INJURY DATA REPORT

Winnipeg Regional Health Authority

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Injury Report Introduction

What is an Injury?

Many people have difficulty viewing "injury" as a single health problem, given that many diverse events may result in an injury. A car crash, a suicide, or a chemical burn in the workplace may appear to be quite unrelated events. However, common to the above examples, is that **energy is applied to the body beyond which it can be tolerated without damage.**

The technical definition of injury is "any specific and identifiable bodily impairment or damage resulting from acute exposure to thermal energy (e.g. burns or scalds); mechanical energy (e.g. collisions, cuts and falls); electrical energy (e.g. burns and shocks); chemical energy (e.g. poisonings or chemical explosions); or the absence of essentials such as heat or oxygen (e.g. hypothermia or suffocation)". Injury is often categorized into two main groups: unintentional and intentional injuries.

Unintentional injuries are involuntary and result from incidents such as motor vehicle collisions, falls, drowning and poisonings where there was no intent for harm to occur. Unintentional injuries are often referred to as "accidents" by the public and the media expressing the sentiment that "no one meant for it to happen". Intentional injuries result from actions taken with intent to do harm to oneself or others such as suicide or assault. It is not always possible to correctly identify intent; given data limitations, as well as the fact that intention is not always clear-cut. Both intentional and unintentional injuries have known risk factors and are responsive to prevention. The preventive approach to intentional and unintentional injury is sometimes quite different, whereas some measures are protective for both. For example, reduced hot water temperatures prevent both unintentional bathtub scalds and intentional hot water immersion (i.e. child abuse).

Injuries are Not "Accidents"

There is a widespread misconception that unintentional injuries are unavoidable "accidents" or random events that are an inevitable part of life. To the contrary, injuries follow predictable patterns associated with risk factors such as age, gender, injury mechanism, social characteristics, geography, environmental risks and risk taking behaviours. A variety of interventions have demonstrated effectiveness in preventing injury and it is predicted that a significant proportion of injury could be prevented if we applied all currently known strategies that have demonstrated effectiveness, such as known interventions to prevent falls among older adults. In Manitoba, the Pediatric Death Review Committee of the College of Physicians and Surgeons deemed that nine out of ten pediatric injury deaths could have been prevented. [i]

Injury: An Important Public Health Issue

The impact of injury is immense, both in economic costs and personal loss. Injury (unintentional and intentional) is the leading cause of death for Canadians between the ages of 1 and 44 and the fourth leading cause of death for Canadians of all ages[ii]. For every injury death, there are many more injuries that result in hospitalization, treatment in emergency departments, visits to primary care practitioners, treatment outside the formal health care system and self-care at home. The *Injuries in Alberta, 2005* data report (2006) documented 36 hospitalizations and 284 emergency department visits for every injury death. Injuries of varying severity result in loss of time from work or school, disruptions in family life and activities of daily living, suffering and disability.

Although the greatest impact of injury is human suffering and loss, the financial costs are also significant. A 2003 study estimated the 1999/2000 cost of unintentional injury in Manitoba at $819 million or approximately $716 for every citizen[iii]. This underestimates the total cost since the significant cost of intentional injury was not included. It is estimated that for every completed suicide (about 4,000 Canadians each year), five to six lives are profoundly affected[iv].

A Population and Public Health Approach to Injury

To prevent injuries and minimize their consequences, a population and public health approach can be used as a systematic process to define the scope of injury, identify priority injury causes and their associated risk and protective factors, and to select, implement and evaluate appropriate interventions. Injury prevention lends itself to a population and public health approach as the causes of injuries are generally multi-factoral and prevention often requires multi-sectoral and community interventions. Injury prevention efforts within the Winnipeg Health Region include collaboration with key stakeholders from a broad range of disciplines, sectors and jurisdictions as well as with members of the community. Strategies will be chosen and implemented based on current research and effectiveness literature, as well as appropriateness and acceptability of the strategies to involved populations.

Purpose of this Report

The first step of a population and public health approach is to define the magnitude and scope of the injury problem. Through these data in this report, which describes the injury experience of Winnipeg Health Region residents, we will be able to describe the age and gender of those most at risk for injury, the most frequent and the most severe causes of injury, injury at the community level, and how rates and types of injury have changed over time. Armed with such data, we will be able to design and apply appropriate interventions, monitor the results/impacts of our interventions, make appropriate adjustments and identify the best ways to engage our partners and use our resources.

[1]The Pediatric Death Review Committee. Annual Report, 1998. Winnipeg: College of Physicians and Surgeons of Manitoba; December 2000.

[2] Injury and Child Maltreatment Section, Public Health Agency of Canada analysis of data from the Canadian Institute for Health Information.

[3] SmartRisk. The Economic Burden of Unintentional Injury in Manitoba. The SmartRisk Foundation, Toronto, Ontario, 2003

[4] Diekstra RF, Garnefski N. (1995). On the nature, magnitude, and causality of suicidal behaviour: an international perspective. *Suicide and Life Threatening Behaviour*, 25: 36-57.

Methods

Data Sources

This report describes the injury experience of people who live within the Winnipeg Health Region (WHR) regardless of where they were injured or treated. It does not include people who were injured or treated within Winnipeg who live elsewhere. The report uses three sources of injury data: Hospital Discharge Abstract Database (Source: Manitoba Health); the WRHA Mortality Database (Source: Manitoba Vital Statistics); and the Canadian Community Health Survey (CCHS) (Source: Statistics Canada). Injury statistics for the WHR were generated from the former two administrative databases.

Deaths: Residents of the WHR who died as a result of an injury (as indicated by an ICD-9 E-code in the record of death) were included in this analysis. Ten calendar years from January 1, 1990 to December 31, 1999 were used for the analysis of death data in this report.

Hospitalization: Ten calendar years of hospitalization data from the Hospital Discharge Abstract Database were used: January 1, 1994 to December 31, 2003. It is important to note that Hospital Discharge Abstract Database includes only in-patient hospital admissions and that persons treated and released from an emergency department are not included in these data due to lack of data capture in Manitoba. It describes residents of the WHR who were hospitalized regardless of location, not people hospitalized in Winnipeg.

Canadian Community Health Survey: Data were produced by Statistics Canada and obtained from the website: http://www.statcan.ca/english/sdds/3226.htm. It provides additional injury information based upon self-report of injuries to the survey by Winnipeg Health Region residents.

Selection of Injury Cases

For this report, records were selected from the administrative databases based upon ICD-9 (the International Classification of Diseases 9th Revision) injury E-codes, E800-E999.9 inclusive. During this period, deaths were coded using ICD-9, while hospitalization records were coded using ICD-9-CM (International Classification of Diseases 9th Revision with Clinical Modifications).

It should be noted that there were no differences in the injury E-code coding structure between ICD-9 and ICD-9–CM. For death data, the injury E-code would occur in the second field for cause of death. For hospitalization data, records were selected based upon the first valid E-code encountered in any of the sixteen diagnosis fields.

The CCHS survey questions regarding injury are fully described in that chapter of this report.

The Injury Matrix

Following extraction of the injury records, the data were then sorted into five intent-manner categories by cause or mechanism of injury based upon the E-code, using the Health Canada recommended “Injury Matrix”. Briefly, the injury matrix was originally developed by the United States Centers for Disease Control and ICE (International Collaborative Effort) on Injury, as the preferred framework for presenting injury data in the United States.[1] It should be noted that Health Canada is represented in the ICE on Injury and has also adopted the use of this framework with some modifications, in order to monitor injuries of interest to the Canadian population.[2] This latter injury matrix was used in this report as an analytical tool in order to produce organized tables of injury data. Although somewhat complicated to interpret, it does provide end-users with a substantial amount of detailed injury information.

Injury matrix data tables were generated for the Winnipeg Health Region, the community areas, and for various age groups by sex within the regional population for both hospitalization and death data. In each chapter, the relevant data have been extracted from an injury matrix table and presented for discussion.

[1] Centers for Disease Control and Prevention. (1997) Recommended framework for presenting injury mortality data. MMWR;46 (No.RR-14).
[2] Information available on-line: http://dsol-smed.hc-sc.gc.ca/dsol-smed/is-sb/icd9sup_e.html

Using the Injury Matrix, the category of "*All Injury*" (ICD-9 codes: E800-869.9, E880-929.9, and E950-E999.9) is used in this report as the summary measure of injury in the Winnipeg Health Region. It should be noted that this summary measure excludes adverse events/ medical misadventures. These are injuries that occur during medical or surgical care. Health Canada (and the afore-mentioned injury groups) have recommended the use of *All Injury* instead of all external causes of injury (i.e. ICD-9 codes E800-E999.9) when examining injury data for injury prevention and control. The reader should be cautioned about drawing comparisons of the data presented in this report to other sources of data published elsewhere, as the definition of an injury event may vary significantly between jurisdictions.

As this is a population-based report, all rates are expressed as per 100 000 population. An exception to this is the Injury in Context chapter, which compares injury with other leading health conditions as causes of death and hospitalization.

Figure 1: Injury Matrix

Mechanism/Cause	Unintentional	Self-inflicted	Assault	Undetermin-ed	Other Violence
Cut/pierce	E920.0-.9	E956	E966	E986	E974
Drowning/submersion	E830.0-.9, E832.0-.9, E910.0-.9	E954	E964	E984	
Fall	E880.0-E886.9, E888	E957.0-.9	E968.1	E987.0-.9	
Fire/burn	E890.0-E899, E924.0-.9	E958.1,.2,.7	E961, E968.0,.3	E988.1,.2,.7	
Fire/flame	E890.0-E899	E958.1	E968.0	E988.1	
Private home conflagration	E890(.0-.9)				
Ignition of clothing	E893(.0-.9)				
Hot object/substance	E924.0-.9	E958.2,.7	E961, E968.3	E988.2,.7	
Firearm	E922.0-.3,.8, .9	E955.0-.4	E965.0-.4	E985.0-.4	E970
Machinery	E919 (.0-.9)				
Agricultural machines	E919.0				
Motor vehicle traffic	E810-E819 (.0-.9)	E958.5	E968.5	E988.5	
Occupant	E810-E819 (.0,.1)				
Motorcyclist	E810-E819 (.2,.3)				
Pedal cyclist	E810-E819 (.6)				
Pedestrian	E810-E819 (.7)				
Unspecified	E810-E819 (.9)				
Pedal cyclist, other	E800-E807 (.3), E820-E825 (.6), E826.1,.9, E827-E829 (.1)				
Pedestrian, other	E800-807(.2), E820-E825(.7), E826-E829(.0)				
Transport, other	E800-E807 (.0,.1,.8,.9), E820-E825 (.0-.5,.8,.9), E826.2-.8, E827-E829 (.2-.9), E831.0-.9, E833.0-E845.9	E958.6		E988.6	
Snowmobile	E820(.0,.1,.9)				
Other off-road vehicle	E821(.0,.1,.9)				
Water transport, ex. Drowning	E831(.0-.9), E833-E838 (.0-.9)				
Air & space transport	E840.0-E845.9				
Natural/environmental	E900.0-E909, E928.0-.2	E958.3		E988.3	
Excessive cold	E901(.0-.9)	E958.3		E988.3	
Bites and stings	E905.0-.6,.9,E906.0-.4,.5,.9				
Overexertion	E927				
Poisoning	E850.0-E869.9	E950.0-E952.9	E962.0-.9	E980.0-E982.9	E972
Medication	E850.0-E858.9	E950.0-.5	E962.0	E980.0-.5	
Alcohol	E860(.0-.9)				
Motor vehicle exhaust	E868.2	E952.0		E982.0	
Other carbon monoxide	E868(.3,.8,.9)	E952.1		E982.1	
Struck by, against	E916-E917.9		E960.0, E968.2		E973, E975
Suffocation	E911-E913.9	E953.0-.9	E963	E983.0-.9	
Choking on food	E911				
Choking, non-food	E912				
Suffocation, plastic bag	E913.1	E953.1			
Suffocation in bed or cradle	E913.0				
Hanging ex. in bed or cradle	E913.8	E953.0	E963	E983.0	
Other specified, classifiable	E846-E848, E914-E915, E918, E921.0-.9, E922.4, E923.0-.9, E925.0-E926.9, E928.3, E929.0-.5	E955.5,.6,.9, E958.0,.4	E960.1, E965.5-.9, E967.0-.9, E968.4,.6, .7	E985.5,.6,E988.0,.4	E971, E978,E990-E994, E996,E997.0-.2
Child maltreatment			E967(.0-.9)		
Other specified, NEC	E928.8, E929.8	E958.8, E959	E968.8, E969	E988.8, E989	E977, E995, E997.8, E998, E999
Unspecified	E887, E928.9, E929.9	E958.9	E968.9	E988.9	E976, E997.9
Fracture, cause unspecified	E887				
All injury	**E800.0-E869.9, E880-E929.9**	**E950.0-E959**	**E960.0-E969**	**E980.0-E989**	**E970-E978, E990-E999**

Measures of Injury

Injury Death Rates

Regional rates were calculated by using the number of injury deaths as the numerator and the WHR population for 1990-1999 as the denominator. All rates are expressed as 'per 100 000 population' per year, reflecting average annual rates from 10 years of data. The regional rates reported here are crude rates.

For each of the twelve community areas, crude rates and age-adjusted rates of injury deaths are presented. Crude rates were calculated with the number of injury events in a given community area as the numerator and the community area population as the denominator. Age-adjusted rates enable comparison between the community areas. Age-standardization of the rates for community areas was done using the direct method of standardization, and standardized to the WHR 2000 population.

Injury Potential Years of Life Lost (PYLL)

This was defined as the number of years of life lost before 75 years of age (based upon the life expectancy for a Manitoba resident). PYLL is a measure that places emphasis on loss of life at younger ages. Each death before age 75 contributes *75-x* years to the PYLL statistic. Note that a death occurring at 75 years of age or greater contributes 0 to the PYLL statistic.

Injury Hospitalization Rates

Regional rates were calculated by using the number of injury hospitalization events as the numerator and the appropriate WHR population (1994-2003) as the denominator. All rates are expressed as 'per 100 000 population' per year, reflecting average annual rates from 10 years of data. All regional rates are reported as crude rates. Also note that "persons in care" (those residents who are attributed to having "residence" at the Public Trustees Office for the Province of Manitoba) were included in both the numerator and denominator for these analyses.

For each of the twelve community areas, crude rates and age-adjusted rates of injury hospitalizations are presented. Crude rates were calculated with the number of injury events in a given community area as the numerator and the community area population as the denominator. Age-adjusted rates enable comparison between the community areas. These rates were generated using the direct method of standardization and standardized to the 2000 WHR population.

Average Length of Stay

In the Injury Hospitalization chapter, average length of stay was calculated using the total number of days of the stay in hospital as the numerator and the number of injury cases as the denominator. It should be noted that the average length of stay (ALOS) calculated for this report is based upon the length of stay in hospital for each hospital record with an injury diagnosis. There may be other health conditions (or diagnoses) that were treated during the same stay, and it is therefore not possible to determine if the entire stay was due to the injury alone or other factors, or alternatively, what proportion of a stay is due to the injury. ALOS presented here is meant for comparison of injury severity among several causes. There are many factors that may influence length of stay in hospital, such as age and pre-existing health conditions, and the examination of these factors is beyond the scope of this report. The ALOS measure presented in this chapter is not the standard measure used for health system analysis, as it was not based upon 'most responsible diagnosis' field in the hospital abstract.

It should be noted that for the Injury in Context chapter, the standard measure for ALOS was used. This selects injury and poisoning cases based upon the most responsible diagnosis field, which is defined as the reason for the greatest proportion of the stay in hospital. Therefore the information presented in the Injury in Context chapter may differ from that reported in the Injury Hospitalization chapter.

Leading Causes of Injury

For both hospitalization and death data, the leading causes of injury in the region were determined by comparing the injury causes with the highest number of events and then ranked. The injury causes or categories that were compared are listed in Figure 2. The first 15 cause/categories are unintentional in nature; these are compared with self-inflicted injury, violence, undetermined-poisoning, and undetermined-other.

These are further described:

- *Self-inflicted* injury is defined as in the injury matrix.
- *Violence* however, is a combination of Assault and Other Violence categories in the injury matrix.
- *Undetermined-poisoning* includes cases of poisoning where the intent could not be determined as either unintentional or self-inflicted.
- *Undetermined-other*, are other injury events (non-poisoning) that could not be determined if unintentional or self-inflicted.

It should be noted that categories of injury causes that appear in the injury matrix that were non-specific in nature were excluded from the determination of leading cause due to the heterogeneity of injury causes that were grouped together in these categories. There are three categories that were excluded: *Unspecified; Other specified, Classifiable; and Other Specified, NEC (not elsewhere classifiable).* The reason for this exclusion is that these "non-specific" cause categories cannot be easily targeted for an injury prevention effort, and may indicate concern with injury coding methods.

There were a large number of hospitalization injury events in the categories of *Other Specified, classifiable*; and *Other Specified*, *NEC* (n=1623 and n=461, respectively between 1994 and 2003). However, the largest number of events occurred in the *Unspecified* category, (n=2800). A substantial proportion of this category was attributed to *Fractures, Cause Unspecified* (ICD-9 E-code: E887), which had n=999 events. This category has particular issues since the code, E887, is an ICD-9 *Fall* injury code. Therefore, the *Fall* injury hospitalization rates reported in this indicator may be somewhat under-reported. In contrast, there are few injury mortality events that were classified as *Other Specified, classifiable*; and *Other Specified*, *NEC*, (17 and 2, respectively between 1990 and 1999). However, the largest number of events occurred in the *Unspecified* category, (171 events); the majority of these were attributed to *Fractures, Cause Unspecified* (ICD-9 E-code: E887), with138 events.

Figure 2: Injury Causes/Categories used for determination of leading causes

Injury Causes/Categories	ICD-9 code
Cut/pierce	E920.0-.9
Drowning/submersion	E830.0-.9, E832.0-.9, E910.0-.9
Falls	E880.0-E886.9, E888
Fire/burn	E890.0-E899, E924.0-.9
Firearm	E922.0-.3,.8, .9
Machinery	E919 (.0-.9)
Motor vehicle traffic	E810-E819 (.0-.9)
Pedal cyclist, other	E800-E807 (.3), E820-E825(.6), E826.1,.9, E827-E829 (.1)
Pedestrian, other	E800-807(.2), E820-E825(.7), E826-E829(.0)
Transport, other	E800-E807 (.0,.1,.8,.9), E820-E825 (.0-.5,.8,.9), E826.2-.8, E827-E829(.2-.9), E831.0-.9, E833.0-E845.9
Natural/environmental	E900.0-E909, E928.0-.2
Overexertion	E927
Poisoning	E850.0-E869.9
Struck by, against	E916-E917.9
Suffocation	E911-E913.9
Self-inflicted	E950.0-E959
Violence	E960.0-E969, E970-E978, E990-E999
Undetermined-poisoning	E980.0-E982.9
Undetermined-other	E980.0-E989 excluding E980.0-E982.9

Types of Analyses

Injury data analyses have been designed to examine the Winnipeg Health Region as a whole, and by geography (i.e. community area). Regional data analyses include analysis by sex, and age groups, and by age-sex groupings. The age groups used in this report were: Under 1 year of age, 1-4 years, 5-9 years, 10-14 years, 15-19 years, 20-24 years, 25-34 years, 35-44 years, 45-54 years, 55-64 years, 65-74 years, 75-84 years, and 85 years of age and older. In some analyses these age groups were combined if there were low numbers of events in the age group: this is particularly relevant for the death data.

Data Limitations

The data sources used in this population-based report are largely reliant on existing administrative data compiled for other purposes. The quality of the data is reliant on the expertise of professional data coders, who must interpret written descriptive information into a numerical coding system (ICD-9 and ICD-9-CM). Some ICD-9 codes may be too broad and in some cases lack specific detail about the injury. In addition, these databases do not include descriptive information about the circumstances or chain of events that lead up to the injury incidents. Some examples such as the involvement of alcohol or drugs, or the use of protective equipment including seatbelts, bicycle helmets or smoke alarms are generally not recorded. Nor do they include the specific place of injury. Examples include the location of a workplace where an injury incident took place, or a specific intersection of motor vehicle collision.

It should be noted that the time period of analysis for the death data was selected in order to include only ICD-9 coded data, from 1990-1999. Since the year 2000, death data in Manitoba has been coded by ICD-10. It is difficult to combine or even compare data coded using the two different methodologies. This was the reason for not including more recent death data. In addition, in Manitoba, hospitalization data has been coded using ICD-9-CM up to the 2003/04 fiscal year. ICD-10 coding methodology was introduced in 2004/05; therefore the time period for the hospitalization data uses the last ten years of ICD-9-CM coded data for this report, 1994-2003. Although this report contains the most currently available and usable information from the administrative databases, accessing current injury data in a timely fashion remains a priority.

These administrative databases do not allow for the analysis of populations defined other than by geography, age, or gender. For example, some groups at high risk for injury such as children and the elderly can be examined as the analysis can be based upon age. Although it may be of interest to examine injury in high-risk groups such as those with less education, or people with substance abuse issues, this cannot be readily completed using the current administrative databases.

It should be noted that analyses by community area were done based upon the most currently available boundaries, although the data pre-date the existence of WHR-defined community areas. Data are sorted into community areas based upon postal code of residence using the most currently available postal code conversion file provided by Statistics Canada. Changes over time in these boundaries may result in fluctuations in populations and therefore the rates over time.

About the CCHS Injury Data

The data sources described above, on which most of this report was based, provide a picture of only the most severe injuries that occur- those severe enough to result in death or require a hospital in-patient stay. The data do not capture injuries for which medical care is provided in the community (in doctors' offices, outpatient hospital settings, emergency departments, physiotherapy, chiropractic or massage therapy practices etc). Nor do they capture injuries for which no medical care was sought, but pain, impaired function and/or disruption of daily activities occurred. For a window into the incidence of injury of lower severity, the Canadian Community Health Survey (CCHS) data were used.

The CCHS is a national health survey that is conducted and analyzed by Statistics Canada. Results of the survey are reported for residents of the WHR, as well as the province of Manitoba and for Canada as a whole, thus allowing some comparison of the WHR to larger populations. The CCHS data are based upon a sample of Winnipeg Health Region residents, and provide an estimate of injury in the WHR population. It should be cautioned that for Cycle 2.1, these comparisons are quite limited due to a small sample size for the WHR (i.e. number of people who were surveyed) for the CCHS in 2003. This results in wide confidence intervals found for estimates provided for WHR data. Data from the CCHS are not available by Community Area for injury.

In cycle 2.1 of the CCHS, respondents who were 12 years of age and over were asked if they had sustained injuries in the past 12 months. This includes all injuries serious enough to limit one's normal activities, but does not include repetitive strain injury. The data presented here are based upon two main questions. The first examines injuries where *medical attention may or may not have been sought*. The second examines injuries where the respondent *sought medical attention*. It is important to note that the CCHS survey question specifically refers to *medical attention from a health professional,* but it should be noted that this term may be open to interpretation by the respondent. A follow-up question asks where the respondent sought medical attention: visit to a doctor's office, walk-in clinic, hospital emergency room, telephone consultation, or from a health professional at work, at school, or at home. [3]

[3] This information was obtained from a follow-up question in the survey, which asks the respondent to chose from a list where medical attention that was received for the injury (The results of this question were not available). The survey questions are available on-line at: www.statcan.ca.

A note about determining statistically significant differences

This information is intended to provide a brief explanation about how statistically significant differences were determined. The data provided by the CCHS includes a point estimate and the upper and lower limits of a 95% confidence interval (95% CI).

What is statistical significance and why do we need it?
Because survey data are based upon a sample of the population (i.e. a portion or a few people selected from the population to respond to the survey), it is necessary to consider how accurately the estimate reflects the true value in the entire population. The data provided by the CCHS include a point estimate and the upper and lower limits of a 95% confidence interval (95% CI). By comparing these data between the populations, it can be determined if there is a statistically significant difference in the point estimates. This can be interpreted as: "Is the difference between estimates likely to be true in the population or not?" For example, in comparing the estimate of the percentage of respondents who reported injuries where medical attention was sought in the WHR this percentage was 9.5% with a 95% CI of 7.3%-11.7%; for Canada this percentage was 8.0% with a 95% CI of 7.8% to 8.2%. While 9.5% is higher than 8.0%; there is an overlap between the 95% CIs. This means that although the estimate is 9.5% in the WHR sample, the true value in the whole WHR population has a 95% chance of being somewhere between as low as 7.3% or as high as 11.7%. Similarly, for Canada, although the estimate in the sample is 8.0%, the whole population rate may be as low as 7.8% and as high as 8.2%. Although a smaller range (due to the much larger sample size), the CI for the Canadian estimate falls within the 95% CI of the WHR estimate. Therefore the conclusion is that this is not a statistically significant difference.

Further information about confidence intervals and statistical significance can be found in any quality statistics reference textbook.

Injury in Context with Other Health Issues

This chapter places injury in perspective with other leading health issues in the Winnipeg Health Region, for death and hospitalization data. This has been examined for the WHR population as a whole, and by three age groups: children and youth, adults, and older adults. All of the injury death data are for the period of 1990-1999, and all of the injury hospitalization data are for the period of 1994-2003. Please note that in this chapter only the 'most responsible diagnosis' field is examined for hospitalization data. Injury is referred to as Injury and Poisoning and is defined by the ICD-9 and ICD-9-CM N-codes of 800-999, which includes adverse events. Further detail can be found in the methods chapter of this report.

Injury Death

Overall Population

For the period of 1990 to 1999, *Injury and Poisoning* was the fourth leading cause of death for residents of the WHR, with 2,374 deaths. This represents 5% of all deaths that occurred in the region during this time.

Potential Years of Life Lost

According to the *WRHA Mortality Report 2004*, *Injury and Poisoning* was the leading cause of potential years of life lost (PYLL), before the age of 75 years, in the WHR. This is true for both males and females.

Between 1990 and 1999 60,652 PYLL were due to *Injury and Poisoning.* This is greater than the PYLL for *Ischemic Heart Disease* (35,209) and *Malignant Neoplasm of Respiratory Organ* (23,640).[4]

Further detail can be found in the *WRHA Mortality Report 2004*.

Figure 3: Injury in Context with Other Leading Health Issues in the Winnipeg Health Region, 1990-1999

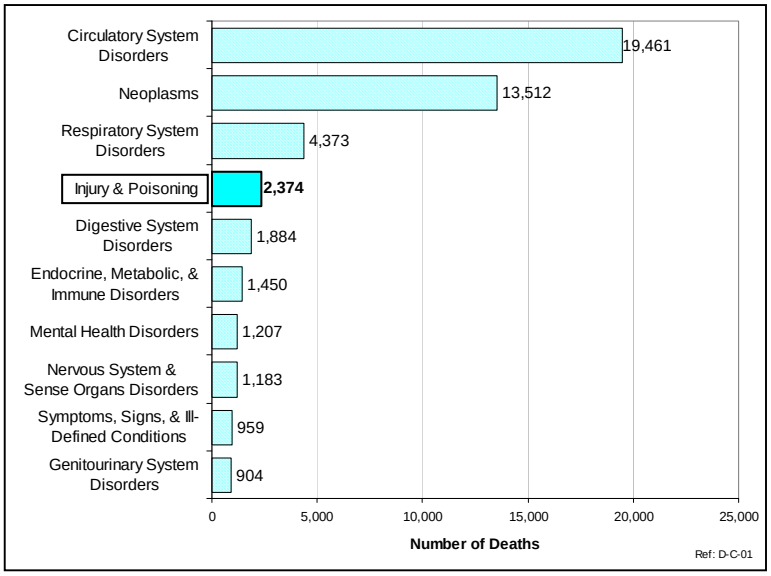
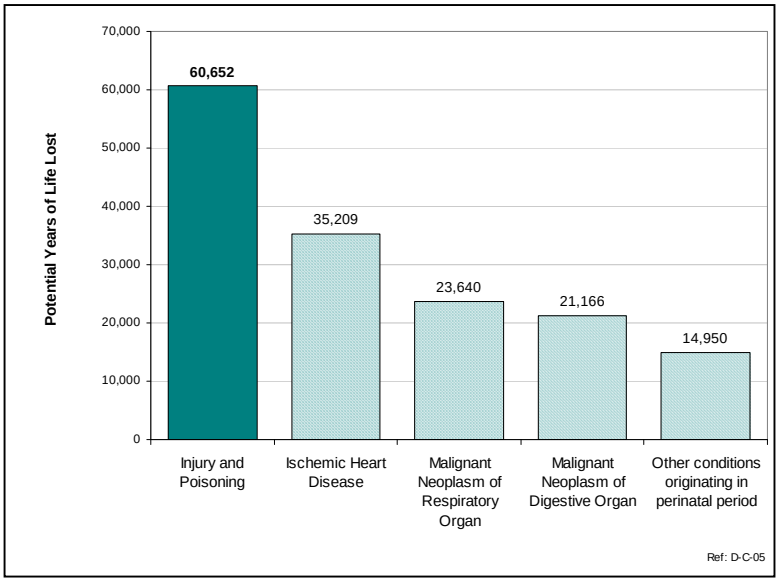


Figure 4: Leading Causes of PYLL for Residents of the Winnipeg Health Region, 1990-1999



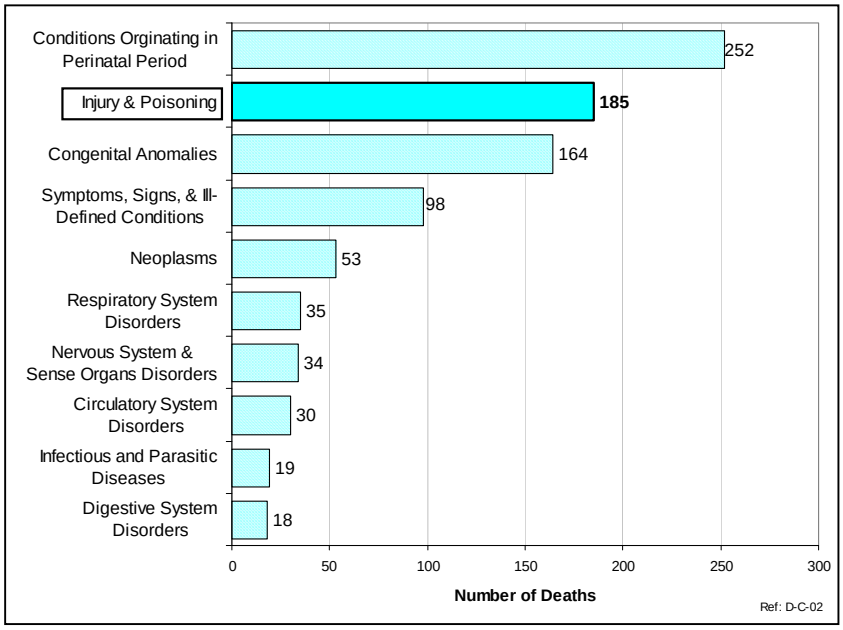
[4] Winnipeg Regional Health Authority. *WRHA Mortality Report 2004*. p.52.

Injury Death by Age Group

19 Years of Age and Under

Injury and Poisoning was the second leading cause of death among children and youth 19 years of age and under. This represents 20% of all deaths that occurred in this age group during this period.

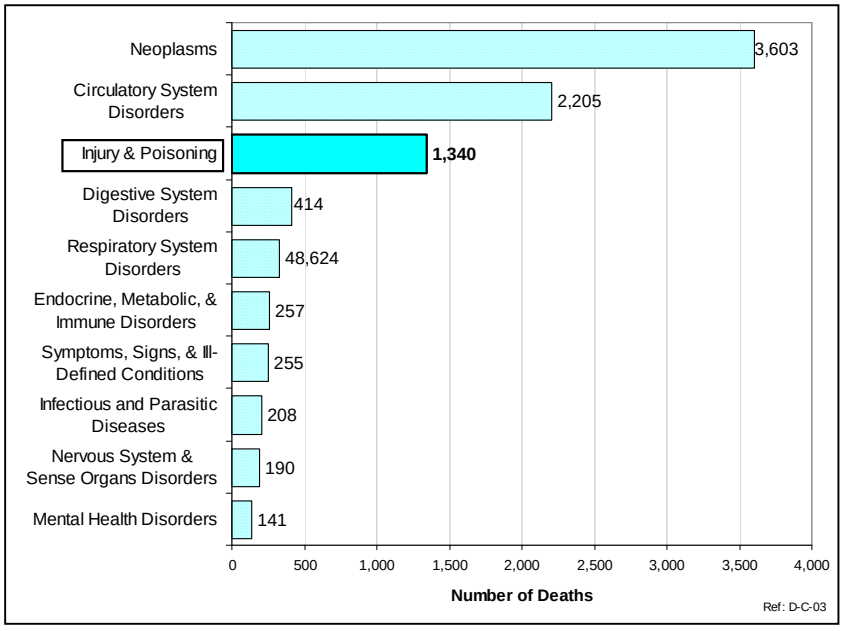
Figure 5: Leading Causes of Death for Children and Youth, 19 Years of Age and Under in the Winnipeg Health Region, 1990-1999



20-64 Years of Age

Injury and Poisoning was the third leading cause of death among adults 20 to 64 years of age. This represents 15% of all deaths that occurred in this age group during this period.

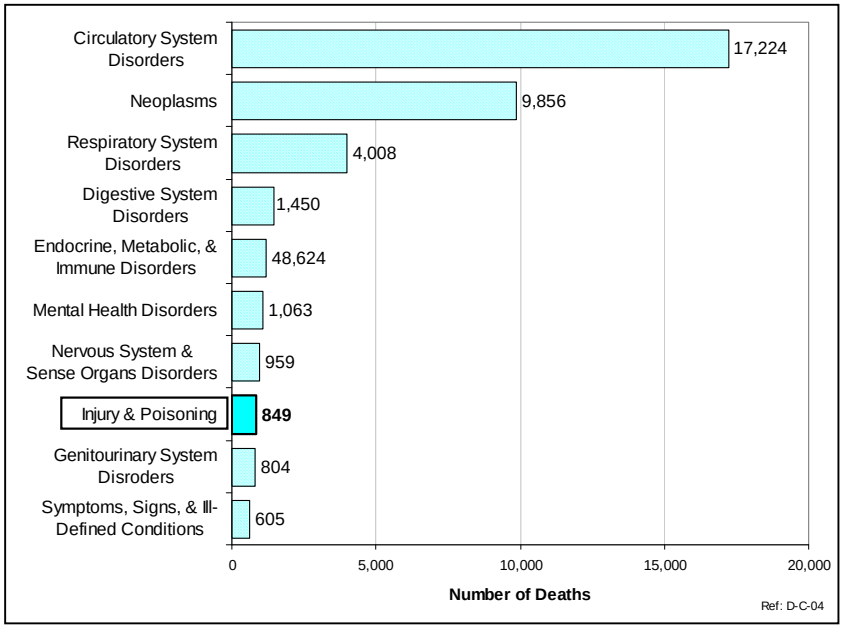
Figure 6: Leading Causes of Death for Adults, 20-64 Years of Age in the Winnipeg Health Region, 1990-1999



65+ Years of Age

Injury and Poisoning was the eighth leading cause of death among older adults, 65 years of age and older. This represents 2% of all deaths that occurred in this age group during this period.

Figure 7: Leading Causes of Death for Adults, 65 Years of Age and Older, in the Winnipeg Health Region, 1990-1999



Injury Hospitalization

Number of Hospitalizations

When *Injury and Poisoning* is compared with the leading health conditions or reasons for in-patient hospital admission for WHR residents, it ranked fifth for the period between 1994 and 2003. *Injury and Poisoning* comprised 8% of all in-patient hospitalizations, a similar proportion to that of Neoplasms.

Figure 8: Injury in Context with Other Leading Health Issues in the Winnipeg Health Region, by Number of Hospitalizations, 1994-2003

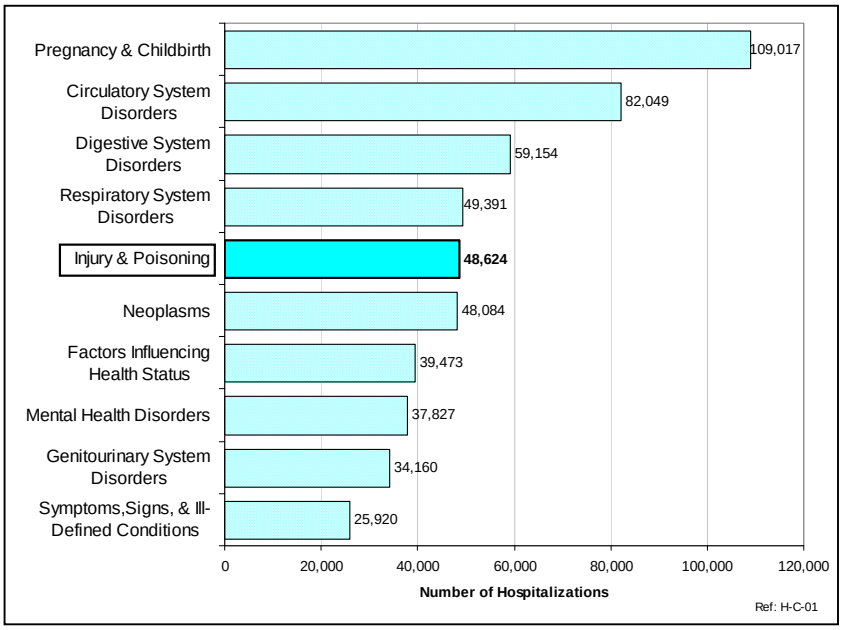
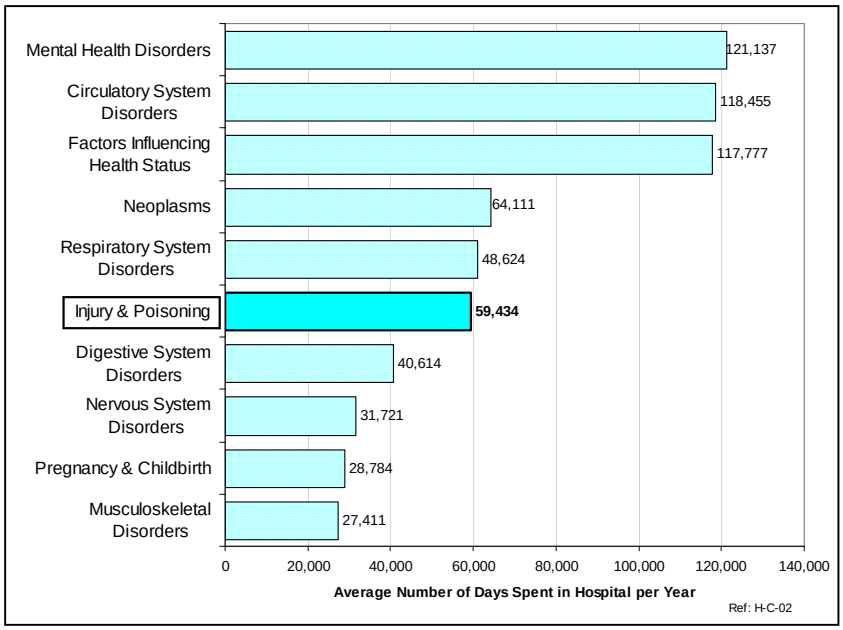


Figure 9: Injury in Context with Other Leading Health Issues in the Winnipeg Health Region, by Average Number of Days Spent in Hospital per Year, (10-Year Average) 1994-2003

Days Spent in Hospital

Injury and Poisoning had the sixth highest average number of days spent in hospital per year (based upon a ten-year average). *Injury and Poisoning* accounted for 8% of all days spent in hospital between 1994 and 2003.



Average Length of Stay

The average length of stay (ALOS), for *Injury and Poisoning,* between 1994 and 2003 was 12.2 days. It was ranked as the ninth longest ALOS. The ALOS for *Injury and Poisoning* was slightly less than the overall ALOS for all in-patient hospital stays between 1994 and 2003, which was 12.5 days.

