the most common cause of transport-related injuries. They caused 42% of deaths, 54% of hospitalizations, 57% of emergency room visits, 52% of permanent partial disabilities and 56% of permanent total disabilities.

Remaining deaths due to transport injuries resulted from other non-specific events (34%), pedestrian events (14%), ATV or snowmobile related injuries (7%) and cycling (3%). Beyond motor vehicle incidents hospitalizations resulted from ATV or snowmobile events (27%), other transport incidents (7%), pedestrian incidents (7%), and cycling events (6%). Emergency room visits for transportation-related injuries were due 20% to cycling incidents, 10% to non-specific incidents, 7% to ATV or snowmobile accidents, and 6% to pedestrian events.

After motor vehicle accidents the causes of permanent partial disability in Newfoundland and Labrador in 2010 were ATV/snowmobile events (24%), cycling accidents (9%), other transportation incidents (8%) and pedestrian incidents (7%). Total permanent disability also resulted from ATV/snowmobile

incidents (21%), other non-specified events (7%), pedestrian incidents (8%) and cycling injuries (8%).

Motor vehicle events were also the greatest driver of transportation-related injury costs making up 50% of total costs, 54% of health care costs and 46% of indirect costs. ATV or snowmobile incidents were responsible for 21% of direct costs and 16% of indirect costs while cycling accidents resulted 11% of health care costs and 7% of indirect costs. The remaining direct and indirect costs were due to pedestrian events (8% and 9% respectively) and other non-specific transport incidents (6% and 22% respectively).

Fall-related injuries by cause and associated costs

In 2010 in Newfoundland and Labrador, 15 individuals died due to injuries caused by falls. The majority (69%) of these fall-related deaths were due unspecified types of falls while deaths also occurred due to falling on stairs (13%), falling on the same level (8%), falling from furniture (8%) and falling from skates/skis/boards/blades (1%).

The main cause of fall-related hospitalizations were falls from the same level (42%). Other causes were other (non-specific) falls (34%), falls on stairs (11%), falls from furniture (7%), falls from ladders/scaffolding (3%), falls from stakes/skis/boards/blades (2%), and falls in play grounds (1%). Fall-related emergency room visits were due most often to other non-specific fall events (38%), followed by falls from the same level (32%), falls on stairs (13%), falls from furniture (6%), falls from sporting equipment (6%), falls in playgrounds (2%), and falls from ladders/scaffolding (2%).

The total costs associated with falls in Newfoundland and Labrador in 2012 was \$137 million. Total costs were dominated by falls occurring on the same level (36%) and other non-specified types of falls (37%). Costs to address fall-related injuries also accrued due to falls on stairs (12%), from furniture (7%), off ladders or scaffolding (3%), from sports equipment (4%) and in playgrounds (2%).

Falls occurring on the same level generated 38% of direct costs and 28% of indirect costs related while other non-specific fall events resulted in 37% of direct and 36% of indirect costs. Direct costs also resulted from falls from furniture (7%) and falls on stairs (11%). Indirect costs occurred due to falls on stairs (15%), falls

from sporting equipment (7%), falls from furniture (6%), falls in playgrounds (4%) and falls from ladders or scaffolding (4%).

Intentional injuries by cause as associated costs

In 2010 a total of 70 deaths occurred due to intentional injury. Most of these deaths resulted from suicide or self-harm by means other than poison (71%), while suicide or self-harm using poison accounted for 22% of deaths and violence led to the remaining 7%.

Intentional injury-related hospitalizations were most often the result of suicide or self-harm poisonings (68%), followed by events of violence (23%), and other suicide or self-harm cases (9%). The majority (73%) of emergency room visits for intentional injuries resulted from violence while 21% of visits were due to suicide or self-harm poisonings, and 6% occurred for other suicide or self-harm events. Intentional injury resulting in permanent disability occurred due suicide or self-harm – poison (67% of partial disability, 48% of total disability), violence (26% of partial disability, 42% of total disability) and suicide or self-harm by means other than poison (7% of partial disability, 10% of total disability).

The total costs associated with intentional injuries were dominated by suicide or self-harm poisoning (43%) and other suicide or self-harm events (37%) while violence accounted for 20% of total costs. The majority (64%) of direct health care costs accrued due to poison-related suicide or self-harm events, followed by violence (28%), and other suicide or self-harm events (9%). The highest portion of indirect costs was invested to address suicide or self-harm by means other than poison (55%), while 30% of these costs were due to poison-related suicide / self-harm events and the remaining 15% addressed injuries resulting from violence.

NOVA SCOTIA

In 2004, Nova Scotia became the first province in Canada to develop a government supported comprehensive Injury Prevention Strategy. In 2009 this Strategy was renewed with involvement from many injury prevention partners and co-released by the provincial government and Injury Free Nova Scotia. The renewed strategy called *Taking It to the Next Level*, builds on what has been achieved since the introduction of the original strategy.

The renewed Strategy's vision is for everyone in Nova Scotia working together to create healthy and safe communities. Objectives focus on reducing injuries, improving all aspects of the health of Nova Scotians and making injury prevention more visible in our communities. The Strategy provides stakeholders, both within and outside traditional boundaries of injury prevention, with a framework to guide activities – from planning and development to implementation and evaluation. This purpose reflects the need to make injury prevention more visible as an important aspect of healthy communities. This includes reducing disparity across the entire population and focusing on the sub-populations where the rates of injury are highest.

Priorities are based on surveillance, research, and consultation and include seniors' falls, suicide and attempted suicide and road safety. Priority populations include:

- ❖ children and youth,
- ❖ older Nova Scotians (seniors), and
- ❖ other populations at increased risk of injury.

Priority settings are schools, workplaces, homes, communities, roads and streets, health care settings, recreation and leisure settings.

Although the Nova Scotia Department of Health & Wellness and Injury Free Nova Scotia provide overall leadership for the Strategy, it is a shared responsibility between many government departments (e.g. NS Department of Transportation & Infrastructure Renewal; Community Services), provincial organizations and community groups. Success of the Strategy is dependent on the involvement of all stakeholders who have either the mandate or ability to

positively influence the issue of injury. To action the Injury Prevention Strategy, the government supports many injury prevention organizations that focus on the key priority areas and populations.

There are numerous non-government organizations involved in injury prevention including, but not limited to, Injury Free Nova Scotia (IFNS), Child Safety Link, Atlantic Collaborative on Injury Prevention (ACIP), Safety Services Nova Scotia, the Division of Neurotrauma (QEII Hospital), Community Links, Canadian Mental Health Association, and the Ecology Action Centre. These groups often partner on projects. For example, ACIP provides a forum for collaboration and host an Atlantic injury prevention conference every two years. Child Safety Link, ACIP, IFNS, Department of Transportation & Infrastructure Renewal, Department of Health & Wellness and the Ecology Action Centre and others also partner on various road safety issues.

Total cost of injury

In 2010, injuries cost Nova Scotians \$790 million and caused 510 deaths.

In the same year 6,436 hospitalizations and 96,107 visits to the emergency room resulted from injuries as did 1,506 cases of permanent partial disability and 119 cases of permanent total disability.

Table 56

Summary of findings, all injury, Nova Scotia, 2010

Injury Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability	Total Economic Cost of Injury
510	6,436	96,107	1,506	119	\$790 million

Based on a Nova Scotia population of 942,073 the annual mortality rate due to injury was 54 per 100,000 people. An estimated 1,367 potential years of life were lost for every 100,000 Nova Scotians, and the per capita cost of injury was \$839.

Direct and indirect costs

The total costs of injury in 2010 were \$790 million of which \$546 million (69%, or \$579 per capita) were direct health care costs and \$245 million (31% or \$260 per capita) were indirect costs.

Intentional and unintentional injury

Table 57
Injury by intent, Nova Scotia, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Unintentional	380	5,643	91,927	1,329	107
Intentional	125	685	3,616	153	11
Undetermined Intent/Other	5	108	564	24	<5
TOTAL	510	6,436	96,107	1,506	119

Unintentional injuries made up the majority of injury-related deaths (75%), hospitalizations (88%), emergency room visits (96%), and permanent partial (88%) and total (90%) disabilities. Intentional injury accounted for one quarter of the 2010 injury related deaths, 11% of injury hospitalizations, 4% of emergency room visits, and — respectively — 10% and 9% of the cases of permanent partial and total disability. The remaining events were attributable to events of undetermined intent.

The cost of injury in Nova Scotia reflects the distribution of injury intent. Unintentional injuries account for \$676 million of (85%) total costs including 91% of direct costs and 72% of indirect costs. Intentional injuries generated 13% of total costs associated with injuries, including 8% of direct costs and 26% of indirect expenditures. One percent of total costs were due to injuries of undetermined intent.

Table 58

Total, direct, and indirect costs by intent of injury, Nova Scotia, 2010

Description	Total costs (\$ millions)	Direct costs (\$ millions)	Indirect costs (\$ millions)
Unintentional	\$676	\$497	\$177
Intentional	\$105	\$42	\$63
Undetermined Intent/ Other	\$10	\$6	\$4
TOTAL	\$790	\$546	\$245

Injury by cause

In 2010 in Nova Scotia 510 deaths resulted from injuries. The leading causes of these deaths were falls (35%) and suicide or self-harm (21%). Injury-related deaths also occurred due to transportation incidents (13%), unintentional poisoning (12%), other unintentional injuries (9%), fire or burns (4%), violence (4%), drowning (2%), and injuries of undetermined intent (1%).

Nearly two-thirds (60%) of injury-related hospitalizations were the result of falls. Transportation incidents were the cause of 11% of hospitalizations while other unintentional injuries generated 13% of visits and 7% were due to suicide or self-harm. Other causes of hospitalization included violence (4%), unintentional poisoning (2%), injuries of undetermined intent (2%), and fire or burns (1%).

In 2010, emergency room visits for injuries occurred primarily due to non-specific unintentional reasons (52%) and falls (30%). Among the other causes of emergency room visits for injury were transport incidents (8%), violence (3%), unintentional poisoning (2%), being struck by or against sports equipment (2%), fires/burns (1%) and injuries with undetermined intent (1%).

Table 59

Injury deaths, hospitalizations, and emergency room visits by cause, Nova Scotia, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Transport Incidents	65	691	8,015	178	17
<i>Pedestrian</i>	9	63	492	15	<5
<i>Pedal Cycle</i>	<5	67	1,612	24	<5
<i>Motor Vehicle</i>	28	411	4,504	99	10
<i>ATV, Snowmobile</i>	5	93	574	23	<5
<i>Other</i>	21	57	833	16	<5
Falls	180	3,886	28,951	669	56
<i>On the same level</i>	15	1,490	9,364	240	18
<i>From skates, skis, boards, blades</i>	<5	83	1,731	29	<5
<i>From furniture</i>	13	281	1,657	40	<5
<i>In playgrounds</i>	<5	49	597	16	<5
<i>On stairs</i>	16	370	3,652	80	8
<i>From ladders/scaffolding</i>	<5	106	651	27	<5
<i>Diving</i>	<5	2	85	<5	<5
<i>Other</i>	134	1,505	11,215	235	21
Drowning	10	9	34	<5	<5
Fire\Burns	20	56	1,186	26	<5
Unintentional Poisoning	60	157	1,480	37	<5
Struck By\Against Sports Equipment	<5	24	1,829	15	<5
Other Unintentional Injuries*	45	820	50,432	403	28
Suicide\Self-Harm - Poisoning	24	385	738	86	<5
Suicide\Self-Harm - Other	81	68	217	11	<5
Violence	19	232	2,661	55	6
Undetermined Intent\Other	5	108	564	24	<5
TOTAL	510	6,436	96,107	1,506	119

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

In Nova Scotia, the leading cause of permanent disability in 2010 was falls which accounted for 44% of partial and 47% of total disability cases. Other unintentional injuries were responsible for 27% of cases of permanent partial disability and 24% of cases of permanent total disability while transport incidents were responsible for 12% and 15%, respectively. Among the other causes of permanent partial disability were suicide or self-harm (6%), and violence (4%), unintentional poisoning (2%), fire/burns (2%), injuries of undetermined intent (2%), and being struck by or against sporting equipment (1%).

Table 60

Mortality, crude death rates (per 100,000 pop.) and total cost per capita by cause, Nova Scotia, 2010

Cause	Deaths	Death rate (per 100,000)	Total Costs	Costs per capita
Transport Incidents	65	6.9	\$109 million	\$116
Falls	180	19.1	\$243 million	\$259
Suicide/Self-Harm	105	11.1	\$74 million	\$78
Violence	20	2.0	\$32 million	\$34

In Nova Scotia the highest injury-related death rate in 2010 was due to falls (19.1 deaths per 100,000 citizens). Falls were also responsible for the highest per capita cost — \$259 per citizen.

Costs of injury by cause

The total cost of injury in Nova Scotia in 2010 was \$790 million including \$546 million in direct health care costs and \$245 million in indirect costs. Nearly one third (31%) of overall injury costs and 37% of direct costs were due to falls, while the largest drivers of indirect cost were transport incidents (19%) and suicide or self-harm (19%).

