

The
Economic Burden
of Injury in **Canada**

SMARTRISK



SAUVE-QUI-PENSE

preventing injury with smart thinking

The Economic Burden of Injury in Canada

presented by

SMARTRISK™



SAUVE-QUI-PENSE^{MC}

preventing injury with smart thinking

in partnership with



Public Health
Agency of Canada

Agence de la santé
publique du Canada



• Institut national de santé publique
• Ministère de la Santé et des Services sociaux



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Executive Summary

Introduction

SMARTRISK is pleased to present *The Economic Burden of Injury in Canada*, which builds on and expands from our original 1998 economic burden study, *The Economic Burden of Unintentional Injury in Canada*.

While the greatest burden of injury is borne by those whose health, wellbeing, and life potential are directly diminished or destroyed by injury, economic burden studies enable us to calculate the broader societal burden injury imposes, with respect to cost pressures on our health care system and foregone human potential in terms of years of life lost and diminished labour market productivity and earnings.

The costs that emerge from this analysis are the costs of inaction – the price we all pay for failing to address injuries that are largely predictable and preventable.

In the period 1995-2004, Canada's injury death rate decreased by 10.9%. With growing government engagement and support for effective injury prevention programming, it should be possible to make even more significant gains in the decade ahead.

In the spirit of 'what gets inspected gets respected,' we offer this study as an important cornerstone in this process and our contribution to the rich and varied tapestry of injury prevention efforts in Canada.

Total burden of injury

Injuries cost Canadians \$19.8 billion and 13,667 lives in 2004.

Summary of findings, all injury, Canada, 2004

Injury deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability	Total cost
13,667	211,768	3,134,025	62,563	5,023	\$19.8 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 2004 were \$10.72 billion or 54% of total injury costs. The indirect costs were \$9.06 billion or 46% of total costs arising from injury.

Injuries are generally classified as **unintentional or intentional**. Unintentional injuries include those related to: transportation, falls, drowning, fire/burns, unintentional poisoning, sport, and other unintentional causes. Intentional injuries include those resulting from suicide/self-harm and violence. **Unintentional injuries accounted for 81% of injury costs (\$16.0 billion). Intentional injuries accounted for a further 17% of total costs (\$3.3 billion) and injuries of undetermined intent for the remaining 2% (\$0.46 billion).**

Injury by cause

Suicide/self-harm was the leading cause of all injury deaths (3,616) in Canada in 2004, closely followed by transport incidents (3,067) and falls (2,225). Transport incidents were the leading cause of unintentional injury deaths (34%), followed by falls (25%), and other unintentional injuries (25%).

Number of injury deaths, hospitalizations, non-hospitalizations, and related disability cases by cause, Canada, 2004

Description	Deaths	Hospitalizations	Non-hospitalizations	Permanent partial disability	Permanent total disability
Transport Incidents	3,067	30,932	286,086	7,738	760
Falls	2,225	105,565	883,676	29,576	2,500
Drowning	245	238	865	34	< 5
Fire/Burns	233	2,002	44,778	996	51
Unintentional Poisoning	944	7,060	54,741	1,677	106
Struck by/against Sports Equipment	< 5	1,223	66,037	607	48
Other Unintentional Injuries	2,220	34,948	1,641,051	15,341	1,105
Suicide/Self-Harm	3,616	18,210	41,930	3,879	199
Violence	507	8,050	90,463	1,899	201
Undetermined Intent/Other	620	3,540	22,398	815	50
Total	13,667	211,768	3,132,025	62,562	5,024

Falls accounted for 50% of all injuries resulting in hospitalization – followed by other unintentional injuries (16%) and transport incidents (15%) – and 58% of all unintentional injuries resulting in hospitalization, followed again by other unintentional injuries (19%), and transport incidents (17%).

Many injuries, while not requiring hospitalization, do involve emergency room visits for treatment. Other unintentional injuries were the leading cause of all injury related emergency room visits (53%) in 2004, followed by falls (28%), and transport incidents (9%).

Falls were the leading cause of injuries resulting in permanent partial disability (47%) and total permanent disability (50%). Falls were followed in both these cases by other unintentional injuries (24% of injuries leading to permanent partial disability and 22% of those leading to total permanent disability), and transport incidents (12% and 15% respectively).

By all measures of injury except indirect costs – hospitalizations, non-hospitalizations, permanent partial disability, total permanent disability, direct costs, and total costs of injury – **transport incidents and falls consistently ranked among the top three causes, ahead of suicide/self-harm.**

Costs of injury by cause

Falls were the leading cause of overall injury costs in Canada in 2004, accounting for \$6.2 billion or 31% of total costs, followed by other unintentional injuries at \$4.8 billion (24%), transport incidents at \$3.7 billion (19%), and suicide/self-harm at \$2.4 billion (12%).

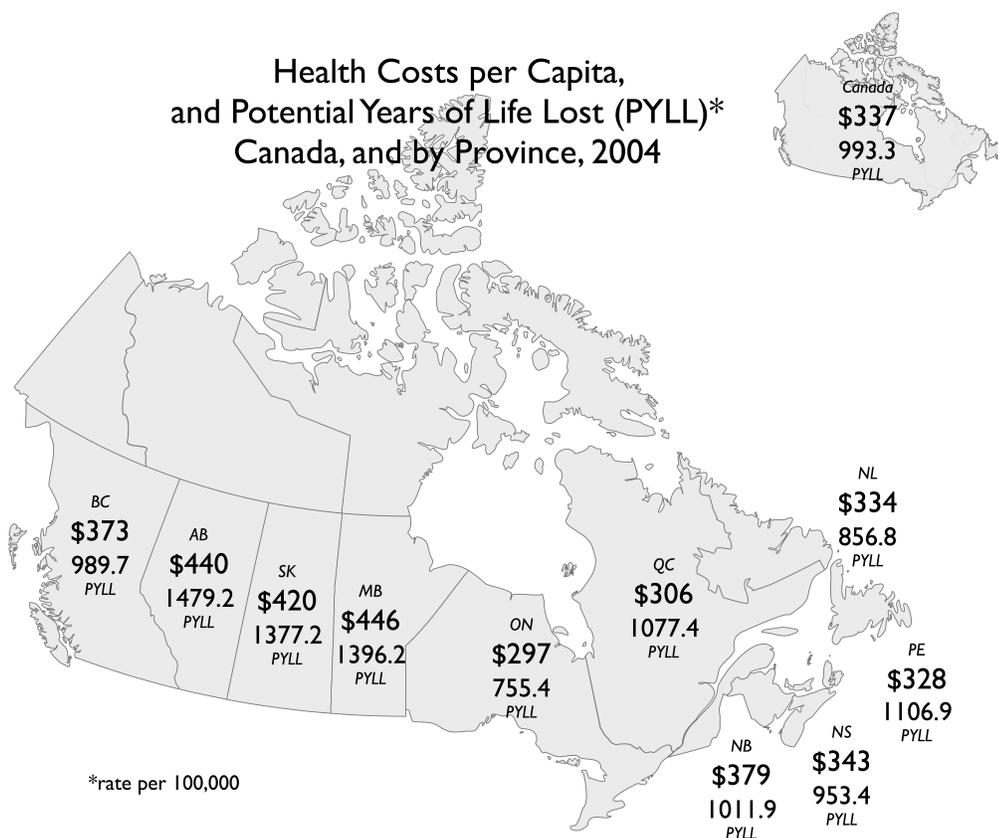
Total, direct, and indirect costs of injury by cause, Canada, 2004

Description	Total costs (\$ Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
Transport Incidents	\$3,699	\$1,603	\$2,096
Falls	\$6,155	\$4,457	\$1,698
Drowning	\$ 106	\$ 8	\$ 98
Fire/Burns	\$ 290	\$ 118	\$ 172
Unintentional Poisoning	\$ 771	\$ 281	\$ 490
Struck by/against Sports Equipment	\$ 188	\$ 97	\$ 91
Other Unintentional Injuries	\$4,801	\$2,918	\$1,882
Suicide/Self-Harm	\$2,442	\$ 707	\$1,735
Violence	\$ 871	\$ 381	\$ 490
Undetermined Intent/Other	\$ 456	\$ 145	\$ 311
Total	\$19,781	\$10,716	\$9,065

Falls accounted for \$4.5 billion or 42% of direct costs of injury in 2004, followed by other unintentional injuries at \$2.92 billion (27%), and transport incidents at \$1.6 billion (15%).

Transport incidents were the leading cause of indirect costs of injury, accounting for \$2.1 billion or 23% of total indirect costs, followed by other unintentional injuries at \$1.9 billion (21%), suicide/self-harm at \$1.7 billion (19%), and falls at \$1.7 billion (19%).

Injury by province



A comparison of age and sex standardized mortality rates for major causes of injury in 2004 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 – 7.6 per 100,000 (21% lower than the national rate of 9.6), while Prince Edward Island had the highest rate at 17.5 (82% above the national rate).

Newfoundland and Labrador enjoyed the lowest mortality rate due to falls at 3.4 per 100,000 (49% of the national rate), while Nova Scotia suffered from the highest rate – 12.6 (80% higher than the national rate).

Prince Edward Island had the lowest mortality rates from suicide and violence (6.0 and 0.0 respectively, just under half the national suicide rate and 100% lower than the national rate for violence), while Quebec had the highest suicide rate (15.7 or 38% higher than the national rate), and Manitoba the highest rate due to violence (4.3 or 269% the national rate).

Age/sex standardized injury mortality rates by cause, Canada, highest and lowest province, 2004

Age/sex standardized mortality rates per 100,000 population			
Cause of injury	Lowest provincial rate	National rate	Highest provincial rate
Transport incidents	7.6 Ontario	9.6	17.5 Prince Edward island
Falls	3.4 Newfoundland and Labrador	7.0	12.6 Nova Scotia
Suicide	6.0 Prince Edward Island	11.4	15.7 Quebec
Violence	0.0 Prince Edward Island	1.6	4.3 Manitoba

Conclusion

Through this report, SMARTRISK has attempted to quantify the tremendous annual burden that injury places on Canadians, our health care system, and Canadian society overall:

- 13,677 deaths
- Over 211,000 Canadians hospitalized
- Over 3 million emergency room visits
- Over 67,000 Canadians permanently disabled
- \$10.7 billion in health care costs
- \$19.8 billion in total economic costs.

The vast majority of the injuries described in this report are both predictable and preventable. We know when they strike 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.

As our capacity to monitor, report on, and coordinate effective action to prevent injury grows, our rationale for inaction diminishes.

In the period 1995-2004, Canada's annual death rate from injury decreased 10.9%.

We can do better.

A comprehensive national injury prevention strategy and complementary provincial strategies can yield immediate and longer-term savings in both dollars and lives. With enhanced leadership, we have the capacity, across Canada, to develop, implement, and demonstrate the impact of such strategies.

SMARTRISK encourages policy makers at all levels of government to consider the costs of current inaction against the backdrop of Canada's aging population, shrinking labour force, and overburdened health care system. Effective action to prevent injury will not eliminate these challenges but it can help to alleviate their impacts and the costly human and economic burden we all currently bear.

Injuries can be prevented, lives saved, and a significant drain on our public resources stopped. Please join us in making this happen.

Introduction

SMARTRISK is pleased to present *The Economic Burden of Injury in Canada*, which builds on and expands from our original economic burden study, *The Economic Burden of Unintentional Injury in Canada* (SMARTRISK, 1998).

Ten years have elapsed since the publication of our first burden of injury report. Since then, there has been significant growth in awareness, reporting, and action to prevent and treat injury, as well as improvement in how injury data is collected and reported. As a result, we have more and better data than we did 10 years ago, and a significantly larger and more informed audience who require up to date data to inform their ongoing injury prevention efforts.

This edition, while drawing on essentially the same methodology as the first, draws on updated International Classification of Diseases (ICD) injury coding, examines intentional as well as unintentional injury, and offers provincial as well as national level data¹, thanks to the active involvement and support of governments and other partners in every province.

While the greatest burden of injury is borne by those whose health, wellbeing, and life potential are directly diminished or destroyed by injury, economic burden studies enable us to calculate the broader societal burden injury imposes, with respect to cost pressures on our health care system and foregone human potential in terms of years of life lost and diminished labour market productivity and earnings.

The costs that emerge from this analysis are the costs of inaction – the price we all pay for failing to address injuries that are, in large part, both predictable and preventable.

We have two aims in producing this study. The first is to equip and enable injury prevention champions, practitioners, and policy makers to appreciate the true extent of injury in Canada, to understand in detail who and where it strikes, and to develop effective strategies to stop it. The second is to quantify the costs of inaction, and therefore the urgency of the issue, for the broader community of policy makers in all orders of government who are tasked with establishing public priorities for investment and action.

SMARTRISK is very encouraged by the growing attention that governments across Canada are giving to injury and by the increasing number of front line prevention programs that take aim at injury where it lives in our communities. Both of these groups, however – policy makers and practitioners – need good, up to date injury data to be effective, and solid baselines against which they can measure the impact of their efforts.

While changes to ICD coding of injury since 1998 have made any detailed assessment of Canada's progress in injury prevention over the past 10 years largely impracticable, we do know that in the period 1995-2004, Canada's injury death rate decreased by 10.9%.

¹ Due to the unavailability of comparable data from the Northwest Territories, Yukon and Nunavut, these jurisdictions are not covered in this report.

With growing government engagement and support for effective injury prevention programming, it should be possible to make even more significant gains in the decade ahead and, with new ICD coding and improved injury reporting and monitoring processes, to regularly monitor and assess our progress, learning and improving as we go.

In the spirit of 'what gets inspected gets respected,' we offer this study as an important cornerstone in this process and our contribution to the rich and varied tapestry of injury prevention efforts in Canada.

Methodology

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 2004 was costed over the lifetime of the injured individuals. The costs, both direct and indirect, were discounted to a present value in 2004 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.

For more details on the economic approach, ERAT, data sources and limitations, readers are encouraged to see Appendix 1- Methodology.

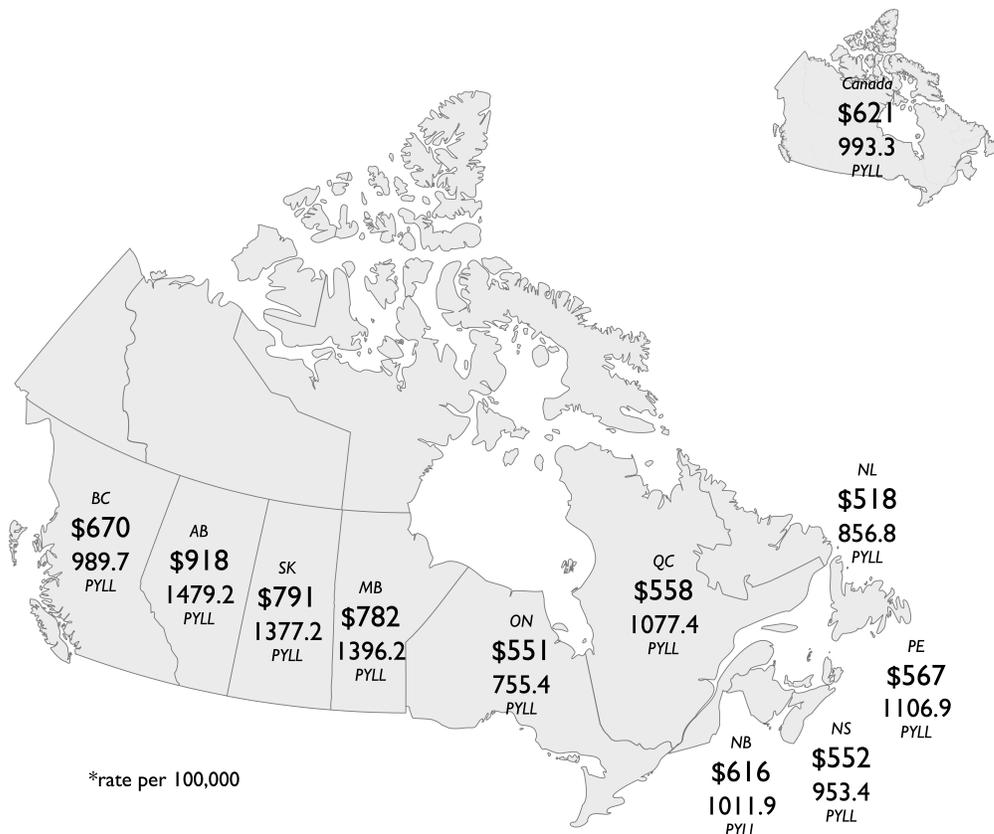
Injury in Canada

Total burden of injury

Table 1
Summary of findings, all injury, Canada, 2004

Injury deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability	Total cost
13,667	211,768	3,134,025	62,563	5,023	\$19.8 billion

Figure 1
Economic burden per capita and potential years of life lost (PYLL), Canada and by province, 2004²



² Potential years of life lost (PYLL), is an estimate of the average years a person or group would have lived had they not died prematurely. It is, therefore, a measure of premature mortality. In this report, PYLL was calculated using the difference between the average age of death for each injury age cohort in 2004 and 75 years as the average overall life expectancy.

Injuries cost Canadians \$19.8 billion and 13,667 lives in 2004.

A further 5,023 individuals were permanently and totally disabled³ and 62,563 were left with a permanent partial disability⁴, while 211,768 Canadians were hospitalized and another 3,134,025 were treated in emergency departments as a result of injury.

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 2004 were \$10.72 billion or 54% of total injury costs. The indirect costs were \$9.07 billion or 46% of total costs arising from injury.

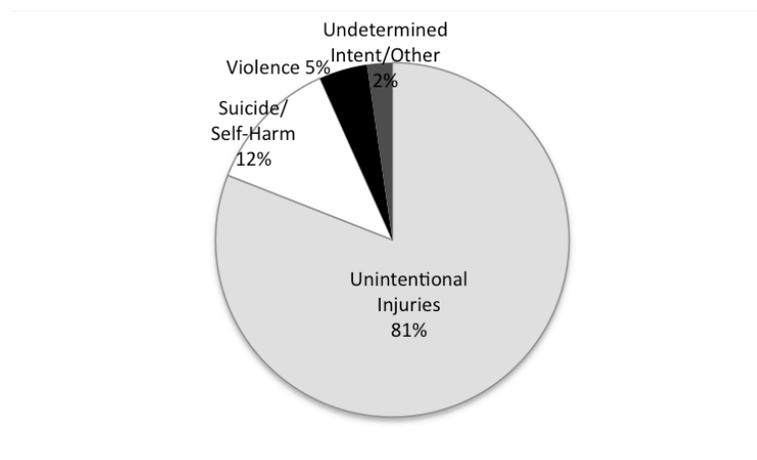
Intentional and unintentional injury

Injuries are generally classified as unintentional or intentional. Unintentional injuries include those related to: transportation, falls, drowning, fire/burns, unintentional poisoning, sport, and other unintentional causes. Intentional injuries include those resulting from suicide/self-harm and violence. A third category includes injuries of undetermined intent. (For a detailed classification of injury causes in each of these categories, please see Appendix 2.)

Unintentional injuries account for the great majority of total injury costs. In 2004, 81% of injury costs (\$16.01 billion) were attributable to unintentional injuries. Intentional injuries accounted for a further 17% of total costs (\$3.3 billion) and injuries of undetermined intent for the remaining 2% (\$0.46 billion).

Figure 2

Total Costs by Intent of Injury, Canada, 2004



³ 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.

⁴ 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.

Unintentional injuries still account for the vast majority of costs when direct and indirect costs are examined separately – 88% in the case of direct costs (\$9.48 billion) and 72% in the case of indirect costs (\$6.53 billion).

Figure 3
Direct Cost by Intent of Injury,
Canada, 2004

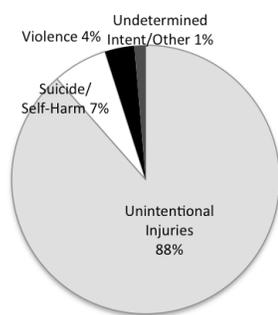
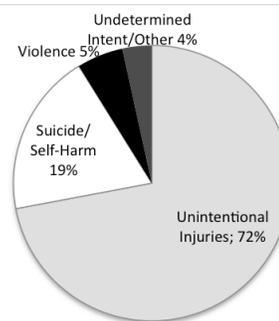


Figure 4
Indirect Cost by Intent of Injury,
Canada, 2004



Change in injury rates since 1995

Table 2
Change in injury death rates – 1995 to 2004

	Standardized injury death rate (per 100,000 pop.)
1995	47.22
2004	42.06
Increase/decrease 1995 -2004	-10.9%

Comparative analysis shows a decrease of 10.9% in the overall death rate from injury from 1995 to 2004⁵, based on reanalysis of data from the same years as reported in SMARTRISK’s original report on The Economic Burden of Unintentional Injury in Canada, published in 1998.

Due to differences in methodology in collecting the 1995 and 2004 non-hospitalization 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 two reports is impossible.

⁵ Analysis of data provided by Statistics Canada by staff at the Public Health Agency of Canada. Personal communication of results from Margaret Herbert, August, 2009.

Injury by cause

Table 3

Number of injury deaths, hospitalizations, non-hospitalizations and related disability cases by cause, Canada, 2004

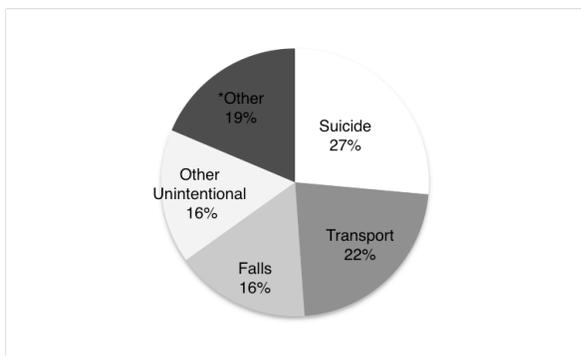
Description	Deaths	Hospitalizations	Non-hospitalizations	Permanent partial disability	Permanent total disability
Transport Incidents	3,067	30,932	286,086	7,738	760
Falls	2,225	105,565	883,676	29,576	2,500
Drowning	245	238	865	34	< 5
Fire/Burns	233	2,002	44,778	996	51
Unintentional Poisoning	944	7,060	54,741	1,677	106
Struck by/against Sports Equipment	< 5	1,223	66,037	607	48
Other Unintentional Injuries	2,220	34,948	1,641,051	15,341	1,105
Suicide/Self-Harm	3,616	18,210	41,930	3,879	199
Violence	507	8,050	90,463	1,899	201
Undetermined Intent/Other	620	3,540	22,398	815	50
Total	13,667	211,768	3,132,025	62,562	5,024

Suicide/self-harm was the leading cause of all injury deaths (3,616) in Canada in 2004, closely followed by transport incidents (3,067) and falls (2,225). Transport incidents were the leading cause of unintentional injury deaths (34%), followed by falls (25%), and other unintentional injuries (25%)⁶. (Table 3)

By all measures of injury except indirect costs – hospitalizations, non-hospitalizations, permanent partial disability, total permanent disability, direct costs, and total costs of injury – transport incidents and falls consistently ranked among the top three causes, ahead of suicide/self-harm.

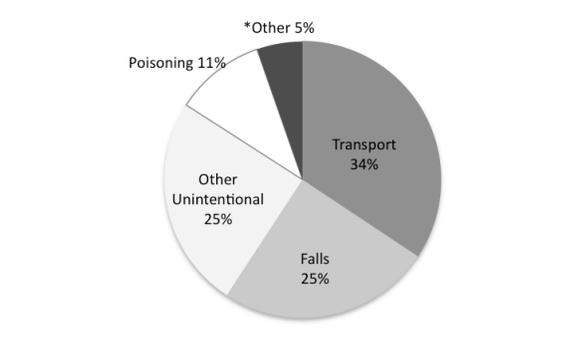
⁶ See Appendix 3 for a detailed breakdown of causes of injury in this category.

Figure 5
Injury Deaths by Cause, Canada, 2004



*Poisoning, Undetermined, Violence, Drowning, Fire/Burns, Sports

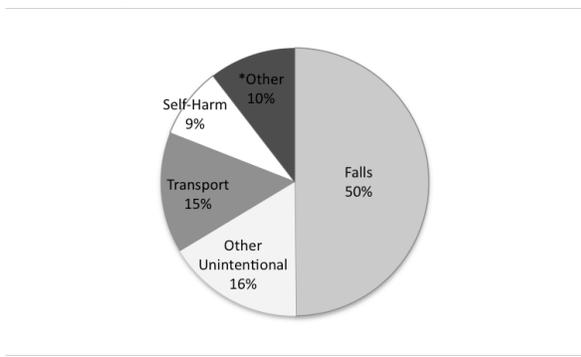
Figure 6
Unintentional Injury Deaths by Cause, Canada, 2004



*Drowning, Fire/Burns, Sports

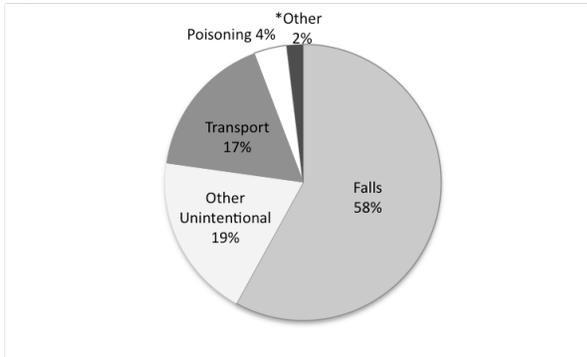
Falls accounted for 50% of all injuries resulting in hospitalization – followed by other unintentional injuries (16%) and transport incidents (15%) – **and for 58% of all unintentional injuries resulting in hospitalization**, followed again by other unintentional injuries (19%) and transport incidents (17%).

Figure 7
Injury Hospitalizations by Cause, Canada, 2004



*Violence, Poisoning, Undetermined, Fire/Burns, Sports, Drowning

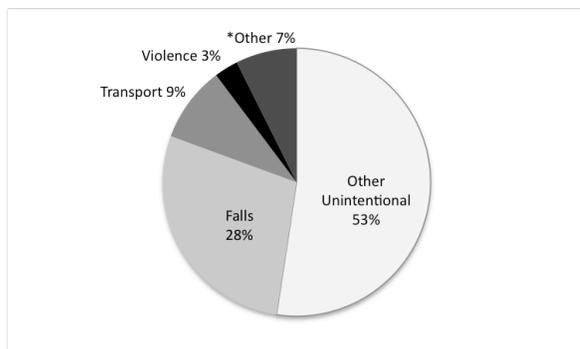
Figure 8
Unintentional Injury Hospitalizations by Cause, Canada, 2004



*Fire/Burns, Sports, Drowning

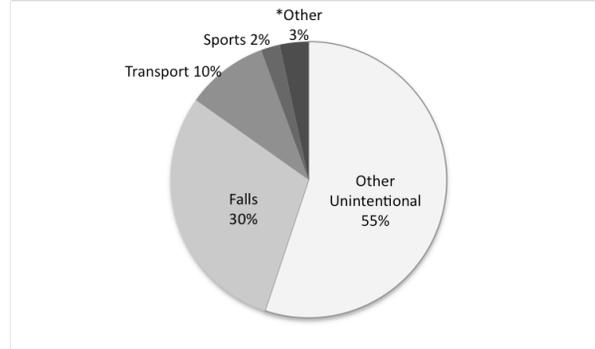
Many injuries, while not requiring hospitalization, do involve emergency room visits for treatment. **Other unintentional injuries were the leading cause of all injury related emergency room visits (53%) in 2004**, followed by falls (28%) and transport incidents (9%).