It should be noted that there has been a substantial decrease in the ALOS for *Injury and Poisoning* between 1994 and 2003. In 1994, the ALOS of 14.9 days while that in 2003 was 9.4 days. However, in general the overall ALOS has decreased for all hospital stays during this period. The overall ALOS for all in-patient hospital stays in 1994 was 12.8 days and 2003 was 6.9 days.

While the ALOS for *Injury and Poisoning* has decreased between 1994 and 2003, so too has both the number of in-patient cases and in-patient days spent in hospital.

Between 1994 and 2003, the number of in-patient cases of *Injury and Poisoning* has decreased by 16.3%. The number of

days spent in hospital has decreased by 47.2% while the ALOS has decreased by approximately 37%. These are larger decreases than that experienced by the health system overall (see Figure 12).

This may be a reflection on health systems changes more than a change in the incidence of injury of equivalent severity. There may be many factors affecting these health system changes. For example, longer observation times in emergency departments may replace short admissions for observation, or patients may be sent home from emergency departments to await day surgery rather than being admitted to wait for surgery.

Figure 10: ALOS for In-patient Hospital Stays of Injury and Poisoning Compared to Other Health Conditions in the Winnipeg Health Region, 1994 to 2003

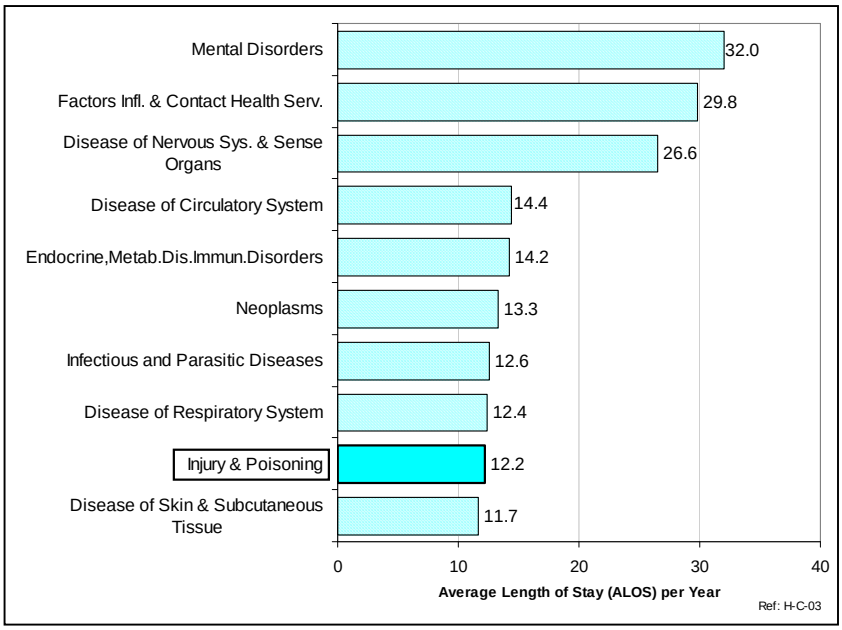


Figure 11: Trend Analysis for In-patient Cases of Injury and Poisoning in the Winnipeg Health Region, 1994 to 2003

Year	Total Number of Cases	Total Number of Days	ALOS	Per cent of All Cases	Per cent of All Days
1994	5343	79526	14.9	8%	10%
1995	5206	77371	14.9	8%	9%
1996	5119	72567	14.2	8%	9%
1997	4855	67464	13.9	8%	9%
1998	4741	60185	12.7	8%	8%
1999	4620	52978	11.5	8%	7%
2000	4586	48511	10.6	8%	7%
2001	4399	43796	10.0	8%	6%
2002	4340	43198	10.0	8%	7%
2003	4471	42020	9.4	8%	7%

Figure 12: Per cent Change for In-patient Cases of Injury and Poisoning in the Winnipeg Health Region, 1994 to 2003

	Per cent Change 1994 to 2003		
	Cases	Days	ALOS
Injury and Poisoning (In-patient)	-16.3%	-47.2%	-36.9%
All In-patient Hospitalizations	-13.4%	-24.2%	-12.5%

Injury Hospitalizations by Age Group

19 Years of Age and Under

Injury and Poisoning was the third leading reason for in-patient hospital stay among children and youth 19 years of age and under. This represents 12% of all in-patient cases that occurred in this age group during this period.

Figure 13: Leading Reasons for In-patient Hospital Stay for Children and Youth, 19 Years of Age and Under, in the Winnipeg Health Region, 1994-2003

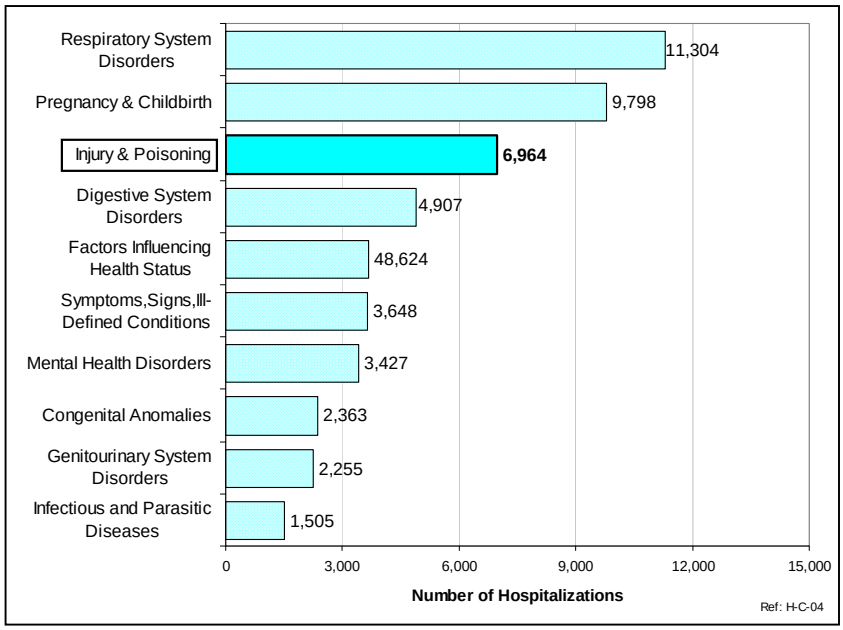
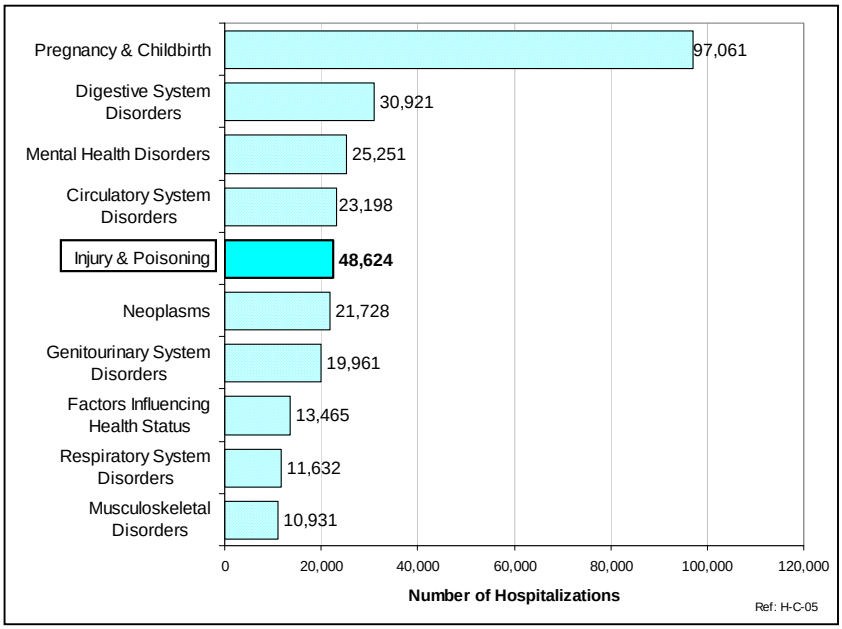


Figure 14: Leading Reasons for In-patient Hospital Stay for Adults, 20-64 Years of Age, in the Winnipeg Health Region, 1994-2003

20-64 Years of Age

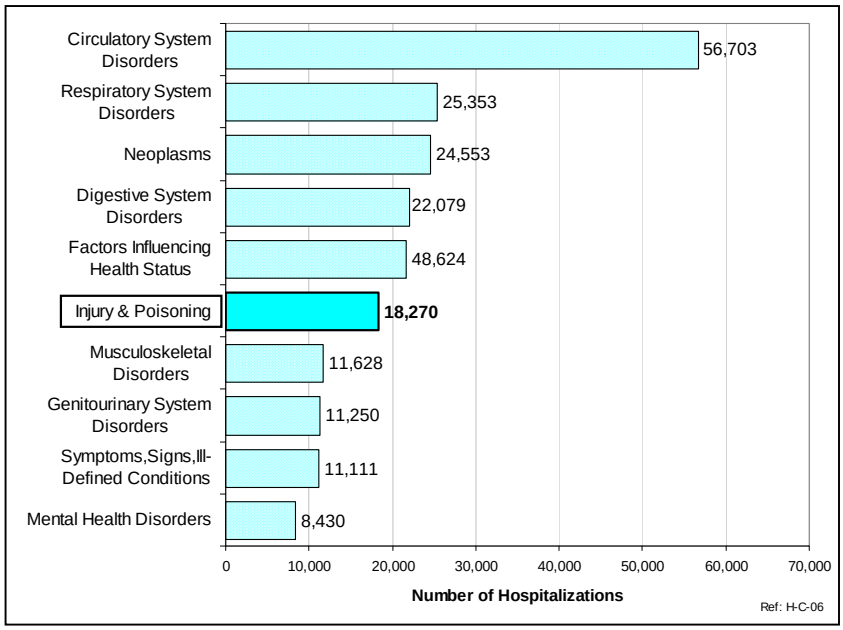
Injury and Poisoning was the fifth leading reason for in-patient hospital stay among adults 20 to 64 years of age. This represents 7% of all in-patient cases that occurred in this age group during this period.



65+ Years of Age

Injury and Poisoning was the sixth leading reason for in-patient hospital stay among older adults, 65 years of age and older. This represents 8% of all in-patient cases that occurred in this age group during this period.

Figure 15: Leading Reasons for In-patient Hospital Stay for Adults, 65 Years of Age and Older, in the Winnipeg Health Region, 1994-2003



Injury Death

This chapter examines two key measures related to injury mortality: deaths and potential years of life lost (PYLL). The leading causes of injury are described in the context of these two measures for the overall population of the Winnipeg Health Region (WHR) with comparisons between males and females (of all ages), and with respect to trends over the past decade. Additionally, overall injury data by age group and sex are presented. All of the injury death and PYLL data are for the period of 1990-1999, unless otherwise indicated.

Deaths due to Injury

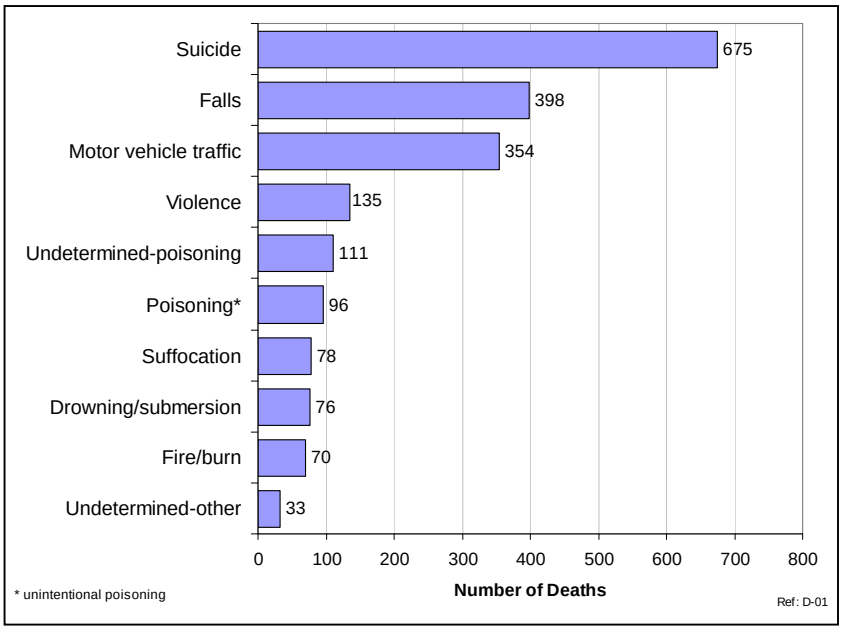
Overall Population

For the period of 1990 to 1999, 2303 deaths due to injury occurred to residents of the WHR, resulting in a crude injury mortality rate of 36 deaths per 100 000 population, annually.[5] In other words, every year (in 1990's) approximately 4 out of every 10,000 residents in the WHR died as a result of injuries.

Suicide was the leading cause of injury death, accounting for 29% of all injury deaths. This is followed by *falls* and *motor vehicle traffic* injury. Each cause accounts for 17% and 15% of all injury deaths, respectively. Thus these top three injury causes accounted for 61% of all injury deaths in the WHR.

The ten leading causes of injury death in the WHR are shown in Figure 16. These causes of injury represent 88% of injury deaths, which occurred between 1990 and 1999.

Figure 16: Leading Causes of Injury Death in the Winnipeg Health Region, 1990 – 1999 n=2303



◈ *Note to readers: The injury matrix categories of Other specified, classifiable; Other specified, NEC; and Unspecified were excluded from the determination of leading injury causes due to the heterogeneity of causes included in these categories. As well, these categories point to methodological challenges in data coding for injury causes, more than to injury prevention program planning. More information about this topic may be found in the methods chapter.*

Data tables that include the number of deaths, crude rates, and percentages of all injury that is attributable to the 22 major injury causes (including the leading causes) that were examined for this report are provided at the end of the chapter. More detailed analyses of the four leading causes of injury in the WHR will be presented in subsequent chapters of this report.

[5] Please note that unless otherwise specified, crude rates are used throughout this report. This overall injury mortality rate has been produced for the population of the WHR, both males and females, of all ages.

How does injury differ between male and female residents?

In the WHR, male residents are more likely to die from injury than female residents. Male residents (of all ages) accounted for 64% (n=1479) of all injury deaths between 1990 and 1999, while female residents accounted for 36% (n=824) of all injury deaths.

For most of the causes of injury male residents have higher numbers of injury deaths compared to female residents (Figures 17 and 18).[6]

Suicide is the leading cause of injury death among males. This is followed by *motor vehicle traffic* as the second leading cause of injury death among males. About half of all injuries among males were due to these two injury causes (33.8% and 15.5%). *Falls* accounted for 13.8% of injury deaths among males, making it the third leading cause.

Falls was the leading cause of injury death among female residents in the WHR, accounting for 23.5% of all injury deaths. This is closely followed by *suicide,* at 21.2%, as the second leading cause. *Motor vehicle traffic* is the third leading cause for females, accounting for 15.2% of injury deaths.

There are nearly three times as many *suicide* deaths among males as there are for females. Females have fewer deaths related to *motor vehicle traffic*, however it accounts for a similar percentage of all injury deaths between males and females. The opposite is true of *falls*: the number of deaths is similar between males and females, however, it accounts for substantially different proportions of injury deaths for each gender (13.8% and 23.5%, respectively).

Violence was the fourth leading cause of death for both males and females.

Figure 17: Leading Causes of Injury Death for Male Residents of the Winnipeg Health Region, 1990-1999 n=1479

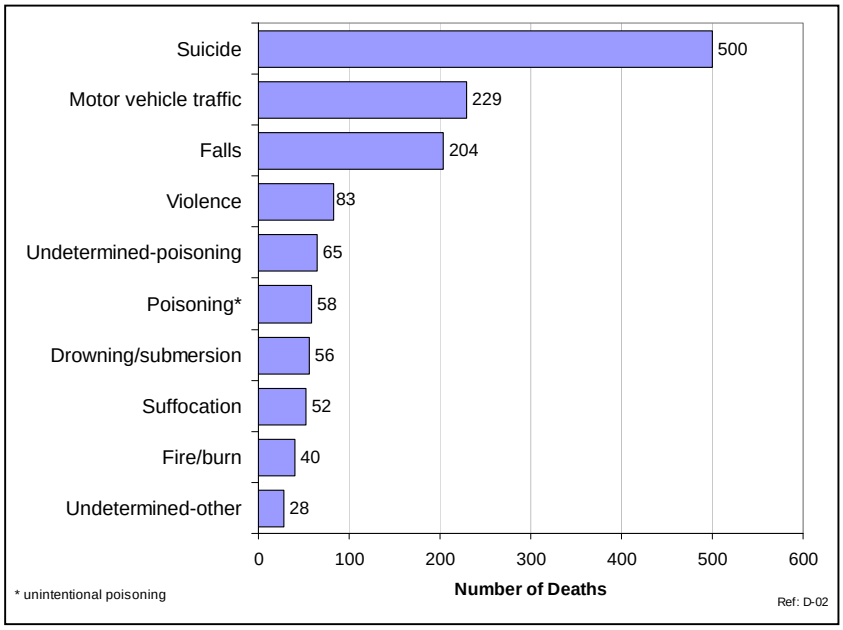
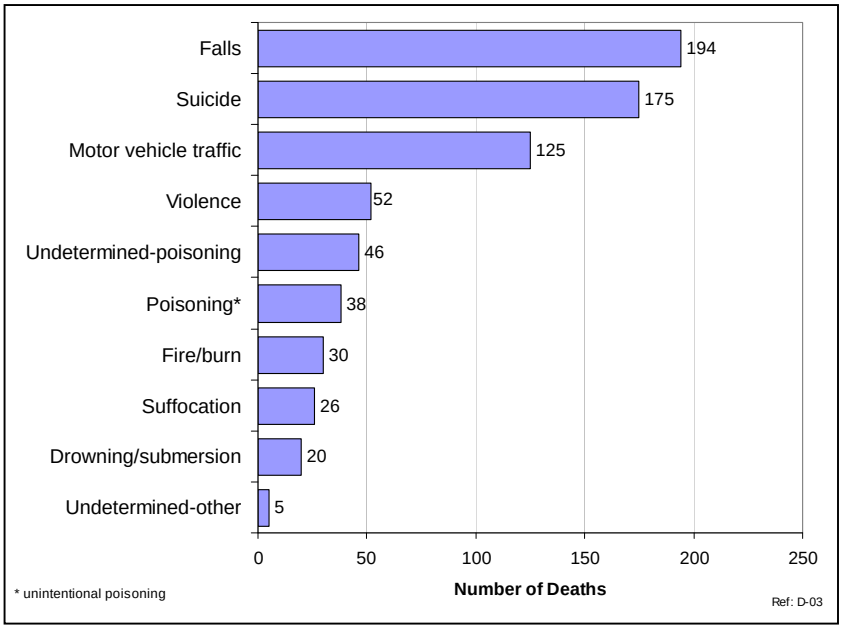


Figure 18: Leading Causes of Injury Death for Female Residents of the Winnipeg Health Region, 1990-1999 n=824



Please note that these graphs have different scales

[6] The exceptions being the cause: *cut/pierce* and the category of *unspecified* injury.

Have there been changes in injury deaths over time?

There were 273 more injury-related deaths in the WHR between the first half and the last half of the 1990's. The *All Injury* death rate increased from 31.7 to 40.3 deaths per 100 000 population, an increase of 27% (see Table 2).[7]

The largest increase in number of injury deaths was for *falls.* There were 132 more fall-related deaths in 1995-1999 than there were in 1990-1994 (Figure 19). Nearly half of the overall increase of injury death can be attributed to *falls*. Note that this does not include the increase seen in *fractures, cause unspecified*, which can also be included in the *falls* definition under ICD-9, but not included in the falls category in this report.

Notably, there was also a 2.5-fold increase in the number of deaths due to *poisoning-undetermined intent*. In contrast, *motor vehicle traffic* injury deaths **decreased** by 22% or 29 deaths between the two five-year periods. There were also decreases for *drowning/ submersion* and *fire/burn* injury deaths.

Females experienced a larger overall increase in the rate of injury deaths compared to that of males, at 48.3% versus 16.8%.

Among the leading causes of injury for males, the number of *motor vehicle traffic* deaths decreased, while that of *falls* increased, and that of *suicide* remained stable. In contrast, for females, there were increases in all three leading causes of injury death: most notably for falls (Figure 20).

Figure 19: Time Trend Comparison of Number of Deaths for Leading Causes of Injury for Residents of the Winnipeg Health Region, 1990-1994 and 1995-1999

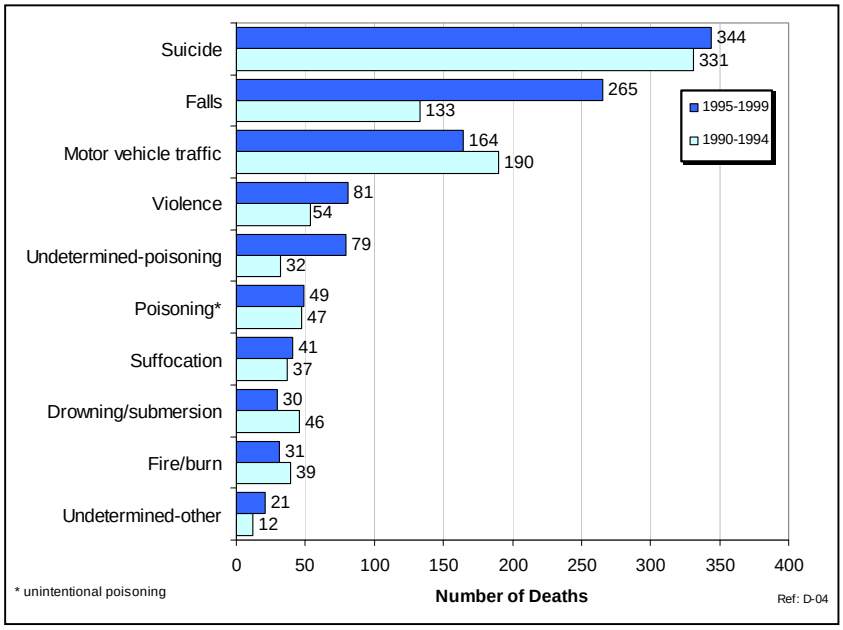
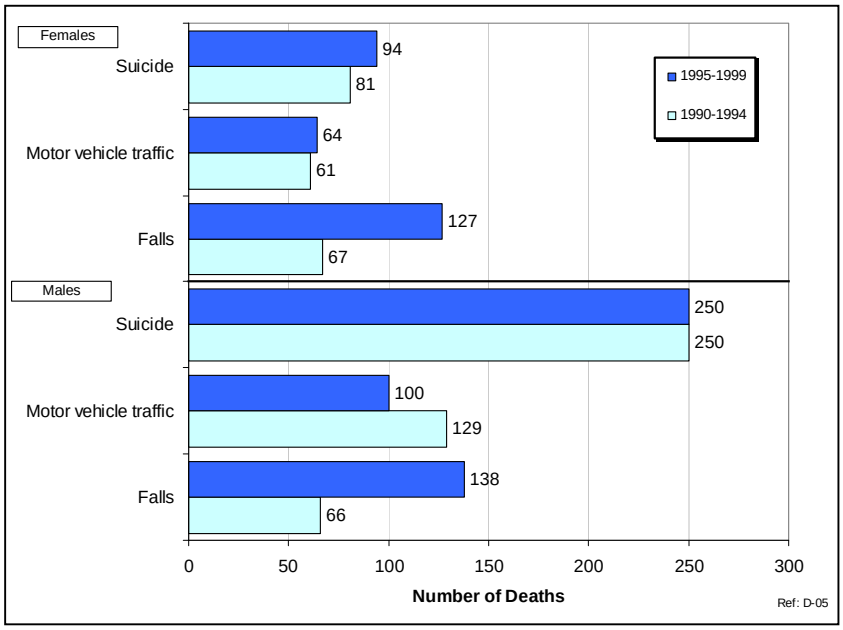


Figure 20: Time Trend Comparison for Leading Causes of Injury Death among Female and Male Residents of the Winnipeg Health Region, 1990-1994 and 1995-1999



[7] However, the overall number of deaths in the WHR also increased by 13% during this time, *WRHA Mortality Report 2004*, p.15.

What age groups are at risk of injury death?

The greatest number of injury deaths occurred in the 25-34 years age group, with 378 deaths; closely followed by the 35-44 years age group, with 365 deaths.[8] Although children under the age of 19 years account for a low proportion of all injury deaths in the WHR, injury is the leading cause of death for children 1-19 years of age.[9]

The number of injuries that occurs to males consistently outnumbers that of females at every age group, except 85+.[10] Males, 35-44 years of age, account for the largest number of injuries among these age-sex groupings (Figure 21).

Comparison of age-specific rates may be more useful as it takes into account differences in underlying population structure. Figure 22 shows the rates of injury death for each age group by sex per 100 000 population. These rates are low in children, increase in adulthood, but remain fairly stable until the 65-74 year of age group, where the rates begin to increase substantially.

Senior men, 85 years of age and older, are clearly shown to have the highest rate of injury death. For men in this age group, about 1 out every 200 died as a result of injury (or 5 deaths per 1000). For women 85 years of age and older, 1 out of every 333 died due to injury (or 3 deaths per 1000).

Leading causes of injury vary by age group and will be presented in the age and injury chapter of the report.

Figure 21: Distribution of All Injury Deaths by Age-Sex Group, Winnipeg Health Region, 1990-1999, n=2303

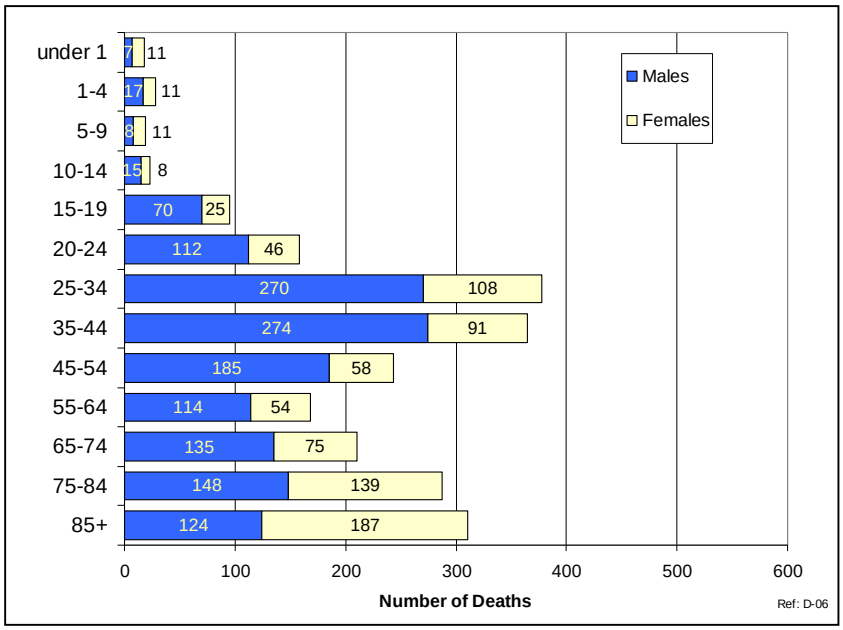
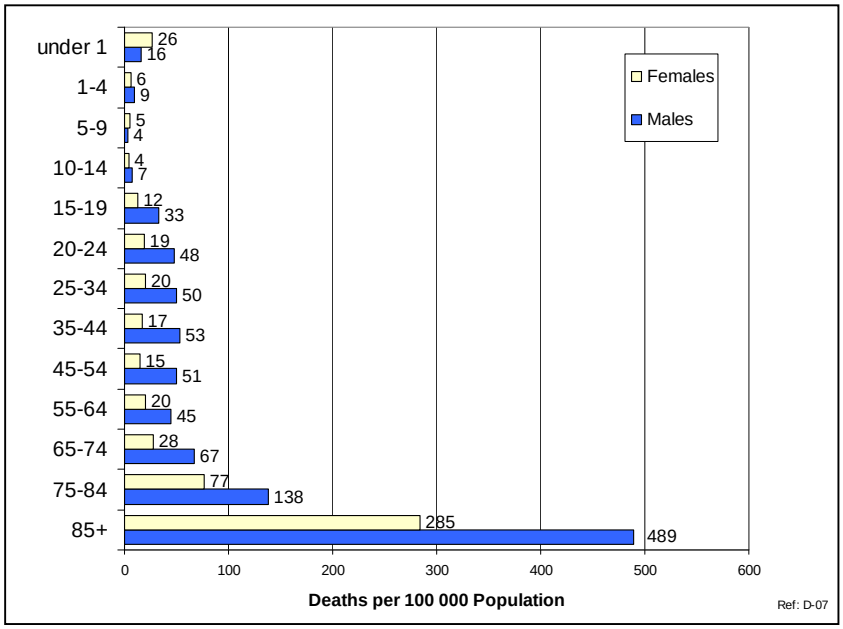


Figure 22: Age-specific Rates of All Injury Death in the Winnipeg Health Region, by Age-Sex Grouping, 1990-1999



Note to readers: In the above figures the age groups consist of: infants (under one year of age), five-year age groups for children and youth (1-24 years), and changes to ten-year age groups for adults (25-84 years of age), with the 'oldest of the old' grouped of those 85 years and older (85+).

[8] Note that this analysis compares five-year and ten-year age groups. See *Note to readers* at right.
[9] *WRHA Mortality 2004 report*, p. 51.
[10] However it is important to note that the population structure changes for the 85+ age group: females far outnumber males.

Potential Years of Life Lost due to Injury

This section examines another injury measure: potential years of life lost (PYLL). PYLL is a measure that shows the impact of early death in a population. The standard measure of a "full lifespan" is 75 years, as used by Statistics Canada. The leading causes of injury are described in the context of this measure for the overall population of the Winnipeg Health Region (WHR), comparisons between male and female residents (of all ages), and with respect to trends over the past decade.

Overall Population

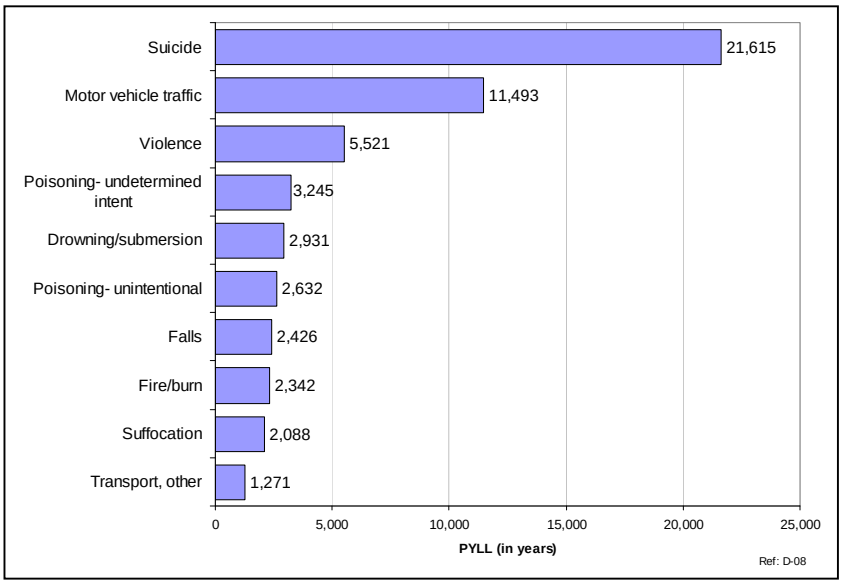
There were 59,560 potential years of life lost due to injury in the WHR population, between 1990 and 1999. This resulted in an average annual crude rate of 990 PYLL per 100,000 population, 75 years of age and under.[11] In other words, during this time period, every year about 1 year of life is lost for every 100 WHR residents (who are 75 years of age and younger) as a result of (premature) injury death.

The ten leading causes of injury PYLL are shown in Figure 23, and this accounts for 93% of all injury PYLL.

Suicide was the leading cause of injury PYLL, accounting for 36% of all injury PYLL. This was followed by *motor vehicle traffic* injury and *violence*. They account for 19% and 9% of all injury PYLL, respectively.

It may appear surprising that *falls*, the second leading cause of injury death (by number), is ranked seventh among the leading causes of PYLL due to injury (see Table 4). This is indicative of an injury cause, which is more prevalent among those who are over the age of 75 years, and therefore does not contribute to the PYLL statistic.

Figure 23: Leading Causes[12] of Injury PYLL in the Total Population of the Winnipeg Health Region, 1990-1999



◈ *Note to readers: Data tables that include the PYLL, PYLL rates, and percentages of all injury that is attributable to the 22 major injury causes (including the leading causes) that were examined for this report are provided at the end of this chapter. More detailed analyses of the four leading causes of injury in the WHR will be presented in Chapter 7 of this report.*

[11] Please note that unless otherwise specified, this figure refers to potential years of life lost from 75 years of age. The PYLL rate has been calculated per 100 000 population 75 years of age and under. This overall PYLL rate has been produced for the population of the WHR, both males and females, of all ages, 75 years and under.

[12] Note that the categories of *Other specified, classifiable*; *Other specified, NEC*; and *Unspecified* were excluded from the determination of leading injury causes due to the heterogeneity of causes included in these categories. As well, these categories point to methodological challenges in data coding for injury causes. More detailed information can be found in the Appendix.

PYLL for male and female residents?

Male residents contribute a substantially greater number of PYLL to the overall figure than female residents do. Since more males die from injury than females, this is not surprising. Males (of all ages) accounted for 71% of all injury PYLL between 1990 and 1999 (or 42,106 PYLL), while females accounted for only 29% (or 17,454 PYLL). For most injury causes, male residents have higher PYLL compared to female residents.[13]

Suicide is the leading cause of injury PYLL among males. This is followed by *motor vehicle traffic*. These two injury causes make-up more than half of the total PYLL for males (38.2% and 18.6%, respectively). *Violence* accounts for 7.3% of injury PYLL among males, making it this group's third leading cause (Figure 24).

For female residents, the three leading injury causes, as ranked by PYLL, are the same as that for male residents. However, these causes account for differing percentages of total PYLL. *Suicide*, accounted for 32.0% of all injury PYLL and *motor vehicle traffic,* accounted for 21.0% (Figure 25). The third leading cause, *violence,* accounted for 14.0% of total PYLL for females, which is nearly double the proportion of male residents.

Sex differences do exist for injury PYLL. For example, the number of PYLL due to *suicide* is three times higher for males than for females. Males also have twice the PYLL due to *motor vehicle traffic*. However, the PYLL due to *violence* is only about 20% higher for males compared to that of females.

Figure 24: Leading Causes of Injury PYLL for Male Residents of the Winnipeg Health Region, 1990-1999

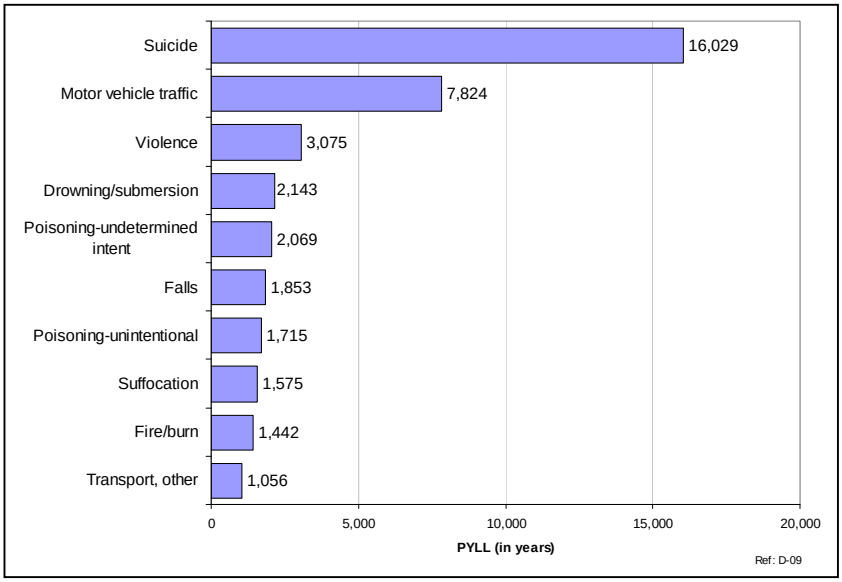
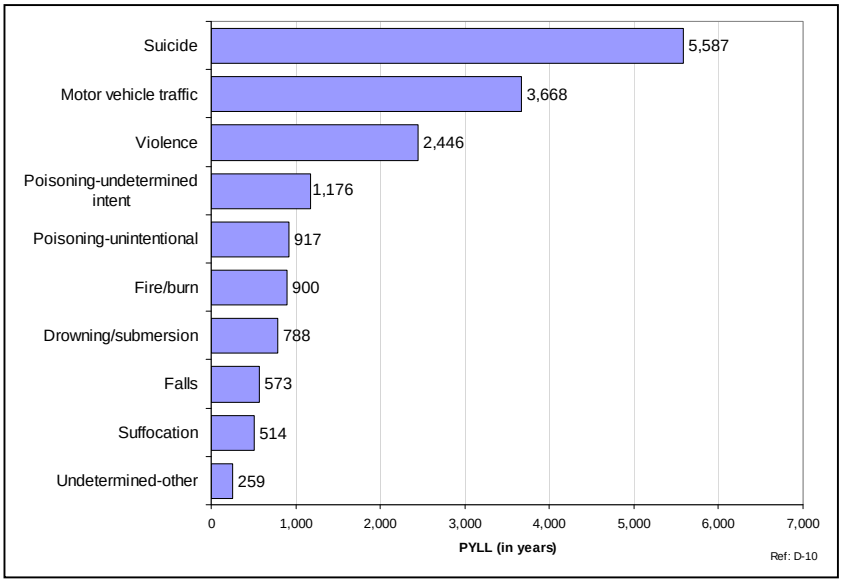


Figure 25: Leading Causes of Injury PYLL for Female Residents of the Winnipeg Health Region, 1990-1999



Please note that the figures on this page have different axis scales.

[13] The exceptions being the cause: *cut/pierce* and the category of *Other specified, NEC* injury, neither are of the top 10 leading causes.

Have there been changes in injury PYLL over time?

Overall, PYLL in the WHR has remained stable between the early and latter halves of the 1990's. This is interesting, since the number of injury deaths rose substantially during this time. A likely explanation is that most of the increase in injury deaths occurred in the older adult population, which would not significantly impact the PYLL statistic.

Overall, PYLL due to *suicide* decreased slightly (Figure 26). While there was a substantial decrease in PYLL due to *motor vehicle traffic*, there was a notable increase in PYLL due to *violence*. Other causes of injury which showed decreases include: *drowning/ submersion* and *fire/burn*. Other causes of injury that showed increases (of varying degrees) include: *poisoning-undetermined intent, poisoning-unintentional, falls, and transport-other.*

As shown in Figure 27, there are differences in the changes over time between male and female residents. For females, the PYLL due to *suicide* increased slightly, while males experienced a slight decrease. The PYLL due to *motor vehicle traffic* decreased substantially for both males and females. The PYLL due to *violence* remained stable for females. This is in contrast to that of males where the PYLL due to *violence* increased substantially during the same period of time.

Further detail for trends over time for PYLL by injury causes can be found in the data tables at the end of this section.

Not shown in figure 27 are the increases in PYLL due to *falls*. For females it increased by 60% and for males it doubled during this time (see Table 7).