Table 61

Total, direct, and indirect costs of injury by cause, Nova Scotia, 2010

Description	Total costs (\$ millions)	Direct costs (\$ millions)	Indirect costs (\$ millions)
Transport Incidents	\$109	\$62	\$47
<i>Pedestrian</i>	\$10	\$5	\$5
<i>Pedal Cycle</i>	\$10	\$6	\$4
<i>Motor Vehicle</i>	\$64	\$40	\$23
<i>ATV, Snowmobile</i>	\$11	\$6	\$5
<i>Other</i>	\$14	\$4	\$10
Falls	\$244	\$199	\$44
<i>On the same level</i>	\$80	\$69	\$12
<i>From skates, skis, boards, blades</i>	\$10	\$6	\$4
<i>From furniture</i>	\$17	\$15	\$3
<i>In playgrounds</i>	\$6	\$4	\$2
<i>On stairs</i>	\$24	\$18	\$6
<i>From ladders/scaffolding</i>	\$7	\$5	\$2
<i>Diving</i>	\$1	\$1	\$0
<i>Other</i>	\$98	\$82	\$16
Drowning	\$4	\$0	\$4
Fire\Burns	\$11	\$5	\$6
Unintentional Poisoning	\$34	\$9	\$25
Struck By\Against Sports Equipment	\$5	\$3	\$2
Other Unintentional Injuries*	\$268	\$220	\$48
Suicide\Self-Harm - Poisoning	\$38	\$22	\$16
Suicide\Self-Harm - Other	\$36	\$5	\$30
Violence	\$32	\$14	\$17
Undetermined Intent \Other	\$10	\$6	\$4
TOTAL	\$790	\$546	\$245

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

Of the total costs other non-specific unintentional injuries accounted for 34% of spending, transport incidents for 14%, suicide or self-harm for 9%, unintentional poisonings for 4% and violence for 4%. The remaining 4% of total costs were due to drowning, fire/burns, being struck by or against sports equipment, and injuries of undetermined intent (1% each).

While falls were the main driver of direct health care costs, transport incidents were responsible 11% of the expense, other non-defined unintentional injuries for 40%, and suicide and self-harm for 5%. Remaining health care costs were due to violence (3%), unintentional poisoning (2%), fire or burns (1%), being struck by or against sports equipment (1%) and injuries of undetermined intent (1%).

Indirect costs were most often due to transport incidents (19%), suicide and self-harm (19%) and falls (18%). Indirect costs were also accrued due to other unintentional injuries (20%), unintentional poisonings (10%), violence (7%), fire or burns (3%), drowning (2%), injuries of undetermined intent (2%) and sports equipment (1%).

Transport-related injuries by cause and associated costs

Motor vehicle events were the main cause of transportation-related injury deaths in 2010 accounting for 28 (44%) of the total 65 deaths. Motor vehicle events were also the main cause of hospitalizations (59%), emergency room visits (56%), permanent partial disability (56%), and permanent total disability (59%) due to transportation-related injuries.

The remaining deaths due to transport injuries were attributable to other non-specified events (32%), pedestrian events (14%), ATV or snowmobile incidents (7%) and cycling (3%). Aside from motor vehicle incidents, transport-related hospitalization and emergency room visits were the result of: ATV or snowmobile incidents (13% and 7% respectively), cycling (10% and 20% respectively), pedestrian incidents (9% and 6% respectively), and other non-specific incidents (8% and 10% respectively).

In Nova Scotia the total cost of transport-related injuries was \$109 million in 2010. Motor vehicle incidents generated \$64 million (58%) of these costs, and were responsible for 65% of direct costs, and half of indirect expenses. Total costs were also attributable to other non-specific transportation injuries (13%), ATV or snowmobile incidents (11%), and pedestrian and cycling incidents (each 9%).

After motor vehicle incidents, direct costs due to transportation-related injuries were most often due to cycling (10%), followed by ATV or snowmobile events (10%), pedestrian incidents (8%) and other transport events (6%). The half of indirect costs not due to motor vehicle incidents accumulated due to non-specific transport incidents (22%), ATV or snowmobile events (11%), and cycling and pedestrian events (8% and 10%, respectively).

Fall-related injuries by cause and associated costs

Non-specific falls were responsible for nearly three quarters (74%) of all fall-related deaths in Nova Scotia in 2010. Injury and death from falls also occurred due to falls on stairs (9%), falls from the same level (8%), and falls from furniture (7%), and falls from ladders/scaffolding (1%).

Of the falls resulting in injury hospitalization, most occurred due to falling on the same level (38%) and other (non-specific) falls (39%). Other fall types leading to hospitalization occurred on stairs (10%), from furniture (7%), off ladders or scaffolding (3%), from sports equipment (2%) and in playgrounds (1%). Similarly, the two most significant reasons for fall-related emergency room visits were falls on the same level (32%) and other non-specific falls (39%). Thirteen percent of falls leading to emergency room visits occurred on the stairs, 6% occurred from furniture, 6% occurred from skates, skis, boards or blades, while 2% resulted from falls from ladders or scaffolding, and a final 2% from falls in playgrounds.

In 2010 in Nova Scotia the costs associated with falls amounted to \$244 million. The main drivers of that cost were falls on the same level (\$80 million or 33%), and other non-specific types of falls (\$98 million or 40%). Non-specific types of falls and falls on the same level were also the largest portion of total healthcare costs (41% and 34%, respectively) and indirect costs (36% and 26%, respectively).

Total costs also resulted from falls on stairs (10%), falls from furniture (7%), falls from sports equipment (4%), falls in playground (3%) and falls from ladders or scaffolding (3%). Nine percent of direct health care costs resulted from falls on stairs while costs also accumulated due to falls from furniture (7%), from skates/skis/boards/blades (3%), from ladders or scaffolding (2%) and from falls in playgrounds (2%). In addition to the two main categories noted above, indirect costs resulted from falls on stairs (13%), from sporting equipment (9%), from furniture (7%), in playground (5%), and from ladders/scaffolding (4%).

Intentional injuries by cause and associated costs

In 2010 almost two-thirds (65%) of the 125 deaths due to intentional injuries resulted from suicide or self-harm by methods other than poison. Nineteen percent of these deaths was due to suicide or self-harm by poison, and the remaining 16% occurred due to violence.

Hospitalizations resulting from intentional injuries were dominated (56%) by cases due to suicide or self-harm using poison, while 34% hospitalizations resulted from violence and 10% occurred because of suicide or self-harm using other means. Violence accounted for 74% emergency room visits for intentional injuries while remaining visits occurred for suicide or self-harm poisoning (20%) and other types of suicide or self-harm (6%). Of the total 153 cases of permanent partial disability, 56% resulted from poisoning-related suicide or self-harm events, 36% were due to violence and the remaining 8% resulted from other suicide or self-harm events. Instances of permanent total disability due to intentional injury most often as a result of violence (53%) but also occurred as a result of suicide or self harm (poison 37%, other 10%).

Intentional injuries cost Nova Scotia \$105 million in 2010. These total costs were distributed across suicide/self-harm due to poisonings (36%), suicide or self-harm – other (34%) and violence (30%). Direct and indirect costs were split between injuries due to poison-related suicide/self-harm (52% of direct, 25% of indirect), followed by violence (35% of direct, 27% of indirect), and other types of suicide or self-harm (13% of direct and 48% of indirect).

ONTARIO

In Ontario, injury prevention efforts are undertaken in a number of government ministries and organizations, including NGOs, with good collaboration to address cross ministerial/sectoral issues.

The Ministry of Health and Long Term Care (MOHLTC) has a provincial injury prevention strategy and the Chief Medical Officer of Health's 2011 report *Maintaining the Gains, Moving the Yardstick: Ontario Health Status Report*, draws attention to the importance and magnitude of the issue of injuries in Ontario. Recently, MOHLTC has identified seniors' falls as a priority and established an indicator to measure public health performance in this area. Public Health Ontario (PHO) is a government agency dedicated to protecting and promoting the health of all Ontarians and reducing inequities in health. PHO links public health practitioners, front-line health workers and researchers to the best scientific intelligence and knowledge from around the world. PHO provides expert scientific and technical advice in areas of public health including injury prevention.

The Ministry of Health and Long Term Care (MOHLTC) provides funding through Public Health Ontario (PHO) for a Health Promotion Resource Centre on injury prevention, the Ontario Injury Prevention Resource Centre (OIPRC), operated by Parachute. The OIPRC supports those working in public health; the province's 36 public health units and 11 lead trauma hospitals. Injury prevention practice for public health units is guided by the *Prevention of Injury and Substance Misuse Public Health Standard*. For the centres comprising Ontario's trauma system, injury prevention practice is part of maintaining trauma distinction through Accreditation Canada.

The Ministry of Transportation (MTO) is responsible for legislation and provides information as well as conducts and supports activities focused on driving safety, pedestrian, bicycle, snowmobile, school bus and child passenger safety. In the 2014 Speech from the Throne, Ontario's priorities in strengthening road safety focuses on maintaining safe roads by continuing to address areas of concern (above) and reducing the emerging trend of drug-impaired driving with the goal of preserving Ontario's ranking as one of the lowest fatality rate jurisdictions in North America. In addition, continuing to implement the province's first-ever

cycling strategy, #CycleON, and establishing a regulatory framework for autonomous vehicles and, working with the Minister of Health and Long-Term Care, stretcher transport services.

The overall vision of the Ministry of Labour is to foster safe, fair and healthy workplaces characterized by productive relationships and high performance that drive a vibrant, competitive economy and generate widespread benefits for all. The ministry contributes to achieving this vision and to the prosperity of Ontario by advancing healthy, safe, fair and productive relationships in the workplace and the broader community.

The Ministry's objective is to create environments that make Ontario workplaces among the safest in the world. The Ministry works towards this by setting, communicating and enforcing Occupational Health Safety (OHS) laws that are designed to reduce or eliminate workplace injury or illness. The Ministry also works to prevent workplace illness and injury by implementing the priorities of its integrated occupational health and safety strategy. As part of the strategy, the ministry collaborates with its partners in Ontario's OHS system with the twin objectives of improving the effectiveness of the OHS system while, at the same time, making workplaces more self-reliant.

The Prevention Council, with representation from a broad range of organizations and interests, advises the Minister of Labour and the Chief Prevention Officer on a wide range of occupational health and safety issues, including:

- ❖ prevention of workplace injuries and illnesses
- ❖ development of the provincial occupational health and safety strategy, and
- ❖ any significant proposed changes to funding and delivery of services under the Occupational Health and Safety Act.

The Centre for Health & Safety Innovation (CHSI) is a focal point for innovation and applied learning in the prevention and elimination of workplace injuries and illnesses, along with four sector-based health and safety associations. It is a key resource for employers, employees, and others seeking expertise and direction on how to make workplaces injury and illness-free.

The Ministry of Education released the Concussions Policy/Program Memorandum (PPM) in March 2014. This PPM outlines the expectations for Ontario school boards to develop and maintain a policy on concussion. The

strategy includes components for awareness, prevention, identification, and management of concussions. To support the PPM, the Ministry developed a web portal that provides the most up-to-date information about preventing, identifying, and managing concussions. This work was done through a collaboration between the Ministry of Education, Ministry of Tourism, Culture and Sport and the Ministry of Health and Long-Term Care.

Total cost of injury

In 2010 injuries cost Ontario \$8.8 billion and 5,785 lives.

In addition, injuries resulted in 72,289 hospitalizations, approximately 1.35 million visits to the emergency room, 18,660 cases of permanent partial disability, and 1,456 instances of permanent total disability.

Based on the provincial population of 13,135,063, in 2010 there were 44 injury-related deaths for every 100,000 Ontarians. Injuries also cost Ontario approximately 1,128 potential years of lost life years per 100,000 people and the per capita cost of injury was \$667.

Table 62

Summary of findings, all injury, Ontario, 2010

Injury Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability	Total Economic Cost of Injury
5,785	72,289	1,350,611	18,660	1,456	\$8.8 billion

Direct and indirect costs

The total 2010 costs associated with injuries were \$8.8 billion of which \$5.1 billion (58% or \$390 per capita) were direct health care costs, and \$3.6 billion (42% or \$277 per capita) were indirect.

Intentional and unintentional injuries

Table 63

Injury by intent, Ontario, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Unintentional	4,235	64,500	1,291,725	16,810	1,333
Intentional	1,360	6,702	51,124	1,594	107
Undetermined Intent/Other	190	1,087	7,888	256	16
TOTAL	5,785	72,289	1,350,611	18,660	1,456

The vast majority of injuries in Ontario in 2010 were unintentional in nature. Unintentional injuries resulted in 73% of injury related deaths, 89% of injury hospitalizations, 96% of emergency room visits, 90% of permanent partial disability caused by injury, and 92% of injury-related permanent total disability. Conversely, intentional injuries resulted in 24% of related deaths, 9% of hospitalizations, 4% of emergency room visits, and — respectively — 9% and 7% of cases of partial and total disability. The remaining incidents were of an undetermined intent.