Figure 9
Injury Non-hospitalizations by Cause, Canada, 2004



*Sports, Poisoning, Fire/Burns, Self-Harm, Undetermined, Drowning

Figure 10
Unintentional Injury Non-hospitalizations by Cause, Canada, 2004



*Poisoning, Fire/Burns, Drowning

Falls were the leading cause of injuries resulting in permanent partial disability (47%) and total permanent disability (50%). Falls were followed in both these cases by other unintentional injuries (24% of injuries leading to permanent partial disability and 22% of those leading to total permanent disability) and transport incidents (12% and 15% respectively).

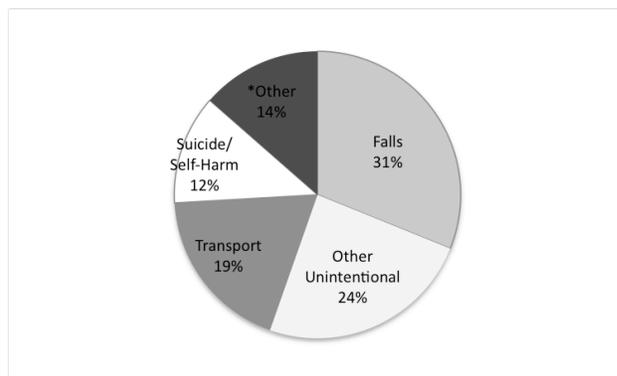
Costs of injury by cause

Falls were the leading cause of overall injury costs in Canada in 2004, accounting for \$6.2 billion or 31% of total costs, followed by other unintentional injuries at \$4.8 billion (24%), transport incidents at \$3.7 billion (19%), and suicide/self-harm at \$2.4 billion (12%).

Table 4
Total, direct, and indirect costs of injury by cause, Canada, 2004

Description	Total costs (\$ Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
Transport Incidents	\$3,699	\$1,603	\$2,096
Falls	\$6,155	\$4,457	\$1,698
Drowning	\$ 106	\$ 8	\$ 98
Fire/Burns	\$ 290	\$ 118	\$ 172
Unintentional Poisoning	\$ 771	\$ 281	\$ 490
Struck by/against Sports Equipment	\$ 188	\$ 97	\$ 91
Other Unintentional Injuries	\$4,801	\$2,918	\$1,882
Suicide/Self-Harm	\$2,442	\$ 707	\$1,735
Violence	\$ 871	\$ 381	\$ 490
Undetermined Intent/Other	\$ 456	\$ 145	\$ 311
Total	\$19,781	\$10,716	\$9,065

Figure 11
Injury Costs by Cause, Canada, 2004

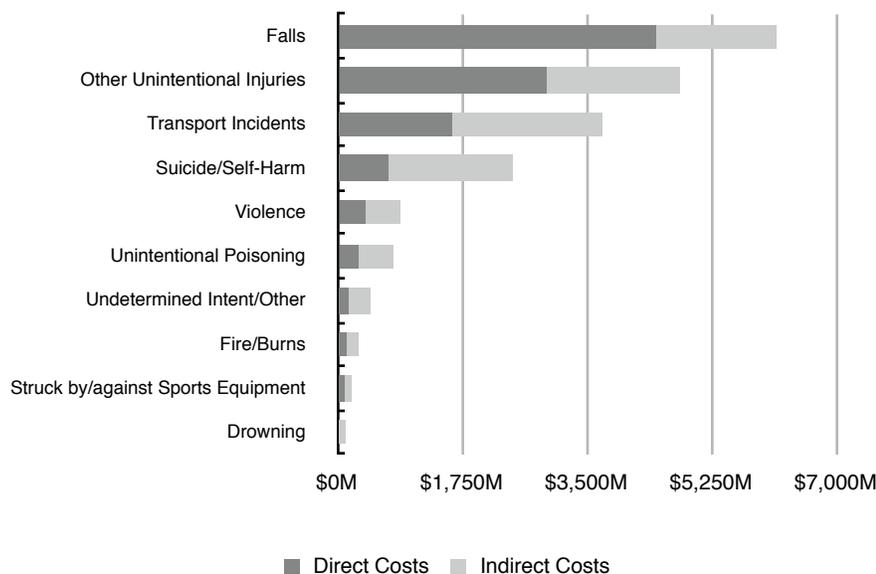


*Violence, Poisoning, Undetermined, Fire/Burns, Sports, Drowning

When these figures are broken down into direct and indirect costs, falls were clearly the major driver of direct costs of injury, accounting for \$4.5 billion or 42% of Canada's total in 2004, followed by other unintentional injuries at \$2.92 billion (27%), and transport incidents at \$1.6 billion (15%).

Transport incidents were the leading cause of indirect costs of injury, however, accounting for \$2.1 billion or 23% of total indirect costs arising from injury, followed by other unintentional injuries at \$1.9 billion (20%), suicide/self-harm at \$1.7 billion (19%), and falls at \$1.7 billion (19%).

Figure 12
Direct and Indirect Costs by Cause, Canada, 2004



Fall related injuries by cause, age, and sex, and associated costs

Table 5

Number of injury deaths, hospitalizations, and non-hospitalizations for falls, Canada, 2004

Cause of injury Falls	Deaths	Hospitalized treatment	Non- hospitalized treatment	Permanent partial disability	Permanent total disability
On the same level	181	35,843	277,428	10,146	754
From skates, skis, boards, blades	< 5	3,680	66,945	1,286	98
From furniture	127	6,608	49,391	1,784	148
In playgrounds	0	1,662	21,158	551	37
On stairs	281	10,057	106,017	2,847	279
From ladders or scaffolding	42	3,716	21,393	981	86
Diving	6	168	2,397	47	9
Other	1,584	43,831	338,947	11,934	1,089
Total	2,225	105,565	883,676	29,576	2,500

Falls are extremely common and have many causes. Falls on the same level were the most prevalent cause of injury from falls in 2004. While these accounted for only 8% of all deaths, they resulted in 34% of hospitalizations, 31% of emergency room visits, 34% of cases of permanent partial disability, and 30% of all cases of permanent total disability.

Falls on stairs were the leading cause of deaths by falling (13%); however, they accounted for only 10% of hospitalizations, 12% of emergency room visits, 10% of cases of permanent partial disability, and 11% of cases of permanent total disability arising from falls.

Falls from furniture were the next most prevalent, accounting for 6% of deaths, hospitalizations, emergency room visits, and cases of permanent partial and total disability from fall related injuries.

Among Canadians aged 25-64, males were four times more likely than females of the same age to die from a fall, but only 1.2 times more likely to be hospitalized, and almost equally likely to require non-hospitalized treatment or suffer some form of permanent disability as a result of a fall.

However, falls have the most severe impact on seniors over the age of 65. While Canadians aged 25-64 accounted for the most emergency room visits due to falls (37%), Canadians over 65 accounted for 84% of deaths, 59% of hospitalizations, 53% of cases of permanent partial disability, and 54% of cases of permanent total disability from falls in 2004.

Table 6

Rate of injury deaths, hospitalizations, non-hospitalizations due to falls by age and sex, Canada, 2004

Sex/Age	Rate per 100,000 population				
	Death	Hospitalized treatment	Non-hospitalized	Permanent partial disability	Permanent total disability
Male 0-4	0.35	167.2	5,546.1	65.8	5.8
Male 5-9	0.51	185.2	3,823.0	66.1	4.9
Male 10-14	0.09	210.5	4,936.5	80.6	5.8
Male 15-19	0.55	162.2	3,273.6	55.5	4.2
Male 20-24	0.79	122.1	2,201.3	40.5	3.4
Male 25-64	2.94	184.96	1,811.48	52.42	4.87
Male 65+	44.23	1,015.80	3,867.98	244.12	27.84
Female 0-4	0.36	138.0	4,402.6	53.8	4.7
Female 5-9	0.22	154.2	3,262.1	57.3	4.1
Female 10-14	0	94.5	3,602.8	43.4	3.3
Female 15-19	0.10	58.4	2,213.2	25.2	1.9
Female 20-24	0.18	60.7	1,663.8	23.5	1.8
Female 25-64	0.76	155.46	1,898.65	48.70	3.61
Female 65+	45.79	1,869.20	6,187.68	477.27	36.49

While death rates for falls among men and women over 65 were almost identical (44.23 for men and 45.79 for women), rates for hospitalized treatment and non-hospitalized treatment were respectively 84% and 60% higher among women.

Table 7

Total, direct, indirect, and per capita cost of falls by age and sex, Canada, 2004

Sex/Age	Reference population	Total costs (\$ Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)	Per capita costs (\$)
Male, all ages	15,763,447	\$3,020	\$1,980	\$1,039	\$192
Female, all ages	16,079,206	\$3,135	\$2,476	\$659	\$195
Both 0-4	1,687,532	\$351	\$203	\$148	\$208
Both 5-9	1,905,917	\$397	\$219	\$178	\$208
Both 10-14	2,107,738	\$445	\$227	\$217	\$211
Both 15-19	2,117,086	\$316	\$163	\$154	\$149
Both 20-24	2,214,913	\$263	\$140	\$123	\$119
Both 25-64	17,673,046	\$2,351	\$1,473	\$878	\$133
Both 65+	4,136,421	\$2,033	\$2,033	N/A	\$491
Male 0-4	863,755	\$202	\$120	\$83	\$33
Male 5-9	975,807	\$218	\$118	\$99	\$90
Male 10-14	1,080,269	\$293	\$149	\$143	\$164
Male 15-19	1,085,842	\$221	\$113	\$108	\$389
Male 20-24	1,132,112	\$172	\$90	\$82	\$399
Male 25-64	8,832,595	\$1,294	\$770	\$524	\$147
Male 65+	1,793,067	\$621	\$621	N/A	\$346
Female 0-4	823,777	\$148	\$83	\$65	\$180
Female 5-9	930,110	\$179	\$100	\$79	\$193
Female 10-14	1,027,469	\$152	\$78	\$74	\$148
Female 15-19	1,031,244	\$96	\$50	\$46	\$93
Female 20-24	1,082,801	\$91	\$50	\$42	\$84
Female 25-64	8,840,451	\$1,057	\$703	\$353	\$120
Female 65+	2,343,354	\$1,416	\$1,416	N/A	\$602

The per capita cost of falls in 2004 was approximately equal for males and females overall, but 23% higher among males aged 25-64 than females of the same age, and 74% higher among females over age 65 than males of the same age.

Seniors over 65 accounted for 33% of the total costs and 46% of the direct (health care) costs for falls in 2004. The per capita cost of falls for Canadians over 65 was consequently 3.7 times higher than that for Canadians aged 25-64. This difference was even greater among females. The per capita cost of falls for females aged 65 and older was five times that of females 25-64, while the per capita cost for males aged 65 and older was only 2.4 times that of males aged 25-64.

Table 8

Direct, indirect, and total costs for falls, Canada, 2004

Cause of injury Falls	Direct costs (\$ Millions)	Indirect costs (\$ Millions)	Total costs (\$ Millions)
On the same level	\$1,417	\$439	\$1,856
From skates, skis, boards, blades	\$216	\$182	\$398
From furniture	\$301	\$75	\$376
In playgrounds	\$106	\$79	\$185
On stairs	\$432	\$209	\$641
From ladders or scaffolding	\$140	\$74	\$214
Diving	\$12	\$12	\$24
Other	\$1,834	\$626	\$2,460
Total	\$4,457	\$1,698	\$6,155

An examination of cost of falls by cause shows that falls on the same level were the greatest single cause of costs, accounting for 30% of total costs, 32% of direct costs and 26% of indirect costs.

Falls on stairs were the second most important cost driver, accounting for 10% of total costs arising from falls, 10% of direct costs, and 12% of indirect costs. While falls from furniture accounted for 7% of direct costs arising from falls, falls involving skates, skis, boards, and blades, are responsible for a greater overall percentage of indirect costs (11%). Total costs arising from each of these categories were equivalent at 6% of all costs arising from falls.

Transport related injuries by cause, age, and sex, and associated costs

Table 9

Number of injury deaths, hospitalizations, and non-hospitalizations for transport incidents, Canada, 2004

Cause of injury Transport Incidents	Deaths	Hospitalized treatment	Non- hospitalized treatment	Permanent partial disability	Permanent total disability
Pedestrian	423	2,904	14,891	683	78
Pedal cycle	71	4,608	61,424	1,316	120
Motor vehicle	1,331	16,856	163,597	4,099	423
ATV, snowmobile	172	3,951	20,235	950	80
Other	1,070	2,613	25,939	690	59
Total	3,067	30,932	286,086	7,738	760

Motor vehicle incidents were the most common cause of transport related injuries, accounting for 1,331 or 43% of transport related deaths and over half of all other transport related injuries

resulting in emergency room visits (57%), hospitalizations (54%), and cases of permanent partial disability (53%) and permanent total disability (56%) in 2004.

Cycling ranked second to motor vehicle incidents with respect to non-fatal transport related injuries, accounting for 15% of hospitalizations, 21% of emergency room visits, 17% of cases of permanent partial disability and 16% of permanent total disability in 2004. Other non-defined transport incidents were the second most frequent cause of transport injuries resulting in death (35%).

ATV use and snowmobiling also accounted for a significant portion of transport related injuries and related hospitalizations (13%), emergency room visits (7%), and cases of permanent partial disability (12%) and permanent total disability (11%).

Table 10
Rates of death, hospitalization, non-hospitalization, and permanent disability for transport incidents by age and sex, Canada, 2004

Sex/Age	Rate per 100,000 population				
	Death	Hospitalized treatment	Non-hospitalized	Permanent partial disability	Permanent total disability
Male 0-4	1.51	23.85	359.37	5.66	0.62
Male 5-9	2.87	73.27	946.08	18.86	1.63
Male 10-14	3.43	139.04	1,737.03	36.84	3.20
Male 15-19	21.27	232.26	2,084.82	56.36	5.62
Male 20-24	27.03	218.35	1,719.37	52.83	5.48
Male 25-64	14.14	124.15	912.37	30.68	3.01
Male 65+	19.69	117.56	508.92	25.88	3.35
Male all ages	14.06	129.99	1,033.50	31.81	3.20
Female 0-4	1.09	18.09	287.08	4.63	0.45
Female 5-9	0.97	43.11	658.94	11.83	1.08
Female 10-14	1.75	63.55	899.71	17.42	1.72
Female 15-19	8.92	99.98	1,472.55	25.89	2.62
Female 20-24	8.96	77.58	1,325.86	21.43	2.12
Female 25-64	4.45	61.00	739.03	16.16	1.47
Female 65+	9.90	84.24	450.55	19.93	1.91
Female all ages	5.29	64.93	766.03	16.93	1.59
Both, all ages	9.63	97.14	898.44	24.30	2.39

Canadian males were far more likely to be involved in a transport incident involving injury than females and 2.7 times more likely to suffer a fatal injury in a transport incident. They were also twice 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.

Young males were particularly at risk of transport related injury, with those between the ages of 20 and 24 experiencing the highest death rate (27.03 per 100,000 population) and those aged 15-19 experiencing the highest rates of hospitalization (232.26), non-hospitalized treatment (2,084.82), permanent partial disability (56.36) and permanent total disability (5.62).

While the risk of fatal injury in a transport incident was lower among Canadians aged 25-64, Canadians over 65 were at greater risk once again. Both males and females over 65 years of age were more likely to be fatally injured in a transport incident than their counterparts aged 25-64; however, males over 65 were less likely to be hospitalized, receive non-hospitalized treatment, or incur a permanent partial disability from such an injury than males aged 25-64. Females over age 65, however, were more likely than those aged 25-64 to be hospitalized or to incur a permanent partial or total disability, but not to receive non-hospitalized treatment.

Table 11

Total, direct, indirect, and per capita costs of injury due to transport incidents by age and sex, Canada, 2004

Sex/Age	Reference population	Total costs (\$ Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)	Per capita costs (\$)
Male, all ages	15,763,447	\$2,544	\$1,038	\$1,506	\$161.41
Female, all ages	16,079,206	\$1,155	\$565	\$590	\$71.82
Both, all ages	31,842,653	\$3,699	\$1,603	\$2,096	\$116.17
Both 15-19	2,117,086	\$316	\$163	\$153	\$287.80
Both 20-24	2,214,913	\$263	\$140	\$123	\$278.61
Both 25-64	17,673,046	\$1,889	\$827	\$1,062	\$106.89
Both 65+	4,136,421	\$136	\$136	N/A	\$32.91
Male 0-4	863,755	\$29	\$14	\$15	\$33.48
Male 5-9	975,807	\$88	\$42	\$46	\$89.71
Male 10-14	1,080,269	\$177	\$83	\$94	\$164.16
Male 15-19	1,085,842	\$422	\$146	\$275	\$389.02
Male 20-24	1,132,112	\$452	\$145	\$306	\$398.92
Male 25-64	8,832,595	\$1,305	\$536	\$769	\$147.72
Male 65+	1,793,067	\$72	\$72	N/A	\$40.04
Female 0-4	823,777	\$20	\$10	\$11	\$24.77

Sex/Age	Reference population	Total costs (\$ Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)	Per capita costs (\$)
Female 5-9	930,110	\$47	\$25	\$23	\$50.78
Female 10-14	1,027,469	\$86	\$41	\$45	\$83.91
Female 15-19	1,031,244	\$189	\$72	\$115	\$181.22
Female 20-24	1,082,801	\$165	\$62	\$104	\$152.82
Female 25-64	8,840,451	\$584	\$291	\$294	\$66.10
Female 65+	2,343,354	\$64	\$64	N/A	\$27.46

Per capita costs arising from transport related injuries were 2.25 times higher for males (\$161.41) than females (\$71.82). Males aged 20-24 had the highest per capita cost of transport related injury at \$398.92 – 3.43 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 \$389.02 and 3.35 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 economic model 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 12

Direct, indirect, and total costs for injury from transport incidents, by cause, Canada, 2004 (\$ Millions)

Cause of injury Transport Incidents	Direct costs (\$ Millions)	Indirect costs (\$ Millions)	Total costs (\$ Millions)
Pedestrian	\$148	\$198	\$346
Pedal cycle	\$242	\$201	\$443
Motor vehicle	\$906	\$1,020	\$1,926
ATV, snowmobile	\$185	\$196	\$381
Other	\$123	\$481	\$603
Total	\$1,603	\$2,096	\$3,699

An examination of injury costs by type of transport incident shows that motor vehicle incidents generated the greatest costs among transport related injuries – \$1.93 billion in total injury costs in 2004 or 52% of all transport related injury costs. These costs can be broken down into direct costs (\$0.91 billion or 56% of all direct transport incident injury costs) and indirect costs (\$1.02 billion or 49% of all indirect transport incident injury costs).

Cycling incidents also accounted for a significant portion of the injury costs arising from transport incidents – \$0.44 billion or 12% of total costs, followed by ATV/snowmobiling incidents, which accounted for \$0.38 billion or 10% of total costs.

Intentional injuries by cause, age, and sex, and associated costs

Table 13

Injury deaths, hospitalizations, and non-hospitalizations by intent, Canada, 2004

Description	Deaths	Hospitalizations	Non-hospitalizations	Permanent partial disability	Permanent total disability
Unintentional injuries	8,934	181,968	2,977,234	55,970	4,574
Suicide/Self-harm	3,616	18,210	41,930	3,879	199
Violence	507	8,050	90,463	1,854	198
Undetermined intent/ Other	620	3,540	22,398	815	50
Total	13,677	211,768	3,132,025	62,517	5,021

While unintentional injuries make up the large majority of injuries in Canada, **intentional injury comprising violence and suicide/self-harm accounted for 4,123 deaths and over \$3.3 billion in total costs in 2004.**

Suicide/self-harm was the leading cause of injury death overall (28%) in 2004 and the leading cause of intentional injury deaths (88%), hospitalizations (69%), and permanent partial disability (83%).

However, injuries resulting from violence accounted for a much higher proportion of related emergency room visits (68%) and an equal portion (50%) of estimated cases of permanent total disability.

Table 14
Injury costs by intent, Canada, 2004 (\$ Millions)

Description	Direct costs (\$ Millions)	Indirect costs (\$ Millions)	Total costs (\$ Millions)
Unintentional injuries	\$9,482	\$6,529	\$16,011
Suicide/Self-harm	\$707	\$1,735	\$2,442
Violence	\$381	\$490	\$872
Undetermined intent/Other	\$145	\$311	\$456
Total	\$10,716	\$9,065	\$19,781

An analysis of injury costs by intent shows that suicide/self-harm accounted for 12% of total injury costs, 7% of direct injury costs, and 19% of indirect injury costs in Canada in 2004, while violence accounted for 4% of total and direct injury costs and 5% of indirect injury costs.

Looking specifically at suicide/self-harm, Canadian males were 2.8 times as likely to die from suicide/self-harm as females in 2004, while females were 1.5 times more likely to be hospitalized or require non-hospitalized treatment, 1.6 times more likely to incur a permanent partial disability, and equally likely to incur a permanent total disability.

Among males, adults aged 25-64 were most likely to die from suicide/self-harm (22.05 per 100,000), while those aged 20-24 were most likely to be hospitalized (72.25) and to incur a permanent disability. Males aged 15-19 were most likely to require an emergency room visit (220.09), however, followed closely by those aged 20-24 (213.17).

Among females, women aged 25-64 were most likely to die from suicide/self-harm (8.43 per 100,000), while girls aged 15-19 were most likely to be hospitalized (173.29), receive non-hospitalized treatment (550.02), or incur a permanent disability.

Table 15

Rates of death, hospitalization, non-hospitalization, and permanent disability for suicide/self-harm by age and sex, Canada, 2004

Sex/Age	Rate per 100,000 population				
	Death	Hospitalized treatment	Non-hospitalized	Permanent partial disability	Permanent total disability
Male 0-4	0.00	0.46	3.12	0.12	0.01
Male 5-9	0.00	0.41	2.57	0.10	0.01
Male 10-14	1.76	9.35	31.01	1.62	0.09
Male 15-19	13.45	67.41	220.09	13.05	0.68
Male 20-24	18.11	72.25	213.17	13.61	0.75
Male 25-64	22.05	57.02	119.66	12.00	0.68
Male 65+	17.57	21.64	28.54	4.32	0.30
Male all ages	17	45	103	9	1
Female all ages	6	69	160	15	1
Female 0-4	0.00	0.36	2.24	0.06	0.00
Female 5-9	0.00	0.11	0.90	0.02	0.00
Female 10-14	0.78	50.71	168.16	9.23	0.32
Female 15-19	5.33	173.29	550.02	33.29	1.37
Female 20-24	5.54	112.58	317.22	23.24	1.02
Female 25-64	8.43	81.22	160.74	18.61	0.95
Female 65+	4.91	17.75	25.08	3.90	0.19
Both 0-4	0.00	0.41	2.69	0.09	0.00
Both 5-9	0.00	0.26	1.76	0.06	0.00
Both 10-14	1.28	29.51	97.87	5.33	0.21
Both 15-19	9.49	118.98	380.80	22.91	1.02
Both 20-24	11.96	91.97	264.04	18.32	0.88
Both 25-64	15.24	69.12	140.21	15.31	0.81
Both 65+	10.40	19.44	26.58	4.08	0.24
Both, all ages	11	57	132	12	1

Table 16

Total, direct, indirect, and per capita costs of injury due to suicide/self-harm incidents by age and sex, Canada, 2004

Sex/Age	Reference population	Total costs (\$ Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)	Per capita costs (\$)
Male, all ages	15,763,447	\$1,380	\$260	\$1,120	\$87.56
Female, all ages	16,079,206	\$1,061	\$447	\$614	\$66.00
Both, all ages	31,842,653	\$2,442	\$707	\$1,735	\$76.68
Both 0-4	1,687,532	\$0.523	\$0.345	\$0.178	\$0.31
Both 5-9	1,905,917	\$0.410	\$0.239	\$0.172	\$0.22
Both 10-14	2,107,738	\$62	\$27	\$34	\$29.39
Both 15-19	2,117,086	\$322	\$109	\$213	\$152.06
Both 20-24	2,214,913	\$318	\$88	\$231	\$143.65
Both 25-64	17,673,046	\$1,718	\$461	\$1,256	\$97.19
Both 65+	4,136,421	\$21	\$21	\$0	\$5.06
Male 0-4	863,755	\$0.357	\$0.235	\$0.122	\$0.41
Male 5-9	975,807	\$0.345	\$0.204	\$0.140	\$0.35
Male 10-14	1,080,269	\$21	\$5	\$16	\$19.23
Male 15-19	1,085,842	\$155	\$31	\$124	\$142.71
Male 20-24	1,132,112	\$189	\$33	\$156	\$167.06
Male 25-64	8,832,595	\$1,005	\$180	\$825	\$113.73
Male 65+	1,793,067	\$10	\$10	\$0	\$5.65
Female 0-4	823,777	\$0.166	\$0.110	\$0.056	\$0.20
Female 5-9	930,110	\$0.066	\$0.034	\$0.031	\$0.07
Female 10-14	1,027,469	\$41	\$22	\$19	\$40.07
Female 15-19	1,031,244	\$1667	\$78	\$89	\$161.91
Female 20-24	1,082,801	\$129	\$55	\$74	\$119.17
Female 25-64	8,840,451	\$713	\$282	\$432	\$80.66
Female 65+	2,343,354	\$11	\$11	\$0	\$4.61

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 \$152.06, followed by those aged 20-24 at \$143.65.

Per capita costs of injuries due to suicide/self-harm were 1.3 times higher for males than females, and highest of all for young males age 20-24 (\$167.06), followed closely by young females aged 15-19 (\$161.91).