Figure 26: Time Trend Comparison for the Leading Causes of Injury PYLL for Residents of the Winnipeg Health Region, 1990-1994 and 1995-1999

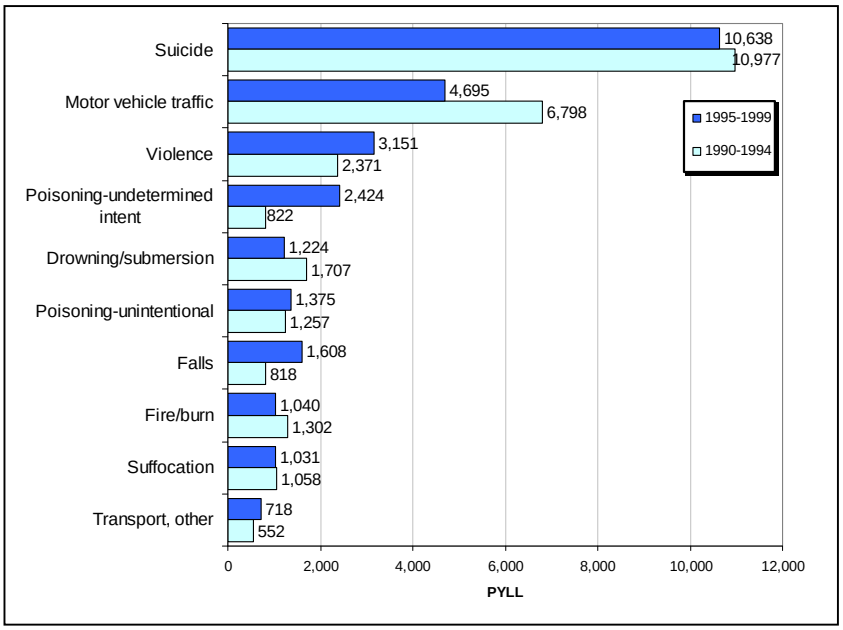
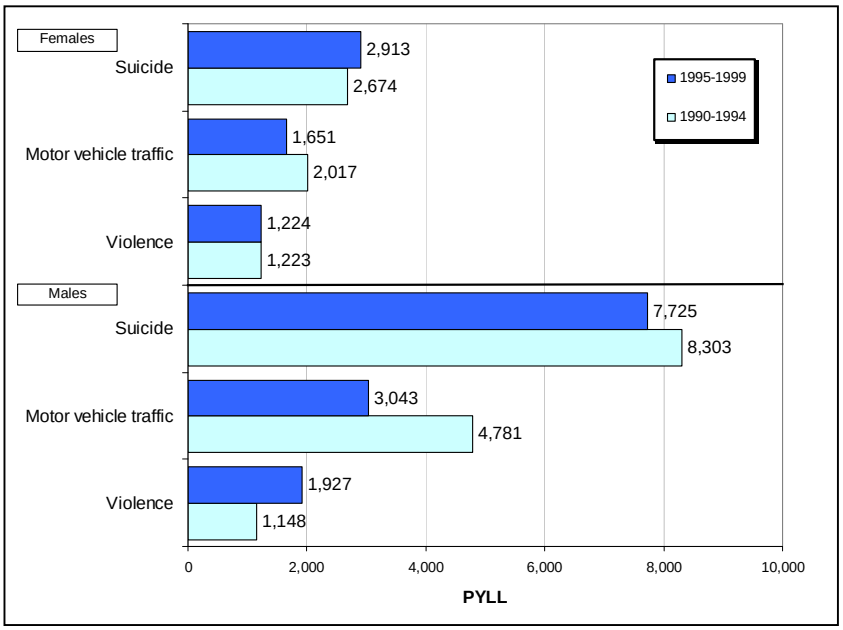


Figure 27: Time Trend Comparison for Leading Causes of Injury PYLL among Female and Male Residents of the Winnipeg Health Region, 1990-1994 and 1995-1999



Summary

This section summarizes key findings and addresses the question: How does the Winnipeg Health Region compare to Manitoba?

In the Winnipeg Health Region (WHR), the average annual crude rate of injury death for the period of 1990 to 1999 was 36.0 per 100 000 population. This rate is much lower than that reported provincially for all Manitoba residents in the Manitoba Health report: *Injuries in Manitoba a Ten-year Review*, for the period of 1992 to 1999, at 48.3 per 100 000 population.[14] It should be noted that this value is for a different time period and also differs in interval length than that produced for the WHR in this report, although the time period used for the WHR injury mortality rate does overlap that of the Manitoba rate. Therefore this comparison should be interpreted with some caution, however it is the most recently published injury rates for the province of Manitoba.[15]

For male residents of the WHR, the crude rate of injury mortality was 47.6 per 100 000 population, compared to a much lower 25.0 per 100 000 population for female residents. As with the overall provincial injury death rates, these rates are both much lower than those reported for 1992 to1999 for all Manitoban male and female residents, with rates of injury death of 65.8 and 31.4 per 100 000 population, respectively.[19] However, the proportion of injury deaths that occurred to WHR males was similar to that for Manitoba males. In the WHR, approximately 64% of all injury deaths occurred in male residents (of all ages) and 36% occurred in female residents. This is similar to the proportions of injury deaths among Manitoba males (67%) and Manitoba females (33%).[14]

Between 1990 and 1999, the five leading causes[16] of injury death for residents of the WHR (both sexes, all ages) were: *suicide*, *falls*, *motor vehicle traffic*, and *violence*, and *undetermined-poisoning*. Combined, these five leading causes accounted for nearly 73% of WHR injury deaths. This differs from the leading causes of injury for residents of the province of Manitoba; these were reported as: *suicide; motor vehicle traffic; falls; fractures, cause unspecified;* and *suffocation and choking* equal to *assault*.[17] When summed together, these six leading causes accounted for 74% of Manitoba injury deaths. The fact that there are differences demonstrates the importance of securing regional-level data for injury prevention program planning.

The number of injury deaths increased in the WHR between the early and latter parts of the 1990's. This can be largely attributed to increases in fall-related deaths and deaths of undetermined intent, including poisonings of undetermined intent. The increase in injury deaths for females was also noted to be substantially greater than that for males. This is also consistent with trend findings reported for the province of Manitoba in *Injuries in Manitoba a Ten-year Review.*

The distribution of injuries by age and sex groupings in the WHR appears to be consistent with that reported in *Injuries in Manitoba a Ten-year Review*. Seniors both in the WHR and Manitoba as a whole were noted as having the greatest risk of dying from injury. One difference in the age-group data is that for the WHR, the greatest number of injury deaths occurred in males 35-44 years of age, with 274 deaths (11.9% of all injury deaths), while for Manitoba as a whole, males, in the 25-34 year age group had the largest number of injury deaths (11.5%).

In the Winnipeg Health Region (WHR), there were 2303 deaths resulting in 59,560 potential years of life lost due to injury for the period of 1990-1999. Male residents of the WHR accounted for 71% of injury PYLL while female residents accounted for much less at 29%.[18] The five leading causes of injury PYLL in the WHR during this time were: *suicide*, *motor vehicle traffic*, *violence*, *poisoning-undetermined intent* and *drowning/submersion.* This contrasts with those reported for the province of Manitoba, which were: *suicide*, *motor vehicle traffic*, *drowning and submersion*, *assault* and *suffocation and choking*.[19] Although *falls* is the second leading cause of injury death by number, it accounts for substantially less PYLL, making it the seventh of the ten leading causes of PYLL

[14] Government of Manitoba. Manitoba Health. *Injuries in Manitoba: A Ten-Year Review*. January, 2004.
[15] It is of interest to note that the injury mortality rate reported for the WHR in the provincial injury report, for the period of 1992 to 1999, was 39.7 per 100 000, which is similar to the 10-year rate produced for this report.
[16] The reader is reminded that the categories of *Other specified, classifiable; Other specified, NEC;* and *Unspecified* were excluded from the determination of leading injury causes. More detailed information can be found in the Appendix.
[17] See technical note at end of this chapter regarding *fractures, cause unspecified* and definitions of *violence* versus *assault*.
[18] Comparisons to provincial data were not possible. It was difficult to compare PYLL data for the province of Manitoba as the provincial injury report presented total PYLL, which cannot be fairly compared to WHR data without rates. There were also no gender comparisons for PYLL provided in the provincial injury report..
[19] Government of Manitoba. Manitoba Health. *Injuries in Manitoba: A Ten-Year Review*. January, 2004. p.13.

in the WHR. This appears to be consistent with information reported in the provincial injury report for *falls* by PYLL, which indicates that *falls* was not one of the five leading injury causes by PYLL. However, it was not stated where it does rank by PYLL for the province.[19]

In summary, although the WHR fares better than the province overall with respect to rates of injury deaths, the overall trend of increasing rates is of concern for the region. Males appear to be at far greater risk of dying from injuries; however females experienced a larger increase in the number of injury deaths. *Suicide* accounted for both the largest proportion of injury deaths and injury PYLL of all the injury cause-categories. Among the leading causes of injury death for the WHR (*suicide*, *falls*, *motor vehicle traffic* and *violence)*, trends for both *falls* and *violence* were increasing. The senior age groups (i.e. 65-74, 75-84 and 85+) were found to have the highest rates of injury deaths.

In contrast to number of deaths, the total PYLL due to injury for the WHR did not change substantially during this time. Although it may appear that a stable PYLL indicates a stability in premature injury death among the young, when combined with the overall increase in numbers (and rate) of deaths due to injury, there is an indication that there was an increase of injury deaths in the segment of the population 75 years of age and older.[20] In general, the PYLL for each injury cause/category is proportional to the number of deaths. The exception to this is *falls* injury, which had a very low PYLL compared to the number of deaths. *Falls* also accounted for a large proportion of the increase in number of injury deaths, but did not substantially increase in PYLL. This further points to an increase in deaths due to *falls* to those 75 years of age and older. Further analysis of *falls* injury by age and sex groupings should confirm this in subsequent chapters of this report.

Challenges facing the WHR include reducing the number of deaths for the leading injury causes: *suicide*, *falls*, *motor vehicle traffic*, and *violence*. Targeting a younger segment of the WHR population would also reduce PYLL due to injury. Injury is a major cause of premature mortality among the younger population: deaths that are preventable and have both economic and social impacts on a population. The senior population should also be targeted, especially as the population as a whole ages, thereby increasing the numbers of older seniors in the region, who are at increased risk of injury death.

Technical Notes:

1. In this report we have chosen not to include *unspecified* injury (which includes f*ractures, cause unspecified*) in the determination of leading causes as it is difficult to plan injury prevention programming activities around injuries coded in this manner, and it actually points to coding challenges, which should be addressed by the health information system. The code for *fractures, cause unspecified* originates from the ICD-9 code for an unintentional fall injury where the events leading to injury were not known, but assumed to be a fall. If these types of injuries were to be added to the number of fall deaths in the WHR, it would increase the rate and number of fall injuries, but this would not affect its ranking as the second leading cause of injury death for the WHR. The magnitude of falls injury death is therefore under-reported here but it does align this injury cause with the definition of falls in the Health Canada injury matrix.
2. It should also be noted that the WHR definition of *violence* injury includes *assault* and *other violence*, two categories of intent from the Health Canada injury matrix. However, there was only one death due to *other violence* in the WHR for ten-year period examined, making the *violence* category comparable to the *assault* category used by the provincial report.

[20] This will be further explored by age-sex groupings in the *Injury and Age* chapter of this report

WINNIPEG HEALTH REGION INJURY DEATH- REFERENCE TABLES

Table 1: Injury Death by Cause for Residents of the Winnipeg Health Region, All Ages, Both Sexes, 1990-1999

Injury Causes/Categories	Both Sexes			Females			Males		
	Number	Rate per 100,000	Per cent of All Injury	Number	Rate per 100,000	Per cent of All Injury	Number	Rate per 100,000	Per cent of All Injury
Cut/pierce	1	0.02	0.04%	1	0.03	0.1%	0	0.0	0.0%
Drowning/submersion	76	1.2	3.3%	20	0.6	2.4%	56	1.8	3.8%
Falls	398	6.2	17.3%	194	5.9	23.5%	204	6.6	13.8%
Fire/burn	70	1.1	3.0%	30	0.9	3.6%	40	1.3	2.7%
Firearm	7	1.0	0.3%	0	0.0	0.0%	7	0.2	0.5%
Machinery	6	0.1	0.3%	0	0.0	0.0%	6	0.2	0.4%
Motor vehicle traffic	354	5.5	15.4%	125	3.8	15.2%	229	7.4	15.5%
Pedal cyclist, other	0	0.0	0.0%	0	0.0	0.0%	0	0.0	0.0%
Pedestrian, other	5	0.1	0.2%	1	0.03	0.1%	4	0.1	0.3%
Transport, other	32	0.5	1.4%	5	0.2	0.6%	27	0.9	1.8%
Natural/environmental	27	0.4	1.2%	5	0.2	0.6%	22	0.7	1.5%
Overexertion	0	0.0	0.0%	0	0.0	0.0%	0	0.0	0.0%
Poisoning	96	1.5	4.2%	38	1.2	4.6%	58	1.9	3.9%
Struck by, against	9	0.1	0.4%	1	0.03	0.1%	8	0.3	0.5%
Suffocation	78	1.2	3.4%	26	0.8	3.2%	52	1.7	3.5%
Other specified, classifiable	17	0.3	0.7%	3	0.1	0.4%	14	0.5	0.9%
Other specified, NEC	2	0.03	0.1%	1	0.03	0.1%	1	0.03	0.1%
Unspecified	171	2.7	7.4%	96	2.9	11.7%	75	2.4	5.1%
Suicide	675	10.6	29.3%	175	5.3	21.2%	500	16.1	33.8%
Violence[2]	135	2.1	5.9%	52	1.6	6.3%	83	2.6	5.6%
Undetermined-poisoning	111	1.7	4.8%	46	1.4	5.6%	65	2.1	4.4%
Undetermined-other[3]	33	0.6	1.4%	5	0.1	0.6%	28	0.9	1.9%
All Injury[4]	**2303**	**36.0**	100.0%	**824**	**25.0**	100.0%	**1479**	**47.6**	100.0%

Notes:

1- *Other specified, NEC*: NEC =not elsewhere specified.

2- *Violence* is defined as the total of the two injury intent-manner categories from the injury matrix: *Assault* and *Other Violence*.

3- *Undetermined-other* groups together injuries of undetermined intent that have causes other than poisoning. In this dataset it includes the following causes: cut/pierce, drowning/submersion, falls, fire/burn, firearm, motor vehicle traffic, natural/environmental, and suffocation.

4- *All Injury* refers to the total of the column.

Table 2: Time Trend Comparison for Causes of Injury Death for Residents of the Winnipeg Health Region, 1990-1994 and 1995-1999

Injury Causes/Categories	1990-1994			1995-1999		
	Number	Rate per 100,000 Population	Per cent of All Injury	Number	Rate per 100,000 Population	Per cent of All Injury
Cut/pierce	1	0.03	0.1%	0	0.0	0.0%
Drowning/submersion	46	1.4	4.5%	30	0.9	2.3%
Falls	133	4.2	13.1%	265	8.3	20.6%
Fire/burn	39	1.2	3.8%	31	1.0	2.4%
Firearm	1	0.0	0.1%	6	0.2	0.5%
Machinery	4	0.1	0.4%	2	0.1	0.2%
Motor vehicle traffic	190	5.9	18.7%	164	5.1	12.7%
Pedal cyclist, other	0	0.0	0.0%	0	0.0	0.0%
Pedestrian, other	3	0.1	0.3%	2	0.06	0.2%
Transport, other	13	0.4	1.3%	19	0.6	1.5%
Natural/environmental	13	0.4	1.3%	14	0.4	1.1%
Overexertion	0	0.0	0.0%	0	0.0	0.0%
Poisoning	47	1.5	4.6%	49	1.5	3.8%
Struck by, against	5	0.2	0.5%	4	0.13	0.3%
Suffocation	37	1.2	3.6%	41	1.3	3.2%
Other specified, classifiable	6	0.2	0.6%	11	0.3	0.9%
Other specified, NEC	0	0.0	0.0%	2	0.06	0.2%
Unspecified	48	1.5	4.7%	123	3.8	9.5%
Suicide	331	10.3	32.6%	344	10.8	26.7%
Violence	54	1.7	5.3%	81	2.5	6.3%
Undetermined-poisoning	32	1.0	3.2%	79	2.5	6.1%
Undetermined-other	12	0.4	1.2%	21	0.7	1.6%
All Injury	**1015**	**31.7**	100.0%	**1288**	**40.3**	100.0%

Table 3: Time Trend Comparison for Causes of Injury Death by Sex, for Residents of the Winnipeg Health Region, By Sex, All Ages, 1990-1994 and 1995-1999

Injury Causes/Categories	Females						Males					
	1990-1994			1995-1999			1990-1994			1995-1999		
	Number	Rate per 100,000 Population	Per cent of All Injury	Number	Rate per 100,000 Population	Per cent of All Injury	Number	Rate per 100,000 Population	Per cent of All Injury	Number	Rate per 100,000 Population	Per cent of All Injury
Cut/pierce	1	0.06	0.3%	0	0.00	0.0%	0	0.0	0.0%	0	0.0	0.0%
Drowning/submersion	11	0.7	3.3%	9	0.5	1.8%	35	2.3	5.1%	21	1.4	2.6%
Falls	67	4.1	20.2%	127	7.7	25.8%	66	4.2	9.7%	138	8.9	17.3%
Fire/burn	14	0.8	4.2%	16	1.0	3.3%	25	1.6	3.7%	15	1.0	1.9%
Firearm	0	0.0	0.0%	0	0.0	0.0%	1	0.1	0.1%	6	0.4	0.8%
Machinery	0	0.0	0.0%	0	0.0	0.0%	4	0.3	0.6%	2	0.1	0.3%
Motor vehicle traffic	61	3.7	18.4%	64	3.9	13.0%	129	8.3	18.9%	100	6.5	12.6%
Pedal cyclist, other	0	0.0	0.0%	0	0.0	0.0%	0	0.0	0.0%	0	0.0	0.0%
Pedestrian, other	1	0.1	0.3%	0	0.00	0.0%	2	0.1	0.3%	2	0.1	0.3%
Transport, other	3	0.2	0.9%	2	0.1	0.4%	10	0.6	1.5%	17	1.1	2.1%
Natural/environmental	2	0.1	0.6%	3	0.2	0.6%	11	0.7	1.6%	11	0.7	1.4%
Overexertion	0	0.0	0.0%	0	0.0	0.0%	0	0.0	0.0%	0	0.0	0.0%
Poisoning	18	1.1	5.4%	20	1.2	4.1%	29	1.9	4.2%	29	1.9	3.6%
Struck by, against	1	0.1	0.3%	0	0.00	0.0%	4	0.3	0.6%	4	0.3	0.5%
Suffocation	10	0.6	3.0%	16	1.0	3.3%	27	1.7	4.0%	25	1.6	3.1%
Other specified, classifiable	0	0.0	0.0%	3	0.2	0.6%	6	0.4	0.9%	8	0.5	1.0%
Other specified, NEC	0	0.0	0.0%	1	0.06	0.2%	0	0.0	0.0%	1	0.1	0.1%
Unspecified	21	1.3	6.3%	75	4.6	15.2%	27	1.7	4.0%	48	3.1	6.0%
Suicide	81	4.9	24.4%	94	5.7	19.1%	250	16.1	36.6%	250	16.1	31.4%
Violence	26	1.6	7.8%	26	1.6	5.3%	28	1.8	4.1%	55	3.5	6.9%
Undetermined-poisoning	13	0.8	3.9%	33	2.0	6.7%	19	1.2	2.8%	46	3.0	5.8%
Undetermined-other	2	0.1	0.6%	3	0.2	0.6%	10	0.6	1.5%	18	1.2	2.3%
All Injury	**332**	**20.2**	100.0%	**492**	**29.9**	100.0%	**683**	**43.9**	100.0%	**796**	**51.3**	100.0%

Table 4: All Injury Death by Age-Sex Groupings for Residents of the Winnipeg Health Region, 1990-1999

Age-Groups	Both Sexes			Females			Males		
	Number	Rate per 100,000	Per cent of All Injury	Number	Rate per 100,000	Per cent of All Injury	Number	Rate per 100,000	Per cent of All Injury
under 1	18	20.8	0.8%	11	26.2	0.5%	7	15.7	0.3%
1-4	28	7.9	1.2%	11	6.4	0.5%	17	9.5	0.7%
5-9	19	4.4	0.8%	11	5.2	0.5%	8	3.7	0.3%
10-14	23	5.7	1.0%	8	4.0	0.3%	15	7.2	0.7%
15-19	95	23.0	4.1%	25	12.3	1.1%	70	33.4	3.0%
20-24	158	33.6	6.9%	46	19.3	2.0%	112	48.3	4.9%
25-34	378	34.9	16.4%	108	20.0	4.7%	270	49.7	11.7%
35-44	365	35.2	15.8%	91	17.4	4.0%	274	53.2	11.9%
45-54	243	32.6	10.6%	58	15.3	2.5%	185	50.5	8.0%
55-64	168	32.1	7.3%	54	19.9	2.3%	114	45.2	5.0%
65-74	210	44.9	9.1%	75	28.2	3.3%	135	66.9	5.9%
75-84	287	99.3	12.5%	139	76.5	6.0%	148	138.0	6.4%
85+	311	341.5	13.5%	187	284.6	8.1%	124	489.0	5.4%

Note: The *Per Cent Of All Injury* refers to the per cent of the total number of injury deaths for all residents (i.e. the denominator is n=2303).

Table 5: Injury PYLL by Cause for Residents of the Winnipeg Health Region, Under Age 75 years, Both Sexes, 1990-1999

Injury Causes/Categories	Both Sexes			Females			Males		
	PYLL	PYLL Rate per 100,000	Per cent of All Injury	PYLL	PYLL Rate per 100,000	Per cent of All Injury	PYLL	PYLL Rate per 100,000	Per cent of All Injury
Cut/pierce	43	0.71	0.1%	43	1.40	0.2%	0	0.0	0.0%
Drowning/submersion	2931	48.7	4.9%	788	25.9	4.5%	2143	72.1	5.1%
Falls	2426	40.3	4.1%	573	18.8	3.3%	1853	62.4	4.4%
Fire/burn	2342	38.9	3.9%	900	29.5	5.2%	1442	48.5	3.4%
Firearm	268	4.5	0.4%	0	0.0	0.0%	268	9.0	0.6%
Machinery	219	3.6	0.4%	0	0.0	0.0%	219	7.4	0.5%
Motor vehicle traffic	11493	191.0	19.3%	3668	120.5	21.0%	7824	263.3	18.6%
Pedal cyclist, other	0	0.0	0.0%	0	0.0	0.0%	0	0.0	0.0%
Pedestrian, other	195	3.2	0.3%	47	1.55	0.3%	148	5.0	0.4%
Transport, other	1271	21.1	2.1%	214	7.0	1.2%	1056	35.5	2.5%
Natural/environmental	538	8.9	0.9%	54	1.8	0.3%	484	16.3	1.2%
Overexertion	0	0.0	0.0%	0	0.0	0.0%	0	0.0	0.0%
Poisoning	2632	43.7	4.4%	917	30.1	5.3%	1715	57.7	4.1%
Struck by, against	311	5.2	0.5%	20	0.66	0.1%	291	9.8	0.7%
Suffocation	2088	34.7	3.5%	514	16.9	2.9%	1575	53.0	3.7%
Other specified, classifiable	417	6.9	0.7%	51	1.7	0.3%	366	12.3	0.9%
Other specified, NEC	83	1.37	0.1%	52	1.72	0.3%	30	1.0	0.1%
Unspecified	729	12.1	1.2%	143	4.7	0.8%	586	19.7	1.4%
Suicide	21615	359.2	36.3%	5587	183.4	32.0%	16029	539.4	38.1%
Violence	5521	91.8	9.3%	2446	80.3	14.0%	3075	103.5	7.3%
Undetermined-poisoning	3245	53.9	5.4%	1176	38.6	6.7%	2069	69.6	4.9%
Undetermined-other	1193	19.8	2.0%	259	8.5	1.5%	934	31.4	2.2%
All Injury	**59560**	**989.8**	100.0%	**17454**	**573.1**	100.0%	**42106**	**1416.9**	100.0%

Table 6: Time Trend Comparison for Causes of Injury PYLL for Residents of the Winnipeg Health Region, 1990-1994 and 1995-1999

Injury Causes/Categories	1990-1994			1995-1999		
	PYLL	PYLL Rate per 100,000 Population	Per cent of All Injury	PYLL	PYLL Rate per 100,000 Population	Per cent of All Injury
Cut/pierce	43	1.41	0.1%	0	0.00	0.0%
Drowning/submersion	1707	56.4	5.8%	1224	40.9	4.1%
Falls	818	27.1	2.8%	1608	53.7	5.4%
Fire/burn	1302	43.1	4.4%	1040	34.7	3.5%
Firearm	32	1.1	0.1%	236	7.9	0.8%
Machinery	110	3.6	0.4%	109	3.6	0.4%
Motor vehicle traffic	6798	224.9	23.0%	4695	156.8	15.6%
Pedal cyclist, other	0	0.0	0.0%	0	0.0	0.0%
Pedestrian, other	135	4.5	0.5%	60	2.00	0.2%
Transport, other	552	18.3	1.9%	718	24.0	2.4%
Natural/environmental	394	13.0	1.3%	145	4.8	0.5%
Overexertion	0	0.0	0.0%	0	0.0	0.0%
Poisoning	1257	41.6	4.3%	1375	45.9	4.6%
Struck by, against	180	6.0	0.6%	131	4.37	0.4%
Suffocation	1058	35.0	3.6%	1031	34.4	3.4%
Other specified, classifiable	161	5.3	0.5%	257	8.6	0.9%
Other specified, NEC	0	0.00	0.0%	83	2.76	0.3%
Unspecified	334	11.1	1.1%	395	13.2	1.3%
Suicide	10977	363.1	37.2%	10638	355.3	35.4%
Violence	2371	78.4	8.0%	3151	105.2	10.5%
Undetermined-poisoning	822	27.2	2.8%	2424	80.9	8.1%
Undetermined-other	486	16.1	1.6%	707	23.6	2.4%
All Injury	**29536**	**977.0**	100.0%	**30024**	**1002.8**	100.0%

Table 7: Time Trend Comparison for Causes of Injury PYLL by Sex, for Residents of the Winnipeg Health Region, 1990-1994 and 1995-1999

Injury Causes/Categories	Females						Males					
	1990-1994			1995-1999			1990-1994			1995-1999		
	PYLL	PYLL Rate per 100,000 Population	Per cent of All Injury	PYLL	PYLL Rate per 100,000 Population	Per cent of All Injury	PYLL	PYLL Rate per 100,000 Population	Per cent of All Injury	PYLL	PYLL Rate per 100,000 Population	Per cent of All Injury
Cut/pierce	43	2.78	0.5%	0	0.00	0.0%	0	0.0	0.0%	0	0.0	0.0%
Drowning/submersion	405	26.5	4.8%	383	25.3	4.2%	1301	87.2	6.1%	842	56.9	4.0%
Falls	221	14.4	2.6%	352	23.2	3.9%	597	40.0	2.8%	1256	84.9	6.0%
Fire/burn	387	25.2	4.6%	513	33.9	5.7%	916	61.4	4.3%	526	35.6	2.5%
Firearm	0	0.0	0.0%	0	0.0	0.0%	32	2.1	0.2%	236	15.9	1.1%
Machinery	0	0.0	0.0%	0	0.0	0.0%	110	7.4	0.5%	109	7.3	0.5%
Motor vehicle traffic	2017	131.7	24.1%	1651	109.0	18.2%	4781	320.4	22.6%	3043	205.7	14.5%
Pedal cyclist, other	0	0.0	0.0%	0	0.0	0.0%	0	0.0	0.0%	0	0.0	0.0%
Pedestrian, other	47	3.1	0.6%	0	0.00	0.0%	88	5.9	0.4%	60	4.0	0.3%
Transport, other	152	9.9	1.8%	63	4.1	0.7%	401	26.9	1.9%	656	44.3	3.1%
Natural/environmental	48	3.1	0.6%	6	0.4	0.1%	345	23.2	1.6%	139	9.4	0.7%
Overexertion	0	0.0	0.0%	0	0.0	0.0%	0	0.0	0.0%	0	0.0	0.0%
Poisoning	474	30.9	5.7%	443	29.3	4.9%	783	52.5	3.7%	931	62.9	4.4%
Struck by, against	20	1.3	0.2%	0	0.00	0.0%	160	10.7	0.8%	131	8.8	0.6%
Suffocation	242	15.8	2.9%	272	17.9	3.0%	816	54.7	3.9%	759	51.3	3.6%
Other specified, classifiable	0	0.0	0.0%	51	3.4	0.6%	161	10.8	0.8%	205	13.9	1.0%
Other specified, NEC	0	0.00	0.0%	52	3.46	0.6%	0	0.0	0.0%	30	2.0	0.1%
Unspecified	28	1.8	0.3%	116	7.6	1.3%	306	20.5	1.4%	280	18.9	1.3%
Suicide	2674	174.6	31.9%	2913	192.4	32.1%	8303	556.5	39.2%	7725	522.1	36.9%
Violence	1223	79.8	14.6%	1224	80.8	13.5%	1148	76.9	5.4%	1927	130.2	9.2%
Undetermined-poisoning	265	17.3	3.2%	912	60.2	10.0%	557	37.3	2.6%	1512	102.2	7.2%
Undetermined-other	125	8.2	1.5%	133	8.8	1.5%	361	24.2	1.7%	573	38.7	2.7%
All Injury	**8370**	**546.6**	100.0%	**9084**	**599.9**	100.0%	**21166**	**1418.6**	100.0%	**20940**	**1415.2**	100.0%

Injury Hospitalization

This chapter examines two key measures related to injury hospitalization: number of injury events and average length of stay (ALOS) in hospital for treatment. The leading causes of injury are described in the context of these two measures for the overall population of the Winnipeg Health Region (WHR), with comparisons between male and female residents (of all ages). Trends over the past decade are presented for the number of injury hospitalization events. Similarly, hospitalization events by age group and sex are also presented. All of the injury hospitalization and ALOS data are for the period of 1994-2003, unless otherwise indicated.

Hospitalization Events due to Injury

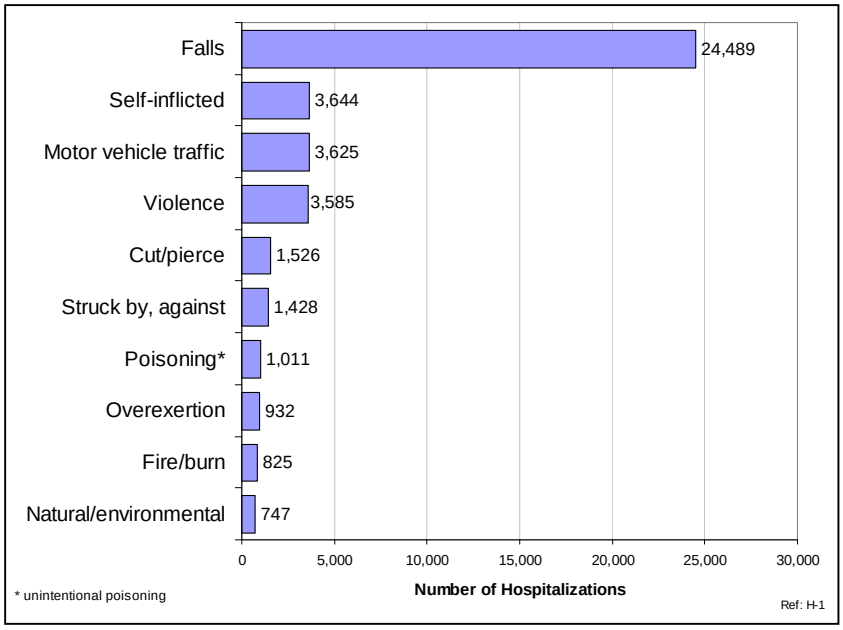
Overall Population

For the period of 1994 to 2003 inclusive, there were 49,742 hospitalizations (about 5000 per year) for injury among residents of the WHR, resulting in a crude rate of 763 injury hospitalizations per 100 000 population annually.[21] In other words, every year approximately 1 out of 130 residents in the WHR are hospitalized with an injury.

Falls were the leading cause of injury hospitalization, accounting for 49% of all injury hospitalizations (or 24,489 admissions). Fall injuries outnumber the other injury causes by far, as illustrated in Figure 28. The second and third leading causes of injury hospitalization were: *self-inflicted* and *motor vehicle traffic* injury. Each of these two causes account for 7.3% of all injury hospitalizations. *Violence* closely followed with 7.2%. These four leading causes accounted for 71% of injury hospitalizations.

The ten leading injury causes shown in Figure 28 account for 84% of injury hospitalizations.

Figure 28: Leading Causes of Injury Hospitalization in the Total Population of the Winnipeg Health Region, 1994-2003
n= 49,742



Note to readers: The term 'hospitalization' is used in this report to refer to an injury event that was treated in-hospital with at least one overnight stay. It is possible that in some cases, the injury event was not the main reason for admission to hospital or for the majority of time spent in hospital. More information about this topic may be found in the Methods section.

The categories of Other specified, classifiable; Other specified, NEC; and Unspecified were excluded from the determination of leading injury causes due to the heterogeneity of causes included in these categories. As well, these categories point to methodological challenges in data coding for injury causes. More detailed information can be found in the Appendix.

Data tables that include the number of hospitalizations, crude rates, and percentages of all injury that is attributable to the 22 major injury causes (including the leading causes) examined for this report are provided at the end of this chapter.

[21] This overall injury hospitalization rate has been produced for the population of the WHR, both males and females, of all ages. Please note that unless otherwise specified, crude rates are used throughout this report.

How does injury hospitalization differ between male and female residents?

In the WHR, male and female residents (of all ages) have nearly equal numbers of injury hospitalization between 1994 and 2003. Males accounted for 48.4% (n=24,081) of all injury hospitalizations, while female residents accounted for 51.6% (n=25,661).

Male residents have higher numbers of injury hospitalizations for most injury causes compared to female residents, with the exception of the *falls* and *self-inflicted* injury cause/categories.

Falls is the leading cause of injury hospitalization among males, accounting for 35.8% of all injury. This is followed by *violence, motor vehicle traffic,* and *self-inflicted* with 11.8%, 8.4% and 6.1% of all injury, respectively.

Falls, by far, is the leading cause of injury hospitalization among female residents, accounting for 61.8% of all injury hospitalizations among females. The number of *falls* admissions is seven times higher than that for the second leading cause: *self-inflicted,* which accounts for 8.5% of all injury among females. M*otor vehicle traffic* and *violence* follow with 6.3% and 2.9% respectively.

Figures 29 and 30 show the differences in the pattern of injury cause-categories between male and female residents in the WHR. There were nearly twice as many *fall* injury hospitalizations for females as there were for males. Female residents also had more *self-inflicted* injuries compared to males. In contrast, males have about four times the number of injury hospitalizations caused by *violence* (from others) compared to that of females. Males also have about 32% more hospitalizations due to *motor vehicle traffic* injury than females do.

Figure 29: Leading Causes of Injury Hospitalization for Males in the Total Population of the Winnipeg Health Region, 1994-2003 n=24,081

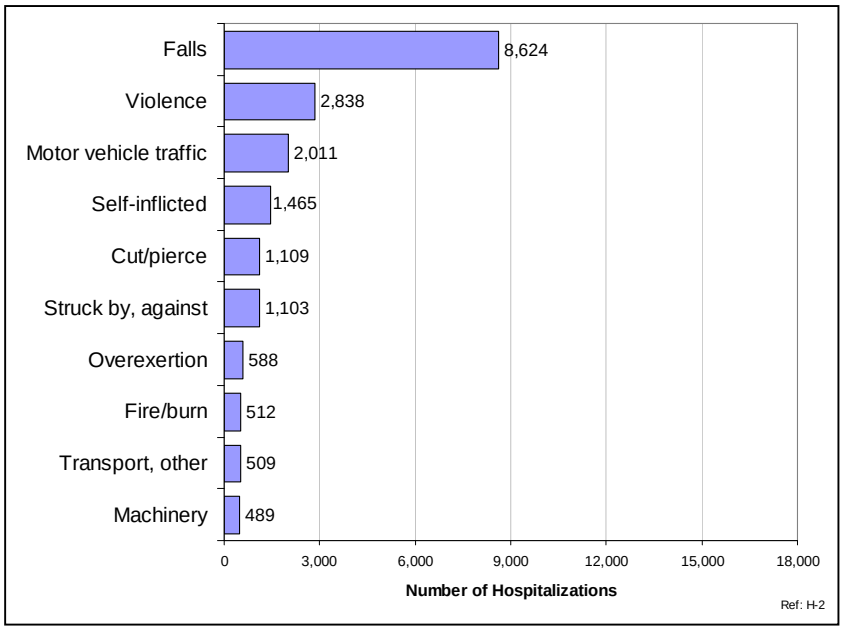
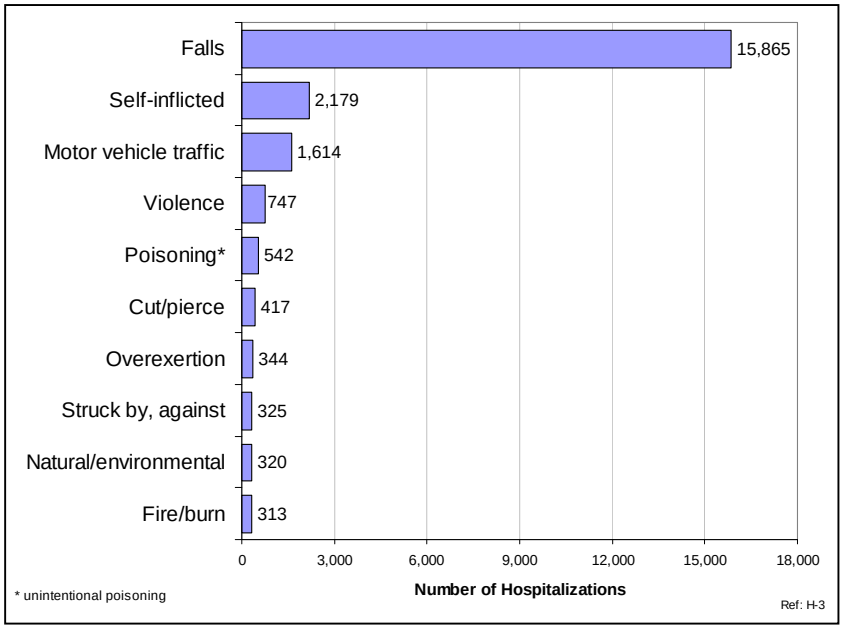


Figure 30: Leading Causes of Injury Hospitalization for Females in the Total Population of the Winnipeg Health Region, 1994-2003 n=25,661



Have there been changes in injury hospitalization over time?

There were fewer injury-related hospitalizations in the WHR between the first half and the last half of the 1990's. The *All Injury* hospitalization rate decreased from 791 to 735 hospitalizations per 100 000 population, a decrease of 6.5% (a reduction of 1684 admissions, or 337 per year on average)(see Table 9).

Most of the injury cause categories showed decreases between the two five-year periods (Figure 31).[22] However, the number of *Fall* hospitalizations remained stable. *Self-inflicted* hospital-izations decreased by 18%, while that for *motor vehicle traffic* decreased by 13%. It is difficult to ascertain whether these decreases are true reductions in injury or a consequence of a general reduction in hospital admissions during the past decade.

Female residents experienced a smaller overall decrease in the number of *All Injury* hospital-izations compared to that of males, at 4% versus 10%, respectively (see Table 10).

Among the leading causes of injury for females, there was a slight increase (2%) in the number of *fall* injury hospital-izations, while *self-inflicted* and *motor vehicle traffic* decreased (9% and 17%, respectively).

In contrast, for males, the number of fall injury hospitalizations decreased slightly (by 5%). Decreases were shown for *violence (6%)* and *motor vehicle traffic (10%)* as well.