Table 64

Total, direct, and indirect costs by intent of injury, Ontario, 2010

Description	Total costs (\$ millions)	Direct costs (\$ millions)	Indirect costs (\$ millions)
Unintentional	\$7,346	\$4,668	\$2,678
Intentional	\$1,239	\$388	\$851
Undetermined Intent/Other	\$174	\$60	\$114
TOTAL	\$8,759	\$5,117	\$3,642

Perhaps not surprising then is the fact that in 2010 injury spending focused on unintentional injuries. Of the total \$8.8 billion spent on injuries in Ontario in

2010, \$7.3 billion (84%) was invested to address unintentional injuries while \$1.2 billion (14%) addressed intentional injuries and \$174 million (2%) was spent on injuries with undetermined causes. Unintentional injuries accounted for 91% of direct spending and 74% of indirect spending while 8% of direct costs and 23% of indirect costs went to address intentional injuries. The remaining 2% of costs were related to injuries of undetermined intent.

Injury by cause

In 2010 the leading causes of injury-related death in Ontario were falls (38%) and suicide or self-harm (20%). Injury deaths also occurred due to transport incidents (13%), unintentional poisoning (11%), other unintentional injuries (8%), violence (3%), injuries of undetermined causes (3%), drowning (2%) and fire/burns (1%).

In Ontario during 2010 more than half (57%) of hospitalizations for injuries occurred due to falls. An additional 17% of hospitalizations occurred due to other non-specific unintentional injuries, 11% resulted from transport incidents and suicide or self-harm events made up 7%. The remaining hospitalizations resulted from unintentional poisonings (4%), violence (3%), events of undetermined intent (2%), and fire or burns (1%).

The most frequent defined cause of emergency room for injuries visits in 2010 was falls, which accounted for 30% of visits. Other unintentional injuries were the reason for 53% of visits, while transport incidents made up 8% and violence 3%. Unintentional poisoning and being struck by or against sporting equipment each resulted in 2% of emergency room visits while suicide or self-harm, and events of undetermined intent contributed 1% each.

The leading cause of both permanent partial and permanent total disability due to injury were falls, making up 42% and 45% of these events, respectively. Among the other causes of permanent partial and total disability were other non-specific unintentional injuries (31% and 28% respectively), transportation incidents (11% and 14% respectively), suicide or self-harm (6% and 4% respectively), violence (3% and 4%, respectively) and unintentional poisoning (3% each). Less common causes of partial or total permanent disability were fire (2% or 1%, respectively), being struck by or against sports equipment (1% each), or injuries of indeterminate intent (1% each).

Table 65

Injury deaths, hospitalizations, and emergency room visits by cause, Ontario, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Transport Incidents	735	7,669	112,589	2,131	203
<i>Pedestrian</i>	110	920	6,862	217	24
<i>Pedal Cycle</i>	25	1,244	23,299	411	37
<i>Motor Vehicle</i>	311	3,946	62,562	1,052	104
<i>ATV, Snowmobile</i>	51	883	8,177	239	20
<i>Other</i>	238	676	11,689	212	18
Falls	2,190	41,072	400,591	7,748	651
<i>On the same level</i>	181	13,266	127,574	2,542	187
<i>From skates, skis, boards, blades</i>	7	1,010	25,360	400	30
<i>From furniture</i>	150	2,489	23,769	377	32
<i>In playgrounds</i>	<5	550	9,414	201	13
<i>On stairs</i>	204	4,211	50,471	1,018	99
<i>From ladders/scaffolding</i>	32	1,156	8,802	330	29
<i>Diving</i>	<5	60	1,232	19	<5
<i>Other</i>	1,615	18,330	153,969	2,862	258
Drowning	130	89	484	13	<5
Fire\Burns	75	666	16,855	362	18
Unintentional Poisoning	640	2,740	20,907	618	40
Struck By\Against Sports Equipment	<5	186	26,747	188	14
Other Unintentional Injuries*	465	12,078	713,552	5,749	406
Suicide\Self-Harm - Poisoning	300	4,348	10,371	973	47
Suicide\Self-Harm - Other	875	423	3,087	80	7
Violence	185	1,931	37,666	541	54
Undetermined Intent\Other	190	1,087	7,888	256	16
TOTAL	5,785	72,289	1,350,611	18,660	1,456

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

Table 66

Mortality, crude death rates (per 100,000 pop.) and total cost per capita by cause, Ontario, 2010

Cause	Deaths	Death rate (per 100,000)	Total Costs	Costs per capita
Transport Incidents	735	5.6	\$1,233 million	\$94
Falls	2,190	16.7	\$2,803 million	\$213
Suicide/Self-Harm	1,175	8.9	\$895 million	\$68
Violence	185	1.4	\$344 million	\$26

Falls were responsible for the most injury deaths per capita (16.7 per 100,000 population), and generated the greatest per capita cost to residents of Ontario — \$213.

Costs of injury by cause

About one-third (32%) of the total \$8.8 billion cost associated with injuries in Ontario in 2010 was due to falls while other unintentional injuries accounted for an additional 29% of this spending. Fourteen percent of total costs occurred due to transport incidents, 10% addressed suicide or self-harm injuries, 6% was spent on unintentional poisonings, and 4% on violence-related injuries. The remaining costs were related to drowning (1%), fire/burns (1%), sports equipment injuries (1%), and other injuries of undetermined intent (2%).

Direct costs amounted to \$5.1 billion in 2010. Forty-one percent of these expenses addressed injury due to falls and 34% was spent responding to other unintentional injuries. Direct costs also arose from transport incidents (12%), suicide or self-harm (5%), unintentional poisoning (3%), violence (3%), fire or burns (1%), being stuck by or against sport equipment (1%), and other injuries of undetermined intent (1%).

Table 67

Total, direct, and indirect costs of injury by cause, Ontario, 2010

Description	Total costs (\$ millions)	Direct costs (\$ millions)	Indirect costs (\$ millions)
Transport Incidents	\$1,233	\$625	\$607
<i>Pedestrian</i>	\$141	\$75	\$66
<i>Pedal Cycle</i>	\$161	\$91	\$70
<i>Motor Vehicle</i>	\$630	\$351	\$279
<i>ATV, Snowmobile</i>	\$122	\$60	\$62
<i>Other</i>	\$178	\$47	\$131
Falls	\$2,803	\$2,090	\$713
<i>On the same level</i>	\$792	\$624	\$168
<i>From skates, skis, boards, blades</i>	\$148	\$81	\$68
<i>From furniture</i>	\$172	\$135	\$38
<i>In playgrounds</i>	\$82	\$47	\$36
<i>On stairs</i>	\$327	\$234	\$93
<i>From ladders/scaffolding</i>	\$99	\$70	\$29
<i>Diving</i>	\$11	\$6	\$5
<i>Other</i>	\$1,172	\$894	\$278
Drowning	\$70	\$4	\$66
Fire\Burns	\$124	\$60	\$64
Unintentional Poisoning	\$494	\$134	\$359
Struck By\Against Sports Equipment	\$68	\$34	\$34
Other Unintentional Injuries*	\$2,554	\$1,719	\$835
Suicide\Self-Harm - Poisoning	\$452	\$209	\$244
Suicide\Self-Harm - Other	\$443	\$36	\$408
Violence	\$344	\$144	\$200
Undetermined Intent \Other	\$174	\$60	\$114
TOTAL	\$8,759	\$5,117	\$3,642

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

Most indirect costs were divided between falls (20%), suicide or self-harm (18%), other unintentional injuries (23%), and transportation incidents (17%). Additional reasons for indirect costs included unintentional poisoning (10%), violence (5%), injuries of undetermined intent (3%), drowning (2%), fire or burns (2%) and injuries associated with sport equipment (1%).

Transport-related injuries by cause and associated costs

Motor vehicle incidents were responsible for 42% of transport-related injury deaths, as well as 51% of the hospitalizations, 56% of emergency room visits, 49% of permanent partial disability, and 51% of permanent total disability due to transport-related injuries.

Transport-related injury deaths were also attributable to other non-specific incidents (32%), pedestrian events (15%), ATV and snowmobile events (7%) and cycling incidents (3%). Other transportation-related reasons for hospitalization and emergency room visits were cycling incidents (16% and 21%, respectively), pedestrian-related events (12% and 6%, respectively), ATV and snowmobile events (12% and 7%, respectively), and non-specific transport incidents (9% and 10%, respectively).

In 2010 the total cost of injury due to transportation incidents was \$1.2 billion. More than half (51%) of the total costs as well as 56% of direct health care spending and 46% of indirect spending were due to motor vehicle related incidents. Remaining direct costs arose from cycling (15%), pedestrian incidents (12%), ATV or snowmobile incidents (10%) or other non-specific transport incidents (8%). Indirect costs resulted from non-specific transport incidents (22%), cycling (11%), pedestrian incidents (11%) and ATV or snowmobile incidents (10%).

Fall-related injuries by cause and associated costs

Aside from falls due to non-specific causes, falling on the same level was the leading cause of fall-related deaths (8%), hospitalization (32%), emergency room visits (32%) and permanent partial (33%) and total (29%) disability. Other (non-specific) falls accounted for 74% of fall deaths, 45% of related hospitalizations, 38% of emergency room visits and 37% of partial and 40% of total disability.

Other causes of fall-related injury deaths were falls on stairs (9%), from furniture (7%), and from ladders or scaffolding (1%). Individuals were also hospitalized with fall-related injuries after falling on stairs (10%), falling from furniture (6%), falling from ladders or scaffolding (3%), falling from skates/skis/boards/blades (2%) and falling in playgrounds (1%). Thirteen percent of emergency room visits due to fall-related injuries were due to falls on stairs, while 6% were due to falls from skates/skis/boards/blades and additional 6% resulted from falls from furniture. Falls from ladders or scaffolding and falls in playground each resulted in 2% of the fall-related emergency room visits.

In 2010, Ontario spent a total of \$2.8 billion addressing fall-related injuries. The two main drivers of these total costs were falls on the same level (28%) and other non-specific falls (42%). Forty-three percent of direct costs and 39% of indirect costs were spent on falls of non-specific nature while 30% of direct costs and 24% of indirect costs were invested to address injuries due to falls on the same level. Costs also arose from falls on stairs (12% of total costs, 11% of direct costs, 13% of indirect costs), falls from furniture (6% of total costs, 6% direct costs, 5% indirect costs), falls from sporting equipment (5% of total costs, 4% of direct costs, 9% of indirect costs), falls from ladders or scaffolding (4% of total costs, 3% of direct costs, and 4% of indirect costs) and falls in playgrounds (3% of total costs, 2% of direct costs, 5% of indirect costs).

Intentional injuries by cause and associated costs

Suicide and self-harm accounted for 86% of intentional injury deaths in 2010, and made up 71% of hospitalizations, 26% of emergency room visits, 66% of permanent partial disability, and 50% of permanent total disability related to intentional injuries.

The leading cause of intentional injury death was suicide/self-harm by other means other than poison (64%) while suicide and self-harm by poisoning accounted for 22% of deaths and violence-related injuries for 14%. Intentional injury hospitalizations were dominated by suicide and self-harm by poisoning (65%), followed by injuries due to violence (29%) and suicide and self-harm by other means (6%). The main cause of emergency room visits for intentional injuries was violence (74%), while suicide and self-harm accounted for the remainder (20% due to poison, 6% other). Suicide and self-harm by poisoning resulted in 61% of the cases of permanent partial disability and 44% of the

instances of permanent total disability. Permanent partial and total disability also resulted from violence (34% and 50%, respectively) and suicide and self-harm by other means (5% and 6%, respectively).

Of the \$1.2 billion spent on intentional injuries in 2010, \$452 million (36%) was spent on events of suicide or self-harm by poisoning, \$443 million (36%) was invested in suicide and self-harm by other means and 28% or \$344 million went to address violence-related injuries.

More than half (54%) of direct health care costs focused on suicide or self-harm by poisoning, 37% was spent on the costs of violence, and 9% addressed suicide and self-harm by other means. Indirect expenditures were dominated by costs associated with suicide and self-harm - other (48%), suicide and self-harm - poison (29%) and violence (23%).

PRINCE EDWARD ISLAND

Injury prevention is a shared responsibility among various provincial government departments such as the Departments of Health and Wellness, Transportation and Infrastructure Renewal, Environment, Labour and Justice as well as Sport and Recreation with support from organizations and community partners.

The mandate of the Prince Edward Island Department of Transportation and Infrastructure Renewal is to contribute to economic development and the quality of life in this province by maintaining and enhancing, in an affordable way, the essential transportation systems and the services for the efficient and safe movement of people, goods, and services. Driving is a privilege and as drivers, everyone has a responsibility to make Island roads safe. The Ministry provides services, enforcement and information on issue such as seat belts, distracted driving, child safety seats, bicycle safety and ATVs, snowmobiles and off-highway vehicles to reduce the risk of serious injury or death on the road.