Table 17

Rates of death, hospitalization, non-hospitalization, and permanent disability for violence by age and sex, Canada, 2004

Sex/Age	Rate per 100,000 population				
	Death	Hospitalized treatment	Non-hospitalized	Permanent partial disability	Permanent total disability
Male all ages	2	41	417	10	1
Female all ages	1	9	154	2	0
Both, all ages	2	25	284	6	1
Both, 0-4	1.07	13.45	27.32	2.14	0.44
Both, 5-9	0.37	2.20	40.57	0.54	0.06
Both 10-14	0.24	7.40	208.27	2.24	0.25
Both, 15-19	1.84	58.85	941.78	15.29	1.45
Both, 20-24	3.16	70.07	879.75	17.66	1.68
Both 25-64	1.82	25.77	249.77	5.88	0.62
Both 65+	1.14	6.58	30.79	1.25	0.23
Male 0-4	0.93	16.67	26.27	2.50	0.64
Male 5-9	0.61	1.95	56.70	0.63	0.07
Male 10-14	0.28	10.18	292.68	3.27	0.37
Male 15-19	3.13	99.00	1,406.54	25.28	2.41
Male 20-24	5.21	119.25	1,338.57	29.58	2.84
Male 25-64	2.59	41.63	345.85	9.32	1.01
Male 65+	1.23	8.70	41.21	1.65	0.35
Female 0-4	1.21	10.08	28.41	1.76	0.23
Female 5-9	0.11	2.47	23.65	0.46	0.04
Female 10-14	0.19	4.48	119.52	1.15	0.13
Female 5-9	48	16.58	452.40	4.77	0.45
Female 10-14	1.02	18.66	400.03	5.20	0.46
Female 15-19	1.04	9.93	153.76	2.43	0.23
Female 20-24	1.07	4.95	22.81	0.95	0.14
Female 25-64	1.21	10.08	28.41	1.76	0.23
Female 65+	11	2.47	23.65	0.46	0.04

An examination of injuries arising from violence, shows that males were twice as likely as females to be killed as a result of violence, 4.5 times more likely to be hospitalized, 2.7 times more likely to receive non-hospitalized treatment, five times as likely to incur a permanent partial disability and twice 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 1.6 times more likely to die from violence, 2.8 times more likely to be hospitalized, three times more likely to be treated in an emergency room or incur a permanent partial disability, and 1.7 times more likely to be permanently totally disabled.

Table 18

Total, direct, indirect, and per capita costs of injury due to violence by age and sex, Canada, 2004

Sex/Age	Reference population	Total costs (\$ Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)	Per capita costs (\$)
Male, all ages	15,763,447	\$691	\$303	\$388	\$43.83
Female, all ages	16,079,206	\$181	\$78	\$103	\$11.23
Both, all ages	31,842,653	\$872	\$381	\$490	\$27.37
Both 0-4	1,687,532	\$30	\$13	\$17	\$17.81
Both 5-9	1,905,917	\$9	\$3	\$6	\$4.77
Both 10-14	2,107,738	\$22	\$9	\$12	\$10.31
Both 15-19	2,117,086	\$153	\$67	\$87	\$72.50
Both 20-24	2,214,913	\$194	\$80	\$113	\$87.43
Both 25-64	17,673,046	\$454	\$199	\$254	\$25.67
Both 65+	4,136,421	\$10	\$10	\$0	\$2.37
Male 0-4	863,755	\$18	\$8	\$9	\$20.70
Male 5-9	975,807	\$7	\$2	\$5	\$6.90
Male 10-14	1,080,269	\$16	\$7	\$9	\$14.36
Male 15-19	1,085,842	\$131	\$56	\$74	\$120.20
Male 20-24	1,132,112	\$166	\$69	\$97	\$146.61
Male 25-64	8,832,595	\$349	\$155	\$194	\$39.51
Male 65+	1,793,067	\$5	\$5	\$-	\$3.02
Female 0-4	823,777	\$12	\$4	\$8	\$14.79
Female 5-9	930,110	\$2	\$1	\$1	\$2.53
Female 10-14	1,027,469	\$6	\$3	\$4	\$6.06
Female 15-19	1,031,244	\$23	\$10	\$13	\$22.27
Female 20-24	1,082,801	\$28	\$11	\$17	\$25.55
Female 25-64	8,840,451	\$105	\$44	\$61	\$11.85
Female 65+	2,343,354	\$4	\$4	\$-	\$1.88

Canadians aged 15-19 were the most likely to require non-hospitalized treatment for injuries due to violence, however (941.78 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 \$87.43 – 3.2 times higher than for Canadians overall. They were followed by youth aged 15-19, with a per capita cost of \$72.50 – 2.6 times the average for all Canadians.

Violence related injury costs for males (\$43.83 per capita) were 3.9 times higher than those for females (\$11.23) and 1.6 times higher than those for Canadians overall.

Provincial comparison of age/sex standardized injury mortality rates

Table 19

Age/sex standardized mortality rates by cause of injury, Canada and by province, 2004

Jurisdiction	Age/sex standardized mortality rates per 100,000 population			
	Transport	Falls	Suicide	Violence
Alberta	13.6	4.3	14.1	2.5
British Columbia	10.6	7.6	10.9	1.2
Manitoba	10.3	10.1	11.6	4.3
New Brunswick	12.4	9.2	11.6	1.1
Newfoundland and Labrador	8.0	3.4	10.0	0.2
Nova Scotia	10.6	12.6	9.5	1.6
Ontario	7.6	8.7	8.3	1.4
Prince Edward Island	17.5	9.4	6.0	0.0
Quebec	9.8	3.6	15.7	1.3
Saskatchewan	12.8	6.9	11.3	3.4
Canada	9.6	7.0	11.4	1.6

A comparison of age and sex standardized mortality rates for major causes of injury in 2004 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 – 7.6 per 100,000 (21% lower than the national rate of 9.6), while Prince Edward Island had the highest rate at 17.5 (82% above the national rate).

Newfoundland and Labrador enjoyed the lowest rate of mortality due to falls at 3.4 per 100,000 (49% of the national rate), while Nova Scotia suffered from the highest rate - 12.6 per 100,000 (80% higher than the national rate).

Prince Edward Island had the lowest rates of mortality due to suicide and violence (6.0 and 0.0 respectively, just under half the national rate of suicide and 100% lower than the national rate from violence), while Quebec had the highest suicide rate (15.7 or 38% higher than the national rate), and Manitoba suffered from the highest rate due to violence (4.3 or 269% the national rate).

Table 20

Age/sex standardized injury mortality rates by cause, Canada, highest and lowest province, 2004

Cause of injury	Age/sex standardized mortality rates per 100,000 population		
	Lowest provincial rate	National rate	Highest provincial rate
Transport incidents	7.6 Ontario	9.6	17.5 Prince Edward island
Falls	3.4 Newfoundland and Labrador	7.0	12.6 Nova Scotia
Suicide	6.0 Prince Edward Island	11.4	15.7 Quebec
Violence	0.0 Prince Edward Island	1.6	4.3 Manitoba

Burden of injury by province

Table 21
Economic burden, health care costs & potential years of life lost, Canada & by province, 2004

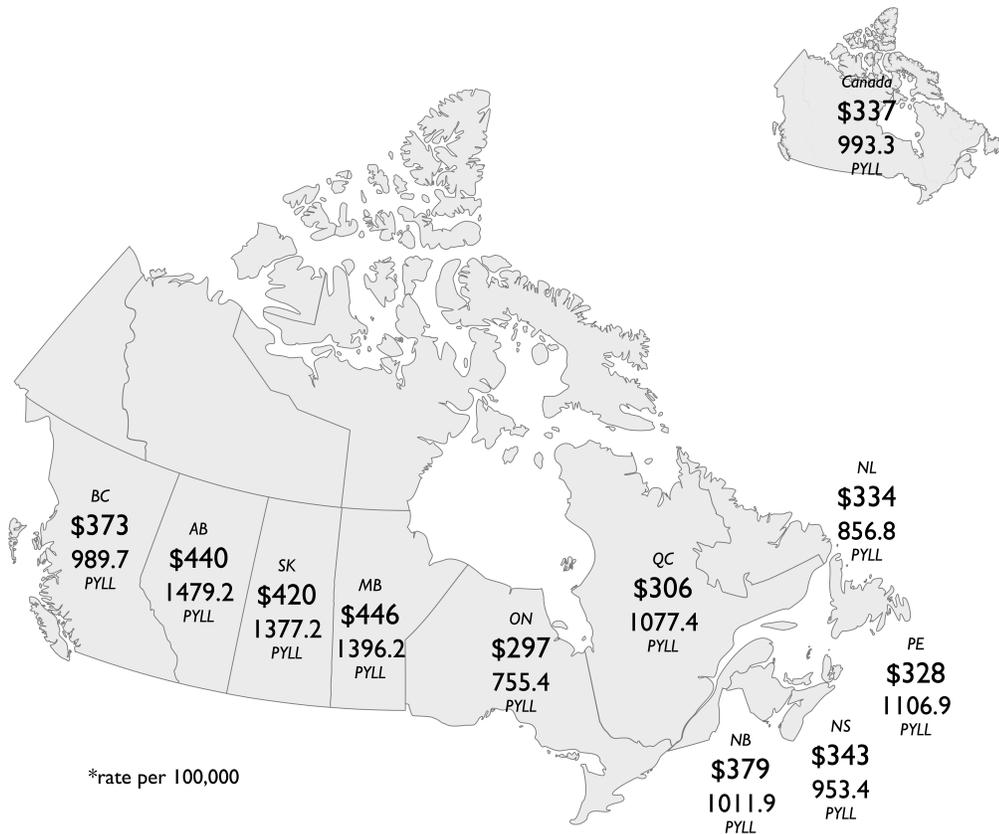
Jurisdiction	Economic burden (per capita)	Health care costs (per capita)	Potential years of life lost (per 100,000 population)
Alberta	\$918	\$440	1,479.2
British Columbia	\$670	\$373	989.7
Manitoba	\$782	\$446	1,396.2
New Brunswick	\$616	\$379	1,011.9
Newfoundland and Labrador	\$518	\$334	856.8
Nova Scotia	\$552	\$343	953.4
Ontario	\$551	\$297	755.4
Prince Edward island	\$567	\$328	1,106.9
Quebec	\$558	\$306	1077.4
Saskatchewan	\$791	\$420	1,377.2
Canada	\$621	\$337	993.3

Table 22
Economic burden, direct costs, and PYLL of injury, Canada and highest and lowest province, 2004

	Lowest provincial rate	National rate	Highest provincial rate
Economic burden (per capita)	\$518 Newfoundland and Labrador	\$621 per capita	\$918 Alberta
Health care costs (per capita)	\$297 Ontario	\$337 per capita	\$446 Manitoba
Potential years of life lost (per 100,000)	755.4 Ontario	993.3 per 100,000 pop.	1,479.2 Alberta

Newfoundland and Labrador enjoyed the lowest economic burden of injury at \$518 per capita (16% below the national rate), while Alberta had the highest at \$918 per capita – 48% higher than the national rate.

Figure 13
Health care costs per capita and potential years of life lost (PYLL) by province, 2004



Ontario had the lowest direct (health care) costs arising from injury at \$297 per capita (12% lower than the national rate), while Manitoba had the highest health care costs at \$446 per capita (32% above the national rate).

Ontario also had the fewest potential years of life lost due to injury, at 755.4 years per 100 000 population (24% below the national rate), while Alberta suffered the most serious losses at 1,479.2 years (49% higher than the national rate).

Alberta, Manitoba, and Saskatchewan consistently ranked as the three provinces with the highest economic burden, health care costs, and potential years of life lost as a result of injury in 2004.

Alberta

Injury in Alberta

The Alberta Centre for Injury Control and Research (ACICR) was established in 1998, in recognition that public health is the foundation of an effective and sustainable health system and injury prevention is a cornerstone of health protection. The ACICR focuses on program support, research, surveillance, evaluation, information sharing, and advocacy for healthy public policy.

In 2003, the ACICR developed the Alberta Injury Control Strategy, with support from Alberta Health and Wellness, and guidance from a provincial Advisory Committee, comprising representatives from government, non-government, and regional health authorities, and input from regional and provincial consultations with a broad range of injury control stakeholders. Aimed at “making Alberta the safest place to live,” the Strategy sets out seven strategic goals with specific objectives and recommended actions:

1. Increase the awareness and commitment of Albertans to injury prevention.
2. Promote the development and enforcement of healthy public policies and legislation aimed at injury prevention.
3. Build and sustain the capacity and capability to deliver effective injury prevention programs.
4. Increase the availability of and access to comprehensive provincial injury surveillance data.
5. Increase research and program evaluation on injury causes, injury programs, and practices.
6. Optimize emergency response, acute care, and rehabilitation services to those who are affected by injury.
7. Strengthen partnerships among injury control stakeholders.

Completion of the Strategy was followed in 2004 by the creation of the Alberta Injury Control Alliance to help drive implementation. Alliance members represent a broad range of injury stakeholders (non-government, government, regions, and industry) who work to create awareness of the Strategy and engage in networking, communication, collaboration, and partnership building related to injury issues.

In 2005 the Alberta Mental Health Board facilitated the development of A Call To Action: The Alberta Suicide Prevention Strategy, setting out key strategies and approaches aimed at the general population as well as more targeted efforts to address key priorities.

In 2007 Alberta Transportation released the Alberta Traffic Safety Plan: Saving Lives on Alberta’s Roads, a comprehensive strategy to reduce traffic-related deaths and injuries in the province. The Plan outlines key initiatives to prevent motor vehicle collisions, build safer roads, establish and enforce traffic laws, and educate Albertans on traffic safety.

In 2008, the ACICR began developing implementation and evaluation plans for the Alberta Injury Control Strategy, under the direction and guidance of an inter-ministry Assistant Deputy Ministers Steering Committee, focusing on the government's response to the Strategy.

Total burden of injury

Injuries cost Albertans \$2.9 billion and 1,626 lives in 2004.

A further 642 people were totally and permanently disabled and 7,926 were left with a permanent partial disability, while 27,919 were hospitalized and another 373,898 were treated in emergency departments as a result of injury.

Based on Alberta's 2004 population of 3,201,895, this translates into an annual death rate of 50.8 people per 100,000 population, an estimated 1,479.2 potential years of life lost, and \$918 in total injury costs for every Albertan due to injury.

Table 23
Summary of findings, all injury, Alberta, 2004

Injury deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability	Total cost
1,626	27,919	373,898	7,926	642	\$2,939 million

Direct and indirect costs

The direct (health care) costs of injury in Alberta in 2004 were \$1.4 billion or \$440 for every Albertan, and represented 48% of all injury costs, while indirect costs amounted to \$1.5 billion or 52%.

Intentional and unintentional injury

Table 24
Injury by intent, Alberta, 2004

Description	Deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability
Unintentional	801	23,838	350,365	7,029	574
Intentional	532	3,718	21,521	815	63
Undetermined intent/Other	293	363	2,012	81	5
Total	1,626	27,919	373,898	7,925	642

Most injuries incurred by Albertans in 2004 were unintentional injuries. Forty-nine percent of deaths, 85% of hospitalizations, 94% 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 33% of deaths, 13% of hospitalizations, 6% of emergency room visits, and 10% of all cases of permanent disability arising from injury.** The remaining incidents are of undetermined intent.

Table 25

Total, direct, and indirect costs by intent of injury, Alberta, 2004

Description	Total costs (\$Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
Unintentional injury	\$2,263	\$1, 236,	\$1,027
Intentional injury	\$522	\$159	\$363
Undetermined intent/Other	\$153	\$14	\$139
Total	\$2,939	\$1,408	\$1,529

It is not surprising then, that **unintentional injuries accounted for \$2.26 billion or 77% of Alberta's \$2.94 billion total injury costs in 2004.** Unintentional injuries were also responsible for \$1.24 billion or 88% of Alberta's \$1.41 billion in direct injury costs and \$1.03 billion or 67% of its \$1.53 billion in indirect costs.

Intentional injuries were responsible for 18% of total costs, 11% of direct costs, and 24% of indirect costs arising from injury, while injuries of other or undetermined intent accounted for 5% of total costs, 1% of direct costs, and 9% of indirect costs.

Change in Alberta unintentional injury death rates 1997-2004

A comparison of 1997 unintentional injury death rates published in SMARTRISK's *The Economic Burden of Unintentional Injury in Alberta*, with comparable data from 2004 shows that **unintentional death rates in Alberta decreased 16.4% over the period 1997-2004.** Because of differences in ICD codes used in 1997 and 2004, it is not possible to accurately compare more detailed breakdowns of Alberta injury data from 1997 and 2004.

Table 26

Change in unintentional injury death rates, 1997-2004, Alberta

	Deaths due to unintentional injury	Alberta population	Unintentional injury death rate per 100,000 population
1997	835	2,790,577	29.9
2004	801	3,201,895	25
Increase/decrease 1997-2004	-4%	+14.7%	-16.4%

Injury by cause

Table 27

Number of injury deaths, hospitalizations, and non-hospitalizations by cause, Alberta, 2004

Description	Deaths	Hospitalizations	Non-hospitalizations	Permanent partial disability	Permanent total disability
Transport Incidents					
<i>Pedestrian</i>	56	285	1,364	66	7
<i>Pedal Cycle</i>	10	493	6,964	143	13
<i>Motor Vehicle</i>	192	2,412	20,470	572	59
<i>ATV, Snowmobile</i>	25	673	4,257	167	14
<i>Other</i>	152	597	5,190	153	13
Falls					
<i>On the same level</i>	9	3,849	25,858	1,064	79
<i>From skates, skis, boards, blades</i>	1	657	9,587	211	16
<i>From furniture</i>	6	654	5,245	178	15
<i>In playgrounds</i>	0	203	3,059	71	5
<i>On stairs</i>	18	1,035	10,473	291	28
<i>From ladders/scaffolding</i>	4	427	2,045	110	10
<i>Diving</i>	1	22	346	6	1
<i>Other</i>	81	4,991	36,123	1,337	123
Drowning	17	22	93	3	0
Fire/Burns	15	309	5,893	137	7
Unintentional Poisoning	30	1,227	10,921	302	20
Struck by/against Sports Equipment	0	130	8,767	75	6
Other Unintentional Injuries	184	5,852	193,710	2,144	157
Suicide/Self-Harm - Poisoning	114	1,689	3,387	371	17
Suicide/Self-Harm - Other	336	385	1,460	66	6
Violence	82	1,644	16,674	378	40
Undetermined Intent/Other	293	363	2,012	81	5
Total	1,626	27,919	373,898	7,926	642

In 2004, suicide/self-harm and transport incidents were the leading causes of death by injury in Alberta, accounting for 28% and 27% of deaths respectively. Injuries of undetermined intent accounted for a further 18% of injury deaths and other unintentional injuries for 11%. Among the remaining deaths, falls were responsible for 7%, violence for 5%, unintentional poisoning for 2%, and drowning and fire/burns for 1% each.

Hospitalizations due to injury were due most often to falls (42%), followed by other unintentional injuries (21%), and transport incidents (16%). Suicide/self-harm accounted for an additional 7% of hospitalizations and violence for 6%. Unintentional poisoning resulted in 4%, while fire/burns and undetermined injuries each accounted for 1%. There were no hospitalizations due to drowning or being struck by/against sports equipment.

The most frequent defined causes of emergency room visits to treat injury were falls (25%) and transport incidents (10%), while 52% of visits were due to other unintentional injury. The remaining causes of emergency room visits were violence (4%), unintentional poisoning (3%), fire/burns (2%), being struck by/against sports equipment (2%), suicide/self-harm (1%), and injury due to undetermined intent (1%).

Falls were the leading cause of permanent partial disability (41%) and permanent total disability (43%) arising from injury, followed by other unintentional injury (27% and 25% respectively), and transport incidents (14% and 17%). Less frequent causes included suicide/self-harm (6% and 4%), violence (5% and 6%), unintentional poisoning (4% and 3%), and injuries of undetermined intent (1% in both cases also).

Table 28
Mortality, crude death rates (per 100,000 pop.) and total cost per capita by cause, Alberta, 2004

Cause	Deaths	Death rate (per 100,000)	Total costs	Cost per capita
Traffic incidents	192	6.0	\$306 million	\$95
Falls	120	3.7	\$764 million	\$239
Suicide/self-harm	450	14.1	\$336 million	\$105
Violence	82	2.6	\$186 million	\$58

While suicide/self-harm was responsible for the most injury deaths per capita (14.1 per 100,000 population), falls generated the greatest per capita cost to Albertans - \$239.

Costs of injury by cause

Table 29

Total, direct, and indirect costs of injury by cause, Alberta, 2004

Description	Total costs (\$ Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
Transport Incidents			
<i>Pedestrian</i>	\$47	\$15	\$32
<i>Pedal Cycle</i>	\$54	\$26	\$28
<i>Motor Vehicle</i>	\$306	\$128	\$178
<i>ATV, Snowmobile</i>	\$70	\$32	\$39
<i>Other</i>	\$120	\$28	\$92
Falls			
<i>On the same level</i>	\$209	\$149	\$60
<i>From skates, skis, boards, blades</i>	\$71	\$36	\$35
<i>From furniture</i>	\$40	\$29	\$11
<i>In playgrounds</i>	\$25	\$13	\$12
<i>On stairs</i>	\$73	\$45	\$28
<i>From ladders/scaffolding</i>	\$27	\$16	\$11
<i>Diving</i>	\$4	\$2	\$2
<i>Other</i>	\$315	\$216	\$98
Drowning	\$11	\$1	\$10
Fire/Burns	\$40	\$17	\$23
Unintentional Poisoning	\$92	\$51	\$41
Struck by/against Sports Equipment	\$25	\$12	\$13
Other Unintentional Injuries	\$734	\$419	\$315
Suicide/Self-Harm - Poisoning	\$158	\$66	\$92
Suicide/Self-Harm - Other	\$178	\$16	\$163
Violence	\$186	\$77	\$109
Undetermined Intent/Other	\$153	\$14	\$139
Total	\$2,939	\$1,409	\$1,529

Almost half (46%) of the total costs of injury in Alberta in 2004 were attributable to falls (26%) and transport incidents (20%). Other unintentional injuries accounted for a further 25% of these costs, followed by suicide/self-harm (11%), violence (6%), injuries of undetermined intent (5%), unintentional poisoning (3%), fire/burns (1%) and being struck by/against sports equipment (1%).

Falls were also the leading cause of health care or direct costs due to injury, accounting for 36% of all direct injury costs in 2004, followed by other unintentional injuries at 30% and transport incidents at 16%. Suicide and violence accounted for a further 6% and 5% of direct costs, unintentional poisoning 4%, fire/burns 1%, and being struck by/against sports equipment 1%.

Transport incidents were the leading cause of indirect costs arising from injury at 24%, followed by other unintentional injuries (21%), falls (17%), and suicide/self-harm (17%). Other causes included injuries of undetermined intent (9%), violence (7%), unintentional poisoning (3%), fire/burns (2%), drowning (1%), and being struck by/against sports equipment (1%).

Transport related injuries by cause and associated costs

Motor vehicle incidents caused 44% of all transport related injury deaths in Alberta in 2004 and accounted for over half of all hospitalizations (54%), emergency room visits (54%), and cases of permanent partial disability (52%) and permanent total disability (56%) arising from transport related injuries.

The remaining deaths due to transport incidents were attributed to other (non-specified) transport incidents (35%), pedestrian incidents (13%), ATV/snowmobile incidents (6%), and cycling incidents 2%. Other transport related causes of hospitalization included ATV/snowmobiles (15%), other (non-specified) transport (13%), cycling (11%), and pedestrian (6%) incidents. Other emergency room visits were due to cycling (18%), other (non-specified) (14%), ATV/snowmobile (11%), and pedestrian (4%) transport incidents.

Motor vehicle incidents accounted for approximately half of total costs (51%), direct costs (56%), and indirect costs (48%) arising from injuries due to transport incidents in Alberta in 2004. Remaining direct costs were due to injuries arising from ATV/snowmobile (14%), cycling (12%), other (unspecified) (12%), and pedestrian (7%) incidents. Remaining indirect costs were due to other (unspecified) (25%), ATV/snowmobile (10%), pedestrian (9%), and cycling (7%) 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 2004, accounting for 15% of all deaths by falling. Other types of falls resulting in death included falls on the same level (8%), from furniture (5%), from ladders/scaffolding (3%), and diving (1%). The vast majority (68%) of deaths by falls, however, are from other (non-specified) types of falls.

However, falls on the same level were the leading cause (33%) of hospitalizations, emergency room visits (28%), and cases of permanent partial disability (33%) and permanent total disability (29%) due to falls. Other causes of hospitalizations from falls included falls from stairs (9%), from skates/skis/boards/blades (6%), from furniture (6%), playgrounds (2%), and diving (less than 1%). Other (non-specified) types of falls accounted for the remaining 42% of hospitalizations in 2004. Other causes of emergency room visits due to falls included falls from stairs (11%), from skates/skis/boards/blades (10%), from furniture (6%), playgrounds (3%), from ladders/scaffolding (2%), and diving (less than 1%). Other (non-specified) types of falls accounted for the remaining 39% of emergency room visits in 2004.

Falls on the same level were also the single greatest cause of costs due to falls, accounting for 27% of total costs, 29% of direct costs, and 23% of indirect costs in 2004, followed by falls from stairs (10% of total costs, 9% of direct costs, and 11% of indirect costs), falls from skates/skis/boards/blades (9% of total costs, 7% of direct costs, and 14% of indirect costs), from furniture (5% of total costs, 6% of direct costs, and 14% of indirect costs), from ladders/scaffolding (4% of total costs, 3% of direct costs, and 4% of indirect costs), and playgrounds (3% of total costs, 3% of direct costs, and 5% of indirect costs). Other (non-specified) falls accounted for 41% of total costs, 43% of direct costs, and 38% of indirect costs.

Intentional injuries by cause and associated costs

Suicide/self-harm accounted for 84% of all deaths by intentional injury in Alberta in 2004. Suicide/self-harm other than by poisoning was the leading cause of death (63%), followed by suicide/self-harm by poisoning (21%) and violence (15%).

Suicide/self-harm by poisoning and violence were equally responsible for the majority of hospitalizations (45% and 44% respectively), followed by suicide/self-harm - other (10%), while injury due to violence was responsible for the vast majority of emergency room visits (77%), followed by suicide/self-harm - poisoning (16%) and suicide/self-harm by other means (7%). Permanent partial disability was due almost equally to violence (46%) and suicide/self-harm by poisoning (45%), followed by suicide/self-harm by other means (8%). Permanent total disability was a result of violence in 64% of cases, followed by suicide/self-harm by poisoning (27%), and suicide/self-harm by other means (8%).

Suicide/self-harm accounted for the majority of costs arising from intentional injury in 2004 - 64% of total costs, 52% of direct costs, and 70% of indirect costs. A more detailed breakdown shows that total costs were divided almost evenly between violence (36%), suicide/self-harm by other means (34%), and suicide/self-harm by poisoning (30%). While violence was also responsible for the greatest share of direct costs (49%), it was followed closely by suicide/self-harm by poisoning (42%), with suicide/self-harm by other means accounting for the remaining 10%. Indirect costs showed still another pattern with 45% of costs attributable to suicide/self-harm by other means, 30% to violence, and 25% to suicide/self-harm by poisoning.