Figure 31: Time Trend Comparison of Injury Hospitalizations in the Total Population of the Winnipeg Health Region 1994-1998 and 1999-2003

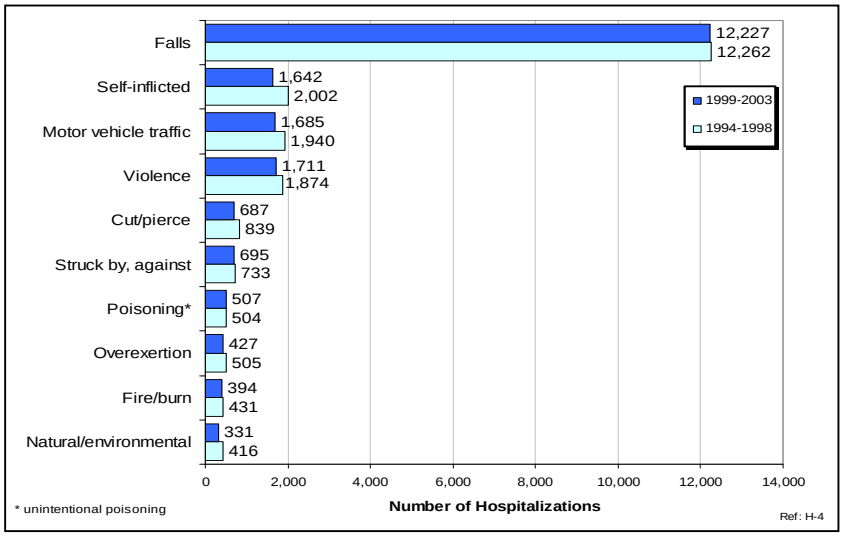
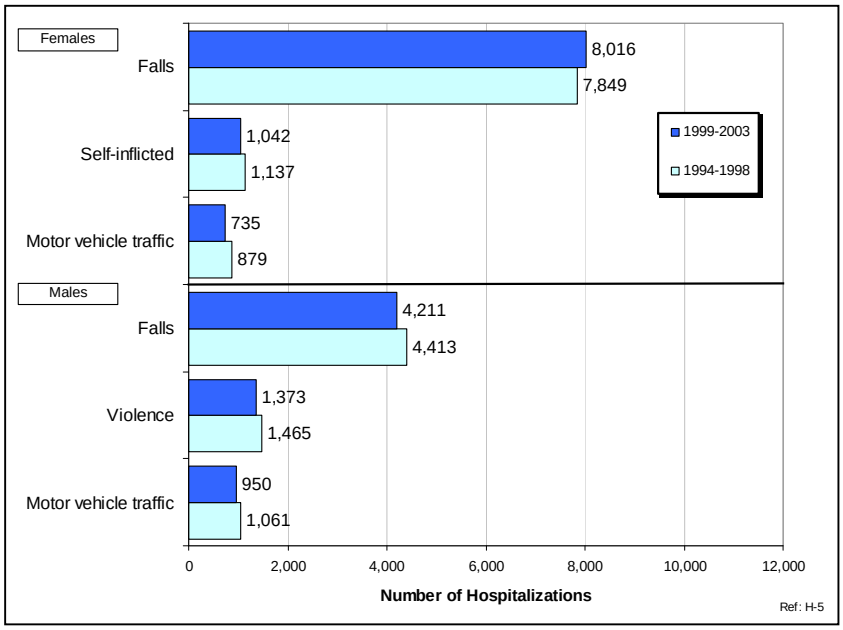


Figure 32: Time Trend Comparison of the Leading Causes of Injury Hospitalizations by Sex in the Total Population of the Winnipeg Health Region, 1994-1998 and 1999-2003[23]



[22] The exceptions to this are machinery, and suffocation, which increased by 3% and 5%, respectively. However, neither of these causes is one of the ten leading causes of injury hospitalization.

[23] Note: Interestingly, but not shown in the graphs, is that for females, there was an 18% reduction in the number of hospitalizations due to *violence*, and for males, there was a 30% reduction in that for *self-inflicted* injury (see Table 10). These are the fourth leading cause for each sex.

What Age Group are at Risk of Hospitalization for Injury?

The largest number of injury hospitalizations occurred in the 75-84 year age group, with 8,590 admissions (17.3%). This is followed by the 85+ years of age group, with 7,289 injury hospitalizations (14.7%), the majority of which involved females in both of these groups.

Figure 33 shows that the number of injury hospitalizations for males is consistently higher than that of females for age groups below 65 years of age. From 65 years of age and older, females have more injury hospitalizations than males.[24]

Although children and youth (24 years of age and under) do not account for a large proportion of all injury hospitalizations, (approximately 19%), injury is usually one of the top three leading causes for hospitalization for children and youth in these age groups.[25]

Comparison of age-specific rates may be more useful as it takes into account differences in the underlying population structure. Figure 34 shows that these rates are low in children, increase in adulthood, but remain fairly stable until the 65-74 years age group, where the rates begin to increase substantially.

Senior women, 85 years of age and older, are clearly shown to have the highest rate of injury hospitalization. For women in this age group, about 7% (1 in 14) are admitted for an injury, compared to about 5% (1 in 20) of men in the same age group.

Figure 33: Distribution of Injury Hospitalizations by Age and Sex in the Total Population of the Winnipeg Health Region, 1994-2003, n=49,742

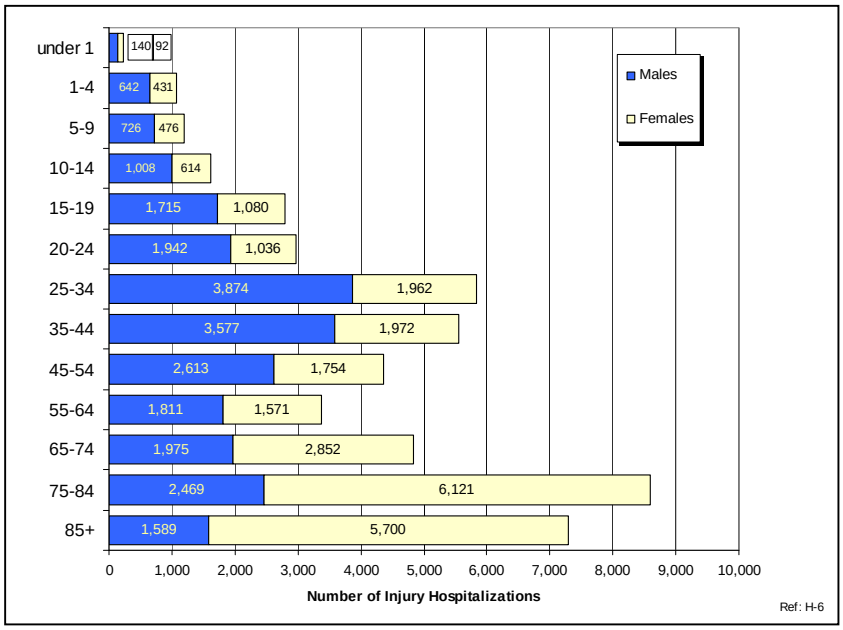
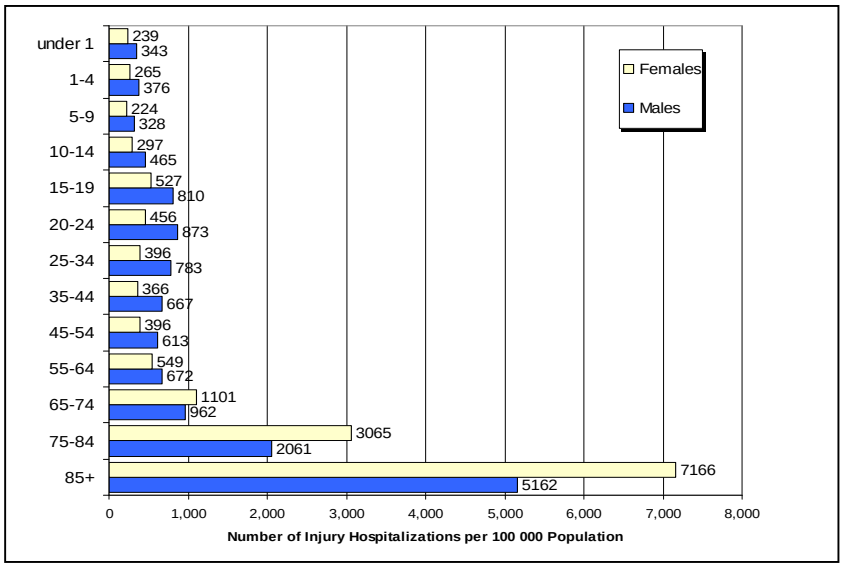


Figure 34: Age-specific Injury Hospitalization Rates by Sex in the Total Population for the Winnipeg Health Region, 1994-2003



Please note that in Figures 33 and 34, five-year age groups are shown for those under 25 years of age, and ten-year age groups for those 25 years of age and older. Leading causes of injury vary by age group and will be presented in the age and injury chapter of the report.

[24] However it is important to note that the population structure changes for older adults where females increasingly outnumber males.
[25] Please refer to the WRHA Community Health Assessment Report-Children and Youth.

Average Length of Stay in Hospital due to Injury

Overall Population

For the period of 1994 to 2003, the average length of stay (ALOS) in-hospital for treatment of an injury was 23.1 days for residents of the WHR. This measure is provided in this report as a proxy indicator for the severity of injury. Although many factors in addition to severity (such as age, pre-existing health status and functional impairment) influence the length of stay, ALOS is the only severity indicator readily available.

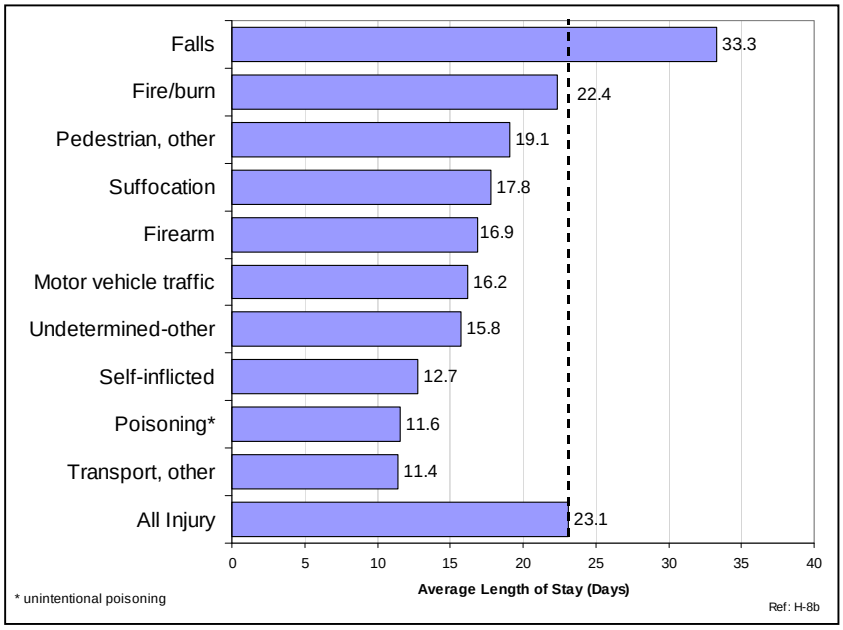
Falls had the longest ALOS, at 33.3 days, which is ten days higher than the ALOS for All Injury. Older average age with higher risks of complications are likely factors. Falls ALOS is approximately 10 days more than the second longest ALOS, which is *fire/burn* at 22.4 days. The injury cause with the third longest ALOS was *Pedestrian, other*, at 19.1 days. Burns and pedestrian injuries are known to be associated with high severity.

The injury causes with the ten longest ALOS are shown in Figure 35, with the ALOS for all injuries combined in the WHR (*All Injury*) for comparison. These ten causes account for 84.5% of days spent in hospital due to injury.

It may seem somewhat surprising that many common causes of injury hospitalization are not ranked higher by ALOS. For example: *motor vehicle traffic* at 16.2 days was ranked fifth and *self-inflicted*, at 12.7 days was ranked eighth.

It is of interest to note that of the total number of days spent in hospital due to injury, the majority (71%) is due to *falls*. Further detail about total hospital days and ALOS for the 22 major causes of injury examined for this report are found in Table 12 (at the end of this chapter).

Figure 35: Leading Causes[26] of Injury by Average Length of Stay (ALOS) in the Total Population of the Winnipeg Health Region, 1994-2003
n= 49,742 cases



◈ *Note to readers: The average length of stay (ALOS) calculated for this report is based upon the total length of stay in hospital for a hospital record with an injury diagnosis. It should be noted that there may be other health conditions (or diagnoses) that were treated during the same stay, and it is not possible to determine if the entire stay was due to the injury alone, or alternatively, what proportion of a stay is due to the injury.*

There are many factors that may influence a person's length of stay in hospital, such as age, pre-existing health conditions, and severity of the injury. Examination of these factors is beyond the scope of this document. However, more information about this topic may be found in the Methods section and/or the Appendix.

[26] Note that the categories of *Other specified, classifiable*; *Other specified, NEC*; and *Unspecified* were excluded from the determination of leading injury causes due to the heterogeneity of causes included in these categories. As well, these categories point to methodological challenges in data coding for injury causes. More detailed information can be found in the Appendix.

Does average length of stay due to injury differ between male and female residents?

In the WHR, male residents (of all ages) had a shorter ALOS due to injury than female residents. Between 1994 and 2003, males had an ALOS of 17.4 days due to injury, while females had an ALOS of 28.5 days (*All Injury,* in Figures 36 and 37).

For males, the longest ALOS was for *falls,* at 27.6 days, approximately 10 days longer than the ALOS due to *all injury* (combined) for males. This is followed by *pedestrian other, firearm and suffocation.* These four injury causes had ALOS that were longer than the all injury ALOS for males.

For females, the longest ALOS was for *falls*, at 36.4 days, nearly eight days longer than the *all injury* ALOS for females, and 13 days longer than the ALOS for all WHR residents. *Fire/burn* (the second longest ALOS) also has a longer ALOS than the *all injury* ALOS for females and all WHR residents. *Undetermined-other* follows with the third longest ALOS for females.

Figures 36 and 37 show the differences in the pattern of injury cause-categories by ALOS between male and female residents in the WHR (note the difference in the cause-categories between the two). In addition, the ALOS for *fall* injury for females is nearly 9 days (32%) higher than that for males. Female residents also had longer ALOS for *fire/burn*, *motor vehicle traffic* and *undetermined-other* injury causes compared to those for males. In contrast, males have longer ALOS for *pedestrian other*; *suffocation*; and *self-inflicted* injury causes compared to those for females.

Figure 36: Leading Causes of Injury by ALOS for Males in the Total Population of the Winnipeg Health Region,1994-2003 n=24,081 cases

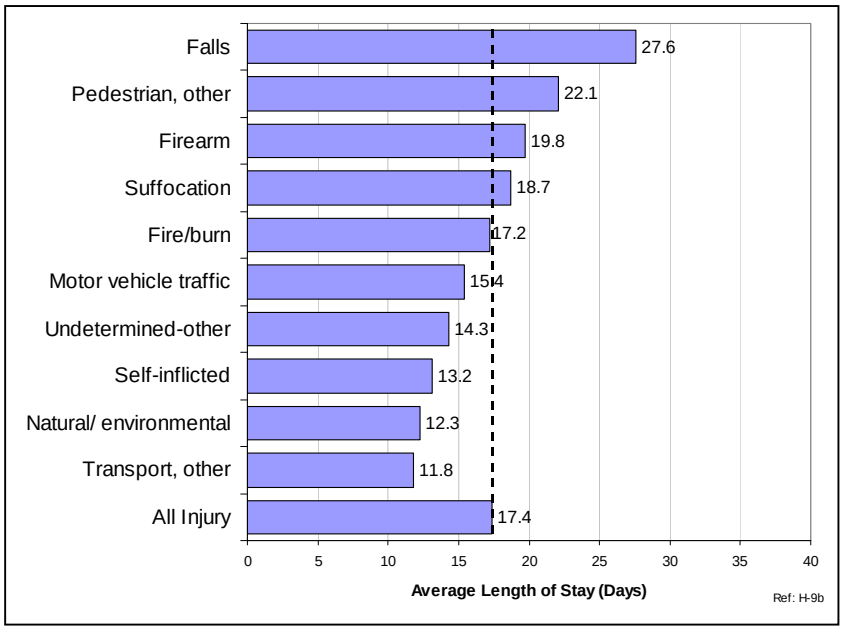
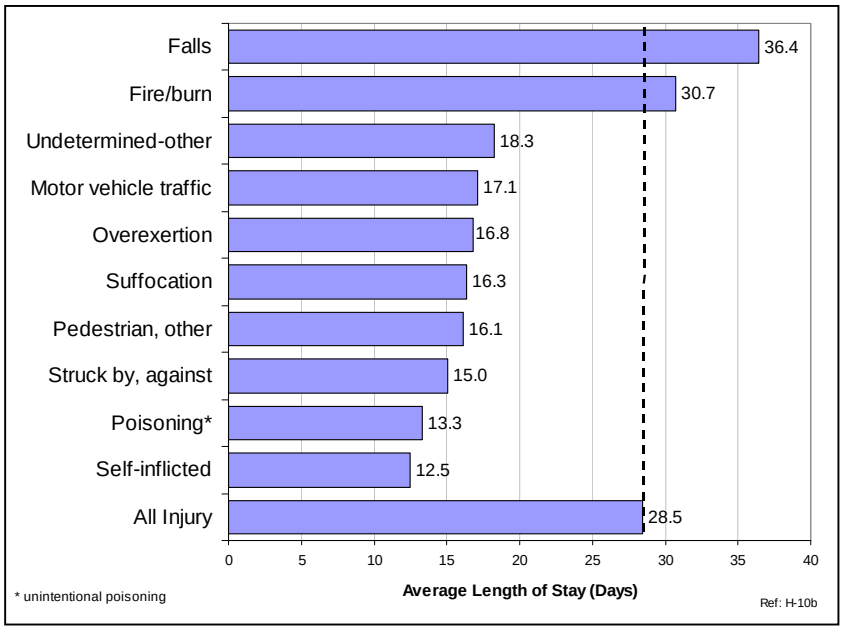


Figure 37: Leading Causes of Injury by ALOS for Females in the Total Population of the Winnipeg Health Region, 1994-2003 n=25,661 cases



Summary

This section summarizes key findings and addresses the question: How does the Winnipeg Health Region compare to Manitoba?

In the Winnipeg Health Region the average annual crude rate of injury hospitalization was 763 per 100 000 population, for the period of 1994 to 2003. This rate is much lower than the 1054 per 100 000 population reported for all Manitoba residents in the Manitoba Health report: *Injuries in Manitoba a Ten-year Review*, for the period of 1992 to 2001.[27] It should be noted that this value is for a different time period than that produced here for the WHR; therefore this comparison should be made with caution. However the WHR injury hospitalization rate in the Manitoba Health report was 786 per 100,000 population, which is similar to the rate reported here, confirming the finding that the WHR injury hospitalization rate is lower than the provincial average.

The rates of hospitalization were similar between male and female residents of the WHR: 760 versus 765 per 100 000 population for males and for females, respectively. As with the overall provincial injury hospitalization rates, these rates are both much lower than those reported for 1992 to 2001 for all Manitoban male and female residents, at 1104 and 1005 per 100 000, respectively. In comparing the proportions of male and female injury hospitalizations between the WHR and Manitoba, there is a similarity. In the WHR, approximately 52% of all injury hospitalizations between 1994 and 2003 involved male residents, compared to 48% involving female residents. This is equal to the proportions of injury hospitalizations among Manitoba males and Manitoba females reported for the period of 1992 to 2001 in the provincial injury report.[27]

There are small differences in the five leading causes of injury hospitalization in the WHR versus the province of Manitoba as a whole. Between 1994 and 2003, the five leading causes[28] of injury hospitalization for residents of the WHR were: *falls*, *self-inflicted*, *motor vehicle traffic*, v*iolence*, and c*ut/pierce*.[29] Combined, these five leading causes accounted for nearly 74% of WHR injury hospitalizations. The leading causes of injury hospitalization for all Manitoba residents were: *falls; motor vehicle traffic; self-inflicted; assault;* and *struck by/against* (in that order).[27] When summed together, these five leading causes accounted for 69% of all Manitoba injury hospitalizations. Note 4 of the 5 categories are essentially the same, but in a slightly different order.

In examining trends over time, there was a decrease of 6.9% in injury hospitalizations between the two five-year periods of 1994-1998 and 1999-2003. The provincial injury report noted a much larger decrease between 1992-2001, of 13.5%.[27] It is possible that these reductions can be accounted for in part by the overall reduction in hospital admissions during this time, which was by 13.4%, between 1994 and 2003.[30] It is also possible that there is greater variation in hospital admitting procedures across the province compared to within the region, which accounts for the difference in the reduction between the WHR and the province as a whole (in addition to the different periods of time studied in the two reports).

The distribution of the number of injury hospitalizations by age and sex groupings in the WHR appears to be consistent with that reported in *Injuries in Manitoba a Ten-year Review.* Seniors (65 years of age and older) both in the WHR, and Manitoba as a whole, were noted as accounting for the largest proportion of injury hospitalizations. The age group of 85 years of age and older clearly has the highest rates of injury hospitalization for both the WHR and Manitoba as a whole, highlighting older seniors as a segment of the population particularly vulnerable to injury.

For the period of 1994 to 2003, the average length of stay (ALOS) in-hospital for treatment of an injury was 23.1 days for residents of the WHR. Male residents had a shorter ALOS due to injury at 17.4 days compared to female residents at 28.5 days. There was wide variability in ALOS for the various injury cause-categories, but the three leading injury causes with the longest ALOS for all residents were: *falls, fire/burn*, and *pedestrian, other*. In addition, there was wide variability in ALOS between males and females by injury causes-categories. For male

[27] Government of Manitoba. Manitoba Health. *Injuries in Manitoba: A Ten-Year Review*. January, 2004.
[28] The reader is reminded that the categories of *Other specified, classifiable; Other specified, NEC;* and *Unspecified* were excluded from the determination of leading injury. More detailed information can be found in the Methods and/or Appendix.
[29] Please refer to the technical note at the end of this chapter for definitions of *violence* versus *assault* injury.
[30] Based upon the per cent change in in-patient hospital cases in 1994 versus 2003. Data provided by M. Svitlica, Quality & Decision Support, WRHA.

residents the injury causes with the three longest ALOS were: *falls*; *pedestrian, other;* and *firearm* and those for female residents were: *falls*, *fire/burn*, and *undetermined-other*.[31] It appears that the high ALOS for females is driven by the high ALOS for *falls* and *fire/burn*. While it may be tempting to conclude that females have more severe injuries than males, it is also possible that since males account for a higher proportion of injury deaths, their ALOS are shorter because they are more likely to die from the severest injuries instead of having long hospital stays.[32] Other factors that may affect length of stay include: age of the patient and the proportion of patients (particularly seniors) who stay in hospital while waiting for long-term care placement because they are unable to return to independent living. This may happen more frequently to older women who often outlive their partner and are not able to live alone after an injury such as a fall. These issues would require further investigation, and are beyond the scope of this report.

In summary, the WHR had lower hospitalization rates for injury compared to the province of Manitoba as a whole and these rates appear to be on the decline over the past decade. Male and female residents account for nearly equal percentages of injury hospitalizations in the WHR. Seniors account for a very large proportion of injury hospitalizations and rates among seniors, especially senior women, remain higher than those for all other age groups.

Falls is by far the most common cause of injury hospitalization, accounting for nearly half of all hospitalizations of WHR residents over the past ten years. The proportion of injury hospitalizations that is due to *falls* appears to be increasing. *Falls* also have the longest length of hospital stay on average at 33.3 days, with females having much longer lengths of stay than males (36.4 and 27.4 days, respectively). Most notably from a systems perspective, *falls* was responsible for 71% of hospital days (over 800,000) during the 10 year period, which was 14 times more days than the next leading cause of *motor vehicle traffic* at just under 59,000 days.

Challenges facing the WHR include the reduction of the number of hospitalizations for the leading causes of injury hospitalization: *falls*, *self-inflicted*, *motor vehicle traffic*, and v*iolence*. Investing in effective prevention programs for seniors in particular would impact on injury hospitalization rates as well as ALOS due to injury. Focussing on the injury causes with the most total bed days in hospital such as *falls*, *motor vehicle traffic, self-inflicted and violence* would benefit the health of the population, as well as the health system. *Falls* is the most important cause to address from a resource perspective, as a 7% reduction in the total number of days in hospital for *falls* would be equivalent to all the days in hospital for *motor vehicle traffic* injuries.

Technical notes:

1. In this report, injuries with undetermined intent were divided into two groups: *undetermined-poisoning* and *undetermined-other* (i.e. all non-poisoning injuries of undetermined intent). Examples of injury causes included in *undetermined-other* for females are: cut/pierce, drowning, fall, fire/burn, motor vehicle traffic, natural/environmental and suffocation.
2. It should also be noted that the WHR definition of *violence* injury includes *assault* and *other violence*, two categories of intent from the Health Canada injury matrix. *Assault* is defined as intentional harm caused by another person in a non-war, non-legal intervention context. *Other violence* is defined as intentional harm caused by another person in an act of war, terrorism, or legal intervention. However, there were only 23 hospitalization events due to *other violence* in the WHR for ten-year period examined, accounting for less than 0.1% of all injury hospitalizations, and only 0.6% of the *violence* category in the WHR during this period. Thus the *violence* category is comparable to the *assault* category used by the provincial report. More information about the Health Canada injury matrix can be found in the Methods chapter of this report.

[31] The latter category, *undetermined-other* consists of injuries where it was not possible to determine an intent (whether intentional or unintentional) for the injury. See technical note at end of chapter text.
[32] The end point of a hospital stay has two outcomes: discharge or death, and these were not differentiated in the calculation of ALOS for this report. i.e. a patient may have had a short stay but the end-point was death.

Data Tables

Table 8: Injury Hospitalization by Cause for Residents of the Winnipeg Health Region, All Ages, Both Sexes, 1994-2003

Injury Causes/Categories	Both Sexes			Females			Males		
	Number	Rate per 100,000	Per cent of All Injury	Number	Rate per 100,000	Per cent of All Injury	Number	Rate per 100,000	Per cent of All Injury
Cut/pierce	1526	23.4	3.1%	417	12.4	1.6%	1109	35.0	4.6%
Drowning/submersion	58	0.9	0.1%	24	0.7	0.1%	34	1.1	0.1%
Falls	24489	375.7	49.2%	15865	473.2	61.8%	8624	272.4	35.8%
Fire/burn	825	12.7	1.7%	313	9.3	1.2%	512	16.2	2.1%
Firearm	39	0.6	0.1%	7	0.2	0.0%	32	1.0	0.1%
Machinery	528	8.1	1.1%	39	1.2	0.2%	489	15.4	2.0%
Motor vehicle traffic	3625	55.6	7.3%	1614	48.1	6.3%	2011	63.5	8.4%
Pedal cyclist, other	538	8.3	1.1%	176	5.2	0.7%	362	11.4	1.5%
Pedestrian, other	70	1.1	0.1%	35	1.0	0.1%	35	1.1	0.1%
Transport, other	747	11.5	1.5%	238	7.1	0.9%	509	16.1	2.1%
Natural/environmental	747	11.5	1.5%	320	9.5	1.2%	427	13.5	1.8%
Overexertion	932	14.3	1.9%	344	10.3	1.3%	588	18.6	2.4%
Poisoning	1011	15.5	2.0%	542	16.2	2.1%	469	14.8	1.9%
Struck by, against	1428	21.9	2.9%	325	9.7	1.3%	1103	34.8	4.6%
Suffocation	273	4.2	0.5%	105	3.1	0.4%	168	5.3	0.7%
Other specified, classifiable	1623	24.9	3.3%	604	18.0	2.4%	1019	32.2	4.2%
Other specified, NEC	461	7.1	0.9%	134	4.0	0.5%	327	10.3	1.4%
Unspecified	2800	43.0	5.6%	1235	36.8	4.8%	1565	49.4	6.5%
Self-inflicted	3644	55.9	7.3%	2179	65.0	8.5%	1465	46.3	6.1%
Violence	3585	55.0	7.2%	747	22.3	2.9%	2838	89.6	11.8%
Undetermined-poisoning	560	8.6	1.1%	312	9.3	1.2%	248	7.8	1.0%
Undetermined-other	233	3.6	0.5%	86	2.6	0.3%	147	4.6	0.6%
All Injury	**49742**	**763.0**	100.0%	**25661**	**765.3**	100.0%	**24081**	**760.6**	100.0%

Table 9: Time Trend Comparison for Causes of Injury Hospitalization for Residents of the Winnipeg Health Region, 1994-1998 and 1999-2003

Injury Causes/Categories	1994-1998			1999-2003		
	Number	Rate per 100,000 Population	Per cent of All Injury	Number	Rate per 100,000 Population	Per cent of All Injury
Cut/pierce	839	25.81	3.3%	687	21.0	2.9%
Drowning/submersion	31	1.0	0.1%	27	0.8	0.1%
Falls	12262	377.2	47.7%	12227	374.1	50.9%
Fire/burn	431	13.3	1.7%	394	12.1	1.6%
Firearm	25	0.8	0.1%	14	0.4	0.1%
Machinery	260	8.0	1.0%	268	8.2	1.1%
Motor vehicle traffic	1940	59.7	7.5%	1685	51.6	7.0%
Pedal cyclist, other	282	8.7	1.1%	256	7.8	1.1%
Pedestrian, other	37	1.1	0.1%	33	1.01	0.1%
Transport, other	390	12.0	1.5%	357	10.9	1.5%
Natural/environmental	416	12.8	1.6%	331	10.1	1.4%
Overexertion	505	15.5	2.0%	427	13.1	1.8%
Poisoning	504	15.5	2.0%	507	15.5	2.1%
Struck by, against	733	22.5	2.9%	695	21.3	2.9%
Suffocation	133	4.1	0.5%	140	4.3	0.6%
Other specified, classifiable	870	26.8	3.4%	753	23.0	3.1%
Other specified, NEC	259	8.0	1.0%	202	6.18	0.8%
Unspecified	1513	46.5	5.9%	1287	39.4	5.4%
Self-inflicted	2002	61.6	7.8%	1642	50.2	6.8%
Violence	1874	57.6	7.3%	1711	52.4	7.1%
Undetermined-poisoning	285	8.8	1.1%	275	8.4	1.1%
Undetermined-other	122	3.8	0.5%	111	3.4	0.5%
All Injury	**25713**	**791.0**	100.0%	**24029**	**735.3**	100.0%

Table 10: Time Trend Comparison for Causes of Injury Hospitalization by Sex, for Residents of the Winnipeg Health Region, All Ages, 1994-1998 and 1999-2003

Injury Causes/Categories	Females						Males					
	1994-1998			1999-2003			1994-1998			1999-2003		
	Number	Rate per 100,000 Population	Per cent of All Injury	Number	Rate per 100,000 Population	Per cent of All Injury	Number	Rate per 100,000 Population	Per cent of All Injury	Number	Rate per 100,000 Population	Per cent of All Injury
Cut/pierce	238	14.22	1.8%	179	10.66	1.4%	601	38.1	4.8%	508	32.0	4.4%
Drowning/submersion	14	0.8	0.1%	10	0.6	0.1%	17	1.1	0.1%	17	1.1	0.1%
Falls	7849	469.0	60.1%	8016	477.3	63.6%	4413	279.8	34.9%	4211	265.1	36.8%
Fire/burn	158	9.4	1.2%	155	9.2	1.2%	273	17.3	2.2%	239	15.0	2.1%
Firearm	5	0.3	0.0%	2	0.1	0.0%	20	1.3	0.2%	12	0.8	0.1%
Machinery	19	1.1	0.1%	20	1.2	0.2%	241	15.3	1.9%	248	15.6	2.2%
Motor vehicle traffic	879	52.5	6.7%	735	43.8	5.8%	1061	67.3	8.4%	950	59.8	8.3%
Pedal cyclist, other	110	6.6	0.8%	66	3.9	0.5%	172	10.9	1.4%	190	12.0	1.7%
Pedestrian, other	18	1.1	0.1%	17	1.01	0.1%	19	1.2	0.2%	16	1.0	0.1%
Transport, other	131	7.8	1.0%	107	6.4	0.8%	259	16.4	2.0%	250	15.7	2.2%
Natural/environmental	179	10.7	1.4%	141	8.4	1.1%	237	15.0	1.9%	190	12.0	1.7%
Overexertion	183	10.9	1.4%	161	9.6	1.3%	322	20.4	2.5%	266	16.7	2.3%
Poisoning	261	15.6	2.0%	281	16.7	2.2%	243	15.4	1.9%	226	14.2	2.0%
Struck by, against	170	10.2	1.3%	155	9.23	1.2%	563	35.7	4.5%	540	34.0	4.7%
Suffocation	54	3.2	0.4%	51	3.0	0.4%	79	5.0	0.6%	89	5.6	0.8%
Other specified, classifiable	325	19.4	2.5%	279	16.6	2.2%	545	34.6	4.3%	474	29.8	4.1%
Other specified, NEC	67	4.0	0.5%	67	3.99	0.5%	192	12.2	1.5%	135	8.5	1.2%
Unspecified	661	39.5	5.1%	574	34.2	4.6%	852	54.0	6.7%	713	44.9	6.2%
Self-inflicted	1137	67.9	8.7%	1042	62.0	8.3%	865	54.8	6.8%	600	37.8	5.2%
Violence	409	24.4	3.1%	338	20.1	2.7%	1465	92.9	11.6%	1373	86.4	12.0%
Undetermined-poisoning	149	8.9	1.1%	163	9.7	1.3%	136	8.6	1.1%	112	7.1	1.0%
Undetermined-other	47	2.8	0.4%	39	2.3	0.3%	75	4.8	0.6%	72	4.5	0.6%
All Injury	**13063**	**780.6**	100.0%	**12598**	**750.1**	100.0%	**12650**	**802.0**	100.0%	**11431**	**719.5**	100.0%

Table 11: All Injury Hospitalization by Age-Sex Groupings for Residents of the Winnipeg Health Region, 1994-2003

Age Groups	Both Sexes			Females			Males		
	Number	Rate per 100,000	Per cent of All Injury	Number	Rate per 100,000	Per cent of All Injury	Number	Rate per 100,000	Per cent of All Injury
under 1	232	292.8	0.5%	92	239.3	0.2%	140	343.4	0.3%
1-4	1073	322.3	2.2%	431	265.4	0.9%	642	376.5	1.3%
5-9	1202	277.5	2.4%	476	224.4	1.0%	726	328.3	1.5%
10-14	1622	383.3	3.3%	614	297.5	1.2%	1008	464.9	2.0%
15-19	2795	670.9	5.6%	1080	527.1	2.2%	1715	810.1	3.4%
20-24	2978	662.2	6.0%	1036	456.1	2.1%	1942	872.6	3.9%
25-34	5836	589.9	11.7%	1962	396.4	3.9%	3874	783.5	7.8%
35-44	5549	516.0	11.2%	1972	365.7	4.0%	3577	667.1	7.2%
45-54	4367	502.4	8.8%	1754	395.9	3.5%	2613	613.1	5.3%
55-64	3382	608.5	6.8%	1571	549.1	3.2%	1811	671.6	3.6%
65-74	4827	1039.6	9.7%	2852	1101.3	5.7%	1975	961.8	4.0%
75-84	8590	2688.4	17.3%	6121	3064.8	12.3%	2469	2060.9	5.0%
85+	7289	6606.9	14.7%	5700	7165.8	11.5%	1589	5162.4	3.2%

Note: The *Per Cent Of All Injury* refers to the per cent of the total number of injuries for all residents (i.e. the denominator is n=49,742).

Table 12: Length of Stay (Average and Total) in Hospital due to Injury for Residents of the WHR, 1994-2003

Injury Causes/Categories	Both Sexes			Females			Males		
	ALOS (Days)	Total Number of Days	Days Per cent of All Injury	ALOS (Days)	Total Number of Days	Days Per cent of All Injury	ALOS (Days)	Total Number of Days	Days Per cent of All Injury
Cut/pierce	4.2	6435	0.6%	5.5	2309	0.3%	3.7	4126	1.0%
Drowning/submersion	3.9	224	0.02%	3.8	91	0.01%	3.9	133	0.03%
Falls	33.3	815653	71.0%	36.4	577755	79.1%	27.6	237898	56.9%
Fire/burn	22.4	18442	1.6%	30.7	9617	1.3%	17.2	8825	2.1%
Firearm	16.9	658	0.1%	3.7	26	0.0%	19.8	632	0.2%
Machinery	5.8	3058	0.3%	4.1	160	0.0%	5.9	2898	0.7%
Motor vehicle traffic	16.2	58662	5.1%	17.1	27666	3.8%	15.4	30996	7.4%
Pedal cyclist, other	5.6	3025	0.3%	4.3	757	0.1%	6.3	2268	0.5%
Pedestrian, other	19.1	1336	0.1%	16.1	563	0.1%	22.1	773	0.2%
Transport, other	11.4	8541	0.7%	10.6	2533	0.3%	11.8	6008	1.4%
Natural/environmental	10.1	7563	0.7%	7.3	2321	0.3%	12.3	5242	1.3%
Overexertion	9.7	9049	0.8%	16.8	5781	0.8%	5.6	3268	0.8%
Poisoning	11.6	11722	1.0%	13.3	7233	1.0%	9.6	4489	1.1%
Struck by, against	7.2	10287	0.9%	15.0	4885	0.7%	4.9	5402	1.3%
Suffocation	17.8	4854	0.4%	16.3	1716	0.2%	18.7	3138	0.8%
Other specified, classifiable	24.7	40040	3.5%	26.1	15747	2.2%	23.8	24293	5.8%
Other specified, NEC	13.0	5979	0.5%	14.2	1909	0.3%	12.4	4070	1.0%
Unspecified	18.7	52426	4.6%	25.5	31548	4.3%	13.3	20878	5.0%
Self-inflicted	12.7	46447	4.0%	12.5	27167	3.7%	13.2	19280	4.6%
Violence	9.9	35423	3.1%	8.8	6575	0.9%	10.2	28848	6.9%
Undetermined-poisoning	8.8	4916	0.4%	7.8	2441	0.3%	10.0	2475	0.6%
Undetermined-other	15.8	3672	0.3%	18.3	1572	0.2%	14.3	2100	0.5%
All Injury	**23.1**	**1,148,412**	100.0%	**28.5**	**730,372**	100.0%	**17.4**	**418,040**	100.0%

Self-reported Injury

A limitation of using administrative data as a measure of injury in the population is that these injuries represent only the most severe injuries: those that required in-hospital treatment[33] or resulted in death. A substantial number of injuries of less severity occur that are not captured in these data. However these injuries may still result in pain, impaired function, disruption of daily activities, time loss from work or school, short-term disability, cost to the health care system and, in some cases, long-lasting effects. This section on *Self-Reported Injury* is a small step towards addressing this significant information gap. Developing a more comprehensive injury surveillance system that captures emergency department visits, emergency response services, primary care encounters, work and school absences, as well as more complete survey data, remains a future challenge.

This information was collected in the Canadian Community Health Survey (CCHS), a cross-sectional health survey of Canadians. Cycle 2.1 (2003) was used in this report, as it was the most recent cycle available at the time of writing. The previous cycle (1.1) was conducted in 2001 and findings are provided here for comparison. This national survey allows some comparisons to be drawn between rates of self-reported injuries for WHR residents and those of Manitoba and Canada. However, due to a small regional sample size, interpretation is quite limited. More information about the CCHS can be found in the Methods section of this report.

In 2003 the percentage of WHR residents (both sexes) that reported having sustained an *injury in the past twelve months where medical attention may or may not have been sought* was 15.3% (i.e. 1 out of every 6 or 7 residents). This appears to be similar to all of Manitoba (15.2%) but somewhat higher than that for Canada 13.1% (1 out of 7 or 8), although not statistically significant given the small sample size. Also in this category, 16.3% of WHR males (1out of 6) reported *injuries where medical attention may or may not have been sought* compared to 14.4% of WHR females (1 out of 7). However, this apparent sex difference also did not achieve statistical significance.