PEI's Department of Health and Wellness' Sport and Recreation division provides expertise, funding programs and support to a number of provincial, regional and local partners to lay the foundation for Islanders to enjoy the many benefits of participating in sport, being involved in recreational activities and living a healthy physically active life.

Department of Environment, Labour and Justice oversee a wide range of programs and activities in the areas of justice, public safety, environmental protection, enforcement and consumer and corporate services. Each division of the department works toward the protection of Islanders and the Island's environment by fostering safe communities, access to justice, sustainable environmental practices, and respect for the law.

In the Department of Education and Early Child Development, the theme of safety underpins the outcomes in Grades K-10 Physical Education (PE) and Grades 1-9 Health. The Grades K-9 goals in PE are interdependent and are of equal importance. Both the Prince Edward Island School Athletic Association (PEISAA) and PE and Health curriculum specialist refer to the Physical Education Safety Guidelines document for safety concerns. This is a joint

venture between the Department of Education and Early Childhood Development, English Language School Board, and the PEISAA.

In addition, the Government of Prince Edward Island has been a supporter of the Atlantic Collaborative on Injury Prevention (ACIP) with annual contributions. ACIP is a partnership of injury prevention practitioners from both government and non-government organizations. The goal of ACIP is to reduce the burden of injury in Atlantic Canada.

The Island Network for Injury Prevention (INIP), a member of ACIP, has brought together different sectors – government and non-government – with particular focus on children’s and seniors’ falls and motor vehicle-related injuries and deaths involving children, youth, and seniors. A number of their funded projects have contributed to the enhanced awareness of injury and its prevention in PEI. Key PEI injury prevention leaders and senior’s falls experts were also instrumental in the development and pilot testing of the Canadian Falls Prevention Curriculum.

In 2012, a partnership of Recreation PEI and INIP, along with a number of provincial and community organizations worked together on the Public Health Agency of Canada’s Active and Safe Initiative (Tier 3). Activities within the Active and Safe Initiative focused on injury prevention in early child care centres, safer playgrounds, cycling, and helmet and concussion education. Family Resource Centres on PEI and the Brain Injury Association of PEI have continued to be active in the prevention of injury.

Total cost of injury

Injuries cost Prince Edward Island \$105 million and 65 lives in 2010.

In the same year, 1,076 hospitalizations occurred due to injuries, and injuries led to 14,557 emergency room visits, 244 instances of permanent partial disability and 20 cases of permanent total disability.

In 2010, the population of Prince Edward Island (PEI) was 141,678, the rate due to injury was 46 per 100,000 residents and injuries resulted in an estimated 1,145

potential years of life lost per 100,000 people. The per capita cost of injuries in 2010 was \$739.

Table 68

Summary of findings, all injury, Prince Edward Island, 2010

Injury Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability	Total Economic Cost of Injury
65	1,076	14,557	244	20	\$105 million

Direct and indirect costs

Of the total \$105 million injuries cost PEI in 2010, \$71 million (68% or \$504 per capita) were spent on direct health care costs and \$33 million (32% or \$236 per capita) were spent on indirect costs.

Intentional and unintentional injury

Table 69

Injury by intent, Prince Edward Island, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Unintentional	55	1,002	13,930	227	19
Intentional	10	60	543	15	<5
Undetermined Intent/Other	<5	14	84	<5	<5
TOTAL	65	1,076	14,557	244	20

In 2010, unintentional injuries made up the majority of injury-related deaths (84%), hospitalizations (93%), emergency room visits (96%), and cases of permanent partial and total disability (93% and 94%, respectively). Intentional injuries accounted for just 16% of deaths, 6% of hospitalizations, 4% of

emergency room visits, 6% of cases of permanent partial disability and 5% of cases of permanent total disability. The remaining events occurred due to injuries of undetermined intent.

Table 70

Total, direct, and indirect costs by intent of injury, Prince Edward Island, 2010

Description	Total costs (\$ millions)	Direct costs (\$ millions)	Indirect costs (\$ millions)
Unintentional	\$94	\$66	\$26
Intentional	\$10	\$4	\$7
Undetermined Intent/ Other	\$1	\$1	\$0
TOTAL	\$105	\$71	\$33

In 2010 the total cost of injuries in PEI was \$105 million of which \$94 million or 89% was spent on unintentional injuries. Unintentional injuries were responsible for 94% of direct health care costs and 79% of indirect costs. Intentional injuries accounted for just 10% of the overall cost of injuries including 5% of direct costs and 20% of indirect costs. Events of undetermined intent resulted in 1% of total costs.

Injury by cause

In 2010 the leading causes of injury-related death in PEI were falls that accounted for 23% of deaths and other (unspecified) intentional injuries which made up an additional 23%. Transportation incidents were responsible for 15% of injury deaths, suicide and self-harm for 16%, and drowning, fire/burns and unintentional poisoning for 8% each.

Hospitalizations for injuries occurred most often due to falls (62%), followed by other unintentional injuries (17%) and transportation incidents (11%). Among the other reasons for hospitalization were suicide and self-harm (5%), unintentional poisoning (3%), and fire or burns, violence and injuries of undetermined intent which each contributed 1% of hospitalization cases.

Table 71

Injury deaths, hospitalizations, and emergency room visits by cause, Prince Edward Island, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Transport Incidents	10	119	1,207	28	<5
<i>Pedestrian</i>	<5	<5	74	<5	<5
<i>Pedal Cycle</i>	<5	7	249	<5	<5
<i>Motor Vehicle</i>	<5	84	671	19	<5
<i>ATV, Snowmobile</i>	<5	11	87	<5	<5
<i>Other</i>	<5	13	125	<5	<5
Falls	15	668	4,387	114	10
<i>On the same level</i>	<5	187	1,406	33	<5
<i>From skates, skis, boards, blades</i>	<5	12	272	<5	<5
<i>From furniture</i>	<5	51	256	6	<5
<i>In playgrounds</i>	<5	8	98	<5	<5
<i>On stairs</i>	<5	94	548	20	<5
<i>From ladders/scaffolding</i>	<5	14	96	<5	<5
<i>Diving</i>	<5	<5	13	<5	<5
<i>Other</i>	11	299	1,698	42	<5
Drowning	5	<5	5	<5	<5
Fire\Burns	5	6	179	<5	<5
Unintentional Poisoning	5	28	223	7	<5
Struck By\Against Sports Equipment	<5	<5	286	<5	<5
Other Unintentional Injuries*	15	178	7,641	71	5
Suicide\Self-Harm - Poisoning	<5	45	111	11	<5
Suicide\Self-Harm - Other	9	7	33	<5	<5
Violence	<5	8	400	<5	<5
Undetermined Intent\Other	<5	14	84	<5	<5
TOTAL	65	1,076	14,557	244	20

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

The main injury types that lead to emergency room visits were other (non-specific) unintentional injuries (52%) and falls (30%). Transportation incidents resulted in 8% of emergency room visits while violence was the reason for 3% of visits, unintentional poisoning for 2%, being struck by or against sports equipment for 2%, suicide and self-harm for 1%, fires or burns for 1% and injuries of undetermined intent for a final 1%.

Falls accounted for 47% of partial disability cases due to injury and 50% of cases of total disability due to injury. Other events that caused partial disability were un-specific unintentional injuries (29%), transport incidents (12%), suicide and self-harm (5%), unintentional poisoning (3%), violence (1%), fire or burns (2%), and injuries of undetermined intent (1%). Permanent total disability also resulted from other unintentional injuries (26%) and transport incidents (14%), and suicide or self-harm (3%).

Table 72

Mortality, crude death rates (per 100,000 pop.) and total cost per capita by cause, Prince Edward Island, 2010

Cause	Deaths	Death rate (per 100,000)	Total Costs	Costs per capita
Transport Incidents	10	7.1	\$14 million	\$95
Falls	15	10.6	\$48 million	\$340
Suicide/Self-Harm	10	7.2	\$9 million	\$63
Violence	<5	<0.1	\$1 million	\$10

In PEI, falls resulted in the highest injury-related mortality rate (10.6 deaths per 100,000 population) and also generated the highest injury-related costs per capita (\$340 per person).

Cost of injury by cause

In 2010 almost half of injury-related spending resulted from falls. Forty-six percent of total injury spending including 57% of direct costs and 22% of all indirect costs were resulted from fall injuries.

Table 73

Total, direct, and indirect costs of injury by cause, Prince Edward Island, 2010

Description	Total costs (\$ thousands)	Direct costs (\$ thousands)	Indirect costs (\$ thousands)
Transport Incidents	\$13,504	\$8,360	\$5,144
<i>Pedestrian</i>	\$729	\$407	\$322
<i>Pedal Cycle</i>	\$1,049	\$592	\$457
<i>Motor Vehicle</i>	\$8,869	\$5,985	\$2,885
<i>ATV, Snowmobile</i>	\$1,348	\$783	\$564
<i>Other</i>	\$1,508	\$592	\$916
Falls	\$48,175	\$40,898	\$7,278
<i>On the same level</i>	\$9,585	\$7,867	\$1,718
<i>From skates, skis, boards, blades</i>	\$1,635	\$967	\$667
<i>From furniture</i>	\$2,666	\$2,274	\$392
<i>In playgrounds</i>	\$979	\$612	\$368
<i>On stairs</i>	\$13,809	\$12,454	\$1,355
<i>From ladders/scaffolding</i>	\$1,821	\$1,636	\$185
<i>Diving</i>	\$376	\$212	\$164
<i>Other</i>	\$17,304	\$14,875	\$2,429
Drowning	\$1,876	\$35	\$1,841
Fire\Burns	\$824	\$482	\$342
Unintentional Poisoning	\$3,604	\$1,251	\$2,353
Struck By\Against Sports Equipment	\$667	\$379	\$288
Other Unintentional Injuries*	\$24,904	\$13,913	\$7,938
Suicide\Self-Harm - Poisoning	\$3,851	\$2,462	\$1,389
Suicide\Self-Harm - Other	\$5,142	\$317	\$4,824
Violence	\$1,447	\$904	\$542
Undetermined Intent \Other	\$752	\$529	\$223
TOTAL	\$104,746	\$71,348	\$33,398

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

Overall costs also accrued due to other un-specific unintentional injuries (24%), transportation incidents (13%), suicide or self-harm (9%), unintentional poisoning (3%), drowning (2%), violence (1%), being struck by or against sports equipment (1%), fire or burns (1%) and due to other injuries of undetermined intent (1%). Beyond falls, other unintentional injuries led to 22% of direct health care spending, 12% resulted from transport incidents, 4% was due to suicide or self-harm and 2% from unintentional poisoning. Violence, injuries of undetermined causes, being struck by or against sports equipment and, fire / burns were each responsible for 1% of direct spending. Other injury types contributing to indirect costs were other (non-specific) unintentional injuries (27%), suicide or self-harm (19%), transport incidents (15%), unintentional poisoning (7%) and drowning (6%). The remaining four percent of indirect costs were associated with fire / burns (1%), violence (2%), being struck by or against sport equipment (1%) and injuries of indeterminate intent (1%).

Transport-related injuries by cause and associated costs

Motor vehicle incidents were the main reason for transportation-related injury in 2010. They were associated with 40% of deaths, 71% hospitalizations, 56% of emergency room visits due to transportation incidents, 66% of cases of permanent partial disability, and 70% of cases of permanent total disability due to transportation injury. Deaths related to transport injury also occurred due to other (non-specific) incidents (33%), pedestrian incidents (20%), and ATV or snowmobile events (5%).

Hospitalization for injury due to transportation incidents also occurred due to other non-specified incidents (11%), ATV or snowmobile event (9%), cycling (6%) and pedestrian incident (3%). After motor vehicle reasons transport-related emergency room visits due to the following: cycling incidents (21%), other non-specific transport incidents (10%), ATV or snowmobile (7%) or pedestrian incidents (6%).

The cost of injuries resulting from transport incidents were mostly due to motor vehicle events (66% of total costs, 72% direct costs, 56% indirect costs). Direct health care costs also arose from ATV or snowmobile injuries (9%), other non-specific transport incidents (7%), cycling (7%) and pedestrian injury (5%). Indirect costs accumulated due to other non-specific transport incidents (18%), ATV or snowmobile injuries (11%), cycling (9%) and pedestrian injury (6%).

Fall-related injuries by cause and associated costs

After falls of un-specified nature, falling on the same level was the leading cause of fall-related hospitalization (28%), emergency room visits (32%), and permanent partial disability (28%). Fall-related deaths also occurred due to falls on stairs (9%), on the same level (8%), from furniture (7%), and falls from ladders/scaffolding (1%).