British Columbia

Injury in British Columbia

Since the Economic Burden of Unintentional Injury in British Columbia report in 2001, BC has continued to implement a strategic and collaborative approach to reducing the incidence and severity of injuries. Over the past decade, injury mortality and hospitalization rates resulting from motor vehicle collisions, suicide, poisoning and falls have declined. These successes are a result of an integrated approach focusing on policy, research, and practice by the BC government and many partners engaged in injury prevention. Despite significant investment and commitment by many organizations and initiatives, injury still remains the leading cause of death for British Columbians aged 1-44 years, and is still one of the largest cost contributors to its health care system.

The BC Injury Research and Prevention Unit (BCIRPU) operates as a partnership between the BC government, University of BC, and Child and Family Research Institute. Its core functions comprise injury prevention research, surveillance, knowledge translation, and public information. The BCIRPU acts as a provincial injury prevention hub, collaborating with federal, provincial, and regional stakeholders, in particular the BC government, BC health authorities, the BC Injury Prevention and Leadership Action Network, and The Community Against Preventable Injuries. Through these strategic partnerships and collaborative action, BC aims to reduce preventable injuries with the goal of becoming the jurisdiction with the lowest injury rates in the world.

Total burden of injury

Injuries cost British Columbians \$2.8 billion and 1,721 lives in 2004.

A further 739 people were totally and permanently disabled and 9,161 were left with a permanent partial disability, while 32,667 were hospitalized and another 403,340 were treated in emergency departments as a result of injury.

Based on British Columbia's 2004 population of 4,196,383, this translates into an annual death rate of 41.0 people per 100,000 population, an estimated 989.7 potential years of life lost, and \$670 in total costs for every British Columbian due to injury.

Table 30

Summary of findings, all injury, British Columbia, 2004

Injury deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability	Total cost
1,721	32,667	403,340	9,161	739	\$2,812 million

Direct and indirect costs

The direct (health care) costs of injury in British Columbia in 2004 were \$1.6 billion or \$373 for every British Columbian, and represented 56% of total injury costs, while indirect costs amounted to \$1.2 billion or 44%.

Intentional and unintentional injury

Table 31
Injury by intent, British Columbia, 2004

Description	Deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability
Unintentional	1,188	27,365	383,956	8,038	663
Intentional	517	4,770	16,383	1,003	69
Undetermined intent/Other	16	532	3,001	120	7
Total	1,721	32,667	403,340	9,161	739

Most injuries incurred by British Columbians in 2004 were unintentional injuries. Sixty-nine percent of deaths, 84% of hospitalizations, 95% of emergency room visits, 88% of all cases of permanent partial disability, and 90% of permanent total disability arising from injury were caused by unintentional injury.

Intentional injuries accounted for just 30% of deaths, 15% of hospitalizations, 4% of emergency room visits, 11% of all cases of permanent partial disability, and 9% of all cases of permanent total disability arising from injury. The remaining incidents are of undetermined intent.

Table 32
Total, direct, and indirect costs by intent of injury, British Columbia, 2004

Description	Total costs (\$Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
Unintentional injury	\$2,294	\$1,357	\$937
Intentional injury	\$479	\$185	\$293
Undetermined intent/Other	\$38	\$21	\$18
Total	\$2,812	\$1,564	\$1,247

Unintentional injuries accounted for \$2.3 billion or 82% of British Columbia's \$2.8 billion total injury costs in 2004. Unintentional injuries were also responsible for \$1.4 billion or 87% of British Columbia's \$1.6 billion in direct injury costs and \$0.9 billion or 75% of its \$1.2 billion in indirect costs.

Intentional injuries were responsible for 17% of total costs, 12% of direct costs, and 23% of indirect costs arising from injury, while injuries of other or undetermined intent accounted for 1% of total, direct, and indirect costs respectively.

Injury by cause

Table 33

Number of injury deaths, hospitalizations, and non-hospitalizations by cause, British Columbia, 2004

Description	Deaths	Hospitalizations	Non-hospitalizations	Permanent partial disability	Permanent total disability
Transport Incidents					
<i>Pedestrian</i>	62	572	1,986	129	15
<i>Pedal Cycle</i>	11	1,002	7,831	253	24
<i>Motor Vehicle</i>	197	3,042	21,134	696	73
<i>ATV, Snowmobile</i>	25	407	2,341	100	8
<i>Other</i>	156	477	3,050	116	10
Falls					
<i>On the same level</i>	27	5,473	36,866	1,516	112
<i>From skates, skis, boards, blades</i>	< 5	833	8,547	244	19
<i>From furniture</i>	20	1,015	6,301	267	22
<i>In playgrounds</i>	< 5	337	2,501	98	7
<i>On stairs</i>	41	1,365	14,000	385	38
<i>From ladders/scaffolding</i>	6	682	2,873	172	15
<i>Diving</i>	< 5	44	295	10	< 5
<i>Other</i>	238	5,747	44,126	1,562	143
Drowning	40	55	113	8	< 5
Fire/Burns	26	297	5,679	132	7
Unintentional Poisoning	237	1,225	6,398	266	16
Struck by/against Sports Equipment	< 5	103	8,268	67	5
Other Unintentional Injuries	101	4,689	211,646	2,016	145
Suicide/Self-Harm - Poisoning	124	2,795	4,134	603	27
Suicide/Self-Harm - Other	341	438	1,344	73	6
Violence	52	1,537	10,905	327	36
Undetermined Intent/Other	16	532	3,001	120	7
Total	1,721	32,667	403,340	9,161	739

In 2004, suicide/self-harm and transport incidents were the leading causes of death by injury in British Columbia, accounting for 27% and 26% of deaths respectively, followed closely by falls (19%). Other causes included unintentional poisoning (14%), other unintentional injuries (6%), violence (3%), drowning (2%), fire/burns (2%), and injuries of undetermined intent (1%).

Table 34

Mortality, crude death rates (per 100,000 pop.) and total cost per capita by cause, British Columbia, 2004

Cause	Deaths	Death rate (per 100,000)	Total costs	Cost per capita
Traffic incidents	192	6.0	\$306 million	\$95
Falls	120	3.7	\$764 million	\$239
Suicide/self-harm	450	14.1	\$336 million	\$105
Violence	82	2.6	\$186 million	\$58

While suicide/self-harm was responsible for the most injury deaths per capita (11.1 per 100,000 population), falls generated the greatest per capita cost to British Columbians – \$211.

Hospitalizations due to injury were due most often to falls (47%), followed by transport incidents (17%), other unintentional injuries (14%), and suicide/self-harm (10%). Other causes included violence (5%), unintentional poisoning (4%), injuries of undetermined intent (2%), and fire/burns (1%). There were no hospitalizations due to drowning or being struck by/against sports equipment.

The most frequent defined causes of emergency room visits to treat injury were falls (29%) and transport incidents (9%), while 52% of visits were due to other (non-specified) unintentional injury. The remaining causes of emergency room visits were violence (3%), unintentional poisoning (2%), being struck by/against sports equipment (2%), fire/burns (1%), suicide/self-harm (1%), and injury due to undetermined intent (1%).

Falls were the leading cause of permanent partial disability (46%) and permanent total disability (48%) arising from injury, followed by other unintentional injury (22% and 20% respectively), and transport incidents (14% and 18%). Less frequent causes included suicide/self-harm (7% and 4%), violence (4% and 5%), unintentional poisoning (3% and 2%), fire/burns (1% in both cases), being struck by/against sports equipment (1% in both cases), and injuries of undetermined intent (1% in both cases also).

Costs of injury by cause

Table 35

Total, direct, and indirect costs of injury by cause, British Columbia, 2004

Description	Total costs (\$ Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
Transport Incidents			
<i>Pedestrian</i>	\$58	\$27	\$30
<i>Pedal Cycle</i>	\$85	\$48	\$37
<i>Motor Vehicle</i>	\$302	\$146	\$156
<i>ATV, Snowmobile</i>	\$41	\$19	\$22
<i>Other</i>	\$88	\$20	\$68
Falls			
<i>On the same level</i>	\$262	\$209	\$53
<i>From skates, skis, boards, blades</i>	\$75	\$43	\$32
<i>From furniture</i>	\$54	\$44	\$11
<i>In playgrounds</i>	\$34	\$20	\$14
<i>On stairs</i>	\$86	\$59	\$27
<i>From ladders/scaffolding</i>	\$36	\$24	\$12
<i>Diving</i>	\$5	\$2	\$3
<i>Other</i>	\$332	\$249	\$83
Drowning	\$18	\$1	\$16
Fire/Burns	\$36	\$167	\$19
Unintentional Poisoning	\$152	\$44	\$109
Struck by/against Sports Equipment	\$19	\$10	\$10
Other Unintentional Injuries	\$610	\$374	\$236
Suicide/Self-Harm - Poisoning	\$202	\$104	\$98
Suicide/Self-Harm - Other	\$144	\$17	\$127
Violence	\$132	\$64	\$68
Undetermined Intent/Other	\$38	\$21	\$18
Total	\$2,812	\$1,564	\$1,247

Over half (51%) of the total costs of injury in British Columbia in 2004 were attributable to falls (31%) and transport incidents (20%). Other unintentional injuries accounted for a further 22% of these costs, followed by suicide/self-harm (12%), unintentional poisoning (5%), violence (5%), drowning (1%), fire/burns (1%), being struck by/against sports equipment (1%), and injuries of undetermined intent (1%).

Falls were also the leading cause of health care or direct costs due to injury, accounting for 42% of all direct injury costs in 2004, followed by other unintentional injuries at 24%, and transport incidents at 17%. Suicide/self-harm accounted for a further 8%, violence 4%, unintentional poisoning 3%, fire/burns 1%, being struck by/against sports equipment 1%, and injuries of undetermined intent 1%.

Transport incidents were the leading cause of indirect costs arising from injury at 25%, followed by falls (19%), other unintentional injuries (19%), and suicide/self-harm (18%). Other causes included unintentional poisoning (9%), violence (5%), fire/burns (2%), drowning (1%), being struck by/against sports equipment (1%), and injuries of undetermined intent (1%).

Transport related injuries by cause and associated costs

Motor vehicle incidents caused 44% of all transport related injury deaths in British Columbia in 2004 and accounted for over half of all hospitalizations (55%), emergency room visits (58%), and cases of permanent partial disability (54%), and permanent total disability (56%) arising from transport related injuries.

The remaining deaths due to transport incidents were attributed to other (non-specified) transport incidents (35%), pedestrian incidents (14%), ATV/snowmobile incidents (6%), and cycling incidents (2%). Other transport related causes of hospitalization included injuries due to cycling (18%), pedestrian incidents (10%), other (non-specified) transport (9%), and ATV/snowmobiles (7%). Other emergency room visits were due to cycling (22%), other (non-specified) incidents (8%), ATV/snowmobiles (6%), and pedestrian (5%) transport incidents.

Motor vehicle incidents accounted for approximately half of total costs (53%), direct costs (56%), and indirect costs (50%) arising from injuries due to transport incidents in British Columbia in 2004. With respect to total costs, motor vehicle incidents were followed by cycling incidents (15%), other (unspecified) incidents (15%), pedestrian incidents (10%), and ATV/snowmobiles (7%). Remaining direct costs were due to injuries arising from cycling (18%), pedestrian incidents (10%), other (unspecified) transport incidents (8%), and ATV/snowmobiles (7%). Remaining indirect costs were due to other (unspecified) incidents (22%), cycling (12%), pedestrian incidents (10%), and ATV/snowmobiles (7%).

Fall related injuries by cause and associated costs

After other (unspecified) falls, stairs were the leading cause of death by falls in British Columbia in 2004, accounting for 12% 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 (2%). The vast majority (71%) of deaths by falls, however, are from other (unspecified) types of falls.

However, falls on the same level were the leading cause (35%) of hospitalizations, emergency room visits (32%), and cases of permanent partial disability (36%) and permanent total disability (31%) due to falls. Other causes of hospitalizations from falls included falls from stairs (9%), from furniture (7%), from skates/skis/boards/blades (5%), from ladders/scaffolding (4%), and in playgrounds (2%). Other (unspecified) types of falls accounted for the remaining 37% of hospitalizations in 2004. Other causes of emergency room visits included falls from stairs (12%), from skates/skis/boards/ blades (7%), from furniture (5%), playgrounds (2%), and from ladders/scaffolding (2%). Other (non-specified) types of falls accounted for the remaining 38% of emergency room visits in 2004.

Falls on the same level were also the single greatest cause of costs due to falls, accounting for 30% of total costs, 32% of direct costs, and 23% of indirect costs in 2004, followed by falls from stairs (10% of total costs, 9% of direct costs, and 12% of indirect costs), falls from skates/skis/boards/blades (9% of total costs, 7% of direct costs, and 14% of indirect costs), from furniture (6% of total costs, 7% of direct costs, and 5% of indirect costs), from ladders/scaffolding (4% of total costs, 4% of direct costs, and 5% of indirect costs), and playgrounds (4% of total costs, 3% of direct costs, and 6% of indirect costs). Other (unspecified) falls accounted for 38% of total costs, 38% of direct costs, and 35% of indirect costs.

Intentional injuries by cause and associated costs

Suicide/self-harm accounted for 29% of all injury deaths and 90% of all deaths by intentional injury in British Columbia in 2004. Suicide/self-harm other than by poisoning was the leading cause of death (66%), followed by suicide/self-harm by poisoning (24%) and violence (10%).

Suicide/self-harm by poisoning was responsible for the majority of hospitalizations (59%), followed by violence (32%), and suicide/self-harm - other (9%), while injury due to violence was responsible for the majority of emergency room visits (67%), followed by suicide/self-harm - poisoning (25%) and suicide/self-harm by other means (8%). Permanent partial disability was most often the result of suicide/self-harm by poisoning (60%), followed by violence (33%), and suicide/self-harm by other means (7%). Permanent total disability was a result of violence in 52% of cases, followed by suicide/self-harm by poisoning (39%), and suicide/self-harm by other means (7%).

Suicide was also responsible for the majority of costs arising from intentional injury in 2004 - 72% of total costs, 65% of direct costs, and 76% of indirect costs. A more detailed breakdown shows that suicide/self-harm by poisoning accounted for 42% of total costs, suicide/self-harm by other means 30%, and violence 28%. While suicide/self-harm by poisoning was also responsible for the majority of direct costs (56%), direct costs arising from violence (35%) significantly exceeded those attributable to suicide/self-harm by other means (9%). Indirect costs showed still another pattern with 43% of costs attributable to suicide/self-harm by other means, 33% to suicide/self-harm by poisoning, and 23% to violence.

Manitoba

Injury in Manitoba

Manitoba’s provincial injury prevention strategy – Injury Free Manitoba: A Provincial Injury Prevention Strategy – was developed in partnership by the Manitoba government, regional health authorities, and key stakeholder organizations involved in Manitoba injury prevention efforts. The strategy aims to create a safe and injury free Manitoba, and includes strategic goals and targets to reduce leading causes of injury. Regional health authorities and other coalitions and organizations have developed complementary frameworks and strategies to help achieve these goals, which can be found online at <http://www.gov.mb.ca/healthyliving/injury.html#reports>.

Total burden of injury

Injuries cost Manitobans \$0.9 billion and 647 lives in 2004.

A further 221 people were totally and permanently disabled and 2,703 left with a permanent partial disability, while 9,831 were hospitalized and another 114,342 treated in emergency departments as a result of injury.

Based on Manitoba’s 2004 population of 1,170,268, this translates into an annual death rate of 55.3 people per 100,000 population, an estimated 1,396.2 potential years of life lost, and \$782 in total costs for every Manitoban due to injury.

Table 36
Summary of findings, all injury, Manitoba, 2004

Injury deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability	Total cost
647	9,831	114,342	2,703	221	\$915 million

Direct and indirect costs

The direct (health care) costs of injury in Manitoba in 2004 were \$0.52 billion or \$446 for every Manitoban, and represented 57% of total injury costs, while indirect costs amounted to \$0.39 billion or 43%.

Intentional and unintentional injury

Table 37
Injury by intent, Manitoba, 2004

Description	Deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability
Unintentional	449	8,093	108,974	2,351	194
Intentional	182	1,544	4,537	310	25
Undetermined intent/Other	16	194	831	42	< 5
Total	647	9,831	114,342	2,703	221

Most injuries incurred by Manitobans in 2004 were unintentional injuries. Seventy percent of deaths, 82% of hospitalizations, 95% of emergency room visits, 86% of all cases of permanent partial disability, and 91% of permanent total disability arising from injury were caused by unintentional injury.

Intentional injuries accounted for just 28% of deaths, 16% of hospitalizations, 4% of emergency room visits, and 12% of all cases of permanent partial and total disability arising from injury. The remaining incidents are of undetermined intent.

Table 38
Total, direct, and indirect costs by intent of injury, Manitoba, 2004

Description	Total costs (\$Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
Unintentional injury	\$728	\$452	\$277
Intentional injury	\$169	\$62	\$107
Undetermined intent/Other	\$17	\$8	\$9
Total	\$915	\$522	\$393

It is not surprising then, that unintentional injuries accounted for \$0.73 billion or 80% of Manitoba's \$0.92 billion total injury costs in 2004. Unintentional injuries were also responsible for \$0.45 billion or 87% of Manitoba's \$0.52 billion in direct injury costs and \$0.28 billion or 70% of its \$0.39 billion in indirect costs.

Intentional injuries were responsible for 19% of total costs, 12% of direct costs, and 27% of indirect costs arising from injury, while injuries of other or undetermined intent accounted for 2% of total costs, 1% of direct costs, and 2% of indirect costs respectively.

Injury by cause

Table 39

Number of injury deaths, hospitalizations, and non-hospitalizations by cause, Manitoba, 2004

Description	Deaths	Hospitalizations	Non-hospitalizations	Permanent partial disability	Permanent total disability
Transport Incidents					
<i>Pedestrian</i>	18	142	557	32	< 5
<i>Pedal Cycle</i>	< 5	99	2,336	35	< 5
<i>Motor Vehicle</i>	51	618	5,783	149	15
<i>ATV, Snowmobile</i>	7	217	663	49	< 5
<i>Other</i>	42	147	845	35	< 5
Falls					
<i>On the same level</i>	10	1,596	10,382	440	33
<i>From skates, skis, boards, blades</i>	< 5	104	2,563	40	< 5
<i>From furniture</i>	7	341	1,941	88	7
<i>In playgrounds</i>	< 5	70	828	23	< 5
<i>On stairs</i>	15	422	3,921	116	12
<i>From ladders/scaffolding</i>	< 5	123	767	33	< 5
<i>Diving</i>	< 5	< 5	88	< 5	< 5
<i>Other</i>	88	2,146	12,719	560	51
Drowning	23	6	34	< 5	< 5
Fire/Burns	15	170	1,608	49	< 5
Unintentional Poisoning	59	259	1,815	60	< 5
Struck by/against Sports Equipment	< 5	55	2,443	24	< 5
Other Unintentional Injuries	110	1,575	59,679	617	45
Suicide/Self-Harm - Poisoning	33	647	1,128	140	6
Suicide/Self-Harm - Other	99	122	374	20	< 5
Violence	50	775	3,035	150	17
Undetermined Intent/Other	16	194	831	42	< 5
Total	647	9,831	114,342	2,703	221

In 2004, suicide/self-harm, transport incidents, and falls were the leading causes of death by injury Manitoba, accounting for 20%, 19%, and 19% of deaths respectively. Other causes included other (unspecified) unintentional injuries (17%), unintentional poisoning (9%), violence (8%), drowning (4%), fire/burns (2%), and injuries of undetermined intent (1%).

Table 40
Mortality, crude death rates (per 100,000 pop.) and total cost per capita by cause, Manitoba, 2004

Cause	Deaths	Death rate (per 100,000)	Total costs	Cost per capita
Traffic incidents	120	10.3	\$145 million	\$123
Falls	122	10.4	\$298 million	\$255
Suicide/self-harm	132	11.3	\$97 million	\$83
Violence	50	4.3	\$72 million	\$62

While suicide/self-harm was responsible for the most injury deaths per capita (11.3 per 100,000 population), falls generated the greatest per capita cost to Manitobans – \$255.

Hospitalizations due to injury were due most often to falls (49%), followed by other unintentional injuries (16%), and transport incidents (12%). Other causes included suicide/self-harm (8%), violence (8%), unintentional poisoning (3%), fire/burns (2%), injuries of undetermined intent (2%), and being struck by/against sports equipment (1%).

The most frequent defined causes of emergency room visits to treat injury were falls (29%) and transport incidents (9%), while 52% of visits were due to other (non-specified) unintentional injury. The remaining causes of emergency room visits were violence (3%), unintentional poisoning (2%), being struck by/against sports equipment (2%), fire/burns (1%), suicide/self-harm (1%), and injury due to undetermined intent (1%).

Falls were the leading cause of permanent partial disability (48%) and permanent total disability (50%) arising from injury, followed by other (unspecified) unintentional injury (23% and 20% respectively), and transport incidents (11% and 13%). Less frequent causes included suicide/self-harm (6% and 4%), violence (6% and 8%), unintentional poisoning (2% and 2%), fire/burns (2% and 1%), injuries of undetermined intent (2% and 1%), and being struck by/against sports equipment (1% in both cases).

Costs of injury by cause

Table 41

Total, direct, and indirect costs of injury by cause, Manitoba, 2004

Description	Total costs (\$ Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
Transport Incidents			
<i>Pedestrian</i>	\$17	\$8	\$9
<i>Pedal Cycle</i>	\$13	\$8	\$5
<i>Motor Vehicle</i>	\$70	\$33	\$37
<i>ATV, Snowmobile</i>	\$19	\$10	\$9
<i>Other</i>	\$26	\$7	\$19
Falls			
<i>On the same level</i>	\$92	\$77	\$15
<i>From skates, skis, boards, blades</i>	\$12	\$6	\$6
<i>From furniture</i>	\$21	\$17	\$3
<i>In playgrounds</i>	\$7	\$4	\$3
<i>On stairs</i>	\$30	\$21	\$9
<i>From ladders/scaffolding</i>	\$7	\$5	\$3
<i>Diving</i>	\$0.4	\$0.1	\$0.3
<i>Other</i>	\$129	\$103	\$26
Drowning	\$10	\$0.1	\$10
Fire/Burns	\$18	\$9	\$9
Unintentional Poisoning	\$37	\$12	\$25
Struck by/against Sports Equipment	\$7	\$4	\$3
Other Unintentional Injuries	\$214	\$129	\$85
Suicide/Self-Harm - Poisoning	\$51	\$25	\$26
Suicide/Self-Harm - Other	\$46	\$5	\$41
Violence	\$72	\$32	\$40
Undetermined Intent/Other	\$17	\$8	\$9
Total	\$915	\$522	\$393

Approximately half (49%) of the total costs of injury in Manitoba in 2004 were attributable to falls (33%) and transport incidents (16%). Other unintentional injuries accounted for a further 23% of these costs, followed by suicide/self-harm (11%), violence (8%), unintentional poisoning (4%), fire/burns (2%), injuries of undetermined intent (2%), drowning (1%), and being struck by/against sports equipment (1%).

Falls were also the leading cause of health care or direct costs due to injury, accounting for 45% of all direct injury costs in 2004, followed by other unintentional injuries at 25%, and transport incidents at 13%. Suicide/self-harm accounted for a further 6%, violence 6%, unintentional poisoning 2%, fire/burns 2%, being struck by/against sports equipment 1%, and injuries of undetermined intent 1%.

Transport incidents were the leading cause of indirect costs arising from injury at 20%, followed by falls (17%), and suicide/self-harm (17%). Other unintentional (unspecified) injuries accounted for another 22%, with remaining causes comprised by violence (10%), unintentional poisoning (6%), fire/burns (2%), drowning (2%), injuries of undetermined intent (2%), and being struck by/against sports equipment (1%).

Transport related injuries by cause and associated costs

Motor vehicle incidents caused 43% of all transport related injury deaths in Manitoba in 2004 and accounted for half or more of all hospitalizations (51%), emergency room visits (57%), and cases of permanent partial disability (50%), and permanent total disability (53%) arising from transport related injuries.

The remaining deaths due to transport incidents were attributed to other (unspecified) transport incidents (35%), pedestrian incidents (15%), ATV/snowmobile incidents (6%), and cycling incidents (2%). Other transport related causes of hospitalization included injuries due to ATV/snowmobiles (18%), pedestrian incidents (12%), other (unspecified) transport (12%), and cycling (8%). Other emergency room visits were due to cycling (23%), other (unspecified) incidents (8%), ATV/snowmobiles (7%), and pedestrian (5%) transport incidents.

Motor vehicle incidents accounted for just under or about half of total costs (48%), direct costs (51%), and indirect costs (46%) arising from injuries due to transport incidents in Manitoba in 2004. With respect to total costs, motor vehicle incidents were followed by other (unspecified) incidents (18%), ATV/snowmobiles (13%), pedestrian incidents (12%), and cycling incidents (9%). Remaining direct costs were due to injuries arising from ATV/snowmobiles (15%), cycling (12%), pedestrian incidents (12%), and other (unspecified) transport incidents (10%). Remaining indirect costs were due to other (unspecified) incidents (24%), pedestrian incidents (12%), ATV/snowmobiles (11%), and cycling (7%).

Fall related injuries by cause and associated costs

After other (unspecified) falls, stairs were the leading cause of death by falls in Manitoba in 2004, accounting for 12% 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 (2%). The vast majority (72%) of deaths by falls however, are from other (unspecified) types of falls.

Falls on the same level were the leading cause (33%) of hospitalizations, emergency room visits (31%), and cases of permanent partial disability (34%), and permanent total disability (29%) due to falls. Other causes of hospitalizations from falls included falls from stairs (9%), from furniture (7%), from ladders/scaffolding (3%), from skates/skis/boards/blades (2%), and in playgrounds (1%). Other (unspecified) types of falls accounted for the remaining 45% of hospitalizations in 2004. Other causes of emergency room visits included falls from stairs (12%), from skates/skis/boards/ blades (8%), from furniture (6%), playgrounds (2%), and from ladders/scaffolding (2%). Other (non-specified) types of falls accounted for the remaining 38% of emergency room visits in 2004.

Falls on the same level were also the single greatest cause of costs due to falls, accounting for 31% of total costs, 33% of direct costs, and 24% of indirect costs in 2004, followed by falls from stairs (10% of total costs, 9% of direct costs, and 13% of indirect costs), from furniture (7% of total costs, 7% of direct costs, and 5% of indirect costs), falls from skates/skis/boards/blades (4% of total costs, 3% of direct costs, and 8% of indirect costs), playgrounds (2% of total costs, 2% of direct costs, and 5% of indirect costs) and from ladders/scaffolding (2% of total costs, 2% of direct costs, and 4% of indirect costs). Other (unspecified) falls accounted for 43% of total costs, 44% of direct costs, and 40% of indirect costs

Intentional injuries by cause and associated costs

Suicide/self-harm accounted for 20% of all deaths by injury and 73% of all deaths by intentional injury in Manitoba in 2004. Suicide/self-harm other than by poisoning was the leading cause of intentional deaths (54%), followed by suicide/self-harm by poisoning (18%), and violence (27%).