Examining the data for Canada as a whole may provide a better view of the sex differences in self-reported injury, given the larger sample size. Canadian males were significantly more likely to report injuries in this category than Canadian females. The percentage of Canadian males who reported injuries was 15.2% compared to females at 11.1% (statistically significant). This is equivalent to approximately 1 in 7 males compared to 1 in 10 females reporting having had an injury in the past year. While it appears that both males and females in the WHR are more likely to report injuries as compared to Canadian males and females overall, the comparison is not statistically significant.

In the second category, which queried the respondents about *injuries in the past twelve months where medical attention was sought*, 9.5% of WHR residents responded that this had occurred (just over 1 in 10). This percentage appeared to be higher than that for Canada but similar to all of Manitoba (8.0% and 9.7%, respectively). However, these comparisons were also not statistically significant. In the WHR, the percentage of female residents who reported having sustained *injuries in the past twelve months where medical attention was sought* was nearly the same as that for male residents, at 9.6% and 9.4%, respectively. In examining the national data for sex differences, Canadian males were significantly more likely to report injuries in this category (9.3%) than females (6.8% or approximately 1 in 15).[34]

Comparing 2003 self-reported rates of *injuries where medical attention may or may not have been sought* with the previous cycle in 2001, the Canadian proportion has remained stable, whereas both the MB and WHR proportion appear to have increased overall and for both males and females. For *injuries where medical attention was sought,* the Canadian proportion has trended down somewhat, while the MB and WRH proportions appeared to have increased. However, an apparent increase among females was responsible for that trend, with the proportions of MB and WHR males remaining stable. It was noted that the estimate for WHR females in 2003 was particularly unstable, so it is uncertain whether these data reflect a trend of widening disparity between WHR residents and Canadians overall, or is simply reflecting unstable rates due to a small regional sample size. A larger sample size in future surveys would be helpful to clarify the interpretation.

[33] The reader is reminded that persons treated and released from the emergency department of a hospital are not included in hospital abstract data in this report.

[34] It should be noted that any comparisons of estimates of injury in this category between WHR male and female residents to those of Canada should be made with caution, as there were no statistically significant differences (likely due to the small sample sizes for the WHR group).

In summary, self-reported injury is a very common health event for WHR residents. Although further estimation is needed to be able to draw conclusions, it appears that WRH residents may experience more injuries than the Canadian population as a whole, and that this possible gap may be widening as WHR rates worsen, and the Canadian rates remain stable or are improving.

Table 13: Self-Reported Injuries in the Winnipeg Health Region Population, 12 Years of Age and Older

			Cycle 1.1, 2001			Cycle 2.1, 2003		
Injuries	**Sex**	**Geography**	**Per Cent**	**Low 95% Confidence Interval - Per cent**	**High 95% Confidence Interval - Per cent**	**Per Cent**	**Low 95% Confidence Interval - Per cent**	**High 95% Confidence Interval - Per cent**
Injuries within past 12 months, with and without medical attention	Both	Canada	13.3	13.0	13.6	13.1	12.8	13.4
		Manitoba	13.4	12.5	14.4	15.2	13.5	16.8
		Winnipeg Health Region	12.8	11.4	14.2	15.3	12.7	17.9
	F	Canada	11.2	10.9	11.6	11.1	10.8	11.5
		Manitoba	11.2	9.9	12.5	13.6	11.4	15.9
		Winnipeg Health Region	11.0	9.0	12.9	14.4	10.9	18.0
	M	Canada	15.5	15.0	15.9	15.2	14.7	15.6
		Manitoba	15.7	14.4	17.1	16.7	14.6	18.8
		Winnipeg Health Region	14.7	12.6	16.9	16.3	13.0	19.5
Injuries within past 12 months, sought medical attention	Both	Canada	8.6	8.3	8.8	8.0	7.8	8.2
		Manitoba	8.5	7.7	9.4	9.7	8.3	11.1
		Winnipeg Health Region	8.1	6.8	9.3	9.5	7.3	11.7
	F	Canada	7.2	6.9	7.5	6.8	6.5	7.1
		Manitoba	7.1	6.1	8.1	9.3	7.1	11.5
		Winnipeg Health Region	7.0	5.4	8.6	9.6*	6.0*	13.1*
	M	Canada	10.0	9.6	10.3	9.3	8.9	9.6
		Manitoba	10.0	8.7	11.2	10.2	8.6	11.8
		Winnipeg Health Region	9.2	7.4	11.0	9.4	7.0	11.7

Additional Notes about Table 1:
Data with a coefficient of variation (CV) from 16.6% to 33.3% are identified by an asterisk (*) and should be interpreted with caution.
Data Source: Statistics Canada, Canadian Community Health Survey, 2001, 2003.

Priority Injury Causes

The reason for describing injury and understanding how the most common and most severe injuries occur is to provide guidance for policy and program decisions that will result in prevention initiatives. Since it is not generally feasible to implement comprehensive preventative interventions for all injuries at the same time, it is necessary to set priorities. This chapter describes the process of establishing evidence-informed injury prevention priorities for the WHR.

The four priority injury causes identified were:

(1) Falls;
(2) Suicide and self-inflicted injury;
(3) Motor vehicle traffic injury (and other transportation-related injury); and
(4) Violence.

As elsewhere in this report, all of the injury death data are for the period of 1990-1999, and all of the injury hospitalization data are for the period of 1994-2003.

Process for Prioritization

A WHR Injury Data Report Advisory Committee had been formed to oversee the development of this report. Representatives from the Population and Public Health Program, Research and Evaluation Unit and IMPACT, the Injury Prevention Centre of Children's' Hospital, formed this group and undertook this prioritization task. The group adopted a priority-setting model that had been used previously at the WRHA in establishing injury prevention priorities for the Population and Public Health program strategic plan. It had also been used nationally in a Federal/Provincial/Territorial planning process, and had been presented at the World Injury Prevention Conference in 2002. The process utilized both a quantitative and qualitative approach to identify the top injury cause categories for preventative action. The quantitative part considered the data indicators of injury deaths, potential years of life lost, the number of hospitalizations and the average length of stay across the main injury cause groups to generate a composite ordinal ranking of injury causes. The qualitative part used a consensus-based approach to assign scores to a constellation of factors intended to assess the general readiness and capacity of stakeholders, including the community, to adopt preventative action on the injury cause. The indicators and issues considered are listed below and more details on the priorization process are described in Appendix 2.

Quantitative Indicators: (ranked)

1. Number of injury death (ranked)
2. Number of potential years of life lost (PYLL) (ranked)
3. Numbers of injury hospitalizations (ranked)
4. Average length of stay (ranked)

Qualitative Factors: (scored out of 5 and ranked)

1. Ability to make an impact is within the mandate of the health sector
2. Ability of the health sector to influence other sectors (through partnerships, policy etc)
3. The issue is not being fully addressed by another group or agency
4. Readiness of the public to address the issue (community is receptive to change)
5. Readiness of political systems to address the issue
6. Population subgroups experience a disproportionate burden (disparities exist)
7. Effective interventions are known and available
8. Degree of "opportunity gap" between available preventative benefit and what is happening
9. Potential for cost savings
10. Trending- issue is getting worse (historic analysis of data) and is anticipated to continue to get worse if nothing is done.

Results of Quantitative Process:

Table 14: Causes of Injury Death Ranked by Number of Events in the Winnipeg Health Region, 1990-1999

Injury Causes/Categories	Number of Deaths	Rank
Cut/pierce	1	**17**
Drowning/submersion	76	**8**
Falls	398	**2**
Fire/burn	70	**9**
Firearm	7	**14**
Machinery	6	**15**
Motor vehicle traffic	354	**3**
Pedal cyclist, other	0	**18**
Pedestrian, other	5	**16**
Transport, other	32	**11**
Natural/environmental	27	**12**
Overexertion	0	**19**
Poisoning	96	**6**
Struck by, against	9	**13**
Suffocation	78	**7**
Suicide	675	**1**
Violence	135	**4**
Undetermined-poisoning	111	**5**
Undetermined-other	33	**10**

Table 15: Causes of Injury Potential Years of Life Lost (PYLL) Ranked by PYLL in the Winnipeg Health Region, 1990-1999

Injury Causes/Categories	PYLL	Rank
Cut/pierce	43	**17**
Drowning/submersion	2931	**5**
Falls	2426	**7**
Fire/burn	2342	**8**
Firearm	268	**14**
Machinery	219	**15**
Motor vehicle traffic	11493	**2**
Pedal cyclist, other	0	**18**
Pedestrian, other	195	**16**
Transport, other	1271	**10**
Natural/environmental	538	**12**
Overexertion	0	**19**
Poisoning	2632	**6**
Struck by, against	311	**13**
Suffocation	2088	**9**
Suicide	21615	**1**
Violence	5521	**3**
Undetermined-poisoning	3245	**4**
Undetermined-other	1193	**11**

Table 16: Number and Rank of Injury Hospitalizations -WHR, 1994-2003

Injury Causes/Categories	Number of Hosp.	Rank
Cut/pierce	1526	**5**
Drowning/submersion	58	**18**
Falls	24489	**1**
Fire/burn	825	**9**
Firearm	39	**19**
Machinery	528	**14**
Motor vehicle traffic	3625	**3**
Pedal cyclist, other	538	**13**
Pedestrian, other	70	**17**
Transport, other	747	**10**
Natural/environmental	747	**11**
Overexertion	932	**8**
Poisoning	1011	**7**
Struck by, against	1428	**6**
Suffocation	273	**15**
Self-inflicted	3644	**2**
Violence	3585	**4**
Undetermined-poisoning	560	**12**
Undetermined-other	233	**16**

Table 17: Average Length of Stay (ALOS), Ranked- WHR, 1994-2003

Injury Causes/Categories	ALOS	Rank
Cut/pierce	4.2	**18**
Drowning/submersion	3.9	**19**
Falls	33.3	**1**
Fire/burn	22.4	**2**
Firearm	16.9	**5**
Machinery	5.8	**16**
Motor vehicle traffic	16.2	**6**
Pedal cyclist, other	5.6	**17**
Pedestrian, other	19.1	**3**
Transport, other	11.4	**10**
Natural/environmental	10.1	**11**
Overexertion	9.7	**13**
Poisoning	11.6	**9**
Struck by, against	7.2	**15**
Suffocation	17.8	**4**
Self-inflicted	12.7	**8**
Violence	9.9	**12**
Undetermined-poisoning	8.8	**14**
Undetermined-other	15.8	**7**

Table 18: Summary Overall Results of the Quantitative Prioritization Process

Injury Causes/Categories	Rank Sums	Rank
Falls	**11**	**1**
Suicide/self-inflicted	**12**	**2**
Motor vehicle traffic	**14**	**3**
Violence	**23**	**4**
Fire/burn	28	5
Poisoning	28	6
Suffocation	35	7
Undetermined poisoning	35	8
Transport, other	41	9
Undetermined, other	44	10
Natural/environmental	46	11
Struck by/against	47	12
Drowning/submersion	50	13
Firearm	52	14
Pedestrian, other	52	15
Cut/pierce	57	16
Overexertion	59	17
Machinery	60	18
Pedal cycle, other	66	19

Table 18 shows the results when the ranks of the 4 quantitative indicators above were summed for each cause category. The ranks sums have then been ranked to arrive at an overall composite ranking for the 19 cause categories shown. The causes in Table 18 are shown in the order of their overall ranking. This is a crude way to numerically identify priority causes based on a combined measure of the:

- frequency of fatal injuries (number of deaths),
- tendency for deaths to occur at a young age (PYLL),
- frequency of requiring hospital care (number of hospitalizations) and
- severity of non-fatal injury (ALOS).

Falls, suicide, and motor vehicle are closely ranked as the top 3 causes, with violence coming 4th behind them, followed by fire/burn and poisoning tied for 5th place.

Results of the Qualitative Process:

The ten qualitative factors were considered for each of the main injury causes (condensed from 19 to the main 11 cause categories shown in Table 19). For each cause, a score was assigned for each of the qualitative factors through a process of group consensus. Scores ranged from 1 to 5 with regard to the extent to which the factor was true for the given cause. The lower the number, the greater the extent of agreement with the qualitative factor. Finally, the scores for each cause were summed and then ranked, such that the lowest scores received the highest ranking. Table 19 shows the results of the quantitative process.

Table 19: Summary of Overall Results of the Qualitative Prioritization Process

	Falls	Motor Vehicle	Suicide	Violence	Poison	Drowning / submersio	Fire / Burn	Firearm	Struck by against	Suffoc-ation	Natural / Enviro
1. Ability to make an impact is within the mandate of the health sector	1.5	3.5	2	4	2	3	3.5	4.5	4	3	4
2. Ability of the health sector to influence other sectors (through partnerships, policy etc)	2	2	2	3.5	2	2	3	4	3	2.5	3
3. The issue is not being fully addressed by another group or agency	2	2.5	2	2	2.5	4	3	3	3.5	2.5	2
4. Readiness of the public to address the issue (community is receptive to change)	1.5	1.5	2	2	3	2.5	3	3	3	3.5	4
5. Readiness of political systems to address the issue	2	2	2.5	2	3	3	3.5	3.5	4	4	4.5
6. Population subgroups experience a disporportionate burden(disparities exist)	2	2	1.5	1	3	2	1	1	2	3	2.5
7. Effective interventions are known and available	1.5	1.5	3	4	2	2	2	1	2	2.5	3
8. Degree of "opportunity gap" between available preventative benefit and what is happening)	1	2	2.5	2.5	2.5	2.5	2.5	1.5	2.5	3	3
9. Potential for cost savings	1.5	1	1	1	3	3	2	3	3	3	4
10. Trending- issue is getting worse (historic analysis of data) and is anticipated continue to get worse if nothing is done.	1	1	2	2	3	2.5	3	3	3	3.5	4
Total score	**16**	**19**	**20.5**	**24**	**26**	**26.5**	**26.5**	**27.5**	**30**	**30.5**	**34**
Priority Ranking	**1**	**2**	**3**	**4**	**5**	**6**	**6**	**7**	**8**	**9**	**10**

Although very different approaches were employed to consider priority injury causes from a quantitative and qualitative perspective, it is interesting that the same injury causes emerged as the top 4 priorities. Table 20 shows the ordering of the top 4 causes from both the quantitative and qualitative approaches. There is concordance with falls being the top priority injury to address. The order of suicide and motor vehicle traffic is reversed, but they both come 2nd and 3rd, and violence comes 4th in both approaches.

Table 20: Overall top four injury priority causes

Cause	Quantitative Rank	Cause	Qualitative Rank
Falls	1	Falls	1
Suicide	2	Motor vehicle/traffic	2
Motor vehicle/traffic	3	Suicide	3
Violence	4	Violence	4

The remainder of this chapter will provide a more detailed description of each of the above top 4 priority injury causes for prevention planning purposes.

Fall Injury

This section examines fall injury in further detail. In this section only, all fall injuries including E887, fracture, cause unspecified are examined collectively (ICD-9 E-codes: E881 to E889).

Overview of Fall Injury Deaths

For the period of 1990 to 1999, there were 536 injury deaths due to falls, or an average of about 54 per year. This includes all types of falls and *fractures, cause unspecified*. Slightly more females (278) than males (258), died as a result of a fall-related injury in the WHR (52% and 48%, respectively).

More male residents died from a fall-related injury at the younger adult ages (25 through 74 years of age). More females died from fall-related injury in the oldest age groups of 75 through 85+ years of age. Most fall deaths occurred in older age, with 458 deaths (85%) being adults 65 years and older

Fortunately, fall-related deaths appear rare for children and youth in the WHR. During this period of time, the total number of fall-related deaths for those under the age of 25 years was seven.

Figure 38: Fall Injury Death by Sex in the Winnipeg Health Region, 1990-1999

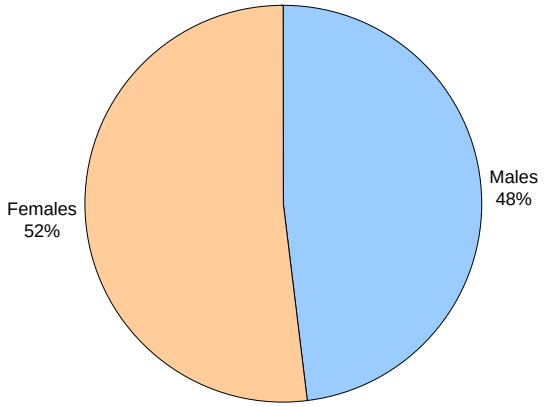
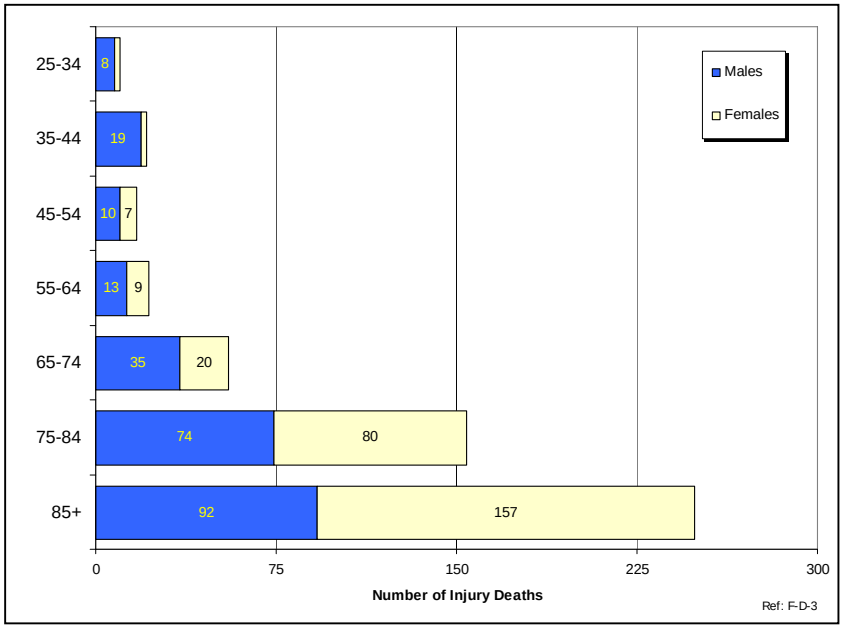


Figure 39: Fall Injury Death by Age-Sex Group, 25 Years of Age and Older, in the Winnipeg Health Region, 1990-1999



Fall Injury Death by Community Area

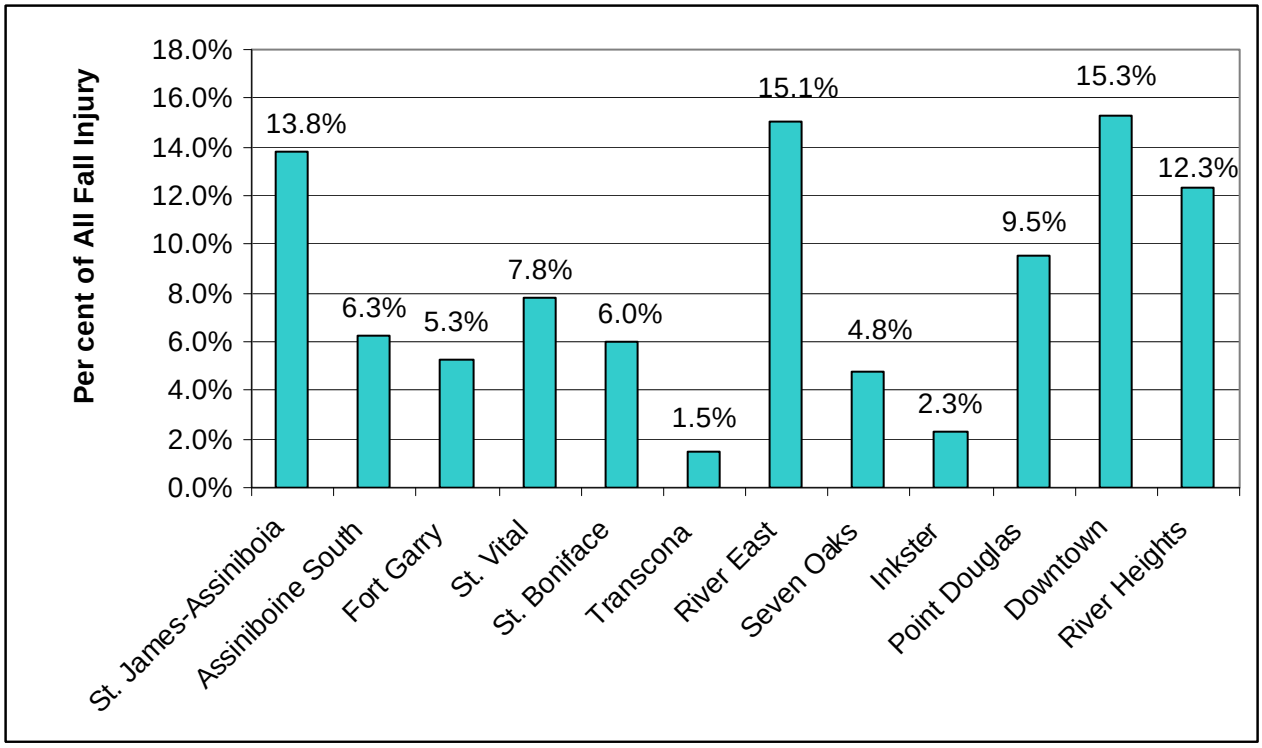
The distribution of fall injury deaths among the community areas is shown in Figure 40. In general, the absolute number of fall injury deaths is proportional to population size of the respective community areas. In other words, the community areas with smaller populations tend to contribute a smaller percentage of all fall injury deaths to the total for the WHR (an example of this is the Transcona community area).

Conversely, the community areas with larger populations, such as Downtown and River East, tend to contribute a higher percentage of all fall injury deaths.

These data are presented here so that the absolute magnitude of the injury death problem can be seen by community area. However, more detail on the crude and age-adjusted rates of fall deaths by community area can be found in Chapter 8, Injury by Community Area later in this report.

There is wide variation in the crude rates of fall injury death between all of the twelve community areas. Approximately half of the community areas had rates that were higher than that for the WHR and half were lower. However, two community areas stand out with very high rates; these are St. James-Assiniboia and Point Douglas.

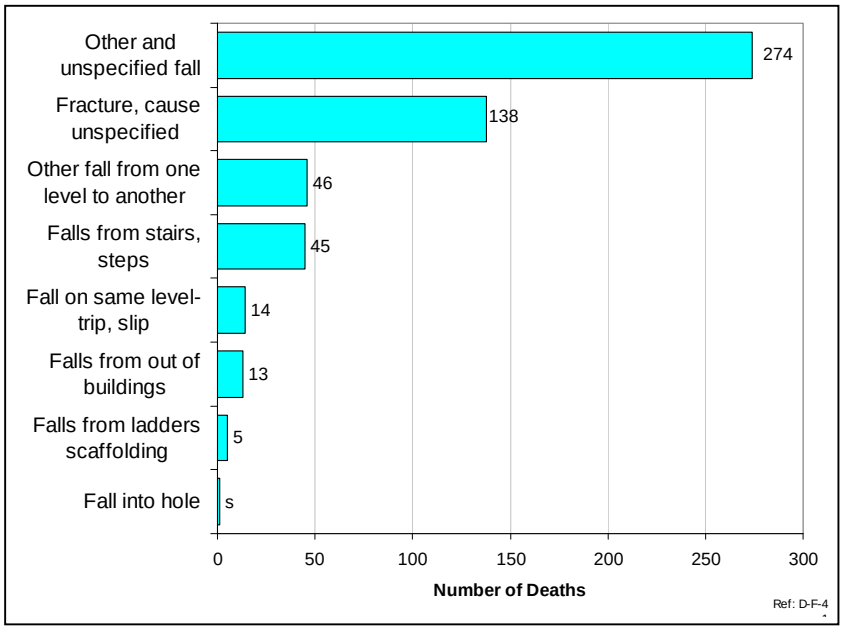
Figure 40: Fall Injury Death-Per cent Distribution by Community Area in the Winnipeg Health Region, 1990-1999



Fall Injury Death by Mechanism

Unfortunately, over 75% of fall deaths are coded to non-specific mechanisms that are not informative for the purpose of prevention. The largest number of fall injury deaths occur in the category of o*ther and unspecified fall* (n=274), followed by *fracture, cause unspecified* (n=138). This identifies coding challenges in the registration of deaths that requires improvement. Falls from one level to another and from stair or steps are the leading fall mechanisms identified that can be addressed through prevention.

Figure 41: Fall Injury Death by Mechanism for Residents of All Ages in the Winnipeg Health Region, 1990-1999



Please note that 's' denotes a suppressed value of less than five events.

Table 21: Fall Injury Death by Mechanism for Residents of All Ages in the Winnipeg Health Region, 1990-1999

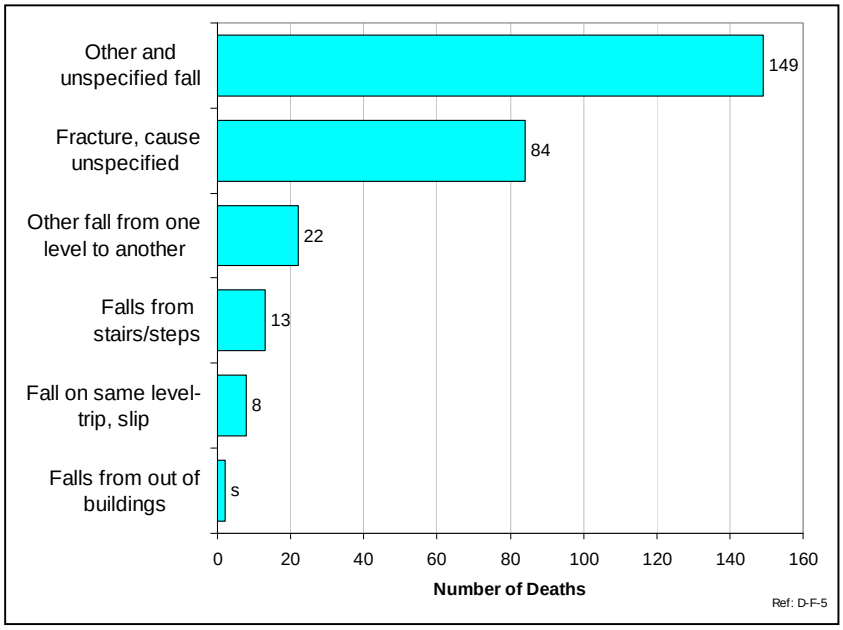
ICD-9 Code	Mechanism or Cause	Both Sexes		Females		Males	
		Number of Deaths	Rate per 100 000	Number of Deaths	Rate per 100 000	Number of Deaths	Rate per 100 000
E880	Fall from stairs, steps	45	0.7	13	0.4	32	1.0
E881	Fall from ladders, scaffolding	5	0.1	0	0.0	5	0.2
E882	Fall from out of buildings	13	0.2	s	s	11	0.4
E883	Fall into hole	s	s	0	0.0	s	s
E884	Other fall from one level to another	46	0.7	22	0.7	24	0.8
E884.0	Fall from playground equipment	0	0.0	0	0.0	0	0.0
E884.2	Fall from chair or bed	32	0.5	19	0.6	13	0.4
E884.3-.6	Fall from: wheelchair, bed, other	14	0.2	s	s	11	0.4
E885	Fall on same level- trip, slip	14	0.2	8	0.2	6	0.2
E886	Fall on same level- with collision	0	0.0	0	0.0	0	0.0
E887	Fracture, cause unspecified	138	2.2	84	2.6	54	1.7
E888	Other and unspecified fall	274	4.3	149	4.5	125	4.0
	All Injury	**536**	**8.4**	**278**	**8.4**	**258**	**8.3**

Please note that ICD-9 codes E884.0, E884.2 and E884.3-.6 are sub-categories of E884. Also, E884.3-0.6 includes falls from wheelchair, bed, other furniture, or commode.

Fall Injury Death by Mechanism - Females

Aside from o*ther and unspecified fall*. and *fracture, cause unspecified,* the largest number of fall injury deaths among female residents occurred in the category of *other fall from one level to another*, followed by *fall from stairs, steps*.

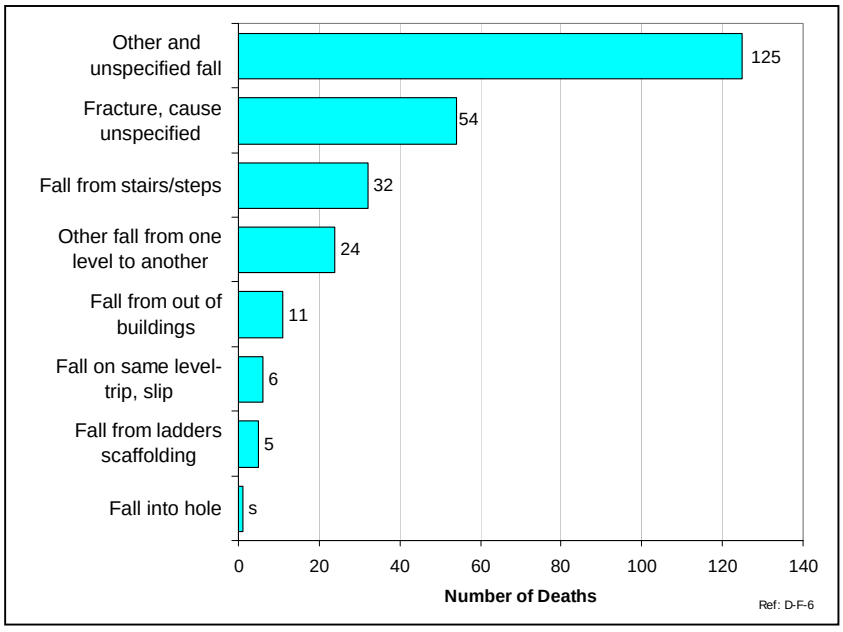
Figure 42: Fall Injury Death by Cause for Female Residents of the Winnipeg Health Region, 1990-1999



Fall Injury Death by Mechanism - Males

Aside from o*ther and unspecified fall*. and *fracture, cause unspecified ,t*he largest number of fall injury deaths among male residents occurred in the category of *fall from stairs, steps*, followed by *other fall from one level to another.*

Figure 43: Fall Injury Death by Cause for Male Residents of the Winnipeg Health Region, 1990-1999



Fall Injury Death by Mechanism-Older Adults

The majority of fall deaths (458 out of a total of 536, or 85%), occurred in adults 65 years or older. The number and rate of fall deaths increases dramatically with older age, as can be seen in Table 22. Of adults 65 years and older 12% of fall deaths occurred in the 65-74 age range, 34% in the 75-84 range, and nearly 54% among those 85 years and older. Considering fall deaths across all ages, the proportions are 10% (65-74), 29% (75-84) and 47% (85+). Therefore, fall mortality is predominantly a health threat affecting older seniors, with 75% of all fall deaths occurring in those 75 years or older.

The mechanism of fatal falls seems to shift with advancing age.

Other than the non-specific categories of o*ther and unspecified fall* and *fracture, cause unspecified*, younger seniors (65-74) most commonly fall from stairs/steps, and less frequently from one level to another. Older seniors (75-84) still fall from stairs/steps, but falls from one level to another increases, particularly falls from a chair or bed. The oldest seniors (85 and older) most commonly fall from a chair or bed. This trend likely reflects declining mobility and changing exposures with advancing age. While this information may be useful in targeting preventative interventions across the ages, better capture of fall mechanism is urgently needed to describe the risk circumstances currently missing for most fall deaths.

Table 22: Fall Injury Death by Cause for Older Adult Residents, 65 Years of Age and Older, of the Winnipeg Health Region, 1990-1999

		65-74		75-84		85+	
ICD-9 Code	Mechanism or Cause	Number of Deaths	Rate per 100 000	Number of Deaths	Rate per 100 000	Number of Deaths	Rate per 100 000
E880	Falls from stairs/steps	12	2.6	9	3.1	5	5.5
E881	Falls from ladders scaffolding	s	s	0	0.0	0	0.0
E882	Falls from out of buildings	0	0.0	s	s	0	0.0
E883	Fall into hole	0	0.0	0	0.0	0	0.00
E884	Other fall from one level to another	6	1.3	8	2.8	20	22.0
E884.0	Fall from playground equipment	0	0.0	0	0.0	0	0.0
E884.2	Fall from chair or bed	s	s	6	2.1	20	22.0
E884.3-.6	Fall from: wheelchair, bed, other	s	s	s	s	0	0.0
E885	Fall on same level- trip, slip	s	s	5	1.7	5	5.5
E886	Fall on same level- with collision	0	0.0	0	0.0	0	0.0
E887	Fracture, cause unspecified	10	2.1	41	14.2	81	88.9
E888	Other and unspecified fall	21	4.5	90	31.2	138	151.5
	All Injury	55	11.8	154	80.1	249	273.4

Overview of Fall Injury Hospitalization

For the period of 1994 to 2003, there were 25,488 hospitalizations for fall injuries among WHR residents, an average of 2,549 per year. This includes all fall types and *fractures, cause unspecified*. More females than males received in-hospital treatment following a fall-related injury (64% and 36%, respectively). In actual numbers, there were 16, 382 fall-related hospitalizations among females and 9,106 among males. There is a bigger sex difference for fall hospitalizations (1.8 females per male) than fall deaths (1.1 female per male). There are close to 50 fall hospitalizations for every fall death.

Figure 44 shows that older adults were treated in-hospital for fall-related injuries more often than those in the younger age groups. Female residents 65 years of age and older accounted for 12,829 fall hospitalizations, or about half of all fall hospitalizations during this period. Also of note is a small peak that occurs during childhood between the ages of 5-14. This age group, together with older adults, represent the groups most likely to benefit from falls prevention efforts.

Figure 44: Fall Injury Hospitalization by Sex, Winnipeg Health Region, 1994-2003

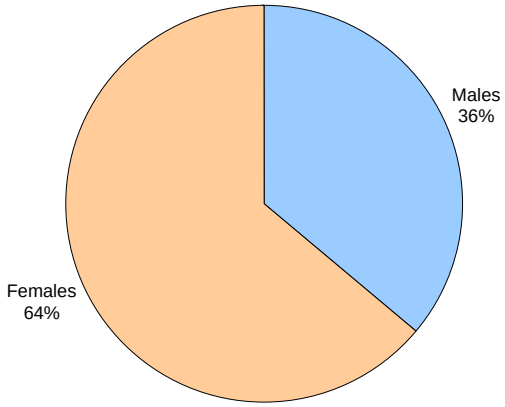
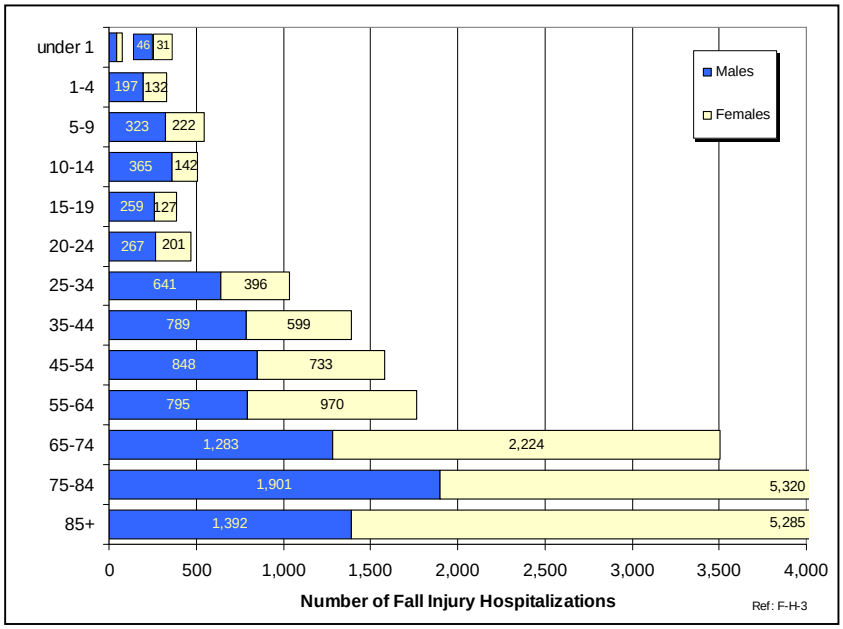


Figure 45: Fall Injury Hospitalization by Age-Sex Group, Winnipeg Health Region, 1994-2003



Please note that the number of hospitalizations for the 75-84 and 85+ age groups exceeds the scale on the above graph.

Fall Injury Hospitalization by Community Area

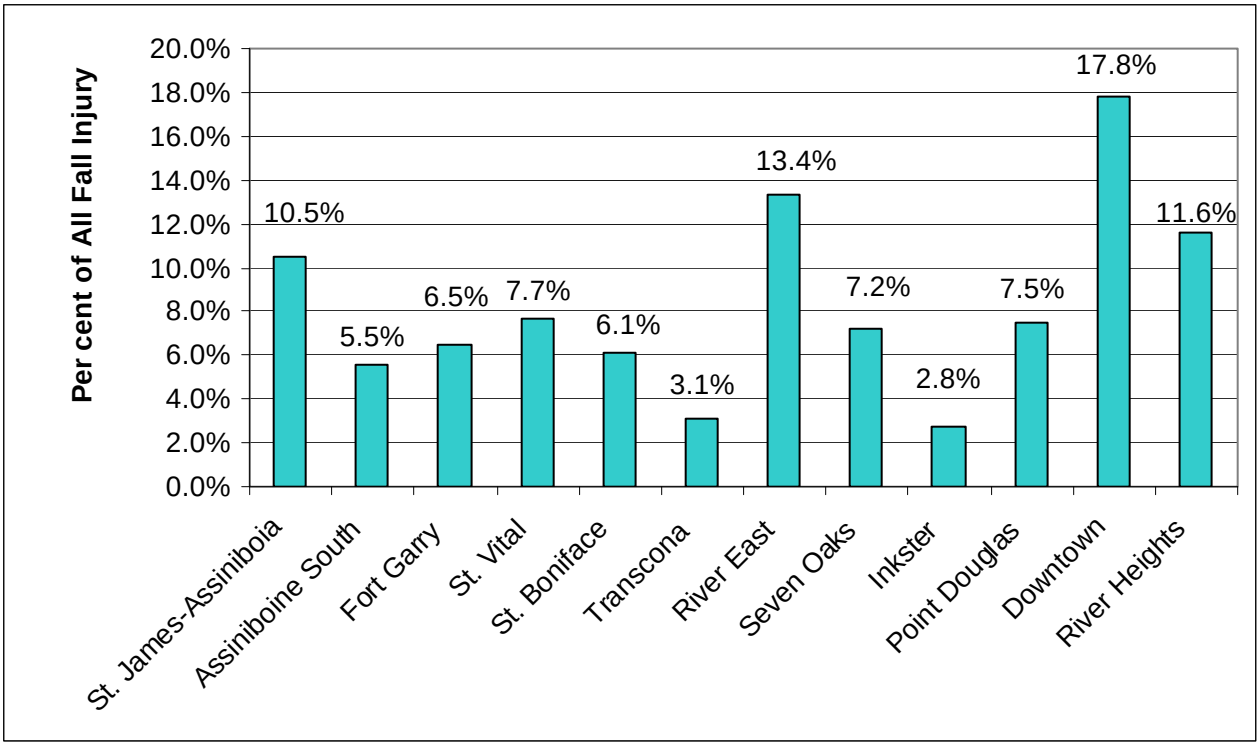
In general, the absolute number of fall injury hospitalizations is proportional to population size of the respective community areas. In other words, the community areas with smaller populations tend to contribute a smaller percentage of all fall injury hospitalizations to the total for the WHR (an example of this is the Transcona community area).