Other non-specific types of falls accounted for 45% of hospitalizations for fall injuries, for 39% of related emergency room visits and for 37% of fall-related permanent partial disability. Hospitalization due to fall injuries also occurred due to falling on stairs (14%), from furniture (8%), from ladders or scaffolding (2%), from skates/skis/boards or blades (2%), and falling in playgrounds (1%). Additional reasons for fall-related emergency room visits were falls on stairs (12%), from skates/skis/boards or blades (6%), from furniture (6%), in playgrounds (2%) and from ladders or scaffolding (2%).

In 2010 the costs of injury due to falls totaled \$48.2 million of which more than a quarter was spent addressing injuries from falling on stairs (29%), or from other non-specified types of falls (36%). The leading causes of the \$40.9 million in direct health care costs were falls on stairs (30%) and other non-specified types of falls (36%) followed by falls on the same level (19%), falls from furniture (6%), falls from ladders or scaffolding (4%), falls from skates/skis/boards or blades (2%), diving (1%) and falls in playgrounds (1%). Most indirect costs were due to falls on the same level (24%) and other non-specified types of falls (33%). Nineteen percent of indirect costs arose from falls on stairs, 9% from falls from skates/skis/boards or blades, 5% from falls from furniture, 5% from falls in playgrounds, 3% from falls from ladders or scaffolding, and 2% from diving.

Intentional injuries by cause and associated costs

In PEI in 2010 all deaths due to intentional injury were due to suicide or self-harm; sixteen percent resulted from suicide or self-harm using poison, and 84% from suicide or self-harm by other means.

The leading cause of hospitalization due to intentional injury was suicide or self-harm using poison (75%), followed by injuries due to violence (13%) and finally injury resulting from suicide or self-harm by other methods (12%). Emergency room visits for intentional injuries were dominated by violence-related injuries

(74%) and then suicide or self-harm by poison (20%) or other means (6%). Two thirds of instances of permanent partial disability resulting from intentional injury were due to suicide or self-harm by poison, 24% were due to violence, and 9% resulted from suicide or self-harm by other means.

The majority (86%) of total spending on intentional injuries was in response to injuries due to suicide or self-harm. Costs associated with intentional injuries were divided between suicide or self-harm – other (49% of total costs, 9% of direct costs and 71% of indirect costs), suicide or self-harm due to poison (37% of total costs, 67% of direct costs and 21% of indirect costs), and violence (14% of total costs, 25% of direct costs and 8% of indirect costs).

In Quebec, the network of public health organizations has been consistently active within the area of injury prevention for the last 20 years. The injury prevention initiatives in the province are an expression of the *Loi sur la santé publique* (The Public Health Act) and the *Programme national de santé publique* (The Provincial Public Health Program). The goal is to reduce the morbidity and mortality derived from non-intentional injuries as well as from violence and suicide. The principal axes of intervention are the reduction of mortality rates in road and offroad users, the decrease in falls and injuries at home, the decrease of mortality rates in sports and recreation, the reduction of abuse, negligence, and violence towards youth, domestic and sexual violence, and the decrease of the rates of suicide and attempted suicide. There is also a strong emphasis on collaboration with sectors other than public health, as many of the solutions to the questions of injury prevention flow from ministries other than the Ministry of Health.

The initiatives that have been implemented so far have yielded successful results in decreasing the number of injuries and deaths on the road, at home, and in sports and recreation. Successful initiatives have been those that have targeted individual behaviour, produced safer environments, or enforced safety regulations. As it was mentioned above, success has been dependent on collaborative efforts among a wide range of related stakeholders.

To a group of leading organizations in the field of injury prevention in the province, the WHO has offered the designation of *Centre collaborateur OMS du Québec pour la promotion de la sécurité et la prévention des traumatismes* (Quebec WHO Collaborating Centre for Safety Promotion and Injury Prevention). The Centre operates under the supervision of *l'Institut national de santé publique du Québec* and works closely with the World Health Organization and the Pan American Health Organization. The Centre addresses the safety and injury prevention needs of the international community as well as those of the international network of French-speaking safety and injury prevention organizations.

Total cost of injury

In 2010 injuries cost the province of Quebec \$5.7 billion and 3,440 lives.

During 2010, over 53,000 individuals were hospitalized due to injury and approximately 800,000 emergency visits were injury-related. Injury also led to 12,600 cases of permanent partial disability, and 1,012 instances of permanent total disability.

Given the provincial population of 7,929,365, in 2010 43 deaths due to injury occurred for every 100,000 Quebecers. Injury also cost the province an estimated 1,212 years of potential life per 100,000 residents and came with a per capita price tag of \$715.

Table 74

Summary of findings, all injury, Quebec, 2010

Injury Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability	Total Economic Cost of Injury
3,440	53,432	809,190	12,600	1,012	\$5.7 billion

Direct and indirect costs

The direct health care costs of injury in Quebec in 2010 were \$3.6 billion (\$450 per capita) and made up 61% of the total spending (\$5.7 billion). Indirect costs were \$2.1 billion (\$265 per capita), or 39% of total costs.

Intentional and unintentional injury

The majority of injuries in Quebec in 2010 were unintentional. Sixty-three percent of injury deaths were unintentional and unintentional injuries were the reason for 90% of injury hospitalizations, 96% of emergency room visits, and 90% of injuries causing permanent partial or total disability. Intentional injuries led to 35% of

injury-related deaths, 9% of hospitalizations, 4% of emergency room visits, 9% cases of permanent partial disability, and 8% of cases of permanent total disability due to injury. Injuries of undetermined intent made up the remainder of the events.

Table 75

Injury by intent, Quebec, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Unintentional	2,180	48,082	774,146	11,371	929
Intentional	1,200	4,927	30,302	1,122	76
Undetermined Intent/Other	60	423	4,742	107	8
TOTAL	3,440	53,432	809,190	12,600	1,012

Table 76

Total, direct, and indirect costs by intent of injury, Quebec, 2010

Description	Total costs (\$ millions)	Direct costs (\$ millions)	Indirect costs (\$ millions)
Unintentional	\$4,753	\$3,263	\$1,489
Intentional	\$858	\$280	\$578
Undetermined Intent/Other	\$56	\$25	\$31
TOTAL	\$5,667	\$3,569	\$2,098

The costs of injury in Quebec in 2010 were also predominantly due to unintentional injuries. Of the total costs, 84% percent was spent on unintentional injury as were 91% of health care costs and 71% of indirect costs. Intentional injuries captured 15% of the overall spending, 8% of direct costs, and 28% of indirect costs. The remaining costs are attributed to injuries of undetermined intent.

Injury by cause

Table 77

Injury deaths, hospitalizations, and emergency room visits by cause, Quebec, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Transport Incidents	605	6,415	67,212	1,635	159
<i>Pedestrian</i>	91	670	4,120	150	17
<i>Pedal Cycle</i>	21	990	13,576	294	27
<i>Motor Vehicle</i>	256	3,265	37,706	809	82
<i>ATV, Snowmobile</i>	44	1,076	4,834	256	22
<i>Other</i>	193	414	6,976	127	11
Falls	445	31,500	242,250	5,443	469
<i>On the same level</i>	36	5,862	77,813	1,318	96
<i>From skates, skis, boards, blades</i>	<5	1,157	14,468	362	28
<i>From furniture</i>	30	1,903	14,414	257	22
<i>In playgrounds</i>	<5	366	5,216	125	8
<i>On stairs</i>	46	2,923	30,687	694	67
<i>From ladders/scaffolding</i>	8	873	5,512	231	20
<i>Diving</i>	<5	53	712	14	<5
<i>Other</i>	323	18,363	93,427	2,441	225
Drowning	75	33	287	6	<5
Fire\Burns	55	436	10,111	219	11
Unintentional Poisoning	220	1,222	12,615	292	20
Struck By\Against Sports Equipment	<5	158	15,360	118	9
Other Unintentional Injuries*	780	8,318	426,312	3,658	261
Suicide\Self-Harm - Poisoning	287	2,981	6,184	670	32
Suicide\Self-Harm - Other	833	820	1,820	131	12
Violence	80	1,126	22,297	321	32
Undetermined Intent\Other	60	423	4,742	107	8
TOTAL	3,440	53,432	809,190	12,600	1,012

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

In 2010, one in three (33%) of injury-related deaths in Quebec were due to suicide or self-harm. Other non-specific unintentional injuries accounted for 23% of injury deaths followed by transport incidents (18%) and falls (13%). Among the other causes of death were unintentional poisoning (6%), and drowning, fire or burns, violence, and injuries of undetermined intent which each resulted in 2% of deaths.

Injury-related hospitalizations occurred overwhelmingly due to falls (59%). Other causes of hospitalization were other (non-specific) unintentional injuries (16%), transport incidents (12%), suicide or self-harm (7%), unintentional poisoning (2%), violence (2%), fire or burns (1%) and injuries of undetermined intent (1%).

In Quebec in 2010 the main causes of visits to the emergency room for injury were falls (30%) and other (non-specific) unintentional injuries (53%). Less frequent causes for emergency room visits were transportation incidents (8%), violence (3%), unintentional poisoning (2%), being struck by or against sport equipment (2%), fire or burns (1%) and injuries of undetermined intent (1%).

Falls were the leading cause of permanent partial disability (43%) and permanent total disability (46%), followed by other non-specific unintentional injuries (29% of partial disability and 26% of total disability) and transportation incidents (13% of partial disability and 16% of full disability). The remaining causes of permanent partial and total disability were suicide and self-harm (6% and 4%, respectively), unintentional poisoning (2% and 2%, respectively), fire or burns (2% and 1%, respectively), being struck by or against sporting equipment (1% each), and injuries of undetermined intent (1% each). In 2010 in Quebec the most prevalent cause of injury-related death was suicide or self-harm taking 14.1 lives for every 100,000 people. The most costly cause of injury was falls that had a per capita cost of \$245.

Table 78

Mortality, crude death rates (per 100,000 pop.) and total cost per capita by cause, Quebec, 2010

Cause	Deaths	Death rate (per 100,000)	Total Costs	Costs per capita
Transport Incidents	605	7.6	\$917 million	\$116
Falls	445	5.6	\$1,940 million	\$245
Suicide/Self-Harm	1,120	14.1	\$691 million	\$87
Violence	80	1.0	\$167 million	\$21

Costs of injury by cause

The greatest injury-related costs in Quebec were incurred due to falls. Falls accounted for \$1.9 billion or 34% of the total \$5.7 billion spent on injury. Other unintentional injuries were responsible for a further 28% of total costs followed by transport incidents (16%), suicide and self-harm (12%), violence (3%), unintentional poisoning (3%), being struck by or against sports equipment (1%), drowning (1%), fire or burns (1%), and injuries with undetermined intent (1%).

Forty-three percent of the \$3.6 billion in injury-related health care costs were due to falls, while 31% were due to other unintentional injuries and 14% resulted from transport incidents. Direct costs also accumulated due to suicide and self-harm at 5%, violence at 2%, unintentional poisoning at 2%, fire or burns (1%), and injuries with undetermined intent (1%).

Nearly one in four (24%) dollars of indirect injury spending was directed to injuries related to suicide and self-harm. Remaining indirect costs of injury were due to transport incidents (21%), falls (19%), other unintentional injuries (22%), unintentional poisoning (5%), violence (4%), fire and burns (2%), injuries with undetermined intent (1%), drowning (1%) and being struck by or against sports equipment (1%).

Table 79

Total, direct, and indirect costs of injury by cause, Quebec, 2010

Description	Total costs (\$ millions)	Direct costs (\$ millions)	Indirect costs (\$ millions)
Transport Incidents	\$917	\$483	\$434
<i>Pedestrian</i>	\$96	\$51	\$45
<i>Pedal Cycle</i>	\$111	\$68	\$43
<i>Motor Vehicle</i>	\$473	\$271	\$202
<i>ATV, Snowmobile</i>	\$116	\$64	\$53
<i>Other</i>	\$121	\$30	\$92
Falls	\$1,940	\$1,540	\$400
<i>On the same level</i>	\$404	\$323	\$81
<i>From skates, skis, boards, blades</i>	\$126	\$77	\$49
<i>From furniture</i>	\$119	\$98	\$21
<i>In playgrounds</i>	\$49	\$29	\$19
<i>On stairs</i>	\$209	\$158	\$51
<i>From ladders/scaffolding</i>	\$61	\$46	\$15
<i>Diving</i>	\$8	\$5	\$3
<i>Other</i>	\$964	\$803	\$160
Drowning	\$31	\$2	\$29
Fire\Burns	\$77	\$38	\$40
Unintentional Poisoning	\$172	\$65	\$108
Struck By\Against Sports Equipment	\$40	\$22	\$18
Other Unintentional Injuries*	\$1,575	\$1,115	\$460
Suicide\Self-Harm - Poisoning	\$310	\$142	\$167
Suicide\Self-Harm - Other	\$382	\$49	\$332
Violence	\$167	\$89	\$78
Undetermined Intent \Other	\$56	\$25	\$31
TOTAL	\$5,667	\$3,569	\$2,098

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

Transport-related injuries and associated costs

The leading cause of transport incident related injury was motor vehicle events. Motor vehicle incidents accounted for 42% of transport incident deaths as well as 51% of related hospitalizations, 56% of emergency room visits, 49% of permanent partial disability and 52% of permanent total disability. Deaths due to transport incidents also resulted from other transport incidents (32%), pedestrian incidents (15%), ATV or snowmobile incidents (7%), and cycling incidents (4%). Seventeen percent of hospitalizations due to transport-related injuries were due to ATV or snowmobile incidents, while 15% were due to cycling events, 10% resulted from pedestrian incidents and 6% were due to other transportation incidents. Emergency room visits were — after motor vehicle incidents — due to cycling (20%), other transport incidents (10%), ATV or snowmobile events (7%) and pedestrian incidents (6%).