Hospitalizations arising from intentional injury were caused equally by violence (50%) and suicide attempts -- suicide self-harm by poisoning (42%) and suicide/self-harm by other means (8%), while violence was responsible for the majority of emergency room visits (67%), followed by suicide/self-harm by poisoning (25%) and suicide/self-harm by other means (8%). Permanent partial disability was most often the result of violence (48% of cases), followed closely by suicide/self-harm by poisoning (45%), and lastly suicide/self-harm by other means (7%). Violence was also responsible for over two-thirds (68%) of intentional injuries resulting in permanent total disability, followed by suicide/self-harm by poisoning (25%), and suicide/self-harm by other means (7%).

A breakdown of the total costs arising from intentional injury in 2004, show that suicide/self-harm was responsible for 57% (30% from suicide/self-harm by poisoning and 27% by other means), while violence accounted for 42%. A similar breakdown of direct (health care) costs of intentional injury, shows that 51% of costs were attributable to violence, 41% to suicide/self-harm by poisoning, and 9% to suicide/self-harm by other means. Indirect costs were divided between violence (38%), suicide/self-harm by other means (38%), and suicide/self-harm by poisoning (24%).

New Brunswick

Injury in New Brunswick

In 2006, the Atlantic Health Sciences Corporation trauma program took a leadership role in injury prevention in New Brunswick with the release of an injury prevention strategy. Building on this, the New Brunswick Department of Health has prepared a draft provincial strategy aimed at preventing unintentional injury, as part of its broader Primary Healthcare Framework. This includes the development of a trauma system with a significant injury prevention component. The Government of New Brunswick, together with those of Nova Scotia, P.E.I., and Newfoundland and Labrador, also supports and funds the Atlantic Collaborative on Injury Prevention.

Total burden of injury

Injuries cost New Brunswick \$463 million and 358 lives in 2004.

A further 135 people were totally and permanently disabled and 1,688 left with a permanent partial disability, while 6,060 were hospitalized and another 72,152 treated in emergency departments as a result of injury.

Based on New Brunswick's 2004 population of 751,384, this translates into an annual death rate of 47.6 people per 100,000 population, an estimated 1,011.9 potential years of life lost, and \$616 in total costs for every resident of New Brunswick due to injury.

Table 42

Summary of findings, all injury, New Brunswick, 2004

Injury deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability	Total cost
358	6,060	72,152	1,688	135	\$463 million

Direct and indirect costs

The direct (health care) costs of injury in New Brunswick in 2004 were \$285 million, or \$379 for every resident of New Brunswick, and represented 61% of total injury costs, while indirect costs amounted to \$178 million or 39%.

Intentional and unintentional injury

Table 43
Injury by intent, New Brunswick, 2004

Description	Deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability
Unintentional	259	5,231	68,701	1,506	124
Intentional	97	673	2,915	148	9
Undetermined intent/Other	< 5	156	536	33	< 5
Total	358	6,060	72,152	1,688	135

Most injuries incurred in 2004 were unintentional injuries. Seventy two percent of deaths, 86% of hospitalizations, 95% of emergency room visits, 89% of all cases of permanent partial disability, and 92% of permanent total disability arising from injury were caused by unintentional injury.

Intentional injuries accounted for just 27% of deaths, 11% of hospitalizations, 4% of emergency room visits, 9% of all cases of permanent partial disability, and 7% of all cases of permanent total disability arising from injury. The remaining incidents are of undetermined intent.

Table 44
Total, direct, and indirect costs by intent of injury, New Brunswick, 2004

Description	Total costs (\$Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
Unintentional injury	\$388	\$251	\$137
Intentional injury	\$66	\$28	\$38
Undetermined intent/Other	\$9	\$6	\$3
Total	\$463	\$285	\$178

It is not surprising then, that unintentional injuries accounted for \$388 million or 84% of New Brunswick's \$463 million total injury costs in 2004. Unintentional injuries were also responsible for \$251 million or 88% of New Brunswick's \$285 million in direct injury costs and \$137 million or 77% of its \$178 million in indirect costs.

Intentional injuries were responsible for 14% of total costs, 10% of direct costs, and 21% of indirect costs arising from injury, while injuries of other or undetermined intent accounted for 2% of total, direct, and indirect costs.

Injury by cause

Table 45

Number of injury deaths, hospitalizations, and non-hospitalizations by cause, New Brunswick, 2004

Description	Deaths	Hospitalizations	Non-hospitalizations	Permanent partial disability	Permanent total disability
Transport Incidents					
<i>Pedestrian</i>	12	48	355	12	< 5
<i>Pedal Cycle</i>	< 5	117	1,397	32	< 5
<i>Motor Vehicle</i>	41	538	3,774	123	13
<i>ATV, Snowmobile</i>	6	195	418	43	< 5
<i>Other</i>	33	49	545	13	< 5
Falls					
<i>On the same level</i>	6	1,078	6,630	294	22
<i>From skates, skis, boards, blades</i>	< 5	123	1,524	37	< 5
<i>From furniture</i>	< 5	181	1,126	48	< 5
<i>In playgrounds</i>	< 5	36	442	12	< 5
<i>On stairs</i>	8	298	2,510	81	8
<i>From ladders/scaffolding</i>	< 5	83	515	22	< 5
<i>Diving</i>	< 5	6	53	< 5	< 5
<i>Other</i>	53	1,201	7,926	318	29
Drowning	9	10	21	< 5	< 5
Fire/Burns	9	60	1,014	25	< 5
Unintentional Poisoning	21	194	1,142	43	< 5
Struck by/against Sports Equipment	< 5	30	1,477	14	< 5
Other Unintentional Injuries	53	984	37,832	388	28
Suicide/Self-Harm - Poisoning	23	477	737	104	5
Suicide/Self-Harm - Other	66	55	239	9	< 5
Violence	8	141	1,939	35	< 5
Undetermined Intent/Other	< 5	156	536	33	< 5
Total	358	6,060	72,152	1,688	135

In 2004, transport incidents, suicide/self-harm, and falls were the leading causes of death by injury in New Brunswick, accounting for 26%, 25%, and 20% of deaths respectively. Other causes included other (unspecified) unintentional injuries (15%), unintentional poisoning (6%), fire/burns (3%), drowning (3%), violence (2%), and injuries of undetermined intent (1%).

Table 46

Mortality, crude death rates (per 100,000 pop.), and total cost per capita by cause, New Brunswick, 2004

Cause	Deaths	Death rate (per 100,000)	Total costs	Cost per capita
Traffic incidents	94	12.5	\$96 million	\$128
Falls	73	9.7	\$149 million	\$199
Suicide/self-harm	89	11.8	\$52 million	\$70
Violence	8	1.1	\$13 million	\$17

While transport incidents were responsible for the most injury deaths per capita (12.5 per 100,000 population), falls generated the greatest per capita cost to residents of New Brunswick – \$199.

Hospitalizations due to injury were due most often to falls (50%), followed by transport incidents (16%) and other unintentional (unspecified) injuries (16%). Other causes included suicide/self-harm (9%), unintentional poisoning (3%), injuries of undetermined intent (3%), violence (2%), and fire/burns (1%).

The most frequent defined causes of emergency room visits to treat injury were falls (29%) and transport incidents (9%), while 52% of visits were due to other (non-specified) unintentional injury. The remaining causes of emergency room visits were violence (3%), unintentional poisoning (2%), being struck by/against sports equipment (2%), fire/burns (1%), suicide/self-harm (1%), and injury due to undetermined intent (1%).

Falls were the leading cause of permanent partial disability (48%) and permanent total disability (51%) arising from injury, followed by other (unspecified) unintentional injury (23% and 21% respectively), and transport incidents (13% and 16%). Less frequent causes included suicide/self-harm (7% and 4%), unintentional poisoning (3% and 2%), violence (2% and 3%), injuries of undetermined intent (2% and 1%), fire/burns (1% in both cases), and being struck by/against sports equipment (1% in both cases).

Costs of injury by cause

Table 47

Total, direct, and indirect costs of injury by cause, New Brunswick, 2004

Description	Total costs (\$ Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
Transport Incidents			
<i>Pedestrian</i>	\$7	\$3	\$4
<i>Pedal Cycle</i>	\$10	\$6	\$4
<i>Motor Vehicle</i>	\$51	\$27	\$25
<i>ATV, Snowmobile</i>	\$15	\$9	\$6
<i>Other</i>	\$13	\$2	\$11
Falls			
<i>On the same level</i>	\$48	\$39	\$9
<i>From skates, skis, boards, blades</i>	\$11	\$7	\$4
<i>From furniture</i>	\$8	\$7	\$1
<i>In playgrounds</i>	\$4	\$2	\$1
<i>On stairs</i>	\$16	\$12	\$4
<i>From ladders/scaffolding</i>	\$4	\$3	\$1
<i>Diving</i>	\$0.5	\$0.3	\$0.2
<i>Other</i>	\$58	\$45	\$13
Drowning	\$3	\$0.3	\$2
Fire/Burns	\$7	\$3	\$5
Unintentional Poisoning	\$17	\$8	\$9
Struck by/against Sports Equipment	\$4	\$2	\$2
Other Unintentional Injuries	\$112	\$77	\$35
Suicide/Self-Harm - Poisoning	\$32	\$18	\$14
Suicide/Self-Harm - Other	\$21	\$3	\$18
Violence	\$13	\$7	\$6
Undetermined Intent/Other	\$9	\$6	\$3
Total	\$463	\$285	\$178

Over half of the total costs of injury in New Brunswick in 2004 were attributable to falls (32%) and transport incidents (21%). Other (unspecified) unintentional injuries accounted for a further 24% of these costs, followed by suicide/self-harm (11%), unintentional poisoning (4%), violence (3%), fire/burns (2%), injuries of undetermined intent (2%), drowning (1%), and being struck by/against sports equipment (1%).

Falls were also the leading cause of health care or direct costs due to injury, accounting for 40% of all direct injury costs in 2004, followed by other (unspecified) unintentional injuries at 27%, and transport incidents at 16%. Suicide/self-harm accounted for a further 7%, unintentional poisoning 3%, violence 2%, injuries of undetermined intent 2%, fire/burns 1%, and being struck by/against sports equipment 1%.

Transport incidents were the leading cause of indirect costs arising from injury at 28%, followed by falls (19%), and suicide/self-harm (18%). Other (unspecified) unintentional injuries accounted for another 20%, with the remaining causes including unintentional poisoning (5%), violence (4%), fire/burns (3%), injuries of undetermined intent (2%), drowning (1%), and being struck by/against sports equipment (1%).

Transport related injuries by cause and associated costs

Motor vehicle incidents caused 11% of all injury deaths and 43% of all transport related injury deaths in New Brunswick in 2004 and accounted for half or more of all hospitalizations (57%), emergency room visits (58%), and cases of permanent partial disability (55%), and permanent total disability (59%) arising from transport related injuries.

The remaining deaths due to transport incidents were attributed to other (unspecified) transport incidents (35%), pedestrian incidents (13%), ATV/snowmobile incidents (6%), and cycling incidents (2%). Other transport related causes of hospitalization included injuries due to ATV/snowmobiles (21%), cycling (12%), other (unspecified) transport incidents (5%), and pedestrian incidents (5%). Other emergency room visits were due to cycling (22%), other (unspecified) incidents (8%), ATV/snowmobiles (6%), and pedestrian (5%) transport incidents.

Motor vehicle incidents accounted for approximately half of total costs (53%), direct costs (58%), and indirect costs (49%) arising from injuries due to transport incidents in New Brunswick in 2004. In terms of total costs, motor vehicle incidents were followed by ATV/snowmobiles (16%), other (unspecified) incidents (14%), cycling incidents (11%), and pedestrian incidents (7%). Remaining direct costs were due to injuries arising from ATV/snowmobiles (19%), cycling (13%), pedestrian incidents (6%), and other (unspecified) transport incidents (5%). Remaining indirect costs were due to other (unspecified) incidents (22%), ATV/snowmobiles (13%), cycling incidents (9%), and pedestrian incidents (8%).

Fall related injuries by cause and associated costs

After other (unspecified) falls, stairs were the leading cause of death by falls in New Brunswick in 2004, 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 (2%). The vast majority (73%) of deaths by falls, however, were from other (unspecified) types of falls.

Falls on the same level were the leading specified cause of hospitalizations (36%), emergency room visits (32%), and cases of permanent partial disability (36%), and permanent total disability (32%) due to falls. Other causes of hospitalizations from falls included falls from stairs (10%), from furniture (6%), from skates/skis/boards/blades (4%), from ladders/scaffolding (3%), and in playgrounds (1%). Other (unspecified) types of falls accounted for the remaining 40% of hospitalizations in 2004. Other causes of emergency room visits included falls from stairs (12%), from skates/skis/boards/ blades (7%), from furniture (5%), playgrounds (2%), and from ladders/scaffolding (2%). Other (unspecified) types of falls accounted for the remaining 38% of emergency room visits due to falls in 2004.

Falls on the same level were also the single greatest specified cause of costs due to falls, accounting for 32% of total costs, 34% of direct costs, and 27% of indirect costs in 2004, followed by falls from stairs (10% of total costs, 10% of direct costs, and 12% of indirect costs), falls from skates/skis/boards/ blades (7% of total costs, 6% of direct costs, and 12% of indirect costs), from furniture (6% of total costs, 6% of direct costs, and 4% of indirect costs), from ladders/scaffolding (3% of total costs, 3% of direct costs, and 4% of indirect costs), and in playgrounds (2% of total costs, 2% of direct costs, and 4% of indirect costs). Other (unspecified) falls accounted for 39% of total costs, 40% of direct costs, and 37% of indirect costs.

Intentional injuries by cause and associated costs

Suicide/self-harm accounted for 25% of all deaths by injury and 92% of all deaths by intentional injury in New Brunswick in 2004. Suicide/self-harm other than by poisoning was the leading cause of intentional deaths (68%), followed by suicide/self-harm by poisoning (24%), and violence (8%).

Hospitalizations arising from intentional injury were also largely caused by suicide attempts - suicide/self-harm by poisoning (71%) and suicide/self-harm by other means (8%), with violence accounting for the remaining 21%. Violence, however, was responsible for the majority of emergency room visits (67%), followed by suicide/self-harm by poisoning (25%), and suicide/self-harm by other means (8%). Permanent partial disability was most often the result of suicide/self-harm by poisoning (70%), followed by violence (24% of cases), and lastly by suicide/self-harm by other means (6%). Suicide/self-harm by poisoning was also responsible for half (51%) of intentional injuries resulting in permanent total disability, followed by violence (40%), and suicide/self-harm by other means (9%).

A breakdown of the total costs arising from intentional injury in New Brunswick in 2004 shows that suicide/self-harm was responsible for 79% of these costs (48% from suicide/self-harm by poisoning and 31% by other means), while violence accounted for 20%. A similar breakdown of direct (health care) costs arising from intentional injury shows that the majority of these costs were again attributable to suicide/self-harm (66% by poisoning and 9% by other means) with 25% attributable to violence. Indirect costs followed a similar pattern; however, suicide/self-harm by other means was responsible for the greatest share of costs (48%), followed by suicide/self-harm by poisoning (36%) and finally violence (17%).

Newfoundland and Labrador

Injury in 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, Phase I 2006-2008* (www.gohealthy.ca). Funding to support the plan enabled a review of the current status of injury prevention initiatives and stakeholders in the province and identified ways to strengthen and support the existing infrastructure. A resulting injury prevention strategy was endorsed with details to be included in Phase II of the Provincial Wellness Plan, anticipated this fiscal year.

This plan builds on prior injury prevention initiatives, including the 2002 launch of a workplace injury prevention strategy report by the Workplace Health, Safety and Compensation Commission, *Promoting Safe and Healthy Workplaces*, which has positively affected workplace safety culture with some consequent decreases in injury rates. On April 1st, 2003, Newfoundland and Labrador also became the first province in Canada to ban the use of hand-held cell phones while driving and, in July, 2008, the province introduced an amendment to the Highway Traffic Act to require booster seats for children while they are being transported in a car, passenger truck, taxi, vehicles used by day cares, and school contract vehicles.

Realizing that an integrated and coordinated approach to injury prevention and control is needed, Newfoundland and Labrador plans to build on the work of provincial networks, ongoing initiatives by injury prevention partners, and current Atlantic and national injury prevention initiatives. In keeping with this approach, and in partnership with the other Atlantic provinces, Newfoundland and Labrador has contributed funding towards the establishment of the Atlantic Collaborative for Injury Prevention (ACIP).

Total burden of injury

Table 48

Summary of findings, all injury, Newfoundland and Labrador, 2004

Injury deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability	Total cost
184	3,268	49,562	974	76	\$268 million

Injuries cost Newfoundland and Labrador \$268 million and 184 lives in 2004.

A further 76 people were totally and permanently disabled and 974 were left with a permanent partial disability, while 3,268 were hospitalized and another 49,562 were treated in emergency departments as a result of injury.

Based on Newfoundland and Labrador’s 2004 population of 517,027, this translates into an annual death rate of 35.6 people per 100,000 population, an estimated 857 potential years of life lost, and \$518 in total costs for every Newfoundlander due to injury.

Direct and indirect costs

The direct (health care) costs of injury in Newfoundland and Labrador in 2004 were \$172.7 million or \$334 for every Newfoundlander, and represented 65% of total injury costs, while indirect costs amounted to \$95.3 million or 36%.

Intentional and unintentional injury

Table 49

Injury by intent, Newfoundland and Labrador, 2004

Description	Deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability
Unintentional	127	2,784	47,149	867	70
Intentional	54	403	2,040	90	5
Undetermined intent/Other	< 5	81	373	18	< 5
Total	184	3,268	49,562	974	76

Most injuries incurred in 2004 were unintentional injuries. Sixty-nine percent of deaths, 85% of hospitalizations, 95% of emergency room visits, 89% of all cases of permanent partial disability, and 92% of permanent total disability arising from injury were caused by unintentional injury.

Intentional injuries accounted for 30% of deaths, 12% of hospitalizations, 4% of emergency room visits, 9% of all cases of permanent partial disability, and 7% of all cases of permanent total disability arising from injury. The remaining incidents are of undetermined intent.

Table 50

Total, direct, and indirect costs by intent of injury, Newfoundland and Labrador, 2004

Description	Total costs (\$Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
Unintentional injury	\$223	\$152	\$71
Intentional injury	\$39	\$17	\$22
Undetermined intent/Other	\$6	\$4	\$2
Total	\$268	\$173	\$95

Unintentional injuries accounted for \$223 million or 83% of Newfoundland and Labrador’s \$268 million total injury costs in 2004. Unintentional injuries were also responsible for \$152 million or 88% of the province’s \$173 million in direct injury costs, and \$71 million or 75% of its \$95 million in indirect costs.

Intentional injuries were responsible for 14% of total costs, 9% of direct costs, and 23% of indirect costs arising from injury, while injuries of other or undetermined intent accounted for 2% of total, direct, and indirect costs.

Injury by cause

Table 51
Number of injury deaths, hospitalizations, and non-hospitalizations by cause, Newfoundland and Labrador, 2004

Description	Deaths	Hospitalizations	Non-hospitalizations	Permanent partial disability	Permanent total disability
Transport Incidents					
<i>Pedestrian</i>	5	38	245	9	< 5
<i>Pedal Cycle</i>	< 5	60	957	17	< 5
<i>Motor Vehicle</i>	18	212	2,625	55	6
<i>ATV, Snowmobile</i>	2	139	290	30	< 5
<i>Other</i>	15	40	379	11	< 5
Falls					
<i>On the same level</i>	< 5	737	4,488	200	15
<i>From skates, skis, boards, blades</i>	< 5	64	1,053	21	< 5
<i>From furniture</i>	< 5	113	747	30	< 5
<i>In playgrounds</i>	< 5	16	292	6	< 5
<i>On stairs</i>	< 5	150	1,719	43	< 5
<i>From ladders/scaffolding</i>	< 5	49	354	13	< 5
<i>Diving</i>	< 5	< 5	36	< 5	< 5
<i>Other</i>	12	482	5,334	142	13
Drowning	9	< 5	14	< 5	< 5
Fire/Burns	< 5	42	700	17	< 5
Unintentional Poisoning	8	90	788	22	< 5
Struck by/against Sports Equipment	< 5	15	1,019	9	< 5
Other Unintentional Injuries	49	529	26,109	239	17
Suicide/Self-Harm - Poisoning	13	289	519	63	< 5
Suicide/Self-Harm - Other	40	34	168	6	< 5
Violence	< 5	80	1,353	21	< 5
Undetermined Intent/Other	< 5	81	373	18	< 5
Total	184	3,268	49,562	974	76

Suicide, other unintentional injuries, transport incidents, and falls were the leading specified causes of death by injury in Newfoundland and Labrador, accounting for 29%, 27%, 23%, and 10% of deaths respectively. Other causes included drowning (5%), unintentional poisoning (4%), injuries of undetermined intent (2%), violence (1%), and fire/burns (1%).

Table 52

Mortality, crude death rates (per 100,000 pop.) and total cost per capita by cause, Newfoundland and Labrador, 2004

Cause	Deaths	Death rate (per 100,000)	Total costs	Cost per capita
Traffic incidents	42	8.1	\$48 million	\$92
Falls	18	3.5	\$98 million	\$189
Suicide/self-harm	53	10.3	\$33 million	\$63
Violence	1	0.2	\$6 million	\$12

While suicide/self-harm was responsible for the most injury deaths per capita (10.3 per 100,000 population), falls generated the greatest per capita cost to residents of Newfoundland and Labrador - \$189.

Hospitalizations due to injury were due most often to falls (49%), followed by other unintentional (unspecified) injuries (16%), and transport incidents (15%). Other causes included suicide/self-harm (10%), unintentional poisoning (3%), violence (2%), injuries of undetermined intent (2%), and fire/burns (1%).

The most frequent defined causes of emergency room visits to treat injury were falls (28%) and transport incidents (9%), while 53% of visits were due to other (non-specified) unintentional injury. The remaining causes of emergency room visits were violence (3%), unintentional poisoning (2%), being struck by/against sports equipment (2%), fire/burns (1%), suicide/self-harm (1%), and injury due to undetermined intent (1%).

Falls were the leading cause of injuries resulting in permanent partial disability (47%) and permanent total disability (50%), followed by other (unspecified) unintentional injury (25% and 23% respectively), and transport incidents (13% and 15%). Less frequent causes included suicide/self-harm (7% and 4%), violence (2% and 3%), unintentional poisoning (2% and 2%), fire/burns (2% and 1%), injuries of undetermined intent (2% and 1%), and being struck by/against sports equipment (1% in both cases).

Costs of injury by cause

Table 53

Total, direct, and indirect costs of injury by cause, Newfoundland and Labrador, 2004

Description	Total costs (\$ Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
Transport Incidents			
<i>Pedestrian</i>	\$4	\$2	\$2
<i>Pedal Cycle</i>	\$5	\$3	\$2
<i>Motor Vehicle</i>	\$22	\$12	\$10
<i>ATV, Snowmobile</i>	\$10	\$6	\$4
<i>Other</i>	\$7	\$2	\$5
Falls			
<i>On the same level</i>	\$36	\$30	\$6
<i>From skates, skis, boards, blades</i>	\$6	\$4	\$2
<i>From furniture</i>	\$7	\$6	\$1
<i>In playgrounds</i>	\$2	\$1	\$1
<i>On stairs</i>	\$10	\$7	\$3
<i>From ladders/scaffolding</i>	\$3	\$2	\$1
<i>Diving</i>	1	\$0.5	\$0.2
<i>Other</i>	\$34	\$27	\$7
Drowning	\$3	\$0.3	\$2
Fire/Burns	\$3	\$2	\$1
Unintentional Poisoning	\$7	\$4	\$3
Struck by/against Sports Equipment	\$2	\$1	\$1
Other Unintentional Injuries	\$63	\$43	\$20
Suicide/Self-Harm - Poisoning	\$19	\$11	\$8
Suicide/Self-Harm - Other	\$14	\$2	\$12
Violence	\$6	\$4	\$2
Undetermined Intent/Other	\$6	\$4	\$2
Total	\$268	\$173	\$95

Over half of the total costs of injury in Newfoundland and Labrador in 2004 were attributable to falls (36%) and transport incidents (18%). Other (unspecified) unintentional injuries accounted for a further 24% of these costs, followed by suicide/self-harm (12%), unintentional poisoning (3%), violence (2%), injuries of undetermined intent (2%), fire/burns (1%), drowning (1%), and being struck by/against sports equipment (1%).

Falls were also the leading cause of health care or direct costs due to injury, accounting for 45% of all direct injury costs in 2004, followed by other (unspecified) unintentional injuries at 25% and transport incidents at 15%. Suicide/self-harm accounted for a further 7%, unintentional poisoning 2%, violence 2%, injuries of undetermined intent 2%, fire/burns 1%, and being struck by/against sports equipment 1%.

Transport incidents were the leading cause of indirect costs arising from injury at 23%, followed by falls (21%), suicide/self-harm (21%) and other (unspecified) unintentional injuries (21%). Remaining causes included unintentional poisoning (4%), drowning (3%), fire/burns (2%), violence (2%), injuries of undetermined intent (2%), and being struck by/against sports equipment (1%).

Transport related injuries by cause and associated costs

Motor vehicle incidents caused 13% of all injury deaths and 43% of all transport related injury deaths in Newfoundland and Labrador in 2004 and accounted for 43% of all hospitalizations, 58% of all emergency room visits, 45% of all cases of permanent partial disability, and 47% of all cases of permanent total disability arising from transport related injuries.

The remaining deaths due to transport incidents were attributed to other (unspecified) transport incidents (35%), pedestrian incidents (13%), ATV/snowmobile incidents (6%), and cycling incidents (3%). Other transport related causes of hospitalization included injuries due to ATV/snowmobiles (28%), cycling (12%), pedestrian incidents (8%), and other (unspecified) transport incidents (8%). Other emergency room visits were due to cycling (21%), other (unspecified) incidents (8%), ATV/snowmobiles (6%), and pedestrian (5%) transport incidents.

Motor vehicle incidents accounted for 46% of total costs, 47% of direct costs, and 45% of indirect costs arising from injuries due to transport incidents in 2004. In terms of total costs, motor vehicle incidents were followed by ATV/snowmobiles (20%), other (unspecified) incidents (14%), cycling incidents (11%), and pedestrian incidents (8%). Remaining direct costs were due to injuries arising from ATV/snowmobiles (25%), cycling (13%), other (unspecified) transport incidents (8%), and pedestrian incidents (7%). Remaining indirect costs were due to other (unspecified) incidents (22%), ATV/snowmobiles (16%), cycling incidents (10%), and pedestrian incidents (8%).