Conversely, the community areas with larger populations, such as Downtown and River East, tend to contribute a higher percentage of all fall injury hospitalizations.

These data are presented here so that the absolute magnitude of the injury hospitalization problem can be seen by community area. However, more detail on the crude and age-adjusted rates of fall hospitalizations by community area can be found in Chapter 8, Injury by Community Area later in this report.

There is wide variation in the crude rates of fall injury hospitalization between all of the twelve community areas. Eight of the twelve community areas had crude rates that were equal to or lower than that for the WHR. The two community areas with the highest rates were River Heights and Downtown.

Figure 46: Fall Injury Hospitalization Per Cent Distribution by Community Area in the Winnipeg Health Region, 1994-2003



Fall Injury Hospitalization by Mechanism

Unfortunately, over 40% of fall hospitalizations are coded to non-specific mechanisms indicating coding challenges that require improvement. *Falling on the same level (slip/trip)* is the leading fall mechanism identified that can be addressed through prevention. *Other falls from one level to another and falls from stairs, steps* are also common mechanisms. This contrasts with fall deaths where *falls from one level to another* (o*ther and from stairs/steps*) were the most common, while deaths from slip/trips were uncommon. Of note in Table 23 is cluster of 281 hospitalizations for falls from playground equipment. Given that falls are so much more common in older adults than children, and that most mechanisms include multiple different risk situations, this cluster of a single type of fall injury in childhood highlights an important opportunity for prevention.

Figure 47: Fall Injury Hospitalization by Mechanism in the Winnipeg Health Region, All Ages, Both Sexes, 1994-2003

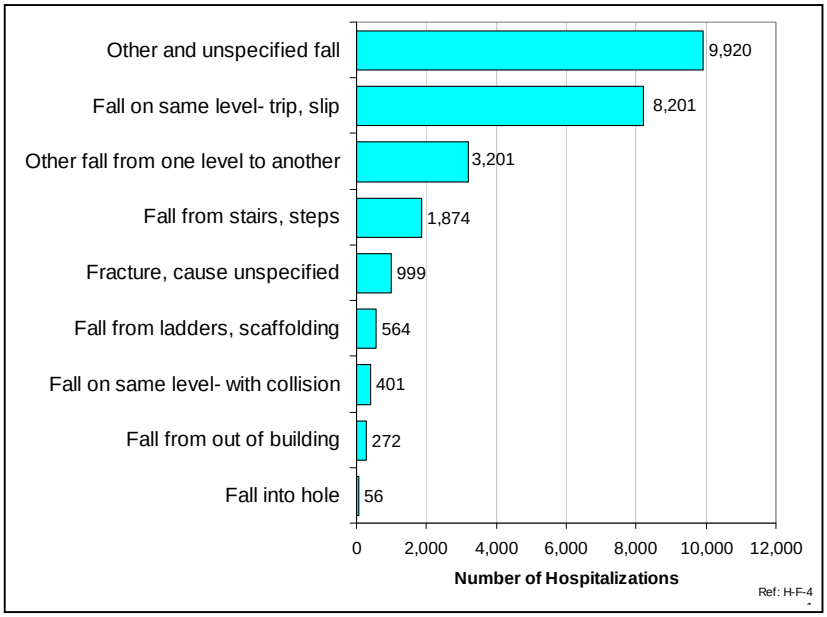


Table 23: Fall Injury Hospitalization by Mechanism in the Winnipeg Health Region, All Ages, Both Sexes, 1994-2003

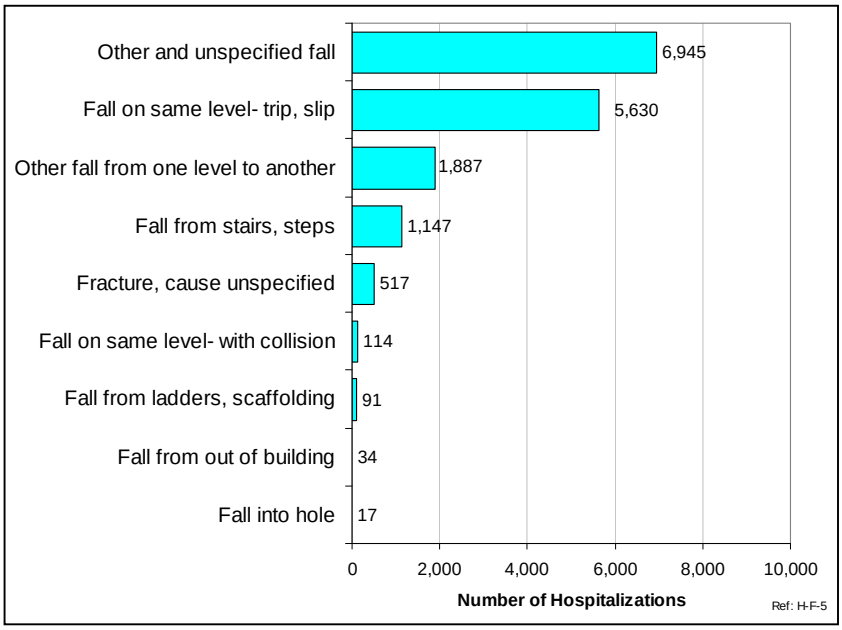
ICD-9 Code	Mechanism or Cause	Both Sexes		Females		Males	
		Number of Events	Rate per 100 000	Number of Events	Rate per 100 000	Number of Events	Rate per 100 000
E880	Falls from stairs/steps	1874	28.7	1147	34.2	727	23.0
E881	Falls from ladders scaffolding	564	8.7	91	2.7	473	14.9
E882	Falls from out of buildings	272	4.2	34	1.0	238	7.5
E883	Fall into hole	56	0.9	17	0.5	39	1.2
E884	Other fall from one level to another	3201	49.1	1887	56.3	1314	41.5
E884.0	Fall from playground equipment	281	4.3	124	3.7	157	5.0
E884.2	Fall from chair or bed	719	11.0	497	14.8	222	7.0
E884.3-.6	Fall from: wheelchair, bed, other	2201	33.8	1266	37.8	935	29.5
E885	Fall on same level- trip, slip	8201	125.8	5630	167.9	2571	81.2
E886	Fall on same level- with collision	401	6.2	114	3.4	287	9.1
E887	Fracture, cause unspecified	999	15.3	517	15.4	482	15.2
E888	Other and unspecified fall	9920	152.2	6945	207.1	2975	94.0
	All Injury	**25488**	**391.0**	**16382**	**488.6**	**9106**	**287.6**

Fall Injury Hospitalization by Mechanism - Females

For female residents, aside from the *other* category, the largest number of falls can be attributed to *fall on same level- trip, slip*. This is followed by *other fall, from one level to another.*

Females tend to have greater numbers of falls than males do for the two leading causes of falls, and also for *fall from stairs or steps, from chair or bed*, and *fracture, cause unspecified*.

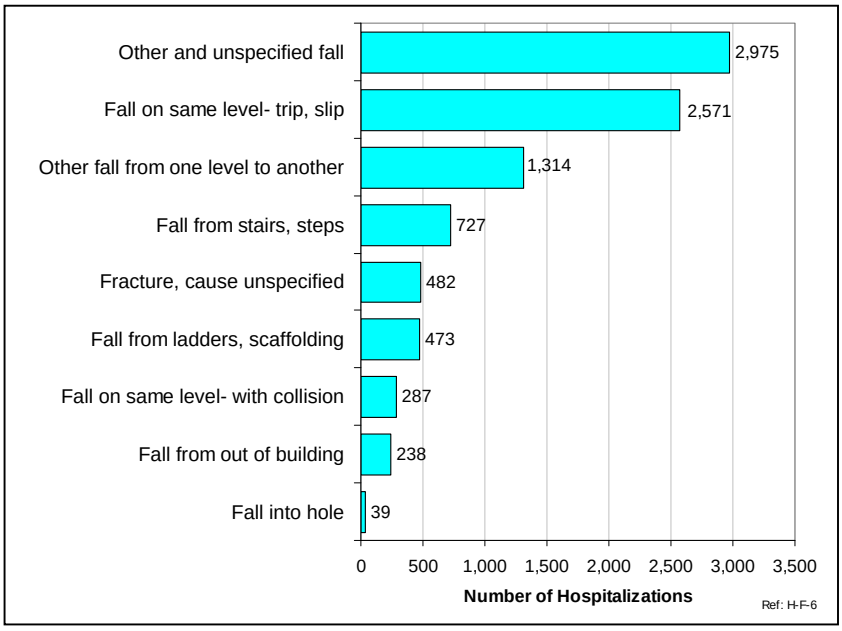
Figure 48: Fall Injury Hospitalization by Mechanism for Female Residents of the Winnipeg Health Region, All Ages, Both Sexes, 1994-2003



Fall Injury Hospitalization by Mechanism - Males

For male residents, the largest number of falls can also be attributed to *fall on same level- trip, slip*, followed by *other fall, from one level to another*. Males tend to have greater numbers of falls than females for *fall from ladders or scaffolding*, *out of buildings, and into holes,* possibly related to different workplace and home exposures. Males also have more falls *from playground equipment* (most common in boys in the 5-9 age range), and *fall with collisions*, which may be related to higher participation than females in sports.

Figure 49: Fall Injury Hospitalization by Mechanism for Male Residents of the Winnipeg Health Region, All Ages, Both Sexes, 1994-2003



Fall Injury Hospitalization by Mechanism-Children

For children under 1, o*ther fall from one level to another was* the most commonly occurring cause of fall injury, mostly within the miscellaneous "other" subcategory. This likely relates to immobile infants falling from a variety of locations where they are placed by adults, as well as the climbing of early mobility. Both children under 1 and toddlers aged 1- 4 years also have a high rate of falls from stairs and steps, emphasizing the potential protective benefit of baby gates.

The most common mechanism of fall for toddlers age 1-4 is *other fall from one level to another*, including falls from chairs, beds and other miscellaneous locations. This likely relates to learning to mobilize at this stage of development and exploration in the home environment resulting in common home injuries in this age group. Falls from playground equipment starts to appear as a significant mechanism in the 1-4 age range as well.

Childhood falls peak in the 5-9 year age group. This is mostly due to the large number of falls from playground equipment which is the highest in this age category. Playground falls accounted for 180 injury hospitalizations for 5-9 year olds, which explains fully one third of all fall hospitalizations in this age group. Other miscellaneous *fall from one level to another* is also prominent in this age group, and falls on same level-trip, slip starts to increase.

For older children, 10 to 14 years of age, the majority of fall hospitalizations were due to *fall on same level-trip, slip* which together with fall on same level with collision likely relates to a large degree with sports injuries. O*ther fall from one level to another* also remains fairly common, likely within a wide variety of settings.

Table 24: Fall Injury Hospitalizations by Cause of Fall for Children of the Winnipeg Health Region, 1994-2003

		under 1		1-4		5-9		10-14	
ICD-9 Code	Mechanism or Cause	Number of Events	Rate per 100 000	Number of Events	Rate per 100 000	Number of Events	Rate per 100 000	Number of Events	Rate per 100 000
E880	Fall from stairs, steps	9	11.4	35	10.5	27	6.2	22	5.2
E881	Fall from ladders, scaffolding	0	0.0	s	s	s	s	s	s
E882	Fall from out of building	0	0.0	17	5.1	13	3.0	15	3.5
E883	Fall into hole	0	0.0	s	s	s	s	s	s
E884	Other fall from one level to another	46	58.1	185	55.6	350	80.8	140	33.1
E884.0	Fall from playground equipment	0	0.0	54	16.2	180	41.5	34	8.0
E884.2	Fall from chair or bed	9	11.4	34	10.2	13	3.0	s	s
E884.3-.6	Fall from: wheelchair, bed, other	37	46.7	97	29.1	157	36.2	103	24.3
E885	Fall on same level- trip, slip	s	s	42	12.6	71	16.4	172	40.6
E886	Fall on same level- with collision	s	s	8	2.4	24	5.5	72	17.0
E887	Fracture, cause unspecified	12	15.1	17	5.1	27	6.2	28	6.6
E888	Other and unspecified fall	6	7.6	23	6.9	30	6.9	51	12.1

Please note that 's' denotes a suppressed value of less than five events

Fall Injury Hospitalization by Mechanisms -Youth and Young Adults

Fall on same level- trip, slip was the most commonly occurring cause of fall injury among both youth (15 to 19 years of age) and young adults (20 to 24 years of age). For youth the second most common cause of fall injury was *fall on same level- with collision*. Sports injuries probably factor heavily into both of these types of falls.

For young adults, the second most common cause was *other and unspecified fall* followed by *fracture, cause unspecified,* neither of which is informative from a prevention perspective. The next two causes were *other falls from one level to another* (mostly miscellaneous) and *falls from stairs/steps*.

Table 25: Fall Injury Hospitalizations by Mechanism of Fall for Youth and Young Adults of the Winnipeg Health Region, 1994-2003

ICD-9 Code	Mechanism or Cause	15-19		20-24	
		Number of Events	Rate per 100 000	Number of Events	Rate per 100 000
E880	Falls from stairs/steps	26	6.2	45	10.0
E881	Falls from ladders scaffolding	s	s	10	2.2
E882	Falls from out of buildings	11	2.6	36	8.0
E883	Fall into hole	6	1.44	11	2.4
E884	Other fall from one level to another	42	10.1	49	10.9
E884.0	Fall from playground equipment	s	s	s	s
E884.2	Fall from chair or bed	s	s	7	1.6
E884.3-.6	Fall from: wheelchair, bed, other	35	8.4	38	8.4
E885	Fall on same level- trip, slip	128	30.7	145	32.2
E886	Fall on same level with collision	79	19.0	32	7.1
E887	Fracture, cause unspecified	41	9.8	60	13.3
E888	Other and unspecified fall	49	11.8	80	17.8

Please note that 's' denotes a suppressed value of less than five events

Fall Injury Hospitalization by Mechanism -Older Adults

As noted earlier in this report, older adults make up a large proportion of those who experience fall injuries, requiring in-patient hospital treatment. Although it should be noted that the numbers of falls in the non-specific categories of *other and unspecified fall* are substantially higher among older adults than in the other age groups, the non-specific nature of these categories is not conducive for targeting injury prevention efforts.

Aside from the non-specific categories then, the most common mechanism of fall by far is *fall on same level- trip, slip:* common to all three of the older adult age groups. The incidence of this type of fall increases dramatically with advancing age. It suggests falls during routine activities of daily living in the home and community. This helps to target interventions to the daily routines of older adults.

All mechanisms of fall increase with age except falls from ladders/scaffolding, falls out of buildings, and falls into holes. This likely indicates less exposure to these activities through work or chores with advancing age.

Other falls from other one level to another (particularly the miscellaneous ones) and falls from stairs/steps are important fall mechanisms that also increase with age.

Table 26: Fall Injury Hospitalizations by Mechanism for Older Adults of the Winnipeg Health Region, 1994-2003

ICD-9 Code	Mechanism or Cause	65-74		75-84		85+	
		Number of Events	Rate per 100 000	Number of Events	Rate per 100 000	Number of Events	Rate per 100 000
E880	Fall from stairs, steps	327	70.4	428	133.9	185	167.7
E881	Fall from ladders, scaffolding	93	20.0	41	12.8	14	12.7
E882	Fall from out of building	12	2.6	s	s	s	s
E883	Fall into hole	5	1.1	s	s	s	s
E884	Other fall from one level to another	332	71.5	813	254.4	695	630.0
E884.0	Fall from playground equipment	0	0.0	0	0.0	0	0.0
E884.2	Fall from chair or bed	102	22.0	254	79.5	214	194.0
E884.3-.6	Fall from: wheelchair, bed, other	230	49.5	559	174.9	481	436.0
E885	Fall on same level- trip, slip	1245	268.1	2322	726.7	1928	1747.6
E886	Fall on same level- with collision	15	3.2	18	5.6	15	13.6
E887	Fracture, cause unspecified	128	27.6	210	65.7	149	135.1
E888	Other and unspecified fall	1350	290.8	3384	1059.1	3689	3343.8

Please note that 's' denotes a suppressed value of less than five events

One of the notable things about fall hospitalizations to recall from Chapter 5 (see Chapter 5, Figure 31) is the very long average length of stay of 33 days. This likely relates to older adults injured by falling taking longer to recover and often needing alternative housing arrangements upon discharge. This warrants further exploration and monitoring, as considerable cost savings are possible in this area.

Suicide and Self-inflicted Injury

This section examines suicide and self-inflicted injury in detail. Note that "suicide" is the term used here for cases of self-inflicted harm that resulted in death and "self-inflicted" is the term used for non-lethal cases of harm to one's self which required in-patient hospital treatment (hospitalization). We have not used the term "suicide attempt" in recognition that not all self-harm occurs with the intention to end life.

Overview of Suicide Deaths

For the period of 1990 to 1999, many more males than females died as a result of a suicide injury in the WHR (74% and 26%, respectively). There were 500 suicide deaths among males and 175 among females, for a total of 675 deaths, or an average of 68 per year (i.e. one death every 5-6 days). This resulted in a rate of 11 suicide deaths per 100 000 population during this period.

The largest number of suicide deaths overall occurs in the 35 to 44 year old age group. This is also the age group with the highest number of male suicide deaths. For females, the peak age occurs younger in the 25-34 year old age group.

Although it appears to be a rare for children to die due to suicide, it occurs in small numbers in the 10-14 year old age range, and unfortunately it is not uncommon in the 15-19 age group.
Please note that 's' denotes a suppressed value of less than five events

Figure 50: Suicide by Sex in the Winnipeg Health Region, 1990-1999

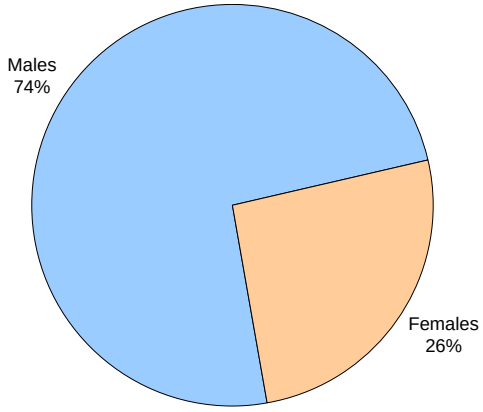
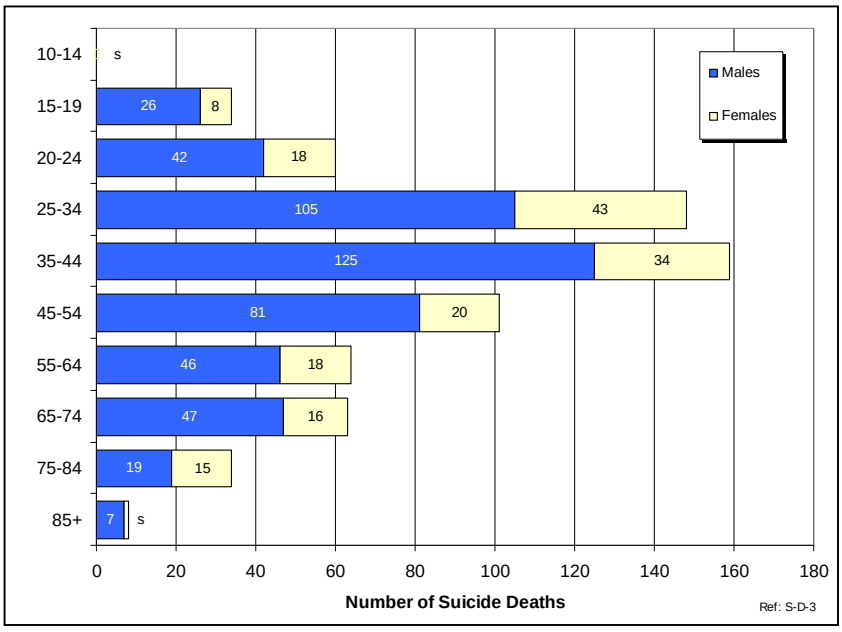


Figure 51: Self-inflicted Injury Death by Age-Sex Group, Winnipeg Health Region, 1990-1999



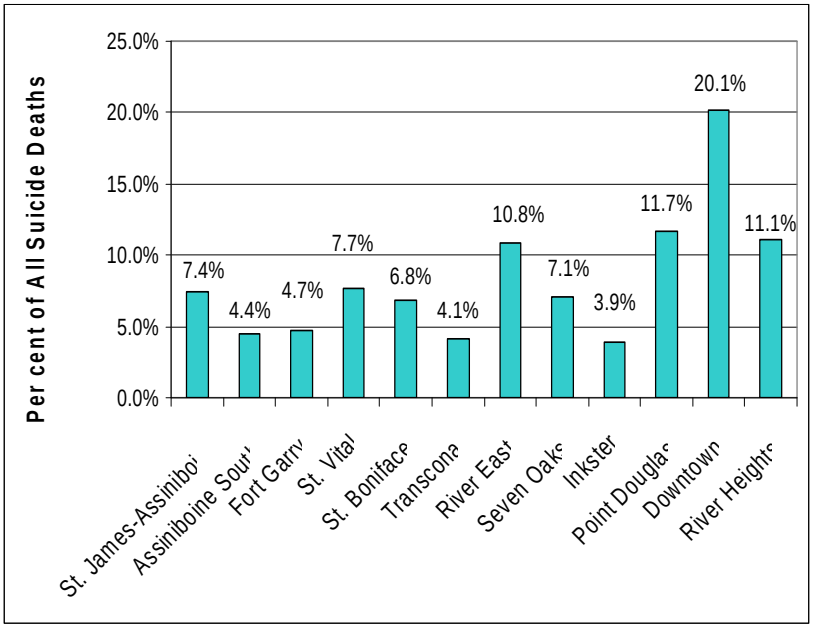
Suicide Deaths by Community Area

In general, the distribution of *suicide* deaths is proportional to the population size of the respective community areas. In other words, the community areas with smaller populations tend to contribute a smaller percentage of *suicide deaths* to the total for the WHR (an example of this is the Transcona community area).

These data are presented here so that the absolute magnitude of the injury death problem can be seen by community area. However, more detail on the crude and age-adjusted rates of suicide deaths by community area can be found in Chapter 8, Injury by Community Area later in this report.

Although there is a large difference between the lowest and highest rates of suicide, the majority of community areas (nine of the twelve) had rates that were similar to or lower than the WHR rate. However, two community areas stand out with extremely high rates: Downtown and Point Douglas. River Heights also had a crude rate that was higher than that of the WHR, but after age-adjusting the rates, the rate in this community area no longer stood out from the rest.

Figure 52: Suicide Death – Percent Distribution by Community Area in the Winnipeg Health Region, 1994 - 2003



Are suicides under-counted in the Winnipeg Health Region?

A recent comparison of data from Manitoba Vital Statistics and Manitoba Justice showed that on average, there was an undercount of an average of 12 suicide deaths per year in the WHR, between 2000 and 2002. The difficulty in ascertainment of suicide as the cause of death should be taken into account when reviewing suicide data.

It may of interest to also examine deaths of undetermined intent with suicide data in order to develop a complete picture of the burden of suicide.

Suicide Deaths by Mechanism of Injury

The leading mechanism of suicide death was *suffocation*, with 257 deaths, the majority of which (250) were by hanging. This is followed by *poisoning* (mostly by use of medication) and *firearms* with 231 and 109 deaths, respectively.

The causes shown in figure 53 represent 98.5% of all suicide deaths in the WHR during this period. More detail is provided in Table 27.

Figure 53: Leading Mechanisms of Suicide Deaths for Residents of the Winnipeg Health Region, Both Sexes, All Ages, 1990-1999

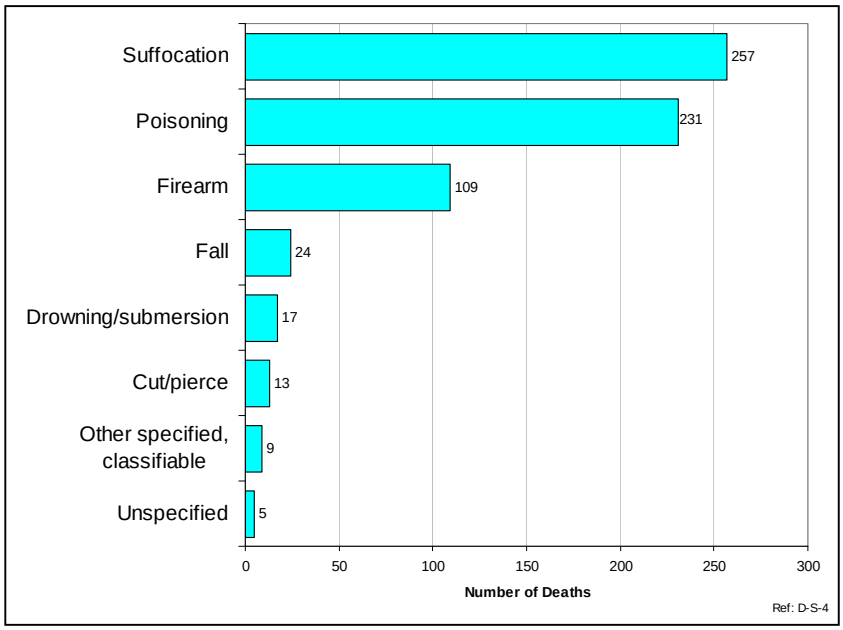


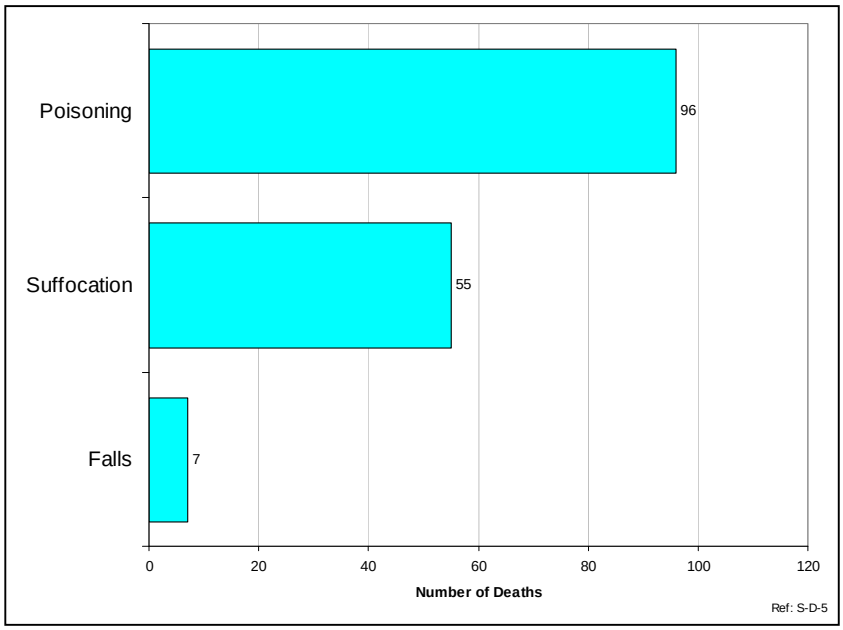
Table 27: Mechanisms of Suicide Deaths for Residents of the Winnipeg Health Region, 1990-1999

Mechanism or Cause	Both Sexes		Females		Males	
	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Cut/pierce	13	0.2	s	s	9	0.3
Drowning/submersion	17	0.3	s	s	13	0.4
Fall	24	0.4	7	0.2	17	0.5
Fire/burn	s	s	s	s	s	s
Fire/flame	s	s	s	s	s	s
Hot object/substance	0	0.0	0	0.0	0	0.0
Firearm	109	1.7	s	s	105	3.4
Motor vehicle traffic	s	s	0	0.0	s	s
Transport, other	0	0.0	0	0.0	0	0.0
Natural/environmental	0	0.0	0	0.0	0	0.0
Excessive cold	0	0	0	0.0	0	0.0
Poisoning	231	3.6	96	2.9	135	4.3
Medication	117	1.8	78	2.4	39	1.3
Motor vehicle exhaust	77	1.2	11	0.3	66	2.1
Other carbon monoxide	25	0.4	s	s	21	0.7
Suffocation	257	4.0	55	1.7	202	6.5
Suffocation, plastic bag	5	0.1	s	s	s	s
Hanging, not in bed or cradle	250	3.9	52	1.6	198	6.4
Other specified, classifiable	9	0.1	0	0.0	9	0.3
Other specified, NEC	s	s	0	0.0	s	s
Unspecified	5	0.1	s	s	s	s
Total	675	10.6	**175**	**5.3**	**500**	**16.1**

Suicide Deaths by Mechanism of Injury - Females

The leading mechanism of suicide death among females was *poisoning*, with 96 deaths (55%), the majority of which (over 80%) were by use of medication. This is followed by *suffocation* and *falls* with 55 (31%) and 7 (4%) deaths, respectively.

Figure 54: Leading Mechanisms of Suicide Death for Female Residents of the Winnipeg Health Region, 1990-1999

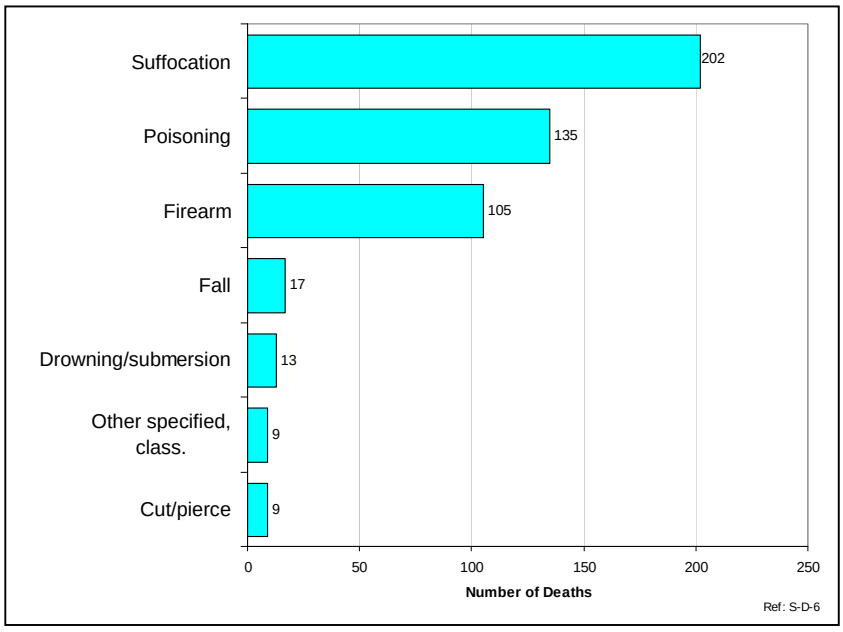


Suicide Deaths by Mechanism of Injury - Males

The leading cause of suicide death among males was *suffocation*, with 202 deaths (40%), the majority of which (98%) were by hanging. This is followed by *poisoning* and *firearms* with 135 (27%) and 105 (21%) deaths, respectively.

Note: Other specified class refers to other injury causes that are 'classifiable' but not shown in the data analysis.

Figure 55: Leading Mechanisms of Suicide Death for Male Residents of the Winnipeg Health Region, 1990-1999



Suicide Deaths by Mechanism of Injury Youth and Young Adults

Suffocation (hanging) was the leading cause of suicide death among youth and young adults (age-specific data are shown in Table 28.) The majority (nearly 60%) of suicide deaths for youth 15 to 19 years of age were also due to *suffocation* by hanging.
In contrast, for those 20-24 years of age, *suffocation* accounts for about half of all suicide deaths, followed by *poisoning* and *firearms*.
For young adults 25 to 34 years of age, *suffocation* (hanging) accounts for about one third of all suicide deaths, another third are due to *poisoning,* primarily by medication, followed by firearms.

Table 28: Mechanisms of Suicide Death for Youth and Young Adults, 15-34 Years of Age, in the Winnipeg Health Region, 1990-1999

	Age Group					
	15-19		20-24		25-34	
Mechanism or Cause	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Cut/pierce	0	0.0	s	s	7	0.6
Drowning/submersion	0	0.0	s	s	s	s
Fall	0	0.0	0	0.0	7	0.6
Fire/burn	s	s	0	0.0	s	s
Fire/flame	s	s	0	0.0	s	s
Hot object/substance	0	0.0	0	0.0	0	0.0
Firearm	6	1.5	11	2.3	20	1.8
Motor vehicle traffic	0	0.0	0	0.0	0	0.0
Transport, other	0	0.0	0	0.0	0	0.0
Natural/environmental	0	0.0	0	0.0	0	0.0
Excessive cold	0	0.0	0	0.0	0	0.0
Poisoning	6	1.5	13	2.8	51	4.7
Medication	s	s	5	1.1	26	2.4
Motor vehicle exhaust	s	s	7	1.5	17	1.6
Other carbon monoxide	0	0.0	s	s	s	s
Suffocation	20	4.8	33	7.0	57	5.3
Suffocation, plastic bag	0	0.0	0	0.0	s	s
Hanging, not in bed or cradle	20	4.8	32	6.8	56	5.2
Other specified, classifiable	s	s	0	0.0	s	s
Other specified, NEC	0	0.0	s	s	0	0.0
Unspecified	0	0.0	0	0.0	s	s
All injury	**34**	**8.2**	**60**	**12.8**	**148**	**13.7**

Suicide Deaths by Mechanism of Injury- Adults

Poisoning was the leading cause of suicide death among adults (age-specific data are shown in Table 29). Poisoning peaks in the 35 to 44 year old age group. The pattern of poisoning also differs between the age groups. Those 35 to 44 and 45-54 have more carbon monoxide-related deaths compared to those 25 to 34 years of age and those 55-64 years of age, although medication poisoning is still more common than carbon monoxide poisoning in all adult age groups other than the 45-54 years of age group.

Suffocation (hanging) follows closely as the second leading cause for those 35 to 44 and 45-54 years of age. In contrast, for those 55 to 64 years of age, *firearms was* the second leading cause followed closely by suffocation. Both are nearly equal to *poisoning by medication*.

Table 29: Mechanisms of Suicide Death for Adults, 35-64 Years of Age, in the Winnipeg Health Region, 1990-1999

	Age Group					
	35-44		**45-54**		**55-64**	
Mechanism or Cause	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Cut/pierce	s	s	0	0.0	0	0.0
Drowning/submersion	s	s	s	s	s	s
Fall	s	s	s	s	s	s
Fire/burn	s	s	s	s	0	0.0
Fire/flame	s	s	s	s	0	0.0
Hot object/substance	0	0.0	0	0.0	0	0.0
Firearm	21	2.0	17	2.3	15	2.9
Motor vehicle traffic	s	s	0	0.0	0	0.0
Transport, other	0	0.0	0	0.0	0	0.0
Natural/environmental	0	0.0	0	0.0	0	0.0
Excessive cold	0	0.0	0	0.0	0	0.0
Poisoning	62	6.0	39	5.2	27	5.2
Medication	31	3.0	15	2.0	15	2.9
Motor vehicle exhaust	21	2.0	16	2.1	6	1.1
Other carbon monoxide	9	0.9	7	0.9	s	s
Suffocation	58	5.6	37	5.0	14	2.7
Suffocation, plastic bag	s	s	s	s	0	0.0
Hanging, not in bed or cradle	57	5.5	36	4.8	13	2.5
Other specified, classifiable	s	s	0	0.0	0	0.0
Other specified, NEC	s	s	0	0.0	s	s
Unspecified	s	s	0	0.0	s	s
All injury	**159**	**15.3**	**101**	**13.5**	**64**	**12.2**

Suicide Deaths by Mechanism of Injury Older Adults

Suffocation (hanging) was the leading cause of suicide death among older adults 65-74 years of age. This was followed by *poisoning* and *firearms,* as the second and third leading causes. In contrast, for older seniors 75-84 years of age, *poisoning* was the leading cause of suicide death, followed by *suffocation* (hanging). In both older adult age groups poisoning was nearly entirely due to medication.

Table 30: Mechanisms of Suicide Death for Adults, 65-84 Years of Age, in the Winnipeg Health Region, 1990-1999

	Age Group			
	65-74		75-84	
Mechanism or Cause	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Cut/pierce	s	s	0	0.0
Drowning/submersion	s	s	s	s
Fall	s	s	s	s
Fire/burn	0	0.0	0	0.0
Fire/flame	0	0.0	0	0.0
Hot object/substance	0	0.0	0	0.0
Firearm	13	2.8	s	s
Motor vehicle traffic	0	0.0	0	0.0
Transport, other	0	0.0	0	0.0
Natural/environmental	0	0.0	0	0.0
Excessive cold	0	0.0	0	0.0
Poisoning	17	3.6	15	5.2
Medication	12	2.6	9	3.1
Motor vehicle exhaust	s	s	s	s
Other carbon monoxide	0	0.0	s	s
Suffocation	24	5.1	8	2.8
Suffocation, plastic bag	s	s	s	s
Hanging, not in bed or cradle	23	4.9	7	2.4
Other specified, classifiable	s	s	0	0.0
Other specified, NEC	0	0.0	0	0.0
Unspecified	s	s	0	0.0
All injury	**63**	**13.5**	**34**	**11.8**

Overview of Self-inflicted Injury Hospitalization

During the period of 1994 to 2003, many more female than male residents received in-patient hospital treatment for a self-inflicted injury. In actual numbers, there were 2,179 females of all ages, who received in-patient hospital treatment for a self-inflicted injury, while there were 1465 males.

The 25-34 year age group had the largest number of hospitalizations for self-inflicted injury with a total of 854. Of the age-sex groups represented here, females 35-44 years of age had the largest number of hospitalizations for self-inflicted injury at 460.

Hospitalization for self-inflicted injury occurs in the WHR at ages as young as 10-14 years, particularly among females. The numbers increase into the adult ages and peaks at 25-34 years then decreases in the older age groups.

Among females there are two notable peaks in self-inflicted injury: 15-19 years of age and 35-44 years of age. Among males, self-inflicted injury peaks once, at 25-34 years of age.