Motor vehicle incidents were also the main driver of \$916 million in costs associated with transport injuries. Half (52%) of total costs, 56% of direct health care expenses and 47% of indirect spending on transportation-related injuries was due to motor vehicle events. Costs also arose due to pedestrian incidents (10% of total, direct and indirect), cycling incidents (12% of total, 14% of direct, 10% of indirect), ATV or snowmobile incidents (13% of total, 13% of direct, 12% of indirect), and other transport incidents (13% of total, 6% of direct, 21% of indirect).

Direct costs also arose from cycling incidents (14%), ATV or snowmobile incidents (13%), pedestrian injuries (10%) and other transportation incidents (6%). Twenty-one percent of indirect costs resulted from other non-specified transportation events, while 12% resulted from ATV / snowmobile injuries, and pedestrian and cycling events each accounted for 10% of spending.

Fall-related injuries by cause and associated costs

Almost three quarters (73%) of deaths due to fall injuries resulted from non-specific (other) fall events. Non-specific falls were also responsible for 58% of hospitalizations and 39% of visits to the emergency rooms visits, 45% of permanent partial disabilities and 48% of permanent total disabilities due to fall injuries.

Other causes of fall-related deaths were falls on stairs (10%), from the same level (8%), from furniture (7%), and falls from ladders or scaffolding (2%). Nine percent of hospitalizations due to fall injuries were precipitated by falls on stairs

while falls on the same level were responsible for 8%, falls from furniture for 7%, falls from skates/skis/boards/blades for 4%, falls from ladders or scaffolding for 3%, and falls in playgrounds for 1%.

Total costs of injuries due to falls were \$1.9 billion dollars in 2010 of which \$1.5 billion were direct health care costs and \$0.4 billion were indirect costs. After other non-specific causes, falls on the same level were the greatest driver of costs accounting for 21% of overall fall-related spending, 21% of direct health care costs and 20% of indirect spending. Other non-specified fall causes resulted in 50% of overall spending, 52% of direct costs and 40% of indirect spending.

Direct costs also arose from falls on stairs (10%), falls from furniture (6%), falls from skates/skis/boards/blades (5%), falls from ladders or scaffolding (3%), and falls in playgrounds (2%). Remaining indirect costs were due to falls on stairs (13%), falls from skates/skis/boards/blades (12%), falls from furniture (5%), falls on playgrounds (5%), falls from ladders or scaffolding (4%), and diving (1%).

Intentional injuries by cause and associated costs

In 2010 suicide and self-harm accounted for 93% of unintentional injury death in Quebec. Suicide/self-harm by method other than poisoning was the leading cause of death (69%), followed by suicide/self-harm due to poisoning (24%), and death due to violence (7%).

Suicide or self-harm by means other than poisoning was also the predominant reason for hospitalization for intentional injuries accounting for 61% of all occurrences. Violence led to 23% of these hospitalizations followed by poison-related suicide or self-harm (17%). Emergency room visits due to intentional injuries were dominated by injury due to violence (74%) while suicide/self-harm by poisoning resulted in 20% of the visits and suicide/self-harm by other means the remaining 6%. In 2010, suicide or self-harm by poisoning were responsible for 60% of permanent partial disability and 42% of permanent total disability, violence accounted for 29% of partial and 42% of total cases of disability and suicide or self-harm – other made up the remaining 12% of partial disability, and 16% of total disability.

Eighty percent of the cost associated with intentional injury were due to suicide or self-harm. Suicide or self-harm by means other than poisoning accounted for 44% of these costs, suicide or self-harm - poison for 36%, and violence for the

remainder. Direct costs were dominated by suicide/self-harm by poisoning (51%) followed by violence (32%) and suicide or self-harm by means other than poisoning (18%). Conversely, the majority (58%) of indirect costs associated with intentional injury were the result of suicide or self-harm by means other than poisoning. Indirect costs were additionally due to suicide or self-harm by poisoning (29%) and injuries due to violence (14%).

SASKATCHEWAN

In Saskatchewan, while there is no adopted injury prevention strategy for the province, several organizations and agencies are committed to the work necessary to prevent injuries. Various agencies work on specific injury areas.

The Acquired Brain Injury (ABI) Partnership Project is a partnership between Saskatchewan Government Insurance (SGI) and the Saskatchewan Ministry of Health and is recognized around the world for its innovation. Along with providing services and support for individuals with ABI and their families, the ABI Partnership Project funds four health region-based positions throughout the province that provide support and resources to communities in their efforts to prevent injury.

Since 1997, the ABI Partnership Project and Saskatchewan Government Insurance have been involved in a joint program to provide community grants for traffic safety and other injury prevention programs. The goal is to enable community groups to establish, enhance, and deliver programs that address safety issues in their communities. Since its inception, the grant program has provided funding to 1,900 applicants for a total of almost two million dollars. The ABI Partnership Project also provides funding to the Saskatchewan Prevention Institute for a dedicated full-time staff person to work in the area of child injury prevention. The Prevention Institute is also funded by SGI for a full-time staff person who provides child passenger safety technician training and expertise in the province.

Saskatchewan Government Insurance (SGI), a crown corporation, is the leading provincial agency in road safety and is dedicated to education, engineering, and enforcement. SGI works very closely with and provides funding to provincial law enforcement agencies to focus enforcement efforts and organize multi-agency projects. They also work with municipal and provincial highway engineers to collaborate on infrastructure safety improvements. SGI funds traffic safety positions for four of Saskatchewan's tribal councils. The Traffic Safety Promotion team attends community events and schools to present on different road safety topics.

Saskatchewan experiences high numbers of fatalities related to motor vehicle crashes. To address this, the provincial government set up an all-party committee in 2013 to do extensive consultation around the province and create a list of recommendations. The Committee established 26 recommendations adopted by the government. These recommendations address stronger legislation, increased enforcement and better public awareness and education as well as collaboration between crown corporations and government ministries. The traffic safety issues targeted were occupant restraints, impaired driving (alcohol and drugs), speed, and distracted driving.

The Saskatchewan Ministry of Labour Relations and Workplace Safety (LRWS) encourages healthy and safe workplaces by establishing, promoting and enforcing employment and occupational health and safety standards. In 2008, the Ministry of Labour Relations and Workplace Safety and the Workers Compensation Board launched WorkSafe Saskatchewan, with the slogan Mission: Zero, in an effort to draw attention to and reduce the numbers of workplace injuries. Safe Saskatchewan is a non-profit organization led by a consortium of public, private, cooperative and not-for-profit sector partners. It works to expand the Mission: Zero message beyond industry. There are a number of industry-specific safety organizations that operate in the province.

There are several other provincial organizations, (such as the Saskatchewan Safety Council, Red Cross, St. John Ambulance, Life Saving Society), community-based organizations, located in health regions, and service provision agencies (ambulance, fire, police) that focus on injury prevention. Academic institutions, such as the Canadian Centre for Health and Safety in Agriculture and the Sports Medicine and Science Council of Saskatchewan, conduct research and provide services and training to the province.

In 2008, the Saskatchewan Comprehensive Injury Surveillance Report, 1995-2005 was produced through the joint efforts of several government ministries, agencies and stakeholders to provide government agencies, regional health authorities, other stakeholder organizations and communities with information for evidence-based planning and evaluation of injury prevention programs that impact on the population of Saskatchewan. The report contains descriptive statistical information on various aspects of injury occurrences in the province. The data for preparation of this report were drawn from a variety of sources including Canadian Community Health

Survey data and administrative databases housed at various Government of Saskatchewan ministries, Saskatchewan Government Insurance and the Saskatchewan Workers' Compensation Board.

Total cost of injury

In 2010 injury cost residents of Saskatchewan \$1.1 billion and led to 690 deaths.

In the same year injuries left 2,292 permanently partially or totally disable, led to 10,844 hospitalizations and prompted 110,312 emergency room visits.

With a 2010 population of 1,051,425 the death rate due to injury in 2010 was 66, approximately 9,953 potential years of life were lost per 100,000 people and injuries cost each resident \$1,059.

Table 80

Summary of findings, all injury, Saskatchewan, 2010

Injury Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability	Total Economic Cost of Injury
690	10,844	110,312	2,292	186	\$1.1 billion

Direct and indirect costs

The total cost of injuries in 2010 was \$1.1 billion including \$605 million (54% or \$576 per capita) in direct health care costs and \$508 million (46% or \$483 per capita) in indirect expenditures.

Intentional and unintentional injury

In 2010, the majority of injuries in Saskatchewan resulted from unintentional events. Three quarters (76%) of deaths, 86% of hospitalizations, 96% of emergency room visits and 86% of cases of both partial and total permanent

disabilities arising from injury were unintentional in nature. Intentional events were responsible for 22% of the injury deaths, as well as 12% of hospitalizations, 4% of emergency room visits and 12% of permanent partial and total disability incidents. The remainder of events were of undetermined intent.

Table 81

Injury by intent, Saskatchewan, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Unintentional	525	9,322	105,584	1,980	162
Intentional	155	1,339	4,102	272	21
Undetermined Intent/Other	10	183	627	40	2
TOTAL	690	10,844	110,312	2,292	186

Table 82

Total, direct, and indirect costs by intent of injury, Saskatchewan, 2010

Description	Total costs (\$ millions)	Direct costs (\$ millions)	Indirect costs (\$ millions)
Unintentional	\$918	\$526	\$391
Intentional	\$177	\$70	\$107
Undetermined Intent/Other	\$18	\$9	\$9
TOTAL	\$1,113	\$605	\$508

The cost of injury in Saskatchewan was also mostly due to unintentional injury. Unintentional injuries accounted for 82% of the overall \$1.1 billion spent on injuries including 87% of direct costs and 77% of indirect costs. Just 12% of direct health care costs and 21% of indirect injury-related costs were due to intentional

injuries. Injuries of undetermined intent cost the province a total of \$18 million, or 2% of total costs.

Injury by cause

The two leading causes of injury-related death in Saskatchewan in 2010 were falls (25%) and transport incidents (23%). Other causes of death due included suicide and self-harm (19%), other unintentional injuries (12%), unintentional poisoning (11%), violence (4%), drowning (3%), fires or burns (1%), and other injuries of undetermined intent (1%).

In Saskatchewan in 2010 falls were the leading cause of hospitalizations resulting from injury accounting for 52% of stays. An additional 13% of injury hospitalizations resulted from transport incidents, while 15% were due to other non-specific unintentional injuries, 6% resulted from suicide or self-harm and 6% followed violence. Other reasons for hospitalization were unintentional poisoning (4%), injuries of undetermined intent (2%) and fire or burns (1%).

Slightly less than one-third of injury-related visits to the emergency room in 2010 were due to falls (30%) or other unintentional injuries (52%). Less common reasons for emergency room visits were transport incidents (8%), violence (3%), being struck by or against sports equipment (2%), unintentional poisoning (2%), fires/burns (1%), suicide or self-harm (1%), and injuries with undetermined intent (1%).

The most common reason for permanent partial and permanent total disability was falls (40% and 42% respectively). Injury-related partial disability also occurred as a result of other unintentional injuries (26%), transport incidents (14%), suicide or self-harm (6%), violence (6%), unintentional poisoning (4%) as well as fire/ burns or injuries of undetermined intent (each 2%), and being struck by or against sports equipment (1%). Instances of permanent total disability also resulted from other unintentional injuries (23%), transport incidents (18%), violence (8%), suicide or self-harm (4%), unintentional poisoning (3%), fire/burns (1%), and being struck by/ against sport equipment (1%).