Fall related injuries by cause and associated costs

After other (unspecified) falls, stairs were the leading cause of death by falls in Newfoundland and Labrador in 2004, accounting for 19% of all deaths by falling. Other types of falls resulting in death included falls on the same level (7%), from ladders/scaffolding (4%), from furniture (3%), and from diving (1%). Just under two thirds (65%) of deaths by falls, however, were from other (unspecified) types of falls.

Falls on the same level were the leading specified cause of hospitalizations (46%), emergency room visits (32%), and cases of permanent partial disability (44%) and permanent total disability (40%) due to falls. Other causes of hospitalizations from falls included falls on stairs (9%), from furniture (7%), from skates/skis/boards/blades (4%), from ladders/scaffolding (3%), and in playgrounds (1%). Other (unspecified) types of falls accounted for the remaining 30% of hospitalizations in 2004. Other causes of emergency room visits included falls on stairs (12%), from skates/skis/boards/ blades (8%), from furniture (5%), from ladders/scaffolding (3%), and in playgrounds (2%). Other (unspecified) types of falls accounted for the remaining 38% of emergency room visits due to falls in 2004.

Falls on the same level were also the single greatest specified cause of costs due to falls, accounting for 37% of total costs, 39% of direct costs, and 28% of indirect costs in 2004, followed by falls from stairs (10% of total costs, 9% of direct costs, and 14% of indirect costs), from furniture (7% of total costs, 8% of direct costs, and 5% of indirect costs), falls from skates/skis/boards/ blades (6% of total costs, 5% of direct costs, and 11% of indirect costs), from ladders/scaffolding (3% of total costs, 3% of direct costs, and 4% of indirect costs), and in playgrounds (2% of total costs, 1% of direct costs, and 3% of indirect costs). Other (unspecified) falls accounted for 35% of total, direct, and indirect costs.

Intentional injuries by cause and associated costs

Suicide/self-harm accounted for 39% of all deaths by injury and 98% of all deaths by intentional injury in Newfoundland and Labrador in 2004. Suicide/self-harm other than by poisoning was the leading cause of intentional deaths (74%), followed by suicide/self-harm by poisoning (24%) and violence (2%).

The majority of hospitalizations arising from intentional injury were also caused by suicide attempts - suicide/self-harm by poisoning (72%) and suicide/self-harm by other means (8%), with violence accounting for the remaining 20%. Violence, however, was responsible for two thirds of emergency room visits (66%), followed by suicide/self-harm by poisoning (25%) and suicide/self-harm by other means (8%). Permanent partial disability was most often the result of suicide/self-harm by poisoning (70%), followed by violence (24% of cases), and lastly by suicide/self-harm by other means (7%). Suicide/self-harm by poisoning was also the leading cause of intentional injuries resulting in permanent total disability (52%), followed by violence (39%), and suicide/self-harm other means (9%).

A breakdown of the total costs arising from intentional injury in Newfoundland and Labrador in 2004 shows that suicide/self-harm was responsible for 84% of these costs (49% from suicide/self-harm by poisoning and 35% by other means), while violence accounted for 16%. A similar breakdown of direct (health care) costs arising from intentional injury shows that the majority of these costs were attributable to suicide/self-harm (66% by poisoning and 9% by other means) with 24% attributable to violence. In the case of indirect costs, suicide/self-harm by means other than poisoning was responsible for the greatest share of costs (54%), followed by suicide/self-harm by other means (36%) and finally violence (10%).

Nova Scotia

Injury in Nova Scotia

In response to the 2003 release of *The Economic Burden of Unintentional Injury in Atlantic Canada*, the Nova Scotia government committed to developing a comprehensive Nova Scotia Injury Prevention Strategy.

With the launch of the strategy in early 2004, Nova Scotia became the first province in Canada to have a government led and funded provincial injury prevention strategy. Developed by the Office of Health Promotion and the Nova Scotia Trauma Program, in collaboration with hundreds of injury prevention stakeholders, the strategy identified road safety, seniors' falls prevention, and suicide as priority issues for Nova Scotia, creating an important foundation and focus for province wide injury prevention efforts.

The strategy is driven by partnerships with a broad range of organizations, NGOs, government departments, and the academic research community. While the Department of Health Promotion and Protection provides overall leadership for the strategy, all stakeholders participate and are accountable for achieving the results.

Since 2004, significant progress has been made building community capacity to address injury. Programs and services have been developed to address priority issues and new legislation and policy enacted. In 2007, the Department of Health Promotion and Protection, in partnership with Injury Free Nova Scotia, launched a process to renew the Nova Scotia Injury Prevention Strategy and set a path forward for the next five years. The renewed strategy will be launched in 2009.

Total burden of injury

Table 54
Summary of findings, all injury, Nova Scotia, 2004

Injury deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability	Total cost
434	5,518	89,979	1,688	134	\$518 million

Injuries cost Nova Scotia \$518 million and 434 lives in 2004.

A further 134 people were totally and permanently disabled and 1,688 left with a permanent partial disability, while 5,518 were hospitalized and another 89,979 treated in emergency departments as a result of injury.

Based on Nova Scotia’s 2004 population of 936,960, this translates into an annual death rate of 46.3 people per 100,000 population, an estimated 953.4 potential years of life lost, and \$552 in total costs for every Nova Scotian due to injury.

Direct and indirect costs

The direct (health care) costs of injury in Nova Scotia in 2004 were \$322 million or \$343 for every Nova Scotian, and represented 62% of total injury costs, while indirect costs amounted to \$196 million or 38%.

Intentional and unintentional injury

Table 55
Injury by intent, Nova Scotia, 2004

Description	Deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability
Unintentional	328	4,688	85,679	1,503	120
Intentional	104	708	3,632	157	11
Undetermined intent/Other	< 5	122	667	27	< 5
Total	434	5,518	89,979	1,688	134

Most injuries incurred in 2004 were unintentional injuries. Seventy six percent of deaths, 85% of hospitalizations, 95% of emergency room visits, 89% of all cases of permanent partial disability, and 90% of permanent total disability arising from injury were caused by unintentional injury.

Intentional injuries accounted for just 24% of deaths, 13% of hospitalizations, 4% of emergency room visits, 9% of all cases of permanent partial disability, and 9% of all cases of permanent total disability arising from injury. The remaining incidents are of undetermined intent.

Table 56
Total, direct, and indirect costs by intent of injury, Nova Scotia, 2004

Description	Total costs (\$Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
Unintentional injury	\$432	\$284	\$148
Intentional injury	\$78	\$32	\$45
Undetermined intent/Other	\$8	\$6	\$3
Total	\$518	\$322	\$196

Unintentional injuries accounted for \$432 million or 83% of Nova Scotia's \$518 million total injury costs in 2004. Unintentional injuries were also responsible for \$284 million or 88% of Nova Scotia's \$322 million in direct injury costs and \$148 million or 76% of its \$196 million in indirect costs.

Intentional injuries were responsible for 15% of total costs, 10% of direct costs, and 23% of indirect costs arising from injury, while injuries of other or undetermined intent accounted for 2% of total and direct costs and 1% of indirect costs.

Injury by cause

Table 57

Number of injury deaths, hospitalizations, and non-hospitalizations by cause, Nova Scotia, 2004

Description	Deaths	Hospitalizations	Non-hospitalizations	Permanent partial disability	Permanent total disability
Transport Incidents					
<i>Pedestrian</i>	14	57	444	14	< 5
<i>Pedal Cycle</i>	< 5	83	1,748	27	< 5
<i>Motor Vehicle</i>	42	427	4,706	107	11
<i>ATV, Snowmobile</i>	6	118	520	28	< 5
<i>Other</i>	36	54	680	15	< 5
Falls					
<i>On the same level</i>	11	1,137	8,307	318	24
<i>From skates, skis, boards, blades</i>	< 5	103	1,918	36	< 5
<i>From furniture</i>	8	230	1,407	60	5
<i>In playgrounds</i>	< 5	38	553	13	< 5
<i>On stairs</i>	15	311	3,137	87	9
<i>From ladders/scaffolding</i>	< 5	81	637	23	< 5
<i>Diving</i>	< 5	< 5	66	< 5	< 5
<i>Other</i>	92	1,071	9,934	303	27
Drowning	10	8	26	< 5	< 5
Fire/Burns	17	51	1,260	27	< 5
Unintentional Poisoning	31	146	1,422	37	< 5
Struck by/against Sports Equipment	< 5	28	1,847	16	< 5
Other Unintentional Injuries	43	743	47,067	390	28
Suicide/Self-Harm - Poisoning	23	411	922	92	< 5
Suicide/Self-Harm - Other	66	92	299	15	< 5
Violence	15	205	2,410	49	5
Undetermined Intent/Other	< 5	122	667	27	< 5
Total	434	5,518	89,979	1,688	134

In 2004, falls, transport incidents, and suicide/self-harm were the leading causes of death by injury in Nova Scotia, accounting for 29%, 23%, and 21% of deaths respectively. Other causes included other (unspecified) unintentional injuries (10%), unintentional poisoning (7%), fire/burns (4%), violence (3%), and drowning (2%).

Table 58

Mortality, crude death rates (per 100,000 pop.), and total cost per capita by cause, Nova Scotia, 2004

Cause	Deaths	Death rate (per 100,000)	Total costs	Cost per capita
Traffic incidents	100	10.7	\$97 million	\$104
Falls	127	13.6	\$175 million	\$187
Suicide/self-harm	89	9.5	\$55 million	\$59
Violence	15	1.6	\$22 million	\$24

While suicide/self-harm was responsible for the most injury deaths per capita (13.6 per 100,000 population), falls generated the greatest per capita cost to Nova Scotians – \$187.

Hospitalizations due to injury were due most often to falls (54%), followed by transport incidents (13%) and other unintentional (unspecified) injuries (13%). Other causes included suicide/self-harm (9%), violence (4%), unintentional poisoning (3%), injuries of undetermined intent (2%), and fire/burns (1%).

The most frequent defined causes of emergency room visits to treat injury were falls (29%) and transport incidents (9%), while 52% of visits were due to other (non-specified) unintentional injury. The remaining causes of emergency room visits were violence (3%), unintentional poisoning (2%), being struck by/against sports equipment (2%), fire/burns (1%), suicide/self-harm (1%), and injury due to undetermined intent (1%).

Falls were the leading cause of injuries resulting in permanent partial disability (50%) and permanent total disability (52%), followed by other (unspecified) unintentional injury (23% and 21% respectively), and transport incidents (11% and 14%). Less frequent causes included suicide/self-harm (6% and 4%), violence (3% and 4%), unintentional poisoning (2% and 2%), fire/burns (2% and 1%), injuries of undetermined intent (2% and 1%), and being struck by/against sports equipment (1% in both cases).

Costs of injury by cause

Table 59

Total, direct, and indirect costs of injury by cause, Nova Scotia, 2004

Description	Total costs (\$ Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
Transport Incidents			
<i>Pedestrian</i>	\$9	\$4	\$5
<i>Pedal Cycle</i>	\$9	\$5	\$4
<i>Motor Vehicle</i>	\$52	\$27	\$25
<i>ATV, Snowmobile</i>	\$11	\$6	\$5
<i>Other</i>	\$16	\$3	\$13
Falls			
<i>On the same level</i>	\$58	\$49	\$9
<i>From skates, skis, boards, blades</i>	\$10	\$6	\$4
<i>From furniture</i>	\$14	\$12	\$2
<i>In playgrounds</i>	\$4	\$2	\$2
<i>On stairs</i>	\$19	\$14	\$5
<i>From ladders/scaffolding</i>	\$5	\$4	\$1
<i>Diving</i>	\$0.4	\$0.2	\$0.2
<i>Other</i>	\$65	\$52	\$13
Drowning	\$3	\$0.2	\$3
Fire/Burns	\$8	\$3	\$6
Unintentional Poisoning	\$19	\$9	\$10
Struck by/against Sports Equipment	\$4	\$2	\$2
Other Unintentional Injuries	\$124	\$85	\$39
Suicide/Self-Harm - Poisoning	\$30	\$16	\$14
Suicide/Self-Harm - Other	\$25	\$4	\$21
Violence	\$22	\$12	\$10
Undetermined Intent/Other	\$8	\$6	\$3
Total	\$518	\$322	\$196

Over half of the total costs of injury in Nova Scotia in 2004 were attributable to falls (34%) and transport incidents (19%). Other (unspecified) unintentional injuries accounted for a further 24% of these costs, followed by suicide/self-harm (11%), unintentional poisoning (4%), violence (4%), fire/burns (2%), injuries of undetermined intent (2%), drowning (1%), and being struck by/against sports equipment (1%).

Falls were also the leading cause of health care or direct costs due to injury, accounting for 43% of all direct injury costs in 2004, followed by other (unspecified) unintentional injuries at 26%, and transport incidents at 14%. Suicide/self-harm accounted for a further 6%, violence 4%, unintentional poisoning 3%, injuries of undetermined intent 2%, fire/burns 1%, and being struck by/against sports equipment 1%.

Transport incidents were the leading cause of indirect costs arising from injury at 26%, followed by falls (19%), and suicide/self-harm (18%). Other (unspecified) unintentional injuries accounted for another 20%, with the remaining causes including unintentional poisoning (5%), violence (5%), fire/burns (3%), drowning (2%), being struck by/against sports equipment (1%), and injuries of undetermined intent (1%).

Transport related injuries by cause and associated costs

Motor vehicle incidents caused 10% of all injury deaths and 42% of all transport related injury deaths in Nova Scotia in 2004 and accounted for half or more of all hospitalizations (58%), emergency room visits (58%), and cases of permanent partial disability (56%) and permanent total disability (59%) arising from transport related injuries.

The remaining deaths due to transport incidents were attributed to other (unspecified) transport incidents (36%), pedestrian incidents (14%), ATV/snowmobile incidents (6%), and cycling incidents (2%). Other transport related causes of hospitalization included injuries due to ATV/snowmobiles (16%), cycling (11%), pedestrian incidents (8%), and other (unspecified) transport incidents (7%). Other emergency room visits were due to cycling (22%), other (unspecified) incidents (8%), ATV/snowmobiles (6%), and pedestrian (5%) transport incidents.

Motor vehicle incidents accounted for over half of total costs (54%) and direct costs (60%), and just under half of indirect costs (48%) arising from injuries due to transport incidents in 2004. In terms of total costs, motor vehicle incidents were followed by other (unspecified) incidents (16%), ATV/ snowmobiles (11%), cycling incidents (10%), and pedestrian incidents (9%). Remaining direct costs were due to injuries arising from ATV/snowmobiles (14%), cycling (12%), pedestrian incidents (8%), and other (unspecified) transport incidents (6%). Remaining indirect costs were due to other (unspecified) incidents (25%), ATV/ snowmobiles (9%), pedestrian incidents (9%), and cycling incidents (8%).

Fall related injuries by cause and associated costs

After other (unspecified) falls, stairs were the leading cause of death by falls in Nova Scotia in 2004, accounting for 12% of all deaths by falling. Other types of falls resulting in death included falls on the same level (9%), from furniture (6%), and from ladders/scaffolding (1%). The vast majority (72%) of deaths by falls, however, were from other (unspecified) types of falls.

Falls on the same level were the leading specified cause of hospitalizations (38%), emergency room visits (32%), and cases of permanent partial disability (38%) and permanent total disability (34%) due to falls. Other causes of hospitalizations from falls included falls from stairs (10%), from furniture (8%), from skates/skis/boards/blades (3%), from ladders/scaffolding (3%), and in playgrounds (1%). Other (unspecified) types of falls accounted for the remaining 36% of hospitalizations in 2004. Other causes of emergency room visits included falls from stairs (12%), from skates/skis/boards/ blades (7%), from furniture (5%), playgrounds (2%), and from ladders/scaffolding (2%). Other (unspecified) types of falls accounted for the remaining 38% of emergency room visits due to falls in 2004.

Falls on the same level were also the single greatest specified cause of costs due to falls, accounting for 33% of total costs, 35% of direct costs, and 25% of indirect costs in 2004, followed by falls from stairs (11% of total costs, 10% of direct costs, and 13% of indirect costs), from furniture (8% of total costs, 9% of direct costs, and 6% of indirect costs), falls from skates/skis/boards/ blades (6% of total costs, 4% of direct costs, and 12% of indirect costs), from ladders/scaffolding (3% of total costs, 3% of direct costs, and 4% of indirect costs), and in playgrounds (2% of total costs, 2% of direct costs, and 4% of indirect costs). Other (unspecified) falls accounted for 37% of total costs, 37% of direct costs, and 36% of indirect costs.

Intentional injuries by cause and associated costs

Suicide/self-harm accounted for 20% of all deaths by injury and 85% of all deaths by intentional injury in Nova Scotia in 2004. Suicide/self-harm other than by poisoning was the leading cause of intentional deaths (63%), followed by suicide/self-harm by poisoning (22%), and violence (14%).

The majority of hospitalizations arising from intentional injury were also caused by suicide attempts – suicide self-harm by poisoning (58%) and suicide/self-harm by other means (13%), with violence accounting for the remaining 29%. Violence, however, was responsible for two thirds of emergency room visits (66%), followed by suicide/self-harm by poisoning (25%) and suicide/self-harm by other means (8%). Permanent partial disability was most often the result of suicide/self-harm by poisoning (59%), followed by violence (31% of cases), and lastly by suicide/self-harm by other means (10%). Violence however was the leading cause of intentional injuries resulting in permanent total disability (47%), followed by suicide/self-harm by poisoning (40%), and suicide/self-harm by other means (13%).

A breakdown of the total costs arising from intentional injury in Nova Scotia in 2004 shows that suicide/self-harm was responsible for 71% of these costs (39% from suicide/self-harm by poisoning and 32% by other means), while violence accounted for 29%. A similar breakdown of direct (health care) costs arising from intentional injury shows that just under two-thirds of these costs were attributable to suicide/self-harm (50% by poisoning and 13% by other means) with 37% attributable to violence. In the case of indirect costs, suicide/self-harm by other means was responsible for the greatest share of costs (46%), followed by suicide/self-harm by poisoning (31%), and finally violence (23%).

Ontario

Injury in Ontario

In August 2007, the Ministry of Health Promotion launched Ontario's Injury Prevention Strategy: Working Together For A Safer, Healthier Ontario, a coordinated plan to reduce the frequency, severity, and impact of preventable injury in Ontario.

The strategy sets out a government-wide coordinated approach to addressing injury prevention, the first of its kind in Ontario. Developed in consultation with government ministries and agencies, public health professionals, and leading injury prevention experts, the strategy proposes four main approaches: community partnerships and mobilization, public education and engagement, safe environments, and healthy public policy.

The Strategy is a call to action. It acknowledges that reducing the burden of injury requires that the wide range of personal, social, and economic factors that influence injury rates be addressed. While no single level of government, ministry, or organization can address all the factors that contribute to injury, Ontario's strategy provides a critical road map to guide efforts undertaken by the government and by communities across Ontario.

Total burden of injury

Injuries cost Ontarians \$6.8 billion and 4,643 lives in 2004.

A further 1,741 people were totally and permanently disabled and 22,030 were left with a permanent partial disability, while 71,727 were hospitalized and another 1,196,505 were treated in emergency departments as a result of injury.

Based on Ontario's 2004 population of 12,392,721, this translates into an annual death rate of 37.5 people per 100,000 population, an estimated 755.4 potential years of life lost, and \$551 in total costs for every Ontarian due to injury.

Table 60
Summary of findings, all injury, Ontario, 2004

Injury deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability	Total cost
434	5,518	89,979	1,688	134	\$518 million

Direct and indirect costs

The direct (health care) costs of injury in Ontario in 2004 were \$3.7 billion or \$297 for every Ontarian, and represented 54% of total injury costs, while indirect costs amounted to \$3.1 billion or 46%.

Intentional and unintentional injury

Table 61
Injury by intent, Ontario, 2004

Description	Deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability
Unintentional	3,251	61,263	1,139,695	19,670	1,591
Intentional	1,188	9,077	47,990	2,039	130
Undetermined intent/Other	204	1,387	8,820	320	20
Total	4,643	71,727	1,196,505	22,029	1,741

Most injuries incurred by Ontarians in 2004 were unintentional injuries. Seventy percent of deaths, 85% of hospitalizations, 95% of emergency room visits, 89% of all cases of permanent partial disability and 91% of permanent total disability arising from injury were caused by unintentional injury.

Intentional injuries accounted for just 26% of deaths, 13% of hospitalizations, 4% of emergency room visits, 9% of all cases of permanent partial disability, and 7% of all cases of permanent total disability arising from injury. The remaining incidents are of undetermined intent.

Table 62
Total, direct, and indirect costs by intent of injury, Ontario, 2004

Description	Total costs (\$Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
Unintentional injury	\$5,548	\$3,242	\$2,306
Intentional injury	\$1,108	\$379	\$729
Undetermined intent/Other	\$167	\$56	\$111
Total	\$6,823	\$3,677	\$3,146

Unintentional injuries accounted for \$5.5 billion or 81% of Ontario's \$6.8 billion total injury costs in 2004. Unintentional injuries were also responsible for \$3.2 billion or 88% of Ontario's \$3.7 billion in direct injury costs, and \$2.3 billion or 73% of its \$3.1 billion in indirect costs.

Intentional injuries were responsible for 16% of total injury costs, 10% of direct costs, and 23% of indirect costs arising from injury, while injuries of other or undetermined intent accounted for 2% of total costs, 2% of direct costs, and 4% of indirect costs respectively.

Injury by cause

Table 63

Number of injury deaths, hospitalizations, and non-hospitalizations by cause, Ontario, 2004

Description	Deaths	Hospitalizations	Non-hospitalizations	Permanent partial disability	Permanent total disability
Transport Incidents					
<i>Pedestrian</i>	134	943	5,848	228	26
<i>Pedal Cycle</i>	21	1,398	23,907	433	39
<i>Motor Vehicle</i>	400	4,805	61,774	1,249	126
<i>ATV, Snowmobile</i>	51	964	6,936	246	21
<i>Other</i>	327	784	8,980	214	19
Falls					
<i>On the same level</i>	88	11,805	108,190	3,455	256
<i>From skates, skis, boards, blades</i>	< 5	1,203	26,034	445	34
<i>From furniture</i>	63	2,348	19,337	647	53
<i>In playgrounds</i>	0	543	8,186	190	13
<i>On stairs</i>	128	3,665	41,249	1,054	103
<i>From ladders/scaffolding</i>	17	1,306	8,291	350	31
<i>Diving</i>	< 5	53	900	16	< 5
<i>Other</i>	764	15,527	130,702	4,303	390
Drowning	74	81	337	12	< 5
Fire/Burns	75	749	16,906	375	19
Unintentional Poisoning	350	2,654	19,040	619	39
Struck by/against Sports Equipment	< 5	259	25,054	193	15
Other Unintentional Injuries	753	12,176	628,024	5,642	404
Suicide/Self-Harm - Poisoning	270	6,167	12,100	1,354	63
Suicide/Self-Harm - Other	751	885	3,945	155	13
Violence	167	2,025	31,945	530	54
Undetermined Intent/Other	204	1,387	8,820	320	20
Total	4,643	71,727	1,196,505	22,030	1,741

In 2004, falls, suicide/self-harm, and transport incidents were the leading causes of death by injury in Ontario, accounting for 23%, 22%, and 20% of deaths respectively. Other causes included other (unspecified) unintentional injuries (16%), unintentional poisoning (8%), violence (4%), injuries of undetermined intent (4%), drowning (2%), and fire/burns (2%).

Table 64
Mortality, crude death rates (per 100,000 pop.), and total cost per capita by cause, Ontario, 2004

Cause	Deaths	Death rate (per 100,000)	Total costs	Cost per capita
Traffic incidents	934	7.5	\$1,149 million	\$93
Falls	1,065	8.6	\$2,143 million	\$173
Suicide/self-harm	1,021	8.2	\$842 million	\$68
Violence	167	1.3	\$266 million	\$21

Falls were the leading cause of injury deaths per capita (8.6 per 100,000 population), followed closely by suicide/self-harm (8.2 per 100,000 population). Falls also generated the greatest per capita cost to Ontarians – \$173.

Hospitalizations due to injury were caused most often by falls (51%), followed by other unintentional injuries (17%), transport incidents (12%), and suicide/self-harm (10%). Other causes included unintentional poisoning (4%), violence (3%), injuries of undetermined intent (2%), and fire/burns (1%).

The most frequent specified causes of emergency room visits to treat injury were falls (29%) and transport incidents (9%), while 52% of visits were due to other (unspecified) unintentional injury. The remaining causes of emergency room visits were violence (3%), unintentional poisoning (2%), being struck by/against sports equipment (2%), fire/burns (1%), suicide/self-harm (1%), and injury due to undetermined intent (1%).

Falls were the leading cause of permanent partial disability (47%) and permanent total disability (51%) arising from injury, followed by other unintentional injury (26% and 23% respectively), and transport incidents (11% and 13%). Less frequent causes included suicide/self-harm (7% and 4%), unintentional poisoning (3% and 2%), violence (2% and 3%), fire/burns (2% and 1%), being struck by/against sports equipment (1% in both cases), and injuries of undetermined intent (1% in both cases).

Costs of injury by cause

Table 65

Total, direct, and indirect costs of injury by cause, Ontario, 2004

Description	Total costs (\$ Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
Transport Incidents			
<i>Pedestrian</i>	\$113	\$49	\$64
<i>Pedal Cycle</i>	\$146	\$77	\$70
<i>Motor Vehicle</i>	\$599	\$280	\$319
<i>ATV, Snowmobile</i>	\$104	\$47	\$57
<i>Other</i>	\$187	\$37	\$150
Falls			
<i>On the same level</i>	\$610	\$458	\$152
<i>From skates, skis, boards, blades</i>	\$140	\$73	\$67
<i>From furniture</i>	\$137	\$110	\$28
<i>In playgrounds</i>	\$65	\$35	\$29
<i>On stairs</i>	\$241	\$158	\$82
<i>From ladders/scaffolding</i>	\$77	\$49	\$28
<i>Diving</i>	\$9	\$4	\$5
<i>Other</i>	\$864	\$632	\$232
Drowning	\$33	\$3	\$30
Fire/Burns	\$112	\$44	\$68
Unintentional Poisoning	\$296	\$101	\$195
Struck by/against Sports Equipment	\$60	\$29	\$31
Other Unintentional Injuries	\$1,756	\$1,055	\$701
Suicide/Self-Harm - Poisoning	\$482	\$236	\$246
Suicide/Self-Harm - Other	\$360	\$37	\$322
Violence	\$266	\$106	\$160
Undetermined Intent/Other	\$167	\$56	\$111
Total	\$6,823	\$3,677	\$3,146

Just under half of the total costs of injury in Ontario in 2004 were attributable to falls (31%) and transport incidents (17%). Other (unspecified) unintentional injuries accounted for a further 26% of these costs, followed by suicide/self-harm (12%), unintentional poisoning (4%), violence (4%), fire/ burns (2%), injuries of undetermined intent (2%), and being struck by/ against sports equipment (1%).