Figure 56: Self-inflicted Injury Hospitalization by Sex, Winnipeg Health Region, 1994-2003

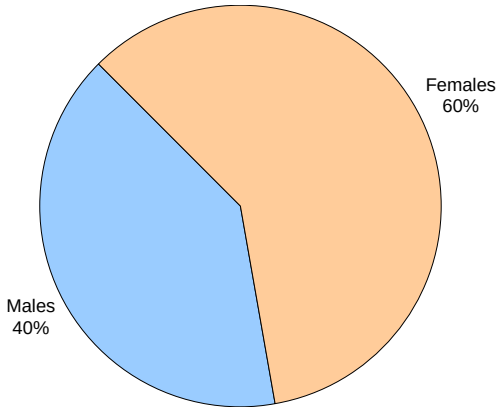
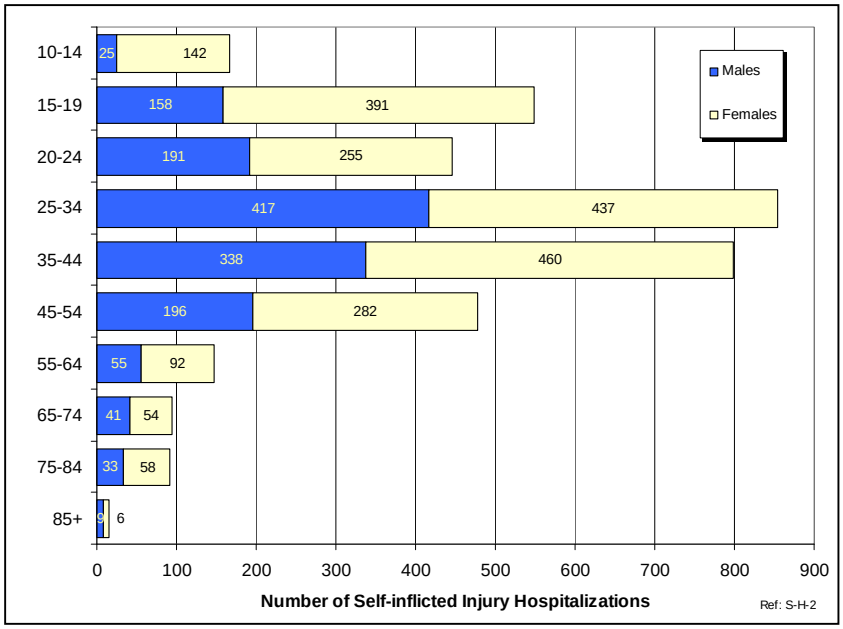


Figure 57: Self-inflicted Injury Hospitalization by Age-Sex Group, Winnipeg Health Region, 1994-2003



Self-inflicted Injury by Community Area

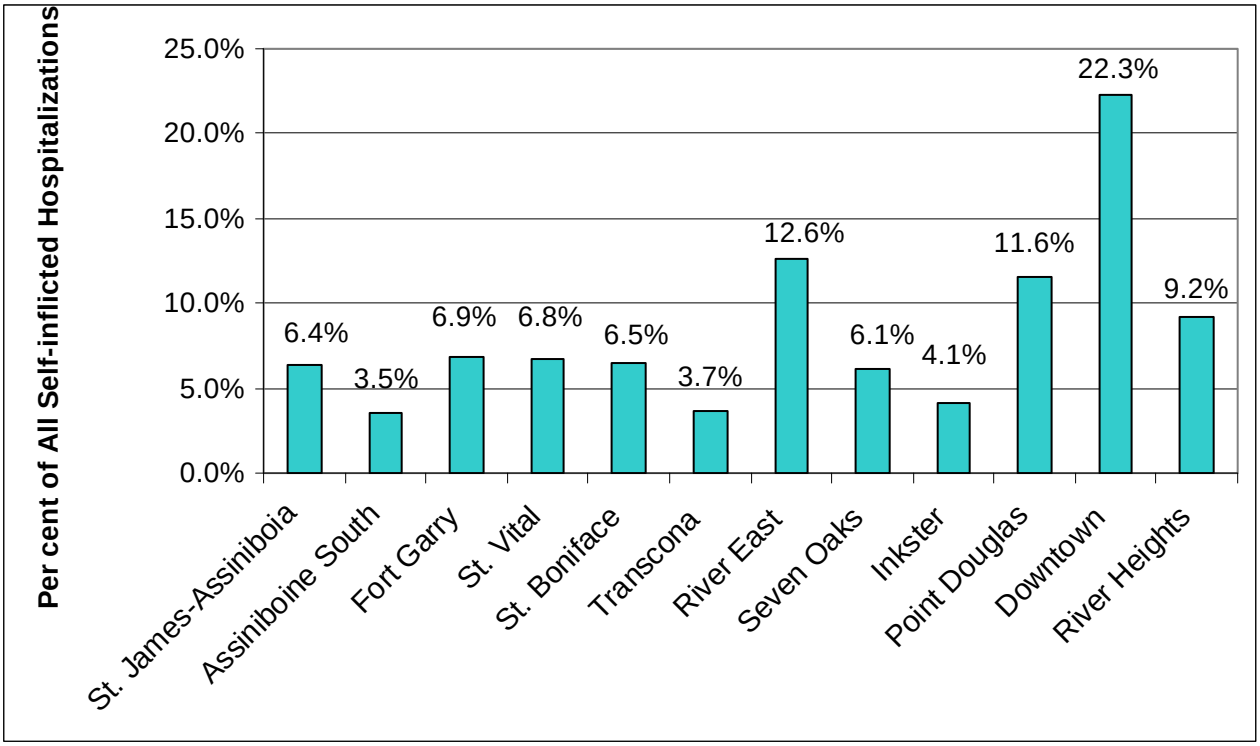
In general, the number of *self-inflicted* injury hospitalizations is proportional to population size of the respective community areas. In other words, the community areas with smaller populations tend to contribute a smaller percentage of *self-inflicted* injury hospitalizations to the total for the WHR (an example of this is the Transcona community area).

Conversely, the community areas with larger populations, such as Downtown and River East, tend to contribute a higher percentage.

These data are presented here so that the absolute magnitude of the injury hospitalization problem can be seen by community area. However, more detail on the crude and age-adjusted rates of self-inflicted injury hospitalization by community area can be found in Chapter 8, Injury by Community Area later in this report

Although there is a large difference between the lowest and highest crude rates of hospitalization for self-inflicted injury, the majority of community areas (ten of the twelve) had rates that were similar to or lower than the WHR rate. The two community areas with the highest crude rates were Point Douglas and Downtown.

Figure 58: Self-inflicted Injury Hospitalization-Per cent Distribution by Community Area in the Winnipeg Health Region, 1994-2003



Self-inflicted Injury Hospitalization by Mechanism of Injury

The leading mechanism of self-inflicted injury hospitalization by far was *poisoning*, with 2,841 hospitalizations, the majority of which were by the use of medication. This is followed by *cut/pierce* and *suffocation* with 478 and 99 hospitalizations, respectively. Less lethal means make up the highest proportion of hospitalizations, while means more likely to result in death, such as hanging and firearms, are hospitalized less commonly.

Figure 59: Leading Mechanisms of Self-inflicted Injury Hospitalization for Residents of the Winnipeg Health Region, Both Sexes, All Ages, 1994-2003

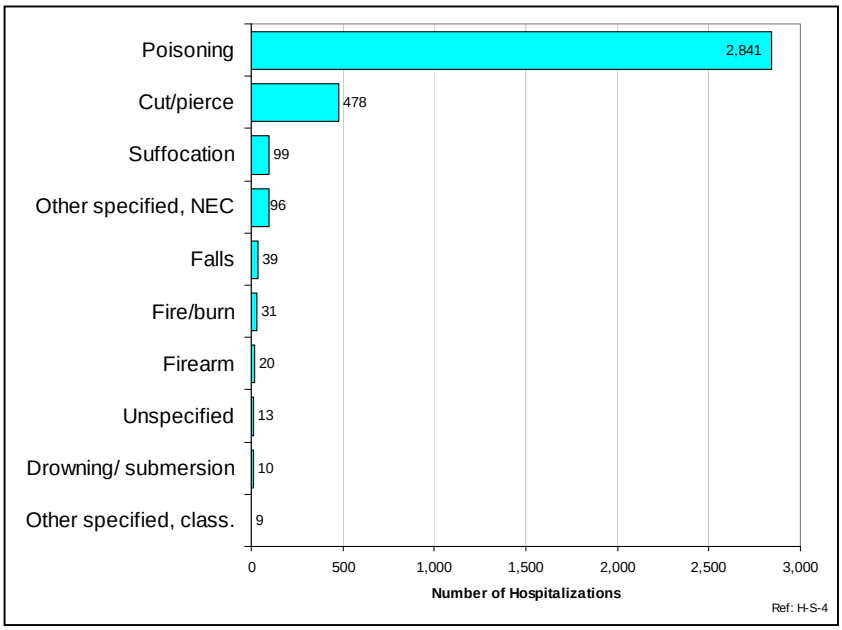


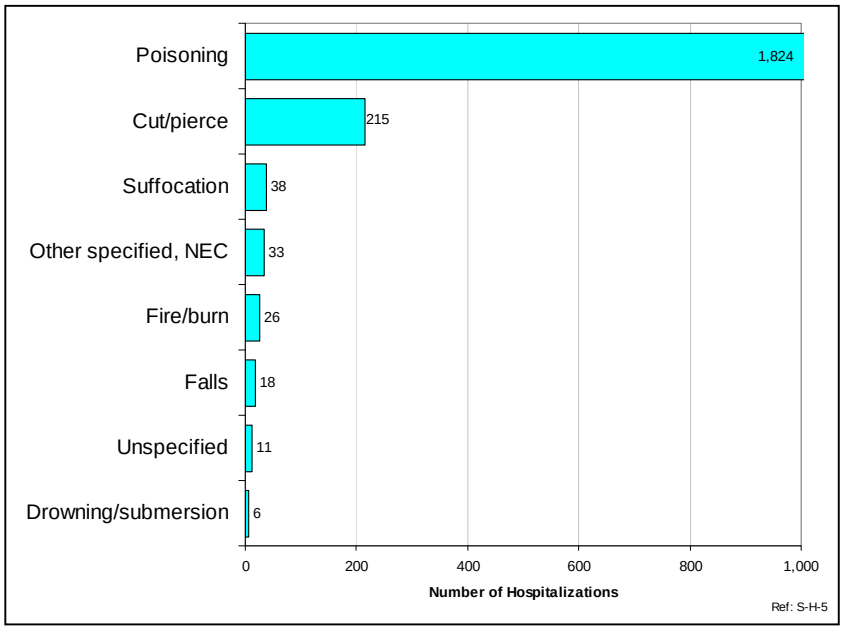
Table 31: Mechanisms of Self-inflicted Injury Hospitalization for Residents of the Winnipeg Health Region, 1994-2003

Mechanism or Cause	Both Sexes		Females		Males	
	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Cut/pierce	478	7.3	215	6.4	263	8.3
Drowning/submersion	10	0.2	6	0.2	s	s
Fall	39	0.6	18	0.5	21	0.7
Fire/burn	31	0.5	26	0.8	5	0.2
Fire/flame	26	0.4	22	0.7	s	s
Hot object/substance	5	0.1	s	s	s	s
Firearm	20	0.3	s	s	19	0.6
Motor vehicle traffic	s	s	s	s	s	s
Transport, other	s	s	s	s	0	0.0
Natural/environmental	s	s	s	s	s	s
Excessive cold	s	s	s	s	s	s
Poisoning	2841	43.6	1824	54.4	1017	32.1
Medication	2648	40.6	1746	52.1	902	28.5
Motor vehicle exhaust	41	0.6	8	0.2	33	1.0
Other carbon monoxide	8	0.1	s	s	5	0.2
Suffocation	99	1.5	38	1.1	61	1.9
Suffocation, plastic bag	0	0.0	0	0.0	0	0.0
Hanging, not in bed or cradle	94	1.4	35	1.0	59	1.9
Other specified, classifiable	9	0.1	s	s	7	0.2
Other specified, NEC	96	1.5	33	1.0	63	2.0
Unspecified	13	0.2	11	0.3	s	s
Total	**3644**	**55.9**	**2179**	**65.0**	**1465**	**46.3**

Self-inflicted Injury Hospitalization by Mechanism of Injury - Females

The leading cause of self-inflicted injury hospitalization among females was overwhelmingly *poisoning*, with 1,824 hospitalizations, nearly all of which were by the use of medication. This was 8.5 times more common than the next leading cause, *cut/pierce with* 215 hospitalizations. *Suffocation* (primarily by hanging) was even less frequent at 38 (i.e. less than 4 per year).

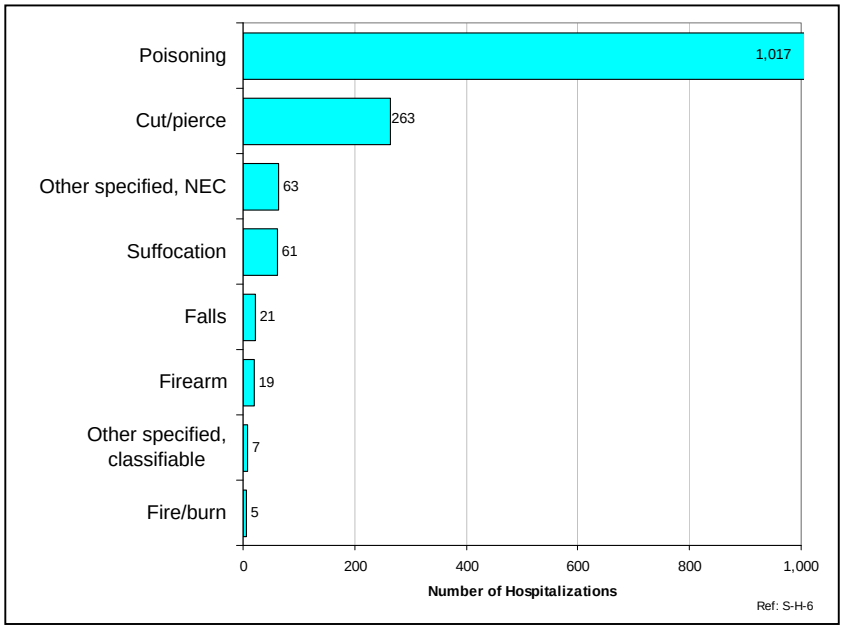
Figure 60: Leading Mechanisms of Self-inflicted Injury Hospitalization for Female Residents of the Winnipeg Health Region, 1994-2003



Self-inflicted Injury Hospitalization by Mechanism of Injury - Males

The leading mechanism of self-inflicted injury hospitalization among males was also *poisoning*, with 1,017 hospitalizations, the majority of which were also by use of medication. This was nearly 4 times as common as the next mechanism of *cut/pierce at* 263 hospitalizations, a less extreme difference than females. Other mechanisms were either non-specific or infrequent.

Figure 61: Leading Mechanisms of Self-inflicted Injury Hospitalization for Male Residents of the Winnipeg Health Region, 1994-2003



Note: 'Other specified, NEC' refers to other injury causes that are 'not elsewhere classifiable' in the data analysis.

Self-inflicted Injury Hospitalization by Mechanism of Injury- Youth and Young Adults

Poisoning was the leading cause of self-inflicted injury hospitalizations among youth and young adults. In fact, the vast majority of self-inflicted injuries were due to poisoning, nearly all by the use of medication. The rate of self-inflicted poisoning peaks in the 15-19 age category at 104 per 100,000 and declines from there gradually with age.

In youth and young adults, *cut/pierce* is the second leading cause of self-inflicted injury. This cause, although still much less than poisoning, peaks in the 25-34 years of age group.

Table 32: Mechanisms of Self-Inflicted Injury Hospitalization for Youth and Young Adults, 15-34 Years of Age, in the Winnipeg Health Region, 1994-2003

	Age Group							
	10-14		15-19		20-24		25-34	
Mechanism or Cause	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Cut/pierce	9	2.1	69	16.6	93	20.7	142	14.4
Drowning/submersion	s	s	s	s	s	s	s	s
Fall	s	s	5	1.2	s	s	11	1.1
Fire/burn	0	0.0	s	s	9	2.0	5	0.5
Fire/flame	0	0.0	s	s	6	1.3	s	s
Hot object/substance	0	0.0	s	s	s	0.7	s	s
Firearm	0	0.0	0	0.0	s	0.7	s	s
Motor vehicle traffic	0	0.0	0	0.0	s	0.2	s	s
Transport, other	0	0.0	0	0.0	s	0.2	0	0.0
Natural/environmental	0	0.0	0	0.0	0	0.0	0	0.0
Excessive cold	0	0.0	0	0.0	0	0.0	0	0.0
Poisoning	144	34.0	434	104.2	289	64.3	633	64.0
Medication	141	33.3	425	102.0	273	60.7	577	58.3
Motor vehicle exhaust	s	s	0	0.0	5	1.1	13	1.3
Other carbon monoxide	0	0.0	0	0.0	0	0.0	s	s
Suffocation	6	1.4	18	4.3	20	4.4	21	2.1
Suffocation, plastic bag	0	0.0	0	0.0	0	0.0	0	0.0
Hanging, not in bed or cradle	6	1.4	17	4.1	20	4.4	20	2.0
Other specified, classifiable	0	0.0	s	s	s	s	s	s
Other specified, NEC	s	s	13	3.1	21	4.7	30	3.0
Unspecified	s	s	5	1.2	s	s	s	s
All injury	**167**	**39.5**	**549**	**131.8**	**446**	**99.2**	**854**	**86.3**

Self-inflicted Injury Hospitalization by Mechanism of Injury- Adults

Poisoning was again the leading cause of self-inflicted injury hospitalizations among adults. In fact, again, the vast majority of self-inflicted injuries were due to poisoning, nearly all by the use of medication.

In these adult age groups *cut/pierce* is the second leading cause of self-inflicted injury, although it is considerably less common than poisoning.

The rate of both *poisoning* and *cut/pierce*. hospitalizations continue to decline throughout the middle-aged age categories.

Table 33: Mechanisms of Self-Inflicted Injury Hospitalization for Adults, 35-64 Years of Age, in the Winnipeg Health Region, 1994-2003

	Age Group					
	35-44		**45-54**		**55-64**	
Mechanism or Cause	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Cut/pierce	96	8.9	36	4.1	12	2.2
Drowning/submersion	0	0.0	s	s	s	s
Fall	9	0.8	s	s	s	s
Fire/burn	9	0.8	s	s	s	s
Fire/flame	9	0.8	s	s	s	s
Hot object/substance	0	0.0	0	0.0	0	0.0
Firearm	s	s	5	0.6	s	s
Motor vehicle traffic	s	s	s	s	0	0.0
Transport, other	0	0.0	0	0.0	0	0.0
Natural/environmental	0	0.0	s	s	0	0.0
Excessive cold	0	0.0	s	s	0	0.0
Poisoning	642	59.7	415	47.7	120	21.6
Medication	589	54.8	385	44.3	111	20.0
Motor vehicle exhaust	12	1.1	5	0.6	s	s
Other carbon monoxide	s	s	s	s	0	0.0
Suffocation	16	1.5	5	0.6	5	0.9
Suffocation, plastic bag	0	0.0	0	0.0	0	0.0
Hanging, not in bed or cradle	16	1.5	s	s	5	0.9
Other specified, classifiable	s	s	s	s	0	0.0
Other specified, NEC	20	1.9	5	0.6	s	s
Unspecified	s	s	0	0.0	0	0.0
All injury	**798**	**74.2**	**478**	**55.0**	**147**	**26.5**

Self-inflicted Injury Hospitalization by Mechanism of Injury - Older Adults

Poisoning remained the leading cause of self-inflicted injury hospitalization among older adults, primarily by the use of medication. While the number of hospitalizations stayed consistent, the rate of poisoning hospitalizations seems to have rebounded slightly in the 75-84 age group after a steady decline since the peak rate at age 15-19 years.

C*ut/pierce* is the second leading cause of self-inflicted injury in the older adult age groups, but is very low. *Cut/pierce* in fact stabilized at a low rate from the 55-64 age range on.

Self-harm hospitalizations for all mechanisms are very low after the age of 85.

Table 34: Mechanisms of Self-Inflicted Injury Hospitalization for Adults, 65 Years of Age and Older, in the Winnipeg Health Region, 1994-2003

	Age Group					
	65-74		**75-84**		**85+**	
Mechanism or Cause	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Cut/pierce	11	2.4	8	2.5	s	s
Drowning/submersion	s	s	s	s	0	0.0
Fall	s	s	0	0.0	0	0.0
Fire/burn	0	0.0	0	0.0	0	0.0
Fire/flame	0	0.0	0	0.0	0	0.0
Hot object/substance	0	0.0	0	0.0	0	0.0
Firearm	s	s	0	0.0	s	s
Motor vehicle traffic	0	0.0	0	0.0	0	0.0
Transport, other	0	0.0	0	0.0	0	0.0
Natural/environmental	0	0.0	s	s	0	0.0
Excessive cold	0	0.0	s	s	0	0.0
Poisoning	74	15.9	76	23.8	10	9.1
Medication	67	14.4	66	20.7	10	9.1
Motor vehicle exhaust	s	s	s	s	0	0.0
Other carbon monoxide	s	s	0	0.0	0	0.0
Suffocation	6	1.3	s	s	0	0.0
Suffocation, plastic bag	0	0.0	0	0.0	0	0.0
Hanging, not in bed or cradle	5	1.1	s	s	0	0.0
Other specified, classifiable	0	0.0	0	0.0	0	0.0
Other specified, NEC	0	0.0	s	s	s	s
Unspecified	0	0.0	0	0.0	0	0.0
All injury	**95**	**20.5**	**91**	**28.5**	**15**	**13.6**

Transportation Injury

The third priority cause was determined to be motor vehicle traffic. However, this section also includes data for other transportation-related injuries. These additional data include: 'pedal cyclist, other'; 'pedestrian, other' and 'transport, other' cause categories. Motor vehicle traffic includes all incidents involving a motor vehicle that occurred on a public roadway. The categories of pedal cycle, other; pedestrian, other; include injuries incurred by pedal cyclists and pedestrians, respectively, but not involving a motor vehicle. For transport, other the majority of these injuries were categorized by an incident with an off-road vehicle, snowmobile, aircraft, and watercraft (but without drowning). In addition, all pedal cyclist injuries and all pedestrian injuries are examined collectively for hospitalizations, and to a limited degree, for death data as well.

Overview of Transportation Injury Deaths

For the period of 1990 to 1999, many more males than females died as a result of a motor vehicle traffic or transportation-related injury (referred to as simply 'transportation' in this chapter). In actual numbers, there were 260 deaths among males and 131 among females, for a total of 391 deaths. This resulted in a rate of 6.1 deaths per 100 000 population during this period.

Figure 62: Motor Vehicle Traffic and Other Transportation-related Injury Death by Sex in the Winnipeg Health Region, 1990-1999

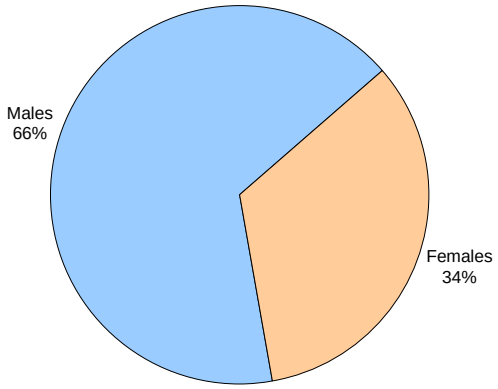
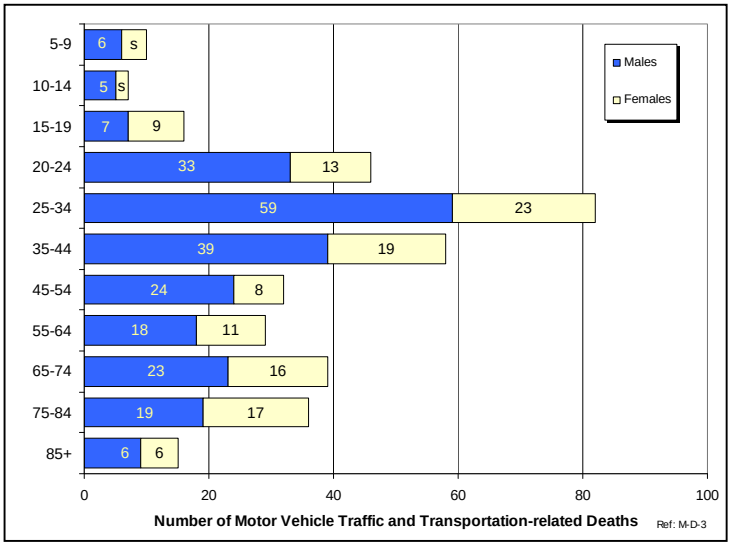


Figure 63: Motor Vehicle Traffic and Other Transportation-related Injury Death by Age-Sex Group, Winnipeg Health Region, 1990-1999

The largest number of transportation-related injury deaths occurs in the 25 to 34 age range for both males and females.
The number of motor vehicle traffic and transportation-related injury deaths is much smaller in children and youth, and also declines in older age.



Transportation Injury Death by Community Area

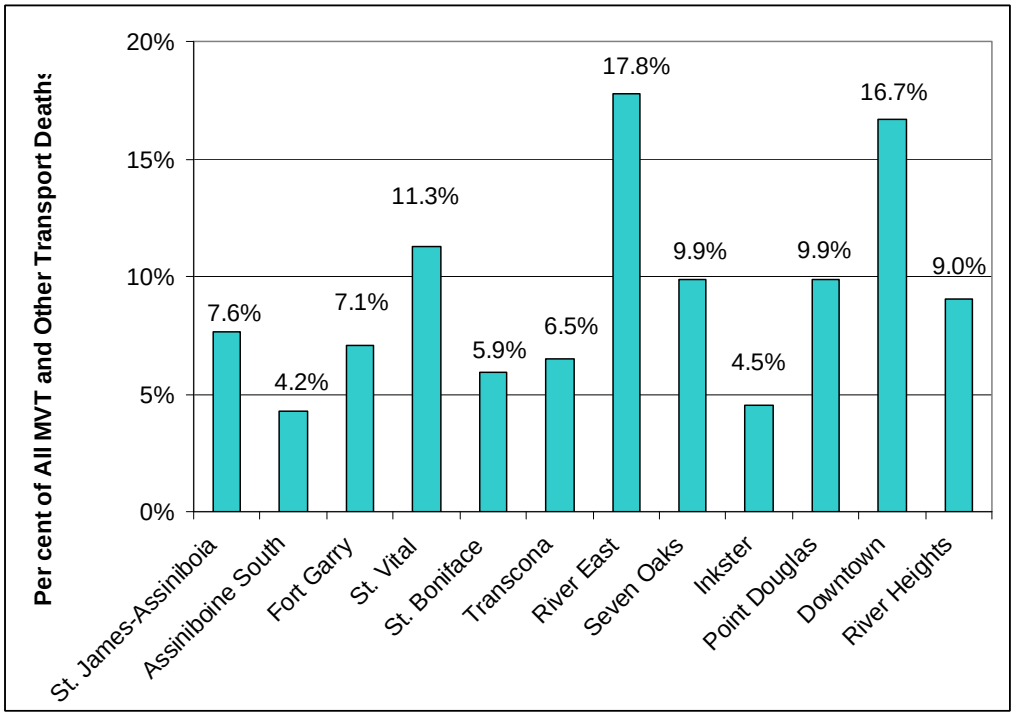
In general, the distribution of *motor vehicle traffic and other transportation-related* deaths is proportional to the population size of the respective community areas. In other words, the community areas with smaller populations tend to contribute a smaller percentage of *motor vehicle traffic and other transportation-related* deaths to the total for the WHR. (an example of this is the Transcona community area).

Conversely, the community areas with larger populations, such as Downtown and River East, tend to contribute larger percentages.

These data are presented here so that the absolute magnitude of the injury death problem can be seen by community area. However, more detail on the crude and age-adjusted rates of transportation deaths by community area can be found in Chapter 8, Injury by Community Area later in this report.

There is less variation in the crude rates of motor vehicle traffic injury death (compared to the previous causes of injury) between the twelve community areas. Five of the community area had rates that were higher than that of the WHR, while seven were similar or lower. The two community areas with the highest rates were Downtown and Point Douglas

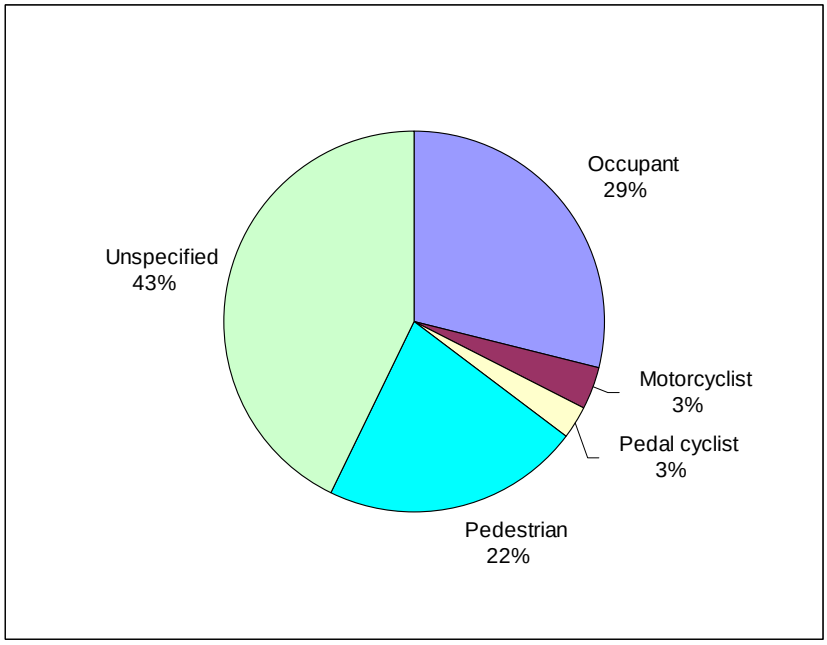
Figure 64: Motor Vehicle Traffic and Other Transportation-related Injury Death - Per cent Distribution by Community Area in the Winnipeg Health Region, 1990-1999



Motor Vehicle Traffic Injury in Detail

Motor vehicle traffic (MVT) injury can be further classified into five sub-categories by the role of the injured person. These are motor vehicle traffic injury involving: the occupant of vehicle (*occupant*), *pedestrian*, *motor cyclist*, *pedal cyclist*, or *unspecified*. In the WHR, the largest proportion of MVT deaths was *unspecified* (which identifies coding gaps). *Occupants* comprised 29% and *pedestrians*, 22% of all MVT deaths.

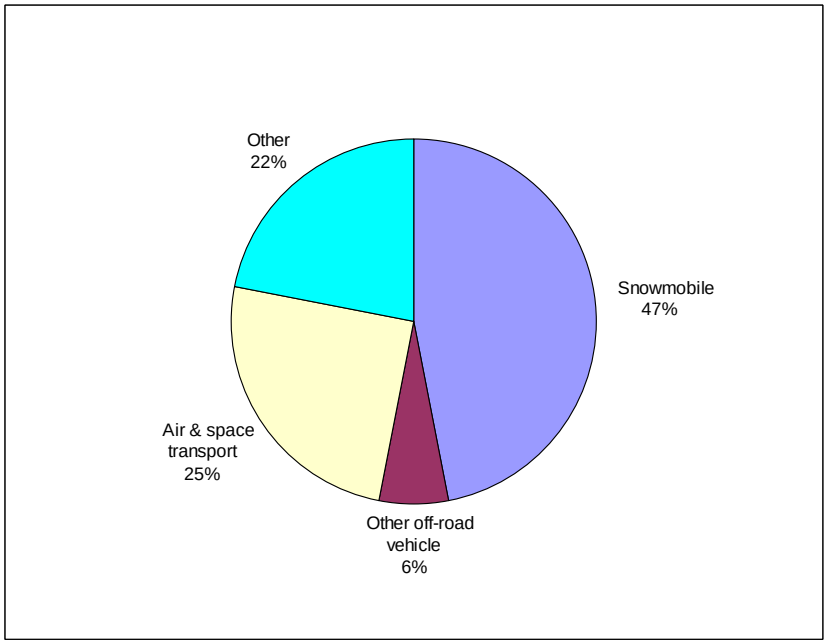
Figure 65: Motor Vehicle Traffic Injury Death for Residents of the Winnipeg Health Region, 1990-1999



'Transport, Other' Injury Death in Detail

Transport, other can be further sub-divided into 4 main sub-categories based on the mode of transport involved in causing the injury. These are: *snowmobile, other off-road vehicle, air and space transport*, and *other*. Snowmobile deaths accounted for the largest proportion of injury deaths in this category at 47%. *Other* includes various miscellaneous mechanisms such as: animal-drawn vehicle or animal being ridden, railway incidents, and also includes some other pedestrian and pedal cycle injury, that are not otherwise specified.

Figure 66: Transport, Other Injury Death for Residents of the Winnipeg Health Region, 1990-1999



Transportation Injury Death by Cause of Injury-Overview

Table 35 shows further detail for all *transportation* injury deaths. There were 354 deaths due to *motor vehicle traffic*, 21 from *other transportation*, and 5 *other pedestrian* for a total of 391 deaths in this overall category.
Males have higher death rates than females in most categories within transportation, with the exception of pedestrian deaths where males and females were similar. Cyclist, motorcycle and snowmobile deaths occur almost entirely among males. Most other types of transportation deaths involved males about twice as often as females.
All pedestrian deaths (this includes *MVT-pedestrian* and *pedestrian, other*) accounted for 82 of the 391 (21%) transportation deaths second only to motor vehicle occupant death, likely due to the severe nature of being struck by a motor vehicle. *All pedal cyclist* (this includes *MVT-pedal cyclist* and *pedal cyclist, other*) accounted for 10 deaths (2.6%), which is about one per year.

Table 35: Motor Vehicle Traffic and Other Transportation-related Injury Death for Residents of the Winnipeg Health Region, 1990-1999

Mechanism or Cause	Both Sexes		Females		Males	
	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Motor vehicle traffic	354	5.5	125	3.8	229	7.4
Occupant	102	1.6	38	1.2	64	2.1
Motorcyclist	12	0.2	s	s	9	0.3
Pedal cyclist	10	0.2	s	s	9	0.3
Pedestrian	77	1.2	38	1.2	39	1.3
Unspecified	151	2.4	45	1.4	106	3.4
Pedal cyclist, other	0	0.0	0	0.0	0	0.0
Pedestrian, other	5	0.1	s	s	s	s
Transport, other	32	0.5	5	0.2	27	0.9
Snowmobile	15	0.2	s	s	12	0.4
Other off-road vehicle	s	s	0	0.0	s	s
Water transport, not drowning	0	0.0	0	0.0	0	0.0
Air & space transport	8	0.1	s	s	6	0.2
Total	391	6.1	131	4.0	260	8.4

Transportation Injury Death by Cause of Injury- Children

All transportation deaths in childhood were motor vehicle-related. For children 5 to 9 and 10 to 14 years of age, most were *pedestrians* involved with a motor vehicle collision. Childhood pedestrian deaths peaked in the 5-9 year age range.

Because of the small numbers of occupant and cyclist deaths in childhood, much of the age-specific data is suppressed. Please note that the data for infants under one year of age were suppressed due to low numbers.

Table 36: Motor Vehicle Traffic and Other Transportation-related Injury Death for Children, 1-14 Years of Age, in the Winnipeg Health Region, 1990-1999

	Age Group					
	1-4		**5-9**		**10-14**	
Mechanism or Cause	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Motor vehicle traffic	6	1.7	10	2.3	7	1.7
Occupant	s	s	s	s	0	0.0
Motorcyclist	0	0.0	0	0.0	0	0.0
Pedal cyclist	s	s	s	s	s	s
Pedestrian	0	0.0	6	1.4	5	1.2
Unspecified	s	s	s	s	0	0.0
Pedal cyclist, other	0	0.0	0	0.0	0	0.0
Pedestrian, other	0	0.0	0	0.0	0	0.0
Transport, other	0	0.0	0	0.0	0	0.0
Snowmobile	0	0.0	0	0.0	0	0.0
Other off-road vehicle	0	0.0	0	0.0	0	0.0
Water transport, not drowning	0	0.0	0	0.0	0	0.0
Air & space transport	0	0.0	0	0.0	0	0.0
All injury	**6**	**1.7**	**10**	**2.3**	**7**	**1.7**

Note: An 's' denotes a suppressed value of less than five events.

Transportation Injury Death by Cause of Injury- Youth and Young Adults

Most transportation deaths among youth and young adults are motor vehicle related, specifically occupant. Pedestrian and cyclist deaths are low in this age group. Snowmobile deaths become prominent in the 25-34 age group. The highest rate of motor vehicle traffic death occurs in the 20-24 age range. This is not only the highest group within youth and young adults, but for motor vehicle deaths of all age groups. However, it should be noted that the 15-19 age group may have lower rates due to lower exposure to vehicle occupancy, since many in this age group do not yet have a licence to drive. (i.e. these data are not able to provide any insight into the actual risk of injury death per distance driven or time spent as a motor vehicle occupant.)

Table 37: Motor Vehicle Traffic and Other Transportation-related Injury Death for Youth and Young Adults, 15-34 Years of Age, in the Winnipeg Health Region, 1990-1999

	Age Group					
	15-19		**20-24**		**25-34**	
Mechanism or Cause	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Motor vehicle traffic	28	6.8	42	8.9	69	6.4
Occupant	13	3.1	13	2.8	19	1.8
Motorcyclist	s	s	s	s	6	0.6
Pedal cyclist	0	0.0	0	0.0	s	s
Pedestrian	s	s	s	0.6	s	s
Unspecified	13	3.1	23	4.9	38	3.5
Pedal cyclist, other	0	0.0	0	0.0	0	0.0
Pedestrian, other	s	s	0	0.0	s	s
Transport, other	s	s	s	s	12	1.1
Snowmobile	0	0.0	s	s	8	0.7
Other off-road vehicle	0	0.0	0	0.0	0	0.0
Water transport, not drowning	0	0.0	0	0.0	0	0.0
Air & space transport	0	0.0	0	0.0	s	s
All injury	**30**	**7.3**	**46**	**9.8**	**82**	**7.6**

Transportation Injury Death by Cause of Injury

The largest number of transportation injury deaths among adults occurs in the 35 to 44 year of age group, although the similarity in rates should be noted between this age group and the 55 to 64 year age group.
The majority of these injury deaths were due to MVT, for all age groups (listed in Table 38).
Again, the 35 to 44 year age group has the highest number of MVT injury, but not the highest rate, which is found in the 55 to 64 year age group.
The largest number of *transport, other* injury death was also in the 35 to 44 years of age group

Table 38: Motor Vehicle Traffic and Other Transportation-related Injury Death for Adults, 35-64 Years of Age, in the Winnipeg Health Region, 1990-1999

	Age Group					
	35-44		**45-54**		**55-64**	
Mechanism or Cause	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Motor vehicle traffic	45	4.3	30	4.0	27	5.2
Occupant	17	1.6	s	s	11	2.1
Motorcyclist	s	s	s	s	0	0.0
Pedal cyclist	0	0.0	s	s	0	0.0
Pedestrian	5	0.5	8	1.1	8	1.5
Unspecified	22	2.1	16	2.1	8	1.5
Pedal cyclist, other	0	0.0	0	0.0	0	0.0
Pedestrian, other	s	s	s	s	0	0.0
Transport, other	11	1.1	s	s	s	s
Snowmobile	s	s	0	0.0	0	0.0
Other off-road vehicle	s	s	0	0.0	0	0.0
Water transport, not drowning	0	0.0	0	0.0	0	0.0
Air & space transport	s	s	0	0.0	s	s
All injury	**58**	**5.6**	**32**	**4.3**	**29**	**5.5**

Transportation Injury Death by Cause of Injury- Older Adults

The largest number of transportation injury deaths among older adults occurs in the 65 to 74 years of age group, although it should be noted that the highest rates occur in the 75 to 84 years and 85 years of age and older groups.

The majority of these injury deaths were due to MVT, for all age groups. Again, the 65 to 74 years of age group has the highest number of MVT injury, but not the highest rates, which occurs in the older two age groups. Many of these injury deaths involved a *pedestrian* and motor vehicle collision.

Few older adults died as a result of *transport, other* injury death.

Table 39: Motor Vehicle Traffic and Other Transportation-related Injury Death for Adults, 65 Years of Age and Older, in the Winnipeg Health Region, 1990-1999

	Age Group					
	65-74		**75-84**		**85+**	
Mechanism or Cause	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Motor vehicle traffic	38	8.1	36	12.5	15	16.5
Occupant	9	1.9	9	3.1	s	s
Motorcyclist	s	s	0	0.0	0	0.0
Pedal cyclist	s	s	0	0.0	s	s
Pedestrian	12	2.6	19	6.6	6	6.6
Unspecified	14	3.0	8	2.8	5	5.5
Pedal cyclist, other	0	0.0	0	0.0	0	0.0
Pedestrian, other	0	0.0	0	0.0	0	0.0
Transport, other	s	s	0	0.0	0	0.0
Snowmobile	0	0.0	0	0.0	0	0.0
Other off-road vehicle	0	0.0	0	0.0	0	0.0
Water transport, not drowning	0	0.0	0	0.0	0	0.0
Air & space transport	0	0.0	0	0.0	0	0.0
All injury	**39**	**8.3**	**36**	**12.5**	**15**	**16.5**

Transportation Injury Hospitalization

Overview of Transportation Injury Hospitalization

During the period of 1994 to 2003, more male than female residents received in-patient hospital treatment for motor vehicle traffic or other transportation-related injury (again, referred to as 'transportation' in this chapter). In actual numbers, there were 2,917 males of all ages, who received in-patient hospital treatment for this injury, while there were 2,063 females.