Table 83

Injury deaths, hospitalizations, and emergency room visits by cause, Saskatchewan, 2010

Description	Deaths	Hospitalizations	Emergency Room Visits	Permanent Partial Disability	Permanent Total Disability
Transport Incidents	160	1,457	8,978	310	30
<i>Pedestrian</i>	21	154	550	32	<5
<i>Pedal Cycle</i>	5	91	1,905	32	<5
<i>Motor Vehicle</i>	71	751	4,935	143	15
<i>ATV, Snowmobile</i>	11	263	663	59	5
<i>Other</i>	53	198	925	45	<5
Falls	175	4,353	33,469	799	69
<i>On the same level</i>	14	536	10,470	185	13
<i>From skates, skis, boards, blades</i>	<5	102	2,095	37	<5
<i>From furniture</i>	12	366	2,146	44	<5
<i>In playgrounds</i>	<5	125	833	36	<5
<i>On stairs</i>	15	508	4,077	119	12
<i>From ladders/scaffolding</i>	<5	158	690	37	<5
<i>Diving</i>	<5	<5	102	<5	<5
<i>Other</i>	130	2,555	13,055	340	31
Drowning	20	14	40	<5	<5
Fire\Burns	10	128	1,373	40	<5
Unintentional Poisoning	75	446	1,708	86	5
Struck By\Against Sports Equipment	<5	29	2,204	18	<5
Other Unintentional Injuries*	85	1,645	57,812	586	43
Suicide\Self-Harm - Poisoning	29	587	813	127	5
Suicide\Self-Harm - Other	101	99	247	16	<5
Violence	25	653	3,042	130	15
Undetermined Intent\Other	10	183	627	40	<5
TOTAL	690	10,844	110,312	2,292	186

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

Table 84

Mortality, crude death rates (per 100,000 pop.) and total cost per capita by cause, Saskatchewan, 2010

Cause	Deaths	Death rate (per 100,000)	Total Costs	Costs per capita
Transport Incidents	160	15.2	\$243 million	\$232
Falls	175	16.6	\$318 million	\$303
Suicide/Self-Harm	130	12.4	\$107 million	\$102
Violence	25	2.4	\$70 million	\$67

In 2010 falls resulted in the highest injury-related death rate in Saskatchewan: 16.6 deaths per 100,000 population. Falls also generated the highest per capita injury costs with a price tag of \$303 per resident.

Costs of injury by cause

In Saskatchewan in 2010 injury-related costs totalled \$1.1 billion. More than a quarter of total costs arose from fall injuries (29%) and injuries due to transport incidents (22%). Total costs also accumulated due to other unintentional injuries (23%), suicide or self-harm (10%), violence (6%), unintentional poisoning (6%), fire and burns (2%), injuries of undetermined intent (2%), and being struck by or against sports equipment (1%).

Direct health care costs made up just over half of total costs and were most often due to falls (38%) and other unintentional injuries (26%). Seventeen percent of direct injury costs were the result of transport incidents, while injuries due to violence contributed 6% of costs, suicide and self-harm 6%, unintentional poisoning 3%, injuries with undetermined intent 1%, fire or burns 1% and being struck by or against sports equipment a final 1%.

Transport incidents were responsible for 28% of indirect costs, falls for 17% and other unintentional injuries for an additional 20%. Less prominent reasons for indirect costs included suicide or self-harm (14%), unintentional poisoning (8%), violence (7%), injuries with undetermined intent (2%), drowning (2%), fire or burns (2%) and being struck by / against sports equipment (1%).

Table 85

Total, direct, and indirect costs of injury by cause, Saskatchewan, 2010

Description	Total costs (\$ millions)	Direct costs (\$ millions)	Indirect costs (\$ millions)
Transport Incidents	\$244	\$104	\$140
<i>Pedestrian</i>	\$29	\$14	\$15
<i>Pedal Cycle</i>	\$14	\$7	\$7
<i>Motor Vehicle</i>	\$122	\$56	\$65
<i>ATV, Snowmobile</i>	\$31	\$15	\$16
<i>Other</i>	\$48	\$12	\$36
Falls	\$319	\$232	\$86
<i>On the same level</i>	\$88	\$68	\$20
<i>From skates, skis, boards, blades</i>	\$15	\$8	\$8
<i>From furniture</i>	\$19	\$14	\$5
<i>In playgrounds</i>	\$16	\$9	\$7
<i>On stairs</i>	\$36	\$25	\$10
<i>From ladders/scaffolding</i>	\$11	\$7	\$4
<i>Diving</i>	\$1	\$0	\$0
<i>Other</i>	\$132	\$100	\$33
Drowning	\$11	\$1	\$10
Fire\Burns	\$17	\$7	\$10
Unintentional Poisoning	\$62	\$21	\$41
Struck By\Against Sports Equipment	\$7	\$3	\$4
Other Unintentional Injuries*	\$259	\$158	\$101
Suicide\Self-Harm - Poisoning	\$48	\$29	\$19
Suicide\Self-Harm - Other	\$59	\$5	\$54
Violence	\$70	\$36	\$34
Undetermined Intent \Other	\$18	\$9	\$9
TOTAL	\$1,113	\$605	\$508

* See Appendix 3 for a detailed breakdown of causes of injury in this category.

Transport-related injuries and associated costs

In Saskatchewan in 2010 transport-related injuries occurred most often due to motor vehicle incidents. Forty-four percent of transport-related injury deaths were due to motor vehicle incidents as were 52% of hospitalizations, 55% of emergency room visits, 49% of partial disability and 53% of total disability arising from injury.

Injury deaths due to transport incidents also occurred as a result of other non-specific transport causes (33%), pedestrian incidents (13%), ATV or snowmobile incidents (7%) and cycling events (3%). After motor vehicle events transport injury hospitalizations resulted from ATV or snowmobile incidents (18%), other non-specified transport incidents (14%), pedestrian (11%) and cycling incidents (6%). Twenty-one percent of emergency room visits for transport-related injuries were due to cycling incidents, 10% were due to non-specific transit incidents, and ATV/snowmobile and pedestrian incidents resulted in 7% and 6% of visits, respectively.

Transport-related injuries cost Saskatchewan \$244 million in 2010. Motor vehicle incidents were responsible for 50% of total costs, 54% of health care costs and 47% of indirect costs. Other non-specific transit incidents contributed 20% of total costs, 11% of direct costs and 26% of indirect costs while pedestrian incidents were responsible for 12% of total, 13% of direct and 11% of indirect costs. Costs also arose from ATV and snowmobile incidents (13% of total, 15% of direct, 11% of indirect) and cycling incidents (6% total, 7% of direct and 5% of indirect).

Fall-related injuries and associated costs

In 2010, nearly three quarters (74%) of deaths due to fall injuries resulted from non-specific (other) fall events. Non-specific falls were also responsible for 46% of hospitalizations and 39% of visits to the emergency rooms visits, 37% of permanent partial disabilities and 41% of permanent total disabilities due to fall injuries.

Other causes of fall-related deaths were falls on stairs (9%), from the same level (8%), from furniture (7%), from ladders/scaffolding (2%) and from sports equipment (1%). Falls-related hospitalization resulted from falling on the same level (32%), on stairs (9%), from furniture (7%), from ladders or scaffolding (3%), in playgrounds (2%) and from skates/skis/boards/blades (2%). Falling on the

same level led to 31% of all fall-related emergency room visits while falls on stairs were responsible for 12%, falls from skates / skis / boards / blades 6%, falls from furniture 6%, falls in playgrounds 2% and falls from ladders or scaffolding a final 2%.

Total costs of injuries due to falls were \$318 million dollars in 2010. After non-specific fall causes which accounted for 42% of total costs, falls from the same level made up the largest segment of total costs, at 28%. Total costs also accumulated due to falls on stairs (11%), from furniture (6%), from skates / skis / boards / blades (5%), in playgrounds (5%), and from ladders or scaffolding (4%). Twenty-nine percent of direct health care costs resulted from falling on the same level and other non-specific fall events contributed 43% of these costs. Further health care costs resulted from falls on stairs (11%), from furniture (6%), in playgrounds (4%), from skates / skis / boards / blades (3%), and from ladders and scaffolding (3%). Indirect costs were most often the result of falls from the same level (23%) and other non-specific fall events (38%) but also resulted from falls on stairs (12%), falls from skates / skis / boards / blades (9%), falls in playgrounds (8%), falls from furniture (5%), and falls from ladders or scaffolding (5%).

Intentional injuries by cause and associated costs

Eighty-four percent of deaths due to intentional injuries were the result of suicide and self-harm, as were 51% of hospitalizations, 26% of emergency room visits, 53% of permanent partial disability due 32% of permanent total disability due to intentional injuries.

Deaths due to intentional injury occurred most often due to suicide or self-harm by means other than poisoning (65%), while suicide or self-harm poison accounted for 19% of deaths and violence for the remaining 16%.

Hospitalizations and emergency room visits due to intentional injuries occurred most often due to violence (49% and 74%, respectively). Other reasons for hospitalizations and emergency room visits were suicide or self-harm due to poisoning (44% of hospitalizations, 20% emergency room visits), and suicide and self-harm by means other than poison (7% of hospitalizations, 6% emergency room visits). Permanent partial and total disability due to intentional injury resulted most often due to violence, 48% and 68% of cases respectively. Suicide or self-harm – poison accounted for 47% of partial and 25% of total disability while

suicide or self-harm by means other than poisoning was the cause of 6% of partial and 7% of total disability cases.

The total cost of intentional injuries in Saskatchewan in 2010 was \$177 million of which 60% was the result of suicide and self-harm (27% poison related, 33% other means), and 40% resulted from violence. Just over half (52%) of direct costs related to intentional injuries was spent on injuries resulting from violence, while 41% were spent on suicide or self-harm by means poisoning, and 7% on suicide or self-harm by means other than poisoning. Indirect costs were due 50% to suicide or self-harm by other means, 32% to violence and 18% suicide or self-harm by poison.

APPENDIX 1: Methodology

Economic approach

The analyses underlying the current report were conducted using an incidence costing, human capital approach. That is, the population of Canadian residents injured in 2010 was costed over the lifetime of injured individuals. The costs, both direct and indirect, were discounted to a present value in 2010 at 3% per annum. Indirect costs, in accordance with the human capital methodology, included only foregone earnings calculated as average earnings, adjusted by the participation rate and unemployment rate, over the relevant period within the working life of an individual from ages 15 to 64 years inclusive. A real wage growth rate of 1% per year was assumed.

The perspective for this report is societal. The viewpoint for cost-of-illness studies has a bearing on the schedule of costs to be included. For example, from a societal perspective, transfer payments such as Canada Pension Plan (CPP), disability, and social assistance are not considered costs since they are a reallocation of resources and the net effect of the transfer to society is zero. Others argue that personal transfers should be included as a cost since, if illness did not occur, then transfer payments could be used for other purposes, such as reducing the deficit. It should be noted that if this study were conducted from the perspective of the federal government, then transfer payments would be considered a cost. Similarly, other perspectives can be adopted such as that of the patient, the insurer, or even the trauma surgeon, each of which will impact on what are considered costs.

Incidence costing

Cost-of-illness studies generally follow one of two approaches—incidence costing or prevalence costing. For conditions which are short-run in nature or which are steady-state chronic health problems, both approaches produce the same results. For policy makers wanting to control current health care expenditures, the prevalence approach is highly appropriate. However, if policy makers want to assess the benefits of preventing or reducing/ameliorating the

incidence of specific health problems, then the incidence approach is more useful and accurate. The prevalence approach assigns the costs of the major illness “to the years in which they are borne or are directly associated.”¹³ The major limitation with this approach is that the full episode of illness, which may span multiple years or a full lifespan, is not captured. For example, longitudinal assessments of the burden of illness associated with hip fractures have found the burden to extend well beyond the initial hospitalization and to vary greatly depending on the disposition of individual cases.

The incidence approach involves “estimating the lifetime direct and indirect costs of the new cases of a condition or group of conditions which have their onset (incidence) in a given year.”¹⁴ Unlike the former method, this approach emphasizes that “it is necessary to estimate not only the direct costs of these new cases accruing in the first year, but also the present value of direct costs (the stream of costs associated with the given health problem) which may accrue in the future, until the patient dies.”¹⁵ The stream of future costs is discounted to a present value. Hence, with this approach, the cost of an injury occurrence (i.e., full episode) can be compared to the cost associated with the prevention of that injury. Under the incidence approach, prevention costs are actually investments, (e.g., \$1 invested in bicycle helmets averts \$29 in injury costs) and unmanaged injury risks are incremental costs. For example, motorcyclists who do not wear helmets increase the burden of injury on society, while wearing a helmet reduces hospitalization costs by more than \$6,000 per patient.

Human capital

Cost-of-illness studies distinguish and measure both direct costs (the value of resources used to treat the persons incurring the illness) and indirect costs (the value lost to society as a result of the illness in question). Direct costs are composed of all the goods and services used for the diagnosis, treatment, continuing care, rehabilitation, and terminal care of people experiencing a major illness or impairment, usually categorized according to major diagnosis or

¹³ Hartunian NS, Smart CN, Thompson MS. The incidence and economic costs of cancer, motor vehicle injuries, coronary heart disease, and stroke: A comparative analysis. *American Journal of Public Health* 1980; 70:1249-1260, at 1250.

¹⁴ Scitovsky AA. Estimating the direct costs of illness. *Millbank Memorial Fund Quarterly/Health and Society* 1982;60:463-491, at 474.

¹⁵ IBID

diagnosis groupings, such as case mix groupings related to cancer or heart problems. These cost categories include expenditures for hospitalization, outpatient care, nursing home care, home care, services of physicians and other health professionals, pharmaceuticals, rehabilitation, as well as the costs of prostheses, appliances, eyeglasses, hearing aids, and speech devices necessary to help the patient overcome the impairments associated with the major illness. Also included are the administrative costs of third-party payers (public and private) who fund such expenses.