Falls were also the leading cause of direct (health care) costs due to injury, accounting for 41% of all direct costs in 2004, followed by other unintentional injuries at 29%, and transport incidents at 13%. Suicide/self-harm accounted for a further 7%, violence 3%, unintentional poisoning 3%, injuries of undetermined intent 2%, fire/burns 1%, and being struck by/against sports equipment 1%.

Transport incidents were the leading specified cause of indirect costs arising from injury at 21%, followed by falls (20%), and suicide/self-harm (18%). Other (unspecified) unintentional injuries accounted for 22%, with the remaining causes including unintentional poisoning (6%), violence (5%), injuries of undetermined intent (4%), fire/burns (2%), drowning (1%), being struck by/against sports equipment (1%).

Transport related injuries by cause and associated costs

Motor vehicle incidents caused 43% of all transport related injury deaths in Ontario in 2004 and accounted for over half of all hospitalizations (54%), emergency room visits (57%), and cases of permanent partial disability (53%), and permanent total disability (55%) arising from transport related injuries.

The remaining deaths due to transport incidents were attributed to other (unspecified) transport incidents (35%), pedestrian incidents (14%), ATV/snowmobile incidents (5%), and cycling incidents (2%). Other transport related causes of hospitalization included injuries due to cycling (16%), pedestrian incidents (11%), ATV/snowmobiles (11%), and other (unspecified) transport incidents (9%). Other emergency room visits were due to cycling (22%), other (non-specified) incidents (8%), ATV/snowmobiles (6%), and pedestrian (5%) transport incidents.

Motor vehicle incidents accounted for approximately half of total costs (52%), direct costs (57%), and indirect costs (48%) arising from injuries due to transport incidents in Ontario in 2004. With respect to total costs, motor vehicle incidents were followed by other (unspecified) incidents (16%), cycling incidents (13%), pedestrian incidents (10%), and incidents involving ATV/snowmobiles (9%). Remaining direct costs were due to injuries arising from cycling (16%), pedestrian incidents (10%), ATV/snowmobiles (10%), and other (unspecified) transport incidents (8%). Remaining indirect costs were due to other (unspecified) incidents (23%), cycling (11%), pedestrian incidents (10%), and ATV/snowmobiles (9%).

Fall related injuries by cause and associated costs

After other (unspecified) falls, stairs were the leading cause of death by falls in Ontario in 2004, accounting for 12% 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 (2%). The vast majority (72%) of deaths by falls, however, are from other (unspecified) types of falls.

However, falls on the same level were the leading specified cause (32%) of hospitalizations, emergency room visits (32%), and cases of permanent partial disability (33%) and permanent total disability (29%) due to falls. Other causes of hospitalizations from falls included falls from stairs (10%), from furniture (6%), from ladders/scaffolding (4%), from skates/skis/boards/blades (3%), and in playgrounds (1%). Other (unspecified) types of falls accounted for the remaining 43% of hospitalizations in 2004. Other causes of emergency room visits included falls on stairs (12%), from skates/skis/boards/ blades (8%), from furniture (6%), playgrounds (2%), and from ladders/scaffolding (2%). Other (unspecified) types of falls accounted for the remaining 38% of emergency room visits in 2004.

Falls on the same level were also the single greatest specified cause of costs due to falls, accounting for 28% of total costs, 30% of direct costs, and 24% of indirect costs in 2004, followed by falls from stairs (11% of total costs, 10% of direct costs, and 13% of indirect costs), falls from skates/skis/boards/ blades (7% of total costs, 5% of direct costs, and 11% of indirect costs), from furniture (6% of total costs, 7% of direct costs, and 4% of indirect costs), from ladders/scaffolding (4% of total costs, 3% of direct costs, and 5% of indirect costs), and playgrounds (3% of total costs, 2% of direct costs, and 5% of indirect costs), and falls from diving (0% of total costs, 0% of direct costs, and 1% of indirect costs). Other (unspecified) falls accounted for 40% of total costs, 42% of direct costs, and 37% of indirect costs.

Intentional injuries by cause and associated costs

Suicide/self-harm accounted for 22% of all injury deaths and 86% of all deaths by intentional injury in Ontario in 2004. Suicide/self-harm other than by poisoning was the leading cause of death by intentional injury (63%), followed by suicide/self-harm by poisoning (23%), and violence (14%).

Suicide/self-harm by poisoning was responsible for the majority of intentional injury hospitalizations (68%), followed by violence (22%), and suicide/self-harm by other means (10%), while violence was responsible for the majority of emergency room visits (67%) due to intentional injury, followed by suicide/self-harm by poisoning (25%), and suicide/self-harm by other means (8%). Permanent partial disability was most often the result of suicide/self-harm by poisoning (66%), followed by violence (26%) and suicide/self-harm by other means (8%). Permanent total disability was a result of suicide/self-harm by poisoning in 48% of cases, followed by violence (42%), and suicide/self-harm by other means (10%).

Suicide was also responsible for the majority of costs arising from intentional injury in 2004 - 76% of total costs, 72% of direct costs, and 78% of indirect costs. A more detailed breakdown shows that suicide/self-harm by poisoning accounted for 44% of total costs, suicide/self-harm by other means 32%, and violence 24%. Suicide/self-harm by poisoning was responsible for the majority of direct costs (62%), followed by direct costs arising from violence (28%), and suicide/self-harm by other means (10%). Indirect costs showed still another pattern with 44% of costs attributable to suicide/self-harm by other means, 34% to suicide/self-harm by poisoning, and 22% to violence.

Prince Edward Island

Injury in Prince Edward Island

The Government of Prince Edward Island is a supporter of the Atlantic Collaborative on Injury Prevention with a \$10,000 contribution in 2008/2009.

Injury prevention is a shared responsibility among various provincial government departments and also a key priority within the PEI Healthy Child Development Strategy. Many legislative approaches have been adopted to reduce the number and severity of transport related injuries, making PEI comparable to, if not more advanced than, other provinces/territories. Workplace legislation is also keeping pace – farming is now under the jurisdiction of the Occupational Health and Safety Act. The Island Network for Injury Prevention (INIP) brings together the different sectors – government and non-government – to raise awareness with regard to injury and injury prevention and encourage government and community response, particularly with respect to children’s and seniors’ falls and motor vehicle-related injuries and deaths involving children, youth, and seniors.

Total burden of injury

Injuries cost Prince Edward Island \$78 million and 83 lives in 2004.

A further 24 people were totally and permanently disabled and 294 left with a permanent partial disability, while 1,039 were hospitalized and another 13,366 treated in emergency departments as a result of injury.

Based on Prince Edward Island’s 2004 population of 137,864, this translates into an annual death rate of 60.2 people per 100,000 population, an estimated 1,106.9 potential years of life lost, and \$567 in total costs for every resident of Prince Edward Island due to injury.

Table 66

Summary of findings, all injury, Prince Edward Island, 2004

Injury deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability	Total cost
83	1,039	13,366	294	24	\$78 million

Direct and indirect costs

The direct (health care) costs of injury in Prince Edward Island in 2004 were \$45 million or \$328 per capita, and represented 58% of total injury costs, while indirect costs amounted to \$33 million or 42%.

Intentional and unintentional injury

Table 67
Injury by intent, Prince Edward Island, 2004

Description	Deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability
Unintentional	73	898	12,727	263	22
Intentional	8	116	539	25	< 5
Undetermined intent/Other	< 5	25	98	5	< 5
Total	83	1,039	13,366	294	24

Most injuries incurred in 2004 were unintentional injuries. Eighty-eight percent of deaths, 86% of hospitalizations, 95% of emergency room visits, 89% of all cases of permanent partial disability and 92% of permanent total disability arising from injury were caused by unintentional injury.

Intentional injuries accounted for just 10% of deaths, 11% of hospitalizations, 4% of emergency room visits, 9% of all cases of permanent partial disability, and 8% of all cases of permanent total disability arising from injury. The remaining incidents are of undetermined intent.

Table 68
Total, direct, and indirect costs by intent of injury, Prince Edward Island, 2004

Description	Total costs (\$Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
Unintentional injury	\$68	\$40	\$28
Intentional injury	\$9	\$4	\$5
Undetermined intent/Other	\$2	\$1	\$1
Total	\$78	\$45	\$33

It is not surprising then, that unintentional injuries accounted for \$67.7 million or 87% of Prince Edward Island's \$78.2 million total injury costs in 2004. Unintentional injuries were also responsible for \$40 million or 88% of Prince Edward Island's \$45.2 million in direct injury costs and \$27.7 million or 84% of its \$33 million in indirect costs.

Intentional injuries were responsible for 11% of total costs, 10% of direct costs, and 14% of indirect costs arising from injury, while injuries of other or undetermined intent accounted for 2% of total, direct and indirect costs.

Injury by cause

Table 69

Number of injury deaths, hospitalizations, and non-hospitalizations by cause, Prince Edward Island, 2004

Description	Deaths	Hospitalizations	Non-hospitalizations	Permanent partial disability	Permanent total disability
Transport Incidents					
<i>Pedestrian</i>	< 5	6	66	< 5	< 5
<i>Pedal Cycle</i>	< 5	17	269	5	< 5
<i>Motor Vehicle</i>	10	78	690	19	< 5
<i>ATV, Snowmobile</i>	< 5	17	78	< 5	< 5
<i>Other</i>	9	13	101	< 5	< 5
Falls					
<i>On the same level</i>	< 5	121	1,226	36	< 5
<i>From skates, skis, boards, blades</i>	< 5	12	299	5	< 5
<i>From furniture</i>	< 5	37	213	10	< 5
<i>In playgrounds</i>	< 5	8	89	< 5	< 5
<i>On stairs</i>	< 5	60	462	16	< 5
<i>From ladders/scaffolding</i>	< 5	12	91	< 5	< 5
<i>Diving</i>	< 5	0	10	< 5	< 5
<i>Other</i>	9	283	1,479	73	7
Drowning	< 5	< 5	< 5	< 5	< 5
Fire/Burns	< 5	15	186	5	< 5
Unintentional Poisoning	< 5	39	210	8	< 5
Struck by/against Sports Equipment	< 5	< 5	284	< 5	< 5
Other Unintentional Injuries	29	175	6,972	71	5
Suicide/Self-Harm - Poisoning	< 5	74	136	16	< 5
Suicide/Self-Harm - Other	6	14	45	< 5	< 5
Violence	< 5	28	358	7	< 5
Undetermined Intent/Other	< 5	25	98	5	< 5
Total	83	1,039	13,366	294	24

In 2004, transport incidents, falls, and suicide/self-harm were the leading specified causes of death by injury in Prince Edward Island, accounting for 29%, 16, and 10% of deaths respectively. Other causes included other (unspecified) unintentional injuries (35%), drowning (4%), unintentional poisoning (4%), injuries of undetermined intent (2%), and fire/burns (1%).

Table 70
Mortality, crude death rates (per 100,000 pop.) and total cost per capita by cause, Prince Edward Island, 2004

Cause	Deaths	Death rate (per 100,000)	Total costs	Cost per capita
Traffic incidents	24	17.4	\$17 million	\$122
Falls	13	9.4	\$27 million	\$197
Suicide/self-harm	8	5.8	\$7 million	\$50
Violence	< 5	< 0.1	\$2 million	\$14

Transport incidents were the leading cause of injury deaths per capita (17.4 per 100,000 population); however, falls generated the greatest per capita injury costs – \$197.

Hospitalizations due to injury were due most often to falls (51%), followed by transport incidents (13%), and other unintentional (unspecified) injuries (17%). Other causes included suicide/self-harm (8%), unintentional poisoning (4%), violence (3%), injuries of undetermined intent (2%), and fire/burns (1%).

The most frequent defined causes of emergency room visits to treat injury were falls (29%) and transport incidents (9%), while 52% of visits were due to other (non-specified) unintentional injury. The remaining causes of emergency room visits were violence (3%), unintentional poisoning (2%), being struck by/against sports equipment (2%), fire/burns (1%), suicide/self-harm (1%), and injury due to undetermined intent (1%).

Falls were the leading cause of injuries resulting in permanent partial disability (49%) and permanent total disability (53%), followed by other (unspecified) unintentional injury (24% and 21% respectively), and transport incidents (11% and 13%). Less frequent causes included suicide/self-harm (6% and 4%), unintentional poisoning (3% and 2%), violence (2% and 3%), fire/burns (2% and 1%), injuries of undetermined intent (2% and 1%), and being struck by/against sports equipment (1% in both cases).

Costs of injury by cause

Table 71

Total, direct, and indirect costs of injury by cause, Prince Edward Island, 2004

Description	Total costs (\$ Thousands)	Direct costs (\$ Thousands)	Indirect costs (\$ Thousands)
Transport Incidents			
<i>Pedestrian</i>	\$1,234	\$293	\$940
<i>Pedal Cycle</i>	\$1,618	\$956	\$662
<i>Motor Vehicle</i>	\$8,822	\$3,576	\$5,246
<i>ATV, Snowmobile</i>	\$1,566	\$721	\$845
<i>Other</i>	\$3,628	\$713	\$2,915
Falls			
<i>On the same level</i>	\$5,843	\$4,594	\$1,249
<i>From skates, skis, boards, blades</i>	\$1,408	\$872	\$536
<i>From furniture</i>	\$1,608	\$1,374	\$233
<i>In playgrounds</i>	\$794	\$494	\$300
<i>On stairs</i>	\$3,340	\$2,138	\$1,202
<i>From ladders/scaffolding</i>	\$997	\$664	\$333
<i>Diving</i>	\$44	\$3	\$41
<i>Other</i>	\$13,168	\$10,005	\$3,164
Drowning	\$565	\$31	\$534
Fire/Burns	\$1,031	\$638	\$393
Unintentional Poisoning	\$2,708	\$1,247	\$1,461
Struck by/against Sports Equipment	\$533	\$255	\$278
Other Unintentional Injuries	\$18,760	\$11,402	\$7,358
Suicide/Self-Harm - Poisoning	\$4,631	\$2,689	\$1,942
Suicide/Self-Harm - Other	\$2,326	\$491	\$1,835
Violence	\$1,965	\$1,133	\$831
Undetermined Intent/Other	\$1,639	\$889	\$750
Total	\$78,225	\$45,178	\$33,047

Over half of the total costs of injury in Prince Edward Island in 2004 were attributable to falls (35%) and transport incidents (22%). Other (unspecified) unintentional injuries accounted for a further 24% of these costs, followed by suicide/self-harm (9%), unintentional poisoning (3%), violence (3%), injuries of undetermined intent (2%), fire/burns (1%), drowning (1%), and being struck by/against sports equipment (1%).

Falls were also the leading cause of health care or direct costs due to injury, accounting for 45% of all direct injury costs in 2004, followed by other (unspecified) unintentional injuries at 25%, and transport incidents at 14%. Suicide/self-harm accounted for a further 7%, unintentional poisoning 3%, violence 3%, injuries of undetermined intent 2%, fire/burns 1%, and being struck by/against sports equipment 1%.

Transport incidents were the leading cause of indirect costs arising from injury at 32%, followed by other (unspecified) unintentional injuries (22%), falls (21%), and suicide/self-harm (18%). Remaining causes including unintentional poisoning (4%), violence (3%), drowning (2%), injuries of undetermined intent (2%), fire/burns (1%), and being struck by/against sports equipment (1%).

Transport related injuries by cause and associated costs

Motor vehicle incidents caused 13% of all injury deaths and 43% of all transport related injury deaths in Prince Edward Island in 2004 and accounted for half or more of all hospitalizations (58%), emergency room visits (58%), and cases of permanent partial disability (56%) and permanent total disability (59%) arising from transport related injuries.

The remaining deaths due to transport incidents were attributed to other (unspecified) transport incidents (36%), pedestrian incidents (13%), ATV/snowmobile incidents (5%), and cycling incidents (2%). Other transport related causes of hospitalization included injuries due to ATV/snowmobiles (13%), cycling (13%), other (unspecified) transport incidents (10%), and pedestrian incidents (5%). Other emergency room visits were due to cycling (22%), other (unspecified) incidents (8%), ATV/snowmobiles (6%), and pedestrian (5%) transport incidents.

Motor vehicle incidents accounted for over half of total costs (52%) and direct costs (57%), and just under half of indirect costs (49%) arising from injuries due to transport incidents in 2004. In terms of total costs, motor vehicle incidents were followed by other (unspecified) incidents (22%), cycling incidents (10%), ATV/ snowmobiles (9%), and pedestrian incidents (7%). Remaining direct costs were due to injuries arising from cycling (15%), ATV/ snowmobiles (12%), other (unspecified) transport incidents (11%), and pedestrian incidents (5%). Remaining indirect costs were due to other (unspecified) incidents (27%), pedestrian incidents (9%), ATV/snowmobiles (8%), and cycling incidents (6%).

Fall related injuries by cause and associated costs

After other (unspecified) falls, stairs were the leading cause of death by falls in Prince Edward Island in 2004, accounting for 18% of all deaths by falling. Other types of falls resulting in death included falls on the same level (6%), from ladders/scaffolding (5%), from furniture (4%), and from diving (1%). Two thirds (66%) of deaths by falls, however, were from other (unspecified) types of falls.

Falls on the same level were the leading specified cause of hospitalizations (23%), emergency room visits (32%), and cases of permanent partial disability (25%) and permanent total disability (21%) due to falls. Other causes of hospitalizations from falls included falls on stairs (11%), from furniture (7%), from skates/skis/boards/blades (2%), from ladders/scaffolding (2%), and in playgrounds (2%). Other (unspecified) types of falls accounted for the remaining 53% of hospitalizations in 2004. Other causes of emergency room visits included falls on stairs (12%), from skates/skis/boards/ blades (8%), from furniture (5%), in playgrounds (2%), and from ladders/scaffolding (2%). Other (unspecified) types of falls accounted for the remaining 38% of emergency room visits due to falls in 2004.

Falls on the same level were also the single greatest specified cause of costs due to falls, accounting for 21% of total costs, 23% of direct costs, and 18% of indirect costs in 2004, followed by falls from stairs (12% of total costs, 11% of direct costs, and 17% of indirect costs), from furniture (6% of total costs, 7% of direct costs, and 3% of indirect costs), falls from skates/skis/boards/blades (5% of total costs, 4% of direct costs, and 8% of indirect costs), from ladders/scaffolding (4% of total costs, 3% of direct costs, and 5% of indirect costs), and in playgrounds (3% of total costs, 2% of direct costs, and 4% of indirect costs). Other (unspecified) falls accounted for 48% of total costs, 50% of direct costs, and 45% of indirect costs.

Intentional injuries by cause and associated costs

Suicide/self-harm accounted for 10% of all deaths by injury and 100% of all deaths by intentional injury in Prince Edward Island in 2004. Suicide/self-harm other than by poisoning was the leading cause of intentional deaths (70%), followed by suicide/self-harm by poisoning (30%).

The majority of hospitalizations arising from intentional injury were also caused by suicide attempts - suicide self-harm by poisoning (64%) and suicide/self-harm by other means (12%), with violence accounting for the remaining 24%. Violence, however, was responsible for two thirds of emergency room visits (66%), followed by suicide/self-harm by poisoning (25%) and suicide/self-harm by other means (8%). Permanent partial disability was most often the result of suicide/self-harm by poisoning (64%), followed by violence (27% of cases), and lastly by suicide/self-harm by other means (9%). Violence, however, was the leading cause of intentional injuries resulting in permanent total disability (45%), followed closely by suicide/self-harm by poisoning (44%), and suicide/self-harm by other means (12%).

A breakdown of the total costs arising from intentional injury in Prince Edward Island in 2004 shows that suicide/self-harm was responsible for 78% of these costs (52% from suicide/self-harm by poisoning and 26% by other means), while violence accounted for 22%. A similar breakdown of direct (health care) costs arising from intentional injury shows that the majority of these costs were attributable to suicide/self-harm (62% by poisoning and 11% by other means) with 26% attributable to violence. In the case of indirect costs, suicide/self-harm by poisoning was responsible for the greatest share of costs (42%), followed by suicide/self-harm by other means (40%), and finally violence (18%).

Quebec

Injury in Quebec

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 2003-12 (The Provincial Public Health Program 2003-12). The latter document identifies the priorities to be addressed by the public health and social services networks throughout the province. Injury Prevention constitutes one of the six areas covered by the program, whose aim is to reduce the morbidity and mortality derived from non-intentional injuries as well as from violence and suicide. The principal axes of the program are the reduction of mortality rates in road and off-road 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 burden of injury

Injuries cost Quebec \$4.2 billion and 3,427 lives in 2004.

A further 1,094 people were totally and permanently disabled and 13,440 were left with a permanent partial disability, while 43,618 were hospitalized, and another 722,966 were treated in emergency departments as a result of injury.

Based on Quebec’s 2004 population of 7,542,760, this translates into an annual death rate of 45.4 per 100,000 population, an estimated 1,077.4 potential years of life lost, and \$558 in total costs for every resident of Quebec due to injury.

Table 72
Summary of findings, all injury, Quebec, 2004

Injury deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability	Total cost
3,427	43,618	722,966	13,440	1,094	\$4.2 billion

Direct and indirect costs

The direct (health care) costs of injury in Quebec in 2004 were \$2.3 billion, or \$306 per capita, and represented 55% of total injury costs, while indirect costs amounted to \$1.9 billion or 45%.

Intentional and unintentional injury

Table 73
Injury by intent, Quebec, 2004

Description	Deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability
Unintentional	2,059	39,228	688,683	12,392	1,020
Intentional	1,298	3,940	28,931	927	65
Undetermined intent/Other	70	450	5,351	121	8
Total	3,427	43,618	722,965	13,440	1,093

Most injuries incurred in Quebec in 2004 were unintentional injuries; unintentional injuries made up 60% of injury deaths, intentional injuries, and injuries of undetermined intent making up the remaining 38% and 2.6% respectively.

Unintentional injuries, however, made up over 90% of all other categories of injury – 90% of those requiring hospitalization, 95% of those resulting in emergency room visits, 92% of those causing permanent partial disability, and 93% of those causing permanent total disability.

Intentional injuries accounted for just 9% of hospitalizations, 4% of emergency room visits, 7% of all cases of permanent partial disability, and 6% of all cases of permanent total disability arising from injury. The remaining incidents are of undetermined intent.

Table 74

Total, direct, and indirect costs by intent of injury, Quebec, 2004

Description	Total costs (\$Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
Unintentional injury	\$3,449	\$2,116	\$1,333
Intentional injury	\$703	\$169	\$534
Undetermined intent/Other	\$58	\$21	\$37
Total	\$4,210	\$2,306	\$1,904

Unintentional injuries accounted for \$3.4 billion or 82% of Quebec’s \$4.2 billion total injury costs in 2004. Unintentional injuries were also responsible for \$2.1 billion or 92% of Ontario’s \$2.3 billion in direct injury costs and \$1.3 billion or 68% of its \$1.9 billion in indirect costs.

Intentional injuries were responsible for 17% of total injury costs, 7% of direct costs, and 29% of indirect costs arising from injury, while injuries of other or undetermined intent accounted for 1% of total costs, 1% of direct costs and 2% indirect costs respectively.

Injury by cause

Table 75

Number of injury deaths, hospitalizations, and non-hospitalizations by cause, Quebec, 2004

Description	Deaths	Hospitalizations	Non-hospitalizations	Permanent partial disability	Permanent total disability
Transport Incidents					
<i>Pedestrian</i>	101	717	3,547	168	19
<i>Pedal Cycle</i>	17	1,224	14,008	335	31
<i>Motor Vehicle</i>	323	4,021	37,712	971	101
<i>ATV, Snowmobile</i>	41	1,013	4,162	237	20
<i>Other</i>	257	258	5,451	86	7
Falls					
<i>On the same level</i>	21	8,423	66,502	2,387	177
<i>From skates, skis, boards, blades</i>	< 5	451	15,193	204	15

Description	Deaths	Hospitalizations	Non-hospitalizations	Permanent partial disability	Permanent total disability
<i>From furniture</i>	14	1,373	11,391	378	31
<i>In playgrounds</i>	0	290	4,508	102	7
<i>On stairs</i>	40	2,271	25,188	650	64
<i>From ladders/scaffolding</i>	7	811	5,173	218	19
<i>Diving</i>	< 5	27	528	8	< 5
<i>Other</i>	194	10,293	79,557	2,801	255
Drowning	52	37	207	6	< 5
Fire/Burns	56	188	10,165	189	8
Unintentional Poisoning	170	753	11,459	224	16
Struck by/against Sports Equipment	< 5	536	14,774	184	16
Other Unintentional Injuries	764	6,542	379,159	3,244	231
Suicide/Self-Harm - Poisoning	331	2,335	7,341	542	28
Suicide/Self-Harm - Other	867	620	2,369	106	9
Violence	100	985	19,220	278	28
Undetermined Intent/Other	70	450	5,351	121	8
Total	3,427	43,618	722,966	13,440	1,094

In 2004, suicide/self-harm, transport incidents, other unintentional injuries, and falls were the leading causes of death by injury in Quebec, accounting for 35%, 22%, 22%, and 8% of deaths respectively. Other causes of death by injury included unintentional poisoning (5%), violence (3%), injuries of undetermined intent (2%), drowning (2%), and fire/burns (2%).

Table 76

Mortality, crude death rates (per 100,000 pop.), and total cost per capita by cause, Quebec, 2004

Cause	Deaths	Death rate (per 100,000)	Total costs	Cost per capita
Traffic incidents	739	9.8	\$825 million	\$109
Falls	278	3.7	\$1,385 million	\$184
Suicide/self-harm	1,198	15.9	\$577 million	\$76
Violence	100	1.3	\$127 million	\$17

Suicide/self-harm was the leading cause of injury deaths per capita in 2004 (15.9 per 100,000 population), while falls generated the greatest per capita injury costs – \$184.

Hospitalizations due to injury were caused most often by falls (55%), followed by transport incidents (17%), and other unintentional injuries (15%). Other causes included suicide/self-harm (7%), unintentional poisoning (2%), violence (2%), being struck by/against sports equipment (1%), and injuries of undetermined intent (1%).

The most frequent specified causes of emergency room visits to treat injury were falls (29%) and transport incidents (9%), while 52% of visits were due to other (unspecified) unintentional injury. The remaining causes of emergency room visits were violence (3%), unintentional poisoning (2%), being struck by/against sports equipment (2%), fire/burns (1%), suicide/self-harm (1%), and injury due to undetermined intent (1%).