Indirect costs represent the losses due to goods and services that are not produced as a result of the impairment. The value of time lost from work and homemaking due to morbidity, disability, and premature mortality is measured by earnings data and the market value of unperformed homemaking services.

Under the human capital methodology, indirect costs are societal productivity losses, which account for the injured individual's inability to perform his or her major activities. Under this methodology, indirect costs are generally captured through measuring foregone/lost income. The human capital method is the predominant approach used to derive indirect costs in the economic cost of illness/ injury literature. It has been suggested that this method produces a conservative or lower bound estimate of indirect costs given that costs are assigned to people 15 to 64 years of age inclusive. As well, costs are not assigned to those who leave the workforce to provide informal care to injured or ill family members. Finally, like the vast majority of studies employing the human capital method, we do not use a shadow pricing approach to value the lost productivity of those outside the workforce.

As well as these economic costs, there are certain intangible costs associated with injuries, such as pain and suffering, economic dependence, and social isolation. While these costs are difficult to quantify in economic terms, they are costs nonetheless and should at least be identified. Too many Canadians have their lives and those of their families irrevocably changed forever as a result of injury. This report did not attempt to quantify these costs and, hence, the indirect costs cited can be considered conservative.

The Electronic Resource Allocation Tool (ERAT)

It is important to capture the lifetime costs associated with an injury. For example, the available cost data associated with a spinal cord injury resulting in permanent paralysis are generally limited to hospital costs and the lifetime costs are essentially unknown. In order to capture the full episodic costs associated with the various types of injury, this report employed the approach initially developed by SMARTRISK for The Economic Burden of Unintentional Injury in Canada, and utilized in its subsequent report, The Economic Burden of Unintentional Injury in Ontario.

An Electronic Resource Allocation Tool (ERAT) was developed, providing a classification and costing framework based on existing provincial injury data and data available from the injury costing literature. In essence, the ERAT combines existing data with variables from the literature in order to model full episodic costs for unintentional and intentional injuries. The ERAT is a flexible tool that can be updated as new data become available and according to changes in population, injury incidence, and treatment patterns and costs.

The ERAT consists of a series of spreadsheets designed to calculate the incidence costs of injury. The tool was created to fulfill two major objectives:

- ❖ To supply modelling and estimation techniques required to fill critical gaps in the available data;
- ❖ To serve as a resource tool that can be used by researchers and public health officials at the provincial and local level to support resource allocation, policy development, and decision-making.

Modelling and estimation techniques

Detailed injury data are available for deaths, hospitalized cases, and persons who are treated in the emergency /outpatient department. Injuries that are not treated in a hospital are not captured or reported through a central body. Furthermore, there is a large data gap for hospitalized injuries that require ongoing care outside a hospital setting for either a short period or for a longer term of permanent disability.

Overall, the data gaps point towards two key analytical challenges:

- ❖ Estimating the type, number, and cost of non-hospitalized injuries, and
- ❖ Building the full episode of care for hospitalized injuries resulting in short-term and long-term disabilities.

The analytic strategy used to address these methodological problems involved an extensive search through scientific literature to find numbers and ratios that could be used to fill the data gaps. Having obtained these, the full episode of injury has been evaluated to include estimates of permanent disability and non-hospitalized cases, as well as population size and mix. Once adjusted, the tool calculates total costs, as well as costs for each injury type. The resource tool has been designed to allow for constant updating of current injury and cost information.

Data sources and definitions

In order to document the direct and indirect costs of injury from an incidence costing perspective, it was essential to have information on the complete episode associated with each of the injuries. This must cover the range of cases from those dealt with completely in a hospital setting to those which encompass institutional, ambulatory, rehabilitation, home care, and other related costs over long periods of recovery or, in extreme cases, during the remaining period of an individual's life expectancy.

The following sources of data were used in this report:

- ❖ The Public Health Agency holdings of the Hospital Morbidity Database (HMDB) from the Canadian Institute for Health Information (CIHI) contained the required data on hospitalizations related to injuries.
- ❖ Resource Intensity Weights (RIWs) from CIHI were used to attach average costs to the hospital episodes derived from the DAD.
- ❖ National Ambulatory Care Reporting System (NACRS) data for Ontario contained data that were used to develop non-hospitalized injury statistics for all provinces..

- ❖ Statistics Canada Vital Statistics Death Database accessed from the Canadian Socio-Economic Information Management System (CANSIM) was used to estimate lost productivity due to premature deaths.
- ❖ Unemployment rates, labour force participation rates, and average wage rates obtained from Statistics Canada's CANSIM database were used to estimate the monetary value of the productivity losses resulting from morbidity and premature death.
- ❖ Population data obtained from Statistics Canada's CANSIM database were used in the calculation of direct and indirect costs related to injuries.

While the above hospital and death data are necessary, they are not nearly sufficient to allow for a comprehensive documentation of all costs associated with injuries in Canada. While the National Ambulatory Care Reporting System (NACRS) at CIHI currently catalogues emergency room visits in Ontario, there is nothing to indicate the nature and extent of all the out-of-hospital treatment resulting from injuries. In order to get around these rather significant data limitations, proxy measures that would provide the complete picture had to be developed.

An extensive search of the literature revealed a major study in the United States. Miller's Databook on Nonfatal Injury: Incidence, Costs and Consequences proved to be instrumental in helping to fill the large gaps by providing missing data and coefficients. This groundbreaking work allowed for a more complete estimate of the economic cost of unintentional injury in Canada by providing a mechanism to calculate:

- ❖ Direct morbidity costs for out-of-hospital treatment related to injuries, using ratios of episodes and related costs of non-hospitalized to hospitalized cases from the United States; and
- ❖ Incidence of both permanent partial and total disability using coefficients that relate these episodes and related costs (both direct and indirect) to the incidence of hospitalized and non-hospitalized cases from the United States.

Injury death data

Statistics Canada vital statistics on deaths (CVS:D) were accessed using CANSIM for the 2010 calendar year. The external cause of injury was classified according

to the International Classification of Diseases, 10th revision (ICD-10). An algorithm developed by SMARTRISK expanded these data to include information on age and gender at the provincial level. Mortality costs were restricted to indirect costs related to earnings lost due to death, over what would have been the remaining working life of individuals had they lived.

Hospitalized injuries

The Public Health Agency of Canada provided the acute hospital separation data analysis from their holdings of the Canadian Institute for Health Information (CIHI) Hospital Morbidity Database (HMDB). The case-level data included Resource Intensity Weights (RIWs), length of hospital Stay (LOS), ICD-10 external cause of injury codes, ICD-10 nature of injury codes (N-code), province of residence, age, and sex for the 2010/11 fiscal year.

A small percentage of people died in hospital. These were included as both a hospitalization and a death as these cases generated both direct hospitalization costs and indirect mortality costs. However, this means that total injury cases cannot simply be obtained as the sum of deaths, hospitalizations, and non-hospitalized cases.

Hospital costs were estimated using the average inpatient cost per weighted case. Medical and rehabilitation costs were calculated using provincial hospital costs, in conjunction with the distribution of ICD-10 N-codes by ICD-10 external cause of injury codes derived from CIHI hospital data, and coefficients derived from Table 5.6 of Miller's Databook. Indirect costs were limited to lost earnings during hospitalization.

Emergency room visits

Injuries resulting in an emergency room visit were determined directly from the Ontario NACRS data and extended to all provinces by using Ontario incidence-to-population ratios on respective provincial populations.

In cases where treatment was initiated in an emergency department, with a subsequent hospital admission, the case would be included in both non-hospitalized and hospitalized categories in order to capture treatment costs in both settings.

Medical and rehabilitation costs were calculated using provincial hospital costs, in conjunction with the distribution of ICD-10 N-codes by ICD-10 external cause of injury codes derived from CIHI hospital data, and coefficients derived from Tables 5.6 and 5.9 of Miller's Databook.

Disability

Permanent partial and permanent total disability from injury were estimated using both hospitalized and non-hospitalized injury in conjunction with the distribution of ICD-10 N-codes by ICD-10 external cause of injury codes derived from CIHI hospital data, and coefficients derived from Tables 4.12 and 4.15 of Miller's Databook.

Long-term medical costs were calculated using hospital costs in conjunction with coefficients derived from Tables 3.1 and 3.2 of the Databook, while the indirect cost associated with income loss was assumed to be 100% for total permanent disability, and 17% for partial permanent disability.

Population denominators

Estimates of populations by age, gender, and province for 2010 were obtained from Statistics Canada.

Caveats and data limitations

Provincial hospitalization data has been classified using the 10th Edition (ICD-10 CA) since 2002/03, while provincial mortality data has been so classified since 2000. However, the coefficients presented in Miller's Databook on Nonfatal Injury: Incidence, Costs and Consequences are based upon injury data classified using International Classification of Disease, 9th Edition (ICD-9) groupings. As a result, the tables used from this publication required translation to ICD-10 code groupings. This was not a major task, but did involve a few minor judgment calls.

The coefficients derived from Miller's Databook are based upon non-fatal injuries in the United States in the mid-1990s. This report assumes that these coefficients are similar to those that would be obtained from a Canadian study.

Costs will also vary according to the degree of disability and, hence, the disability coefficients from the United States related to two disability categories (partial or total) were applied to the Canadian population. Again, it was assumed that the American and Canadian situations were comparable.

The information in this Report can be considered a conservative estimate given data on doctor visits, clinic visits and toll on individuals are not accounted for. There may be variations in data between this report and provincial reports. This is due to the date when data are collected.

CONCLUSION

This Report has quantified the staggering cost of injury for Canadian children, seniors, families, our health care system, and to Canadian society. Preventable injury is the leading cause of death for Canadians aged one to 44, and claims the lives of more children in Canada than all other causes.

The costs continue to rise year after year. The loss of 15,866 Canadian lives and \$26.8 billion is both heartbreaking, and unsustainable.

In the period 2004-2010, Canada's age standardized death rate fell to 34.19. However, with the dramatic aging of Canada's population, the age-standardized death rate is expected to remain basically flat over the next 20 years. By continuing on the current trajectory, forecasts show that by 2035 injuries will kill 26,390 Canadians, and cost \$75 billion.

The good news is that the vast majority of the injuries described in this Report are both predictable and preventable. We know when they happen and under what conditions. We know who is at risk and who is not, and we increasingly know what works and what does not with respect to prevention.

These injuries can be prevented, lives can be saved, and a significant drain on our public resources can be avoided.

And as our capacity to monitor, report on, and coordinate effective action to prevent injury grows, our rationale for inaction diminishes. We encourage consideration of the costs of current inaction against the backdrop of Canada's aging population, shrinking labour force, and over burdened health care system.

The clock is ticking. Effective action to prevent injury can help to alleviate the human and economic cost we all currently bear. It is time to take comprehensive, effective action that will prevent injuries and save lives.

APPENDIX 2: ICD-10 Code Classifications by Detailed Cause

Unintentional injuries

Transport Incidents - Pedestrian V01 - V09

Transport Incidents - Pedal Cycle V10 - V19

Transport Incidents - Motor Vehicle V20 - V29, V40 - V79

Transport Incidents - ATV, Snowmobile V30 - V39, V86

Transport Incidents - Motor Vehicle (includes motorcycle, car, bus, truck) V20-
V29, V40-V79

Falls - On the same level W00 - W01

Falls - From skates, skis, boards, blades W02

Falls - From furniture W06 - W08

Falls - In playgrounds W09

Falls - On stairs W10

Falls - From ladders/scaffolding W11 - W12

Falls - Diving W16

Falls - Other W03 - W05, W13 - W15, W17 - W19

Drowning V90, V92, W65 - W74

Fire/Burns X00 - X19

Unintentional Poisoning X40 - X49

Struck by / against Sports Equipment W21

Other Unintentional Injuries W20, W22 - W64, W75 - W99, X20 - X39, X50, X58, X59

Intentional injuries

Suicide / Self-Harm - Poisoning X60 - X69

Suicide / Self-Harm - Other X70 - X84

Violence X85 - X99, Y00 - Y09

Undetermined Intent / Other Y10 - Y36

APPENDIX 3: External Causes Included in Other Unintentional Injuries

Struck by thrown, projected, or falling object (e.g., falling tree branch) W20

Other Exposure to inanimate mechanical forces (e.g., contact with broken glass)
W22-49

Exposure to animate mechanical forces (e.g., bitten or struck by dog) W50-64

Other accidental threats to breathing (e.g., choking on food) W75-84

Exposure to electric current, radiation and extreme ambient air temperature and
Pressure W85-99

Contact with venomous animals and plants X20-29

Exposure to forces of nature (e.g., lightning) X30-39

Overexertion and strenuous or repetitive movements (e.g., lifting heavy objects)
X50

Accidental exposure to other and unspecified factors (e.g., unspecified cause of
fracture) X58 - X59