Falls were the leading cause of permanent partial disability (50%) and permanent total disability (512%) arising from injury, followed by other (unspecified) unintentional injury (24% and 21% respectively), and transport incidents (13% and 16%). Less frequent causes included suicide/self-harm (5% and 3%), violence (2% and 3%), unintentional poisoning (2% and 1%), fire/burns (1% in both cases), being struck by/against sports equipment (1% in both cases), and injuries of undetermined intent (1% in both cases).

Costs of injury by cause

Table 77

Total, direct, and indirect costs of injury by cause, Quebec, 2004

Description	Total costs (\$ Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
Transport Incidents			
<i>Pedestrian</i>	\$79	\$35	\$43
<i>Pedal Cycle</i>	\$106	\$61	\$45
<i>Motor Vehicle</i>	\$437	\$213	\$224
<i>ATV, Snowmobile</i>	\$89	\$46	\$44
<i>Other</i>	\$114	\$16	\$99
Falls			
<i>On the same level</i>	\$460	\$348	\$112
<i>From skates, skis, boards, blades</i>	\$60	\$32	\$27
<i>From furniture</i>	\$79	\$65	\$14
<i>In playgrounds</i>	\$32	\$19	\$13
<i>On stairs</i>	\$138	\$98	\$40
<i>From ladders/scaffolding</i>	\$44	\$31	\$14

Description	Total costs (\$ Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
<i>Diving</i>	\$4	\$2	\$2
<i>Other</i>	\$566	\$436	\$131
Drowning	\$20	\$1	\$19
Fire/Burns	\$49	\$18	\$31
Unintentional Poisoning	\$112	\$38	\$74
Struck by/against Sports Equipment	\$57	\$32	\$25
Other Unintentional Injuries	\$999	\$624	\$375
Suicide/Self-Harm - Poisoning	\$243	\$90	\$152
Suicide/Self-Harm - Other	\$334	\$25	\$309
Violence	\$127	\$54	\$73
Undetermined Intent/Other	\$58	\$21	\$37
Total	\$4,210	\$2,306	\$1,903

Just over half of the total costs of injury in Quebec in 2004 were attributable to falls (33%) and transport incidents (20%). Other (unspecified) unintentional injuries accounted for a further 24% of these costs, followed by suicide/self-harm (14%), unintentional poisoning (3%), violence (3%), fire/burns (1%), being struck by/against sports equipment (1%), and injuries of undetermined intent (1%).

Falls were also the leading cause of direct (health care) costs due to injury, accounting for 45% of all direct costs in 2004, followed by other (unspecified) unintentional injuries at 27%, and transport incidents at 16%. Suicide/self-harm accounted for a further 5%, violence 2%, unintentional poisoning 2%, fire/burns 1%, being struck by/against sports equipment 1%, and injuries of undetermined intent 1%.

Transport incidents and suicide/self-harm were the leading causes of indirect costs arising from injury - each accounting for 24% - followed by falls at 19%, and other (unspecified) unintentional injuries at 20%. The remaining causes of indirect costs included unintentional poisoning (4%), violence (4%), fire/burns (2%), injuries of undetermined intent (2%), drowning (1%), and being struck by/against sports equipment (1%).

Transport related injuries by cause and associated costs

Motor vehicle incidents caused 12% of all injury deaths and 43% of all transport related injury deaths in Quebec in 2004 and accounted for over half of all hospitalizations (56%), emergency room visits (58%), and cases of permanent partial disability (54%), and permanent total disability (57%) arising from transport related injuries.

The remaining deaths due to transport incidents were attributed to other (unspecified) transport incidents (35%), pedestrian incidents (14%), ATV/snowmobile incidents (6%), and cycling incidents (2%). Other transport related causes of hospitalization included injuries due to cycling (17%), ATV/snowmobiles (14%), pedestrian incidents (10%), and other (unspecified) transport incidents (4%). Other emergency room visits were due to cycling (22%), other (unspecified) transport incidents (8%), ATV/snowmobiles (6%), and pedestrian (5%) transport incidents.

Motor vehicle incidents accounted for approximately half of total costs (53%), direct costs (57%), and indirect costs (49%) arising from injuries due to transport incidents in Quebec in 2004. With respect to total costs, motor vehicle incidents were followed by other (unspecified) transport incidents (14%), cycling incidents (13%), incidents involving ATV/snowmobiles (11%), and pedestrian incidents (10%). Remaining direct costs were due to injuries arising from cycling (16%), ATV/snowmobiles (12%), pedestrian incidents (10%), and other (unspecified) transport incidents (4%). Remaining indirect costs were due to other (unspecified) incidents (22%), cycling (10%), pedestrian incidents (10%), and ATV/snowmobiles (10%).

Fall related injuries by cause and associated costs

After other (unspecified) falls, stairs were the leading cause of death by falls in Quebec in 2004, accounting for 14% of all deaths by falling. Other types of falls resulting in death included falls on the same level (8%), from furniture (5%), and from ladders/scaffolding (3%). The vast majority (70%) of deaths by falls, however, are from other (unspecified) types of falls.

Falls on the same level were the leading specified cause (35%) of hospitalizations, emergency room visits (32%), and cases of permanent partial disability (35%), and permanent total disability (31%) due to falls. Other causes of hospitalizations from falls included falls on stairs (9%), from furniture (6%), from ladders/scaffolding (3%), from skates/skis/boards/blades (2%), and in playgrounds (1%). Other (unspecified) types of falls accounted for the remaining 43% of hospitalizations in 2004. Other causes of emergency room visits included falls on stairs (12%), from skates/skis/boards/ blades (7%), from furniture (5%), in playgrounds (2%), and from ladders/scaffolding (2%). Other

(unspecified) types of falls accounted for the remaining 38% of emergency room visits in 2004.

Falls on the same level were also the single greatest specified cause of costs due to falls, accounting for 33% of total costs, 34% of direct costs, and 32% of indirect costs arising from falls in 2004, followed by falls from stairs (10% of total costs, 10% of direct costs, and 11% of indirect costs), falls from furniture (6% of total costs, 6% of direct costs, and 4% of indirect costs), from skates/skis/boards/blades (4% of total costs, 3% of direct costs, and 8% of indirect costs), from ladders/scaffolding (3% of total costs, 3% of direct costs, and 4% of indirect costs), and in playgrounds (2% of total costs, 2% of direct costs, and 4% of indirect costs), and falls from diving (0% of total costs, 0% of direct costs, and 1% of indirect costs). Other (unspecified) falls accounted for 41% of total costs, 42% of direct costs, and 37% of indirect costs.

Intentional injuries by cause and associated costs

Suicide/self-harm accounted for 45% of all injury deaths and 92% of all deaths by intentional injury in Quebec in 2004. Suicide/self-harm other than by poisoning was the leading cause of death by intentional injury (67%), followed by suicide/self-harm by poisoning (25%), and violence (8%).

Suicide/self-harm by poisoning was responsible for the majority of intentional injury hospitalizations (59%), followed by violence (25%), and suicide/self-harm by other means (16%), while violence was responsible for the majority of emergency room visits (66%) due to intentional injury, followed by suicide/self-harm by poisoning (25%), and suicide/self-harm by other means (8%). Permanent partial disability was most often the result of suicide/self-harm by poisoning (59%), followed by violence (30%), and suicide/self-harm by other means (11%). Suicide/self-harm by poisoning and violence were equally responsible for causing total permanent disability (43% of all cases each), followed by suicide/self-harm by other means (14%).

Suicide was also responsible for the majority of costs arising from intentional injury in 2004 – 82% of total costs, 68% of direct costs, and 87% of indirect costs. A more detailed breakdown shows that suicide/self-harm by other means accounted for 47% of total costs, suicide/self-harm by poisoning 35%, and violence 18%. Suicide/self-harm by poisoning was responsible for just over half of direct costs (53%), however, followed by direct costs arising from violence (32%), and suicide/self-harm by other means (15%). The majority of indirect costs are attributable to suicide/self-harm by other means (58%), with the remainder due to suicide/self-harm by poisoning (29%), and violence (14%).

Saskatchewan

Injury in Saskatchewan

Saskatchewan does not currently have a formal provincial injury prevention strategy. However, several agencies throughout the province include injury prevention in their mandate. Given this shared responsibility for injury, a cross-sectoral initiative was undertaken to assess the key factors underpinning Saskatchewan’s high injury rates. In 2008, the Saskatchewan Ministry of Health, together with 10 other governmental and non-governmental agencies, jointly completed a study entitled the Saskatchewan Comprehensive Injury Surveillance Report, 1995-2005. The purpose of this report was to provide an comprehensive analysis of injury in Saskatchewan, across all age groups, in order to define the extent of the problem. It is anticipated that the collaborative process of developing this report will help to further strengthen shared injury prevention efforts going forward.

Total burden of injury

Injuries cost Saskatchewan \$0.8 billion and 554 lives in 2004.

A further 216 people were totally and permanently disabled and 2,659 were left with a permanent partial disability, while 10,121 were hospitalized and another 97,929 were treated in emergency departments as a result of injury.

Based on Saskatchewan’s 2004 population of 995,391, this translates into an annual death rate of 55.7 per 100,000 population, an estimated 1,377.2 potential years of life lost, and \$791 in per capita total costs due to injury.

Table 78

Summary of findings, all injury, Saskatchewan, 2004

Injury deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability	Total cost
554	10,121	97,927	2,659	216	\$787 million

Direct and indirect costs

The direct (health care) costs of injury in Saskatchewan in 2004 were \$0.42 billion or \$420 per capita, and represented 53% of total injury costs, while indirect costs amounted to \$0.37 billion or 47%.

Intentional and unintentional injury

Table 79
Injury by intent, Saskatchewan, 2004

Description	Deaths	Hospitalized treatment	Non-hospitalized treatment	Permanent partial disability	Permanent total disability
Unintentional	399	8,580	93,318	2,348	192
Intentional	143	1,311	3,903	263	21
Undetermined intent/Other	12	230	708	48	< 5
Total	554	10,121	97,927	2,659	216

Most injuries incurred in 2004 were unintentional injuries. Seventy two percent of deaths, 85% of hospitalizations, 95% of emergency room visits, 88% of all cases of permanent partial disability, and 89% of permanent total disability arising from injury were caused by unintentional injury.

Intentional injuries accounted for just 26% of deaths, 13% of hospitalizations, 4% of emergency room visits, and 10% of all cases of permanent partial and total disability arising from injury. The remaining incidents are of undetermined intent.

Table 80
Total, direct, and indirect costs by intent of injury, Saskatchewan, 2004

Description	Total costs (\$Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
Unintentional injury	\$629	\$358	\$270
Intentional injury	\$141	\$52	\$90
Undetermined intent/Other	\$18	\$8	\$9
Total	\$787	\$418	\$369

It is not surprising then, that unintentional injuries accounted for \$0.63 billion or 80% of Saskatchewan's \$0.79 billion total injury costs in 2004. Unintentional injuries were also responsible for \$0.36 billion or 86% of Saskatchewan's \$0.42 billion in direct injury costs and \$0.27 billion or 73% of its \$0.37 billion in indirect costs.

Intentional injuries were responsible for 18% of total costs, 12% of direct costs, and 24% of indirect costs arising from injury, while injuries of other or undetermined intent accounted for 2% of total, direct, and indirect costs.

Injury by cause

Table 81

Number of injury deaths, hospitalizations, and non-hospitalizations by cause, Saskatchewan, 2004

Description	Deaths	Hospitalizations	Non-hospitalizations	Permanent partial disability	Permanent total disability
Transport Incidents					
<i>Pedestrian</i>	17	96	480	22	< 5
<i>Pedal Cycle</i>	< 5	115	2,007	35	< 5
<i>Motor Vehicle</i>	56	703	4,929	160	17
<i>ATV, Snowmobile</i>	7	208	570	46	< 5
<i>Other</i>	45	194	719	44	< 5
Falls					
<i>On the same level</i>	6	1,624	8,979	436	33
<i>From skates, skis, boards, blades</i>	< 5	130	2,227	44	< 5
<i>From furniture</i>	< 5	316	1,681	80	7
<i>In playgrounds</i>	< 5	121	701	34	< 5
<i>On stairs</i>	10	480	3,357	125	12
<i>From ladders/scaffolding</i>	< 5	142	647	36	< 5
<i>Diving</i>	< 5	7	75	< 5	< 5
<i>Other</i>	54	2,090	11,046	536	49
Drowning	8	14	29	< 5	< 5
Fire/Burns	18	121	1,366	39	< 5
Unintentional Poisoning	35	473	1,546	95	5
Struck by/against Sports Equipment	< 5	63	2,104	24	< 5
Other Unintentional Injuries	134	1,683	50,852	589	43
Suicide/Self-Harm - Poisoning	38	590	959	125	5
Suicide/Self-Harm - Other	73	91	322	15	< 5
Violence	32	630	2,622	122	14
Undetermined Intent/Other	12	230	708	48	< 5
Total	554	10,121	97,929	2,659	217

In 2004, transport incidents, suicide/self-harm, and falls were the leading causes of death by injury Saskatchewan, accounting for 23%, 20%, and 14% of deaths respectively. Other causes included other (unspecified) unintentional injuries (24%), unintentional poisoning (6%), violence (6%), fire/ burns (3%), drowning (2%), and injuries of undetermined intent (2%).

Table 82
Mortality, crude death rates (per 100,000 pop.) and total cost per capita by cause, Saskatchewan, 2004

Cause	Deaths	Death rate (per 100,000)	Total costs	Cost per capita
Traffic incidents	128	12.9	\$147 million	\$148
Falls	76	7.6	\$234 million	\$235
Suicide/self-harm	111	11.2	\$87 million	\$88
Violence	32	3.2	\$54 million	\$54

Transport incidents were the leading cause of injury deaths per capita in 2004 (12.9 per 100,000 population), while falls generated the greatest per capita injury costs – \$235.

Hospitalizations due to injury were due most often to falls (49%), followed by other unintentional injuries (17%), and transport incidents (13%). Other causes included suicide/self-harm (7%), violence (6%), unintentional poisoning (5%), injuries of undetermined intent (2%), and fire/burns (1%).

The most frequent defined causes of emergency room visits to treat injury were falls (29%) and transport incidents (9%), while 52% of visits were due to other (non-specified) unintentional injury. The remaining causes of emergency room visits were violence (3%), unintentional poisoning (2%), being struck by/against sports equipment (2%), fire/burns (1%), suicide/self-harm (1%), and injury due to undetermined intent (1%).

Falls were the leading cause of permanent partial disability (49%) and permanent total disability (51%) arising from injury, followed by other (unspecified) unintentional injury (22% and 20% respectively), and transport incidents (12% and 14%). Less frequent causes included violence (5% and 6%), suicide/self-harm (5% and 3%), unintentional poisoning (4% and 5%), injuries of undetermined intent (2% and 1%), fire/burns (1% and 1%), and being struck by/against sports equipment (1% in both cases).

Costs of injury by cause

Table 83

Total, direct, and indirect costs of injury by cause, Saskatchewan, 2004

Description	Total costs (\$ Millions)	Direct costs (\$ Millions)	Indirect costs (\$ Millions)
Transport Incidents			
<i>Pedestrian</i>	\$12	\$4	\$8
<i>Pedal Cycle</i>	\$12	\$6	\$6
<i>Motor Vehicle</i>	\$76	\$35	\$42
<i>ATV, Snowmobile</i>	\$18	\$9	\$9
<i>Other</i>	\$29	\$8	\$21
Falls			
<i>On the same level</i>	\$68	\$51	\$16
<i>From skates, skis, boards, blades</i>	\$14	\$7	\$6
<i>From furniture</i>	\$15	\$12	\$3
<i>In playgrounds</i>	\$12	\$7	\$5
<i>On stairs</i>	\$26	\$17	\$9
<i>From ladders/scaffolding</i>	\$8	\$5	\$3
<i>Diving</i>	\$0.9	\$0.4	\$0.5
<i>Other</i>	\$91	\$69	\$23
Drowning	\$4	\$0.4	\$4
Fire/Burns	\$16	\$6	\$10
Unintentional Poisoning	\$37	\$15	\$22
Struck by/against Sports Equipment	\$7	\$4	\$4
Other Unintentional Injuries	\$183	\$102	\$81
Suicide/Self-Harm - Poisoning	\$48	\$23	\$26
Suicide/Self-Harm - Other	\$39	\$4	\$35
Violence	\$54	\$25	\$29
Undetermined Intent/Other	\$17	\$8	\$9
Total	\$787	\$418	\$369

Almost half of the total costs of injury in Saskatchewan in 2004 were attributable to falls (30%) and transport incidents (19%). Other unintentional injuries accounted for a further 23% of these costs, followed by suicide/self-harm (11%), violence (7%), unintentional poisoning (5%), fire/burns (2%), injuries of undetermined intent (2%), drowning (1%), and being struck by/against sports equipment (1%).

Falls were also the leading cause of health care or direct costs due to injury, accounting for 40% of all direct injury costs in 2004, followed by other unintentional injuries at 24%, and transport incidents at 15%. Suicide/self-harm accounted for a further 6%, violence 6%, unintentional poisoning 4%, injuries of undetermined intent 2%, fire/burns 1%, and being struck by/against sports equipment 1%.

Transport incidents were the leading cause of indirect costs arising from injury at 23%, followed by falls (18%), and suicide/self-harm (16%). Other unintentional (unspecified) injuries accounted for another 22%, with remaining causes comprised by violence (8%), unintentional poisoning (6%), fire/burns (3%), injuries of undetermined intent (2%), drowning (1%), and being struck by/against sports equipment (1%).

Transport related injuries by cause and associated costs

Motor vehicle incidents caused 10% of all injury deaths and 43% of all transport related injury deaths in Saskatchewan in 2004 and accounted for half or more of all hospitalizations (53%), emergency room visits (57%), and cases of permanent partial disability (52%) and permanent total disability (56%) arising from transport related injuries.

The remaining deaths due to transport incidents were attributed to other (unspecified) transport incidents (35%), pedestrian incidents (14%), ATV/snowmobile incidents (5%), and cycling incidents (2%). Other transport related causes of hospitalization included injuries due to ATV/snowmobiles (16%), other (unspecified) transport incidents (15%), cycling (9%), and pedestrian incidents (7%). Other emergency room visits were due to cycling (23%), other (unspecified) incidents (8%), ATV/snowmobiles (7%), and pedestrian (6%) transport incidents.

Motor vehicle incidents accounted for approximately half of total costs (52%), direct costs (56%), and indirect costs (49%) arising from injuries due to transport incidents in Saskatchewan in 2004. With respect to total costs, motor vehicle incidents were followed by other (unspecified) incidents (20%), ATV/snowmobiles (12%), pedestrian incidents (8%), and cycling incidents (8%). Remaining direct costs were due to injuries arising from ATV/snowmobiles (15%), other (unspecified) transport incidents (12%), cycling (10%), and pedestrian incidents (7%). Remaining indirect costs were due to other (unspecified) incidents (25%), ATV/snowmobiles (10%), pedestrian incidents (9%), and cycling (7%).

Fall related injuries by cause and associated costs

After other (unspecified) falls, stairs were the leading cause of death by falls in Saskatchewan in 2004, accounting for 13% 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 (2%). The vast majority (71%) of deaths by falls, however, were from other (unspecified) types of falls.

Falls on the same level were the leading specified cause of hospitalizations (33%), emergency room visits (31%), and cases of permanent partial disability (34%), and permanent total disability (30%) due to falls. Other causes of hospitalizations from falls included falls from stairs (10%), from furniture (6%), from ladders/scaffolding (3%), from skates/skis/boards/blades (3%), and in playgrounds (2%). Other (unspecified) types of falls accounted for the remaining 43% of hospitalizations in 2004. Other causes of emergency room visits included falls from stairs (12%), from skates/skis/boards/blades (8%), from furniture (6%), playgrounds (2%), and from ladders/scaffolding (2%). Other (unspecified) types of falls accounted for the remaining 38% of emergency room visits in 2004.

Falls on the same level were also the single greatest specified cause of costs due to falls, accounting for 29% of total costs, 30% of direct costs, and 25% of indirect costs in 2004, followed by falls from stairs (11% of total costs, 10% of direct costs, and 13% of indirect costs), from furniture (6% of total costs, 7% of direct costs, and 5% of indirect costs), falls from skates/skis/boards/blades (6% of total costs, 4% of direct costs, and 9% of indirect costs), playgrounds (5% of total costs, 4% of direct costs, and 7% of indirect costs) and from ladders/scaffolding (3% of total costs, 3% of direct costs, and 4% of indirect costs). Other (unspecified) falls accounted for 39% of total costs, 41% of direct costs, and 35% of indirect costs.

Intentional injuries by cause and associated costs

Suicide/self-harm accounted for 20% of all deaths by injury and 77% of all deaths by intentional injury in Saskatchewan in 2004. Suicide/self-harm other than by poisoning was the leading cause of intentional deaths (51%), followed by suicide/self-harm by poisoning (26%), and violence (22%).

Hospitalizations arising from intentional injury were caused almost equally by violence (48%) and suicide attempts – suicide/self-harm by poisoning (45%) and suicide/self-harm by other means (7%), while violence was responsible for the majority of emergency room visits (67%), followed by suicide/self-harm by poisoning (25%) and suicide/self-harm by other means (8%). Permanent partial disability was most often the result of suicide/self-harm by poisoning (48%), followed closely by violence (46% of cases), and lastly by suicide/self-harm by other means (6%). Violence was responsible for over two-thirds (67%) of intentional injuries resulting in permanent total disability, followed by suicide/self-harm by poisoning (26%), and suicide/self-harm by other means (6%).

A breakdown of the total costs arising from intentional injury in Saskatchewan in 2004 shows that suicide/self-harm was responsible for 62% (34% from suicide/self-harm by poisoning and 28% by other means), while violence accounted for 38%. A similar breakdown of direct (health care) costs arising from intentional injury shows that costs were almost evenly attributable to suicide/self-harm (44% by poisoning and 8% by other means), and violence (48% of cases). Indirect costs were divided between suicide/self-harm by other means (39%), violence (32%), and suicide/self-harm by poisoning (29%).

Conclusion

Through this report, SMARTRISK has attempted to quantify the tremendous annual burden that injury places on Canadians, our health care system, and Canadian society overall:

- 13,667 deaths;
- Over 211,000 Canadians hospitalized;
- Over 3 million emergency room visits;
- Over 67,000 Canadians permanently disabled;
- \$10.7 billion in health care costs; and
- \$19.8 billion in total economic costs.

No attempt has been made, however, to quantify the even greater burden of pain, diminished potential, and loss experienced by injured Canadians and their families.

Research and experience have shown that the vast majority of the injuries described in this report are both predictable and preventable. We know when they strike 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.

As our capacity to monitor, report on, and coordinate effective action to prevent injury grows, our rationale for inaction diminishes. In the period 1995-2004, Canada's annual death rate from injury declined 10.9%. During this same period, injury data collection and reporting improved, governments began demonstrating increasing awareness of the issue, and the number of prevention programs increased across the country. Progress was made – but not enough and not quickly enough.

We can do better. A comprehensive national injury prevention strategy and complementary strategies at the provincial level can significantly accelerate the gains of the past decade, and yield immediate and longer-term savings in both dollars and lives. With enhanced leadership, we have the capacity, across Canada, to develop, implement, and demonstrate the impact of such strategies.

SMARTRISK encourages policy makers at all levels of government to consider the costs of current inaction against the backdrop of Canada's aging population, shrinking labour force, and overburdened health care system. Effective action to prevent injury would not eliminate these challenges but it would help to alleviate their impacts and the costly human and economic burden we all currently bear.

Injuries can be prevented, lives saved, and a significant drain on our public resources stopped. Please join us in making this happen.

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 2004 was costed over the lifetime of injured individuals. The costs, both direct and indirect, were discounted to a present value in 2004 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.”⁷ 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.

⁷ 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.

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.”⁸ 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.”⁹ 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 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 burden 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.

⁸ Scitovsky AA. Estimating the direct costs of illness. *Millbank Memorial Fund Quarterly/Health and Society* 1982;60:463-491, at 474.

⁹ *Ibid*

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 Discharge Abstract Database (DAD) from the Canadian Institute for Health Information (CIHI) contained the required data on hospital episodes 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, except Alberta where data from the Alberta Ambulatory Care Classification System (ACCS) were used.
- The mortality database from the Public Health Agency Canada 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 department 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 burden 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

Mortality data analysis was provided by officials from the Public Health Agency Canada, using data provided by Statistics Canada. The Public Health Agency Canada data file included injury death cases, with information on province and on external cause of injury codes based on 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

Acute hospital separation data for all injury hospitalizations in Canada, excluding Québec, were obtained from the DAD at CIHI. The case-level data included age, provincial 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 gender for the 2004 calendar year. For Québec, comparable information on an ICD-9 basis was obtained from the CIHI Hospital Morbidity Database (HMDB) and converted to ICD-10.

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.

Non-hospitalized injuries

Non-hospitalized injuries were determined directly from the Ontario NACRS data and extended to all provinces, except Alberta, by using Ontario incidence-to-population ratios on respective provincial populations. For Alberta, non-hospitalized injuries were determined directly from the Alberta ACCS data.

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 2004 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.

Appendix 2: ICD-10 Code classifications by Detailed Cause

ICD-10 Code Classifications by Detailed Cause	
Description	ICD-10 Codes
Unintentional Injuries	
<i>Transport Incidents - Pedestrian</i>	V01 - V09
<i>Transport Incidents - Pedal Cycle</i>	V10 - V19
<i>Transport Incidents - Motor Vehicle</i>	V20 - V29, V40 - V79
<i>Transport Incidents - ATV, Snowmobile</i>	V30 - V39, V86
<i>Transport Incidents - Other</i>	V80 - V85, V87 - V89, V91, V93 - V99
<i>Falls - On the same level</i>	W00 - W01
<i>Falls - From skates, skis, boards, blades</i>	W02
<i>Falls - From furniture</i>	W06 - W08
<i>Falls - In playgrounds</i>	W09
<i>Falls - On stairs</i>	W10
<i>Falls - From ladders/scaffolding</i>	W11 - W12
<i>Falls - Diving</i>	W16
<i>Falls - Other</i>	W03 - W05, W13 - W15, W17 - W19
<i>Drowning</i>	V90, V92, W65 - W74
<i>Fire/Burns</i>	X00 - X19
<i>Unintentional Poisoning</i>	X40 - X49
<i>Struck by/against Sports Equipment</i>	W21
<i>Other Unintentional Injuries</i>	W20, W22 - W64, W75 - W99, X20 - X39, X50, X58, X59
Intentional Injuries	
<i>Suicide/Self-Harm - Poisoning</i>	X60 - X69
<i>Suicide/Self-Harm - Other</i>	X70 - X84
<i>Violence</i>	X85 - X99, Y00 - Y09
Undetermined Intent/Other	Y10 - Y36

Appendix 3: External causes included in other unintentional injuries

External Causes Included in Other Unintentional Injuries	
Description	ICD-10 Codes
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