The 25-34 years of age group had the largest number of hospitalizations for transportation injury with a total of 875. Of the age-sex groups represented here, males, 25-34 years of age had the largest number of hospitalizations for transportation injury.

Please note that the under one year of age group has been suppressed due to low numbers of events.

Figure 67: Motor Vehicle Traffic and Other Transportation-related Injury Hospitalization by Sex, Winnipeg Health Region, 1994-2003

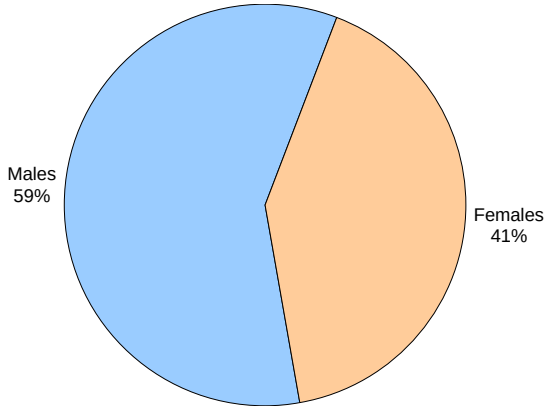
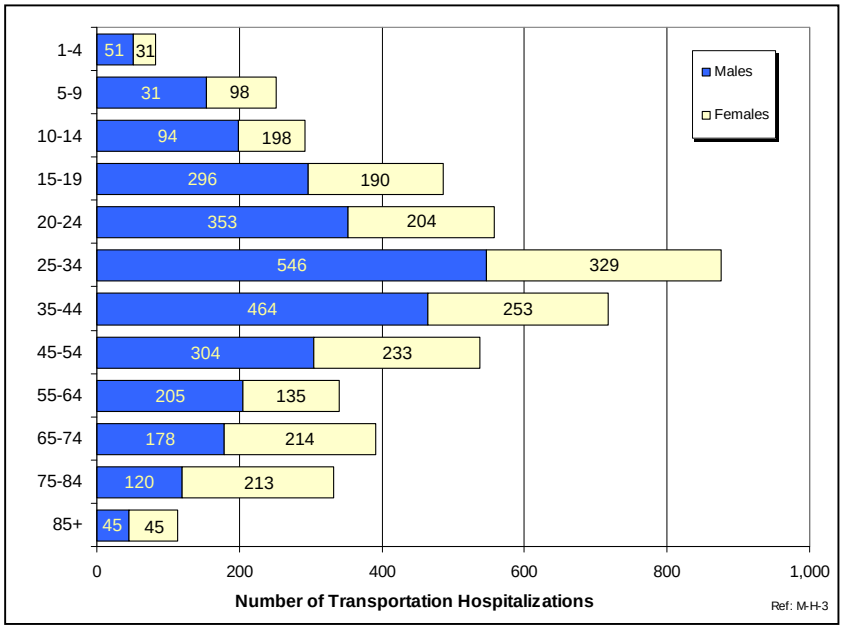


Figure 68: Motor Vehicle Traffic and Other Transportation-related Injury Hospitalization by Age-Sex Group, Winnipeg Health Region, 1994-2003



Transportation Injury
Hospitalization by Community Area

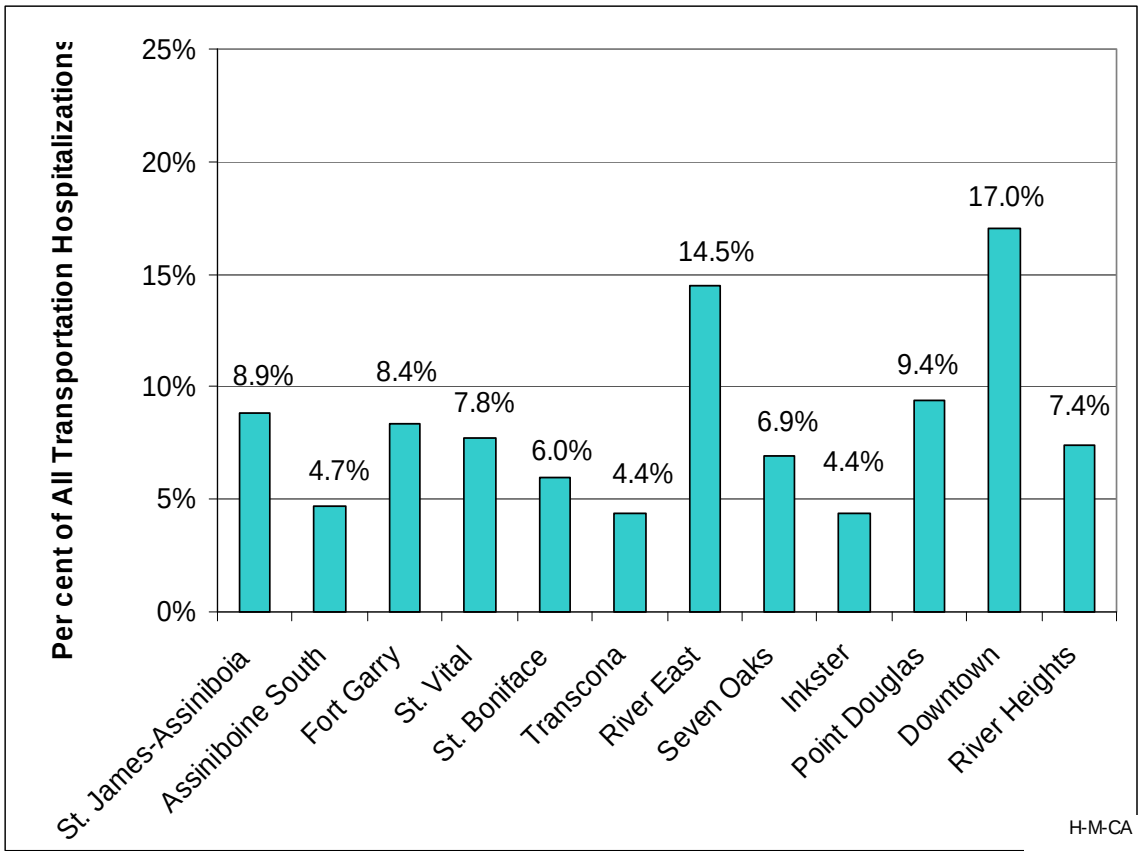
In general, the distribution of transportation injury hospitalizations is roughly proportional to the population size of the respective community areas. In other words, the community areas with smaller populations tend to contribute a smaller percentage of injury hospitalizations to the total of that of the WHR (an example of this is the Transcona community area).

Conversely, the community areas with larger populations, such as Downtown and River East, tend to contribute larger percentages.

These data are presented here so that the absolute magnitude of the injury hospitalization problem can be seen by community area. However, more detail on the crude and age-adjusted rates of transportation injury hospitalization by community area can be found in Chapter 8, Injury by Community Area later in this report.

There is less variation in the crude rates of motor vehicle traffic injury hospitalization between the twelve community areas, compared to the previous causes of injury. Ten of the twelve community areas had rates that were equal to or lower than that for the WHR. However, there were two community areas, which had the highest rates: Downtown and Point Douglas.

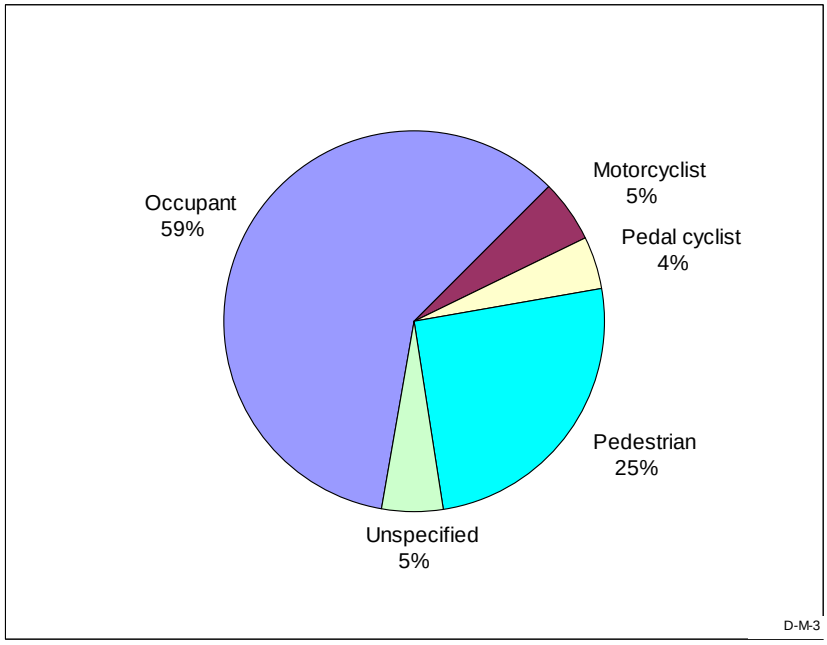
Figure 69: Motor Vehicle Traffic and Other Transportation-related Injury Hospitalization-Per cent Distribution by Community Area in the Winnipeg Health Region, 1994-2003



Motor Vehicle Traffic Injury Hospitalization in Detail

As discussed previously, *motor vehicle traffic* (MVT) injury can be further classified into five sub-categories by the role of the injured person. For MVT injury hospitalization, the largest proportion was *occupant,* at 59%. Followed by *pedestrians*, which comprised 25% of all MVT hospitalizations. The remaining categories: *motorcyclist, pedal cyclist* and *unspecified* comprise much smaller percentages (ranging from 4 to 5%).

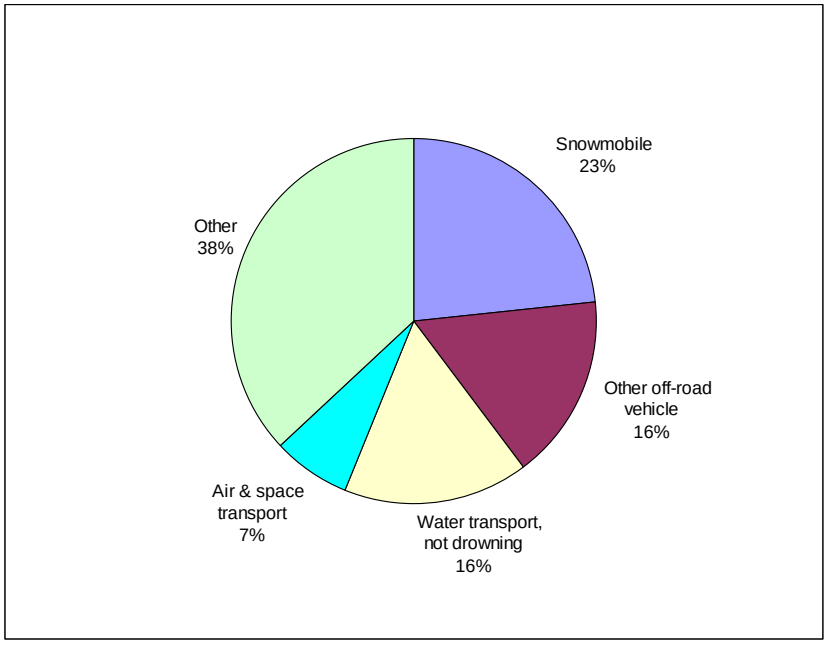
Figure 70: Motor Vehicle Traffic Injury Hospitalization for Residents of the Winnipeg Health Region, 1994-2003



'Transport, Other' Injury Hospitalization in Detail

Transport, other can be further sub-divided into 4 main sub-categories based on the mode of transport involved in causing the injury. The largest proportion of injury hospitalizations in this category involved a *snowmobile,* 23%. The largest percentage (38%) was for o*ther,* this includes the following: animal-drawn vehicle or animal being ridden, railway incidents, and also includes some other pedestrian and pedal cycle injury, that are not elsewhere specified.

Figure 71: Transport, Other Injury Hospitalization for Residents of the Winnipeg Health Region, 1994-2003



Transportation Injury Hospitalization by Cause of Injury -Overview

Motor vehicle traffic (MVT) accounts for the largest proportion of transportation injury hospitalizations. Of these, 59% involved the occupant of the vehicle. More males were hospitalized as a result of motor vehicle traffic injury compared to females. *Transport, other* injury accounted for 747 or 15% of transportation hospitalizations, and nearly 68% involved males.

Table 40: Motor Vehicle Traffic and Other Transportation-related Injury Hospitalization for Residents of the Winnipeg Health Region, 1994-2003

Mechanism or Cause	Both Sexes		Females		Males	
	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Motor vehicle traffic	3625	55.6	1614	48.1	2011	63.5
Occupant	2146	32.9	1048	31.3	1098	34.7
Motorcyclist	197	3.0	34	1.0	163	5.1
Pedal cyclist	162	2.5	28	0.84	134	4.2
Pedestrian	903	13.9	408	12.2	495	15.6
Unspecified	193	3.0	88	2.6	105	3.3
Pedal cyclist, other	538	8.3	176	5.2	362	11.4
Pedestrian, other	70	1.1	35	1.04	35	1.1
Transport, other	747	11.5	238	7.1	509	16.1
Snowmobile	175	2.7	29	0.9	146	4.6
Other off-road vehicle	122	1.87	28	0.8	94	3.0
Water transport, not drowning	57	0.9	15	0.4	42	1.3
Air & space transport	52	0.8	17	0.5	35	1.1
Total	4980	76.4	2063	61.5	2917	92.1

Pedal Cyclist and Pedestrian Injury Hospitalization by Cause -Overview

All pedestrian injury accounted for 973 of the 4980 (21%) transportation injury hospitalizations, while *all pedal cyclist* injury accounted for 700 hospitalizations (14% of all transportation injury). While most pedal cyclist injuries do not involve a motor vehicle collision, most pedestrian injuries do. The number of pedal cyclist injury hospitalizations is more than twice as large for males as for females, 496 and 204, respectively. There were about 20% more pedestrian injuries among males compared to females.

Table 41: Pedal Cyclist and Pedestrian Injury Death for Residents of the Winnipeg Health Region, 1994-2003

Mechanism or Cause	Both Sexes		Females		Males	
	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Pedal cyclist, MVT	162	2.5	28	0.84	134	4.2
Pedal cyclist, other	538	8.3	176	5.2	362	11.4
All Pedal Cyclist	**700**	**10.7**	**204**	**6.1**	**496**	**15.7**
Pedestrian, MVT	903	13.9	408	12.2	495	15.6
Pedestrian, other	70	1.1	35	1.04	35	1.1
All Pedestrian	**973**	**14.9**	**443**	**13.2**	**530**	**16.7**

Transportation Injury Hospitalization by Cause - Children

Motor vehicle traffic was the leading cause of transportation injury hospitalization among children (age groups are listed in Table 42). However, in each age group, the largest proportion of these hospitalizations involved a *pedestrian* and motor vehicle collision.

Please note that the data for infants under one year of age were not included due to low numbers.

The largest number of *all pedal cyclist* hospitalizations occurred in the 10 to 14 years of age group, closely followed by 5 to 9 years of age group. These were the highest numbers and rates for *pedal cyclist* injury hospitalization of all of the age groups studied in this report. The highest number of *all pedestrian* injury occurred in the 5 to 9 years of age group (Table 42).

Table 42: All Pedal Cyclist and All Pedestrian Injury Hospitalization for Children 1-14 Years of Age of the Winnipeg Health Region, 1994-2003

Mechanism or Cause	1-4		5-9		10-14	
	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Pedal cyclist, MVT	s	s	15	3.5	25	5.9
Pedal cyclist, other	14	4.2	87	20.1	78	18.4
All Pedal Cyclist	**18**	**5.4**	**102**	**23.5**	**103**	**24.3**
Pedestrian, MVT	34	10.2	88	20.3	69	16.3
Pedestrian, other	6	1.8	6	1.4	s	s
All Pedestrian	**40**	**12.0**	**94**	**21.7**	**72**	**17.0**

Table 43: Motor Vehicle Traffic and Other Transportation-related Injury Hospitalization for Children, 1-14 Years of Age, in the Winnipeg Health Region, 1994-2003

Mechanism or Cause	Age Group					
	1-4		5-9		10-14	
	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Motor vehicle traffic	53	15.9	138	31.9	150	35.4
Occupant	14	4.2	35	8.1	48	11.3
Motorcyclist	0	0.0	0	0.0	5	1.2
Pedal cyclist	s	s	15	3.5	25	5.9
Pedestrian	34	10.2	88	20.3	69	16.3
Unspecified	s	s	0	0.0	s	s
Pedal cyclist, other	14	4.2	87	20.1	78	18.4
Pedestrian, other	6	1.8	6	1.4	s	s
Transport, other	9	2.7	21	4.8	61	14.4
Snowmobile	0	0.0	0	0.0	12	2.8
Other off-road vehicle	s	s	7	1.6	14	3.3
Water transport, not drowning	s	s	0	0.0	5	1.2
Air & space transport	0	0.0	0	0.0	0	0.0
All injury	**82**	**24.6**	**252**	**58.2**	**292**	**69.0**

Note: An 's' denotes a suppressed value of less than five events

Transportation Injury Hospitalization by Cause of Injury- Youth and Young Adults

The largest number of transportation injury hospitalizations occurred in the 25 to 34 years of age group, however, the 20 to 24 years of age group had the highest rate of hospitalization. (Also note this is a five-year age group while 25-34 years of age group is a ten-year age group).

The majority of these injury hospitalizations were due to MVT, for all age groups. Again, while 25 to 34 years of age group had the largest number 20 to 24 years of age group has the highest rate of MVT injury.

For *transport, other* injury hospitalization, the 25 to 34 years of age group had the highest number however, 20-24 years of age had the highest rate.

Table 44: Motor Vehicle Traffic and Other Transportation-related Injury Hospitalization for Youth and Young Adults, 15-34 Years of Age, in the Winnipeg Health Region, 1994-2003

	Age Group					
	15-19		20-24		25-34	
Mechanism or Cause	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Motor vehicle traffic	390	93.6	422	93.8	620	62.7
Occupant	282	67.7	289	64.3	395	39.9
Motorcyclist	20	4.8	33	7.3	50	5.1
Pedal cyclist	15	3.6	19	4.2	18	1.8
Pedestrian	54	13.0	57	12.7	102	10.3
Unspecified	15	3.6	21	4.7	47	4.8
Pedal cyclist, other	35	8.4	30	6.7	72	7.3
Pedestrian, other	5	1.2	s	s	11	1.1
Transport, other	56	13.4	101	22.5	172	17.4
Snowmobile	8	1.9	35	7.8	55	5.6
Other off-road vehicle	16	3.8	18	4.0	26	2.6
Water transport, not drowning	s	s	7	1.6	20	2.0
Air & space transport	s	s	6	1.3	13	1.3
All injury	**486**	**116.7**	**557**	**123.9**	**875**	**88.4**

The largest number of *all pedal cyclist* hospitalizations among youth and young adults occurred in the 25 to 34 years of age group, however 15-19 years of age group had the highest rate. The largest number of *all pedestrian* injury occurred in the 25 to 34 years of age group, however 15-19 years of age group had the highest rate.

Table 45: All Pedal Cyclist and All Pedestrian Injury Hospitalization for Youth and Young Adults, 15-34 Years of Age of the Winnipeg Health Region, 1994-2003

	15-19		20-24		25-34	
Mechanism or Cause	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Pedal cyclist, MVT	15	3.6	19	4.2	18	1.8
Pedal cyclist, other	35	8.4	30	6.7	72	7.3
All Pedal Cyclist	**50**	**12.0**	**49**	**10.9**	**90**	**9.1**
Pedestrian, MVT	54	13.0	57	12.7	102	10.3
Pedestrian, other	5	1.2	s	s	11	1.1
All Pedestrian	**59**	**14.2**	**61**	**13.6**	**113**	**11.4**

Transportation Injury Hospitalization by Cause of Injury Adults

The largest number of transportation injury hospitalizations among adults occurs in the 35 to 44 years of age group. Both the number and rate of transportation injury declines in the next age groups: 45 to 54 and 55 to 64 years of age groups.

The majority of these injury hospitalizations were due to MVT, for all age groups (listed in Table 46). Again, the 35 to 44 years of age group has the highest number of MVT injury hospitalizations, but the highest rate occurred in the 55 to 64 years of age group. The largest number and rate of *transport, other* injury hospitalization was in the 35 to 44 years of age group.

Table 46: Motor Vehicle Traffic and Other Transportation-related Injury Hospitalization for Adults, 35-64 Years of Age, in the Winnipeg Health Region, 1994-2003

	Age Group					
	35-44		**45-54**		**55-64**	
Mechanism or Cause	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Motor vehicle traffic	500	46.5	388	44.6	275	49.5
Occupant	266	24.7	231	26.6	158	28.4
Motorcyclist	49	4.6	22	2.5	12	2.2
Pedal cyclist	32	3.0	17	2.0	7	1.3
Pedestrian	121	11.3	97	11.2	82	14.8
Unspecified	31	2.9	19	2.2	14	2.5
Pedal cyclist, other	82	7.6	59	6.8	27	4.9
Pedestrian, other	6	0.6	s	s	s	s
Transport, other	129	12.0	86	9.9	35	6.3
Snowmobile	38	3.5	21	2.4	4	0.7
Other off-road vehicle	16	1.5	5	0.6	8	1.4
Water transport, not drowning	11	1.0	6	0.7	s	s
Air & space transport	10	0.9	18	2.1	s	s
All injury	**717**	**66.7**	**537**	**61.8**	**340**	**61.2**

The largest number and rate of *all pedal cyclist* hospitalizations among adults occurred in the 35 to 44 year age group. The largest number of *all pedestrian* injury occurred in the 35 to 44 years of age group, however the 55 to 64 years of age group had the highest rate (Table 47).

Table 47: All Pedal Cyclist and All Pedestrian Injury Hospitalization for Adults, 35-64 Years of Age of the Winnipeg Health Region, 1994-2003

	35-44		**45-54**		**55-64**	
Mechanism or Cause	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Pedal cyclist, MVT	32	3.0	17	2.0	7	1.3
Pedal cyclist, other	82	7.6	59	6.8	27	4.9
All Pedal Cyclist	**114**	**10.6**	**76**	**8.7**	**34**	**6.1**
Pedestrian, MVT	121	11.3	97	11.2	82	14.8
Pedestrian, other	6	0.6	s	s	s	s
All Pedestrian	**127**	**11.8**	**101**	**11.6**	**85**	**15.3**

Transportation Injury Hospitalization by Cause of Injury- Older Adults

The largest number of transportation injury hospitalization among older adults, occurs in the 65 to 74 years of age group, although it should be noted that the highest rates occur in the 75 to 84 years and 85 years of age and older groups (see Table 48).

The majority of these injury hospitalizations were due to MVT, for all age groups. Again, the 65 to 74 years of age group has the largest number of MVT injury, but not the highest rates, which occurs in the 75-84 year age group.

There are much fewer hospitalizations due to *transport, other* injury among older adults.

Table 48: Motor Vehicle Traffic and Other Transportation-related Injury Hospitalization for Adults, 65 Years of Age and Older, in the Winnipeg Health Region, 1994-2003

	Age Group					
	65-74		75-84		85+	
Mechanism or Cause	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Motor vehicle traffic	318	68.5	281	87.9	86	78.0
Occupant	190	40.9	184	57.6	50	45.3
Motorcyclist	5	1.1	s	s	0	0.0
Pedal cyclist	8	1.7	0	0.0	s	s
Pedestrian	93	20.0	76	23.8	30	27.2
Unspecified	20	4.3	19	5.9	s	s
Pedal cyclist, other	42	9.0	10	3.1	s	s
Pedestrian, other	s	s	12	3.8	6	5.4
Transport, other	28	6.0	30	9.4	19	17.2
Snowmobile	s	s	0	0.0	0	0.0
Other off-road vehicle	s	s	6	1.9	s	s
Water transport, not drowning	s	s	s	s	0	0.0
Air & space transport	0	0.0	0	0.0	s	s
All injury	**392**	**84.4**	**333**	**104.2**	**113**	**102.4**

The largest number and rate of *all pedal cyclist* hospitalizations among older adults occurred in the 65 to 74 year age group. The largest number of *all pedestrian* injury occurred in the 65 to 74 years of age group, however the rate increased with age, which were also the highest among all of the age groups studied in this report (Table 49).

Table 49: All Pedal Cyclist and All Pedestrian Injury Hospitalization for Older Adults, 65 Years of Age and Older of the Winnipeg Health Region, 1994-2003

	65-74		75-84		85+	
Mechanism or Cause	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Pedal cyclist, MVT	8	1.7	0	0.0	s	s
Pedal cyclist, other	42	9.0	10	3.1	s	s
All Pedal Cyclist	**50**	**10.8**	**10**	**3.1**	**s**	**s**
Pedestrian, MVT	93	20.0	76	23.8	30	27.2
Pedestrian, other	s	s	12	3.8	6	5.4
All Pedestrian	**97**	**20.9**	**88**	**27.5**	**36**	**32.6**

Violence Injury

Overview of Violence Injury Deaths

For the period of 1990 to 1999 more males than females died as a result of an injury due to *violence* in the WHR (61% and 39%, respectively). In actual numbers, there were 83 deaths by *violence* injury among males and 52 among females, for a total of 135 deaths. This resulted in a rate of 2 deaths due to *violence* per 100 000 population during this period.

The largest number of violence injury deaths occurred in males at 25 to 34 years of age. This is also the age group with the highest total number of violence injury deaths (32 deaths). For females, the largest number of violence injury deaths also occurred in the 25-34 years of age group (12 deaths).

The number of violence injury deaths among infants under one year of age, particularly among females, should be noted, as it is the largest among the children's age groups.

Figure 72: Violence by Sex in the Winnipeg Health Region, 1990-1999

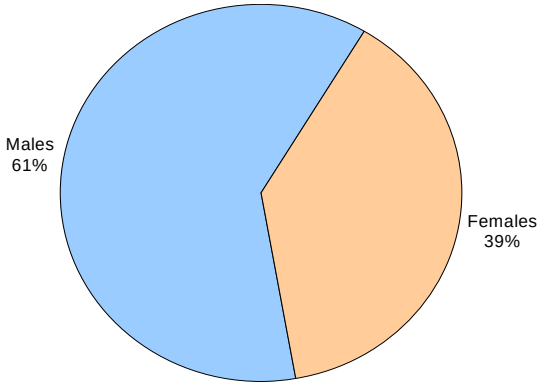
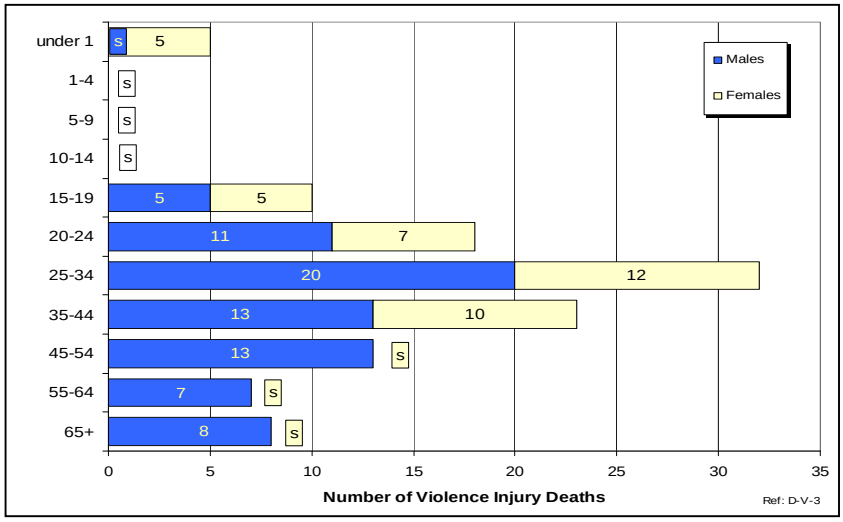


Figure 73: Violence Injury Death by Age-Sex Group, Winnipeg Health Region, 1990-1999

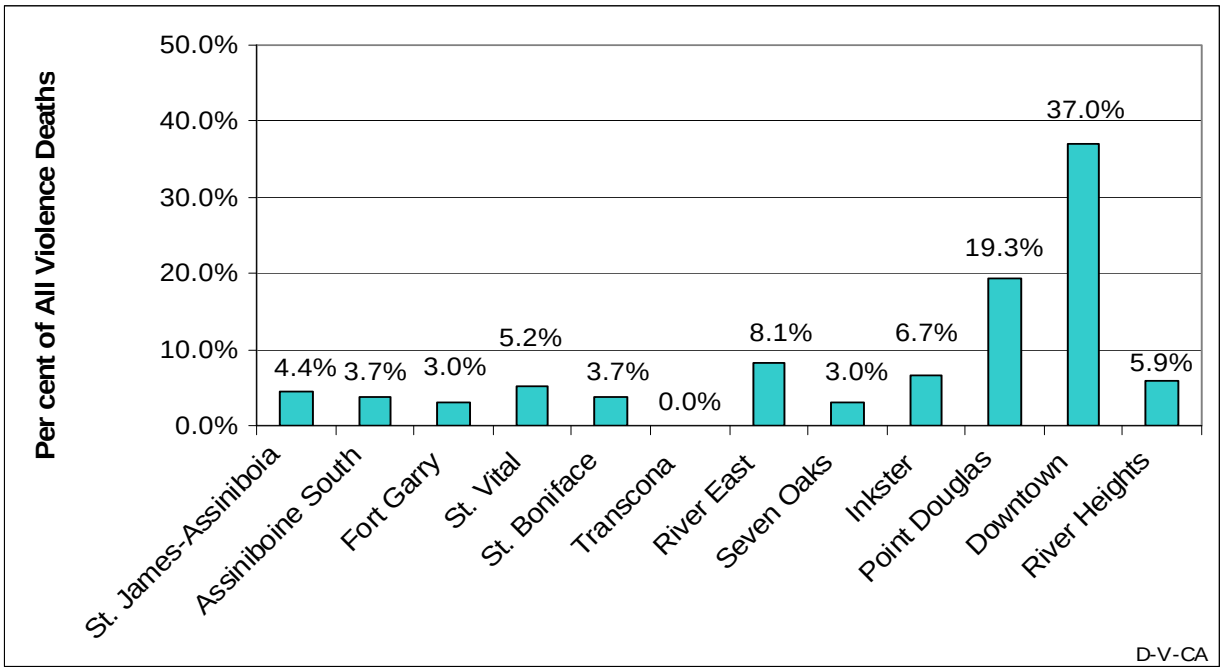


Please note that 's' denotes a suppressed value of less than five events.

Violence Injury Deaths by Community Area

In nine of the twelve community areas, the rate of injury is so low that the overall percentage of violence injury death does not vary greatly in response to population size. Downtown, Point Douglas and Inkster all experience rates of violence deaths above the WHR average. In fact, about 56% of all injury deaths due to violence in the WHR occur to residents of just 2 community areas: Downtown and Point Douglas. In comparison to the other three priority causes of injury death, violence has the largest gradient between the highest and lowest community areas rates. Transcona was notable in having no deaths due to violence in the ten-year period. There was over a 6-fold difference between the community area with the highest rate of violence deaths (Downtown) and the lowest other than Trancona (Fort Garry). Inkster's rate of death due to violence was in between the low rate of most community areas and that of Downtown and Point Douglas. For many of the community areas, violence was not the 4th leading cause of death which it was for the WHR overall, primarily driven by high rates in 2-3 community areas.

Figure 74: Violence Injury Death- Per cent Distribution by Community Area in the Winnipeg Health Region, 1994-2003



Violence Injury Deaths by Mechanism of Injury

The leading cause of *violence* injury death in the WHR was *cutting and piercing*, (injury inflicted by a sharp instrument, i.e. "stabbings") with 49 deaths. This is followed by *unspecified* with 25 deaths, and *struck by or against* (an object or person, e.g. "beatings") and *firearm* with18 deaths each.

The causes listed in figure 75 represent 95% of all *violence* injury deaths in the WHR during this period.

Figure 75: Leading Mechanisms of Violence Injury Deaths for Residents of the Winnipeg Health Region, Both Sexes, All Ages, 1990-1999

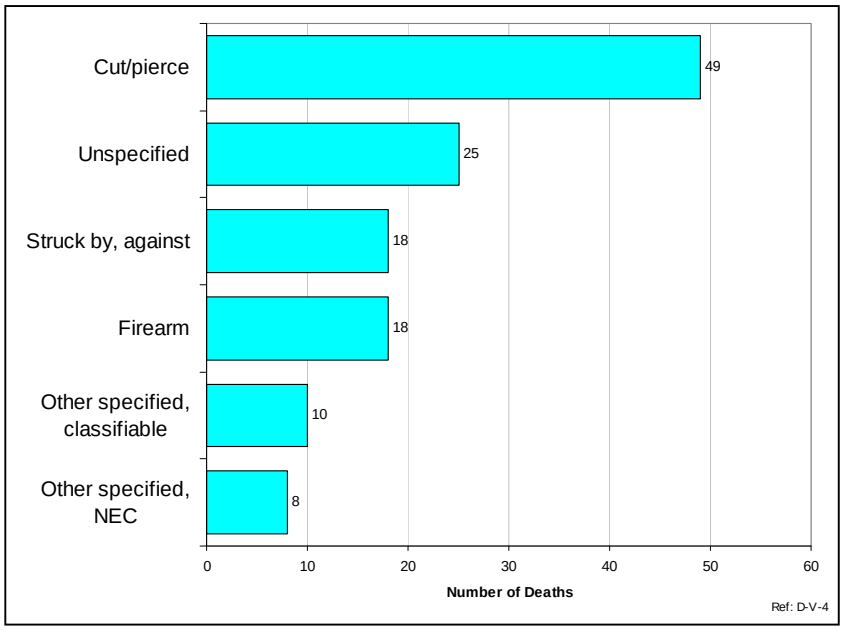


Table 50: Mechanisms of Violence Injury Deaths for Residents of the Winnipeg Health Region, 1990-1999

Mechanism or Cause	Both Sexes		Females		Males	
	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Cut/pierce	49	0.8	17	0.5	32	1.0
Drowning/submersion	0	0.0	0	0.0	0	0.0
Fall	0	0.0	0	0.0	0	0.0
Fire/burn	s	s	0	0.0	s	s
Fire/flame	s	s	0	0.0	s	s
Hot object/substance	0	0.0	0	0.0	0	0.0
Firearm	18	0.3	9	0.3	9	0.3
Motor vehicle traffic	0	0.0	0	0.0	0	0.0
Poisoning	s	s	s	s	0	0.0
Medication	0	0.0	0	0.0	0	0.0
Struck by, against	18	0.3	7	0.2	11	0.4
Suffocation	s	s	s	s	s	s
Hanging, not in bed or cradle	s	s	s	s	s	s
Other specified, classifiable	10	0.2	6	0.2	s	s
Child maltreatment	9	0.1	5	0.2	s	s
Other specified, NEC	8	0.1	0	0.0	8	0.3
Unspecified	25	0.4	9	0.3	16	0.5
Other Violence	s	s	0	0.0	s	s
Total Violence	**135**	**2.1**	**52**	**1.6**	**83**	**2.7**

Please note that 's' denotes a suppressed value of less than five events

Violence Injury Deaths by Mechanism of Injury - Females

The leading cause of *violence* injury death among females was *cutting and piercing (*"stabbings") with 17 deaths. This is followed by *unspecified* and *firearms* each with 9 deaths. The rate of firearm death was the same for females and males, in contrast to other mechanisms of violence deaths which tended to be twice as high for males. Firearm was responsible for 17% of female violence deaths, and 11% of male violence deaths.

Violence Injury Deaths by Mechanism of Injury - Males

The leading cause of violence injury death among males was *cutting and piercing (*"stabbings"), with 32 deaths. This is followed by *unspecified* and *struck by or against* (an object or person, "beatings") with 16 and 11 deaths, respectively. Firearm is proportionately less frequent as a mechanism of violence death for males than it is for females.

Figure 76: Leading Mechanisms of Violence Injury Death for Female Residents of the Winnipeg Health Region, 1990-1999

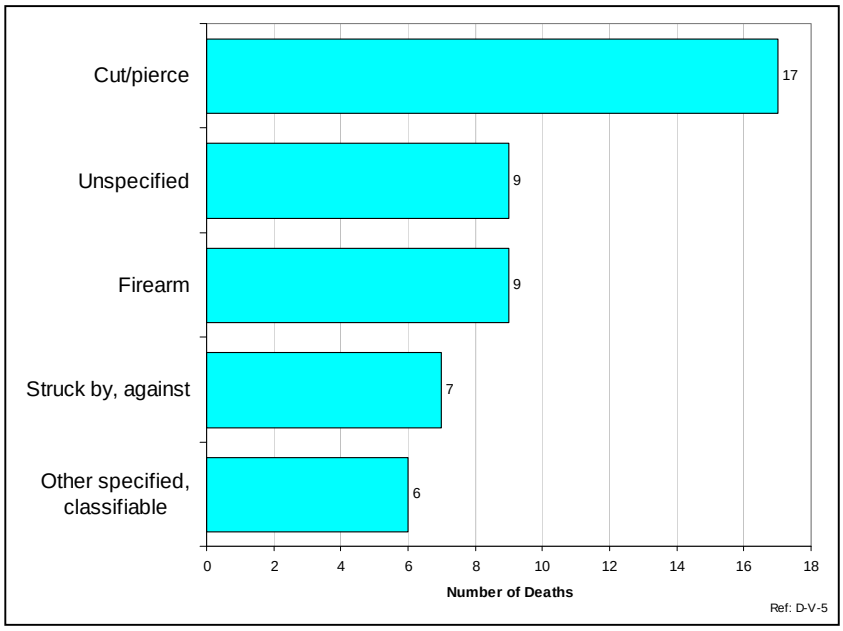
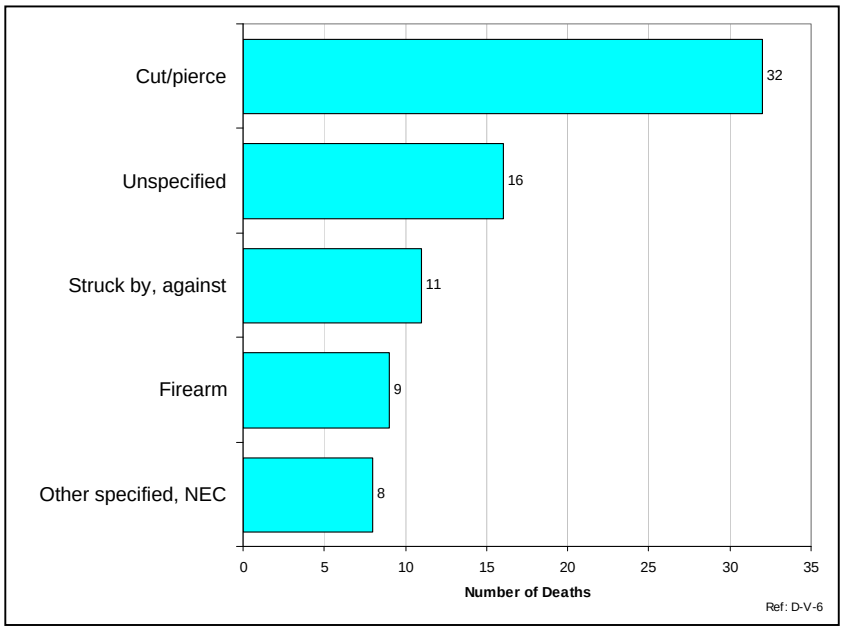


Figure 77: Leading Mechanisms of Violence Injury Death for Male Residents of the Winnipeg Health Region, 1990-1999



Note: The graphs on this page are on different scales

Violence Injury Deaths by Mechanism of Injury- Children

Child maltreatment (a sub-category of *Other specified, classifiable*) was the leading cause of violence injury death among children under 15 years of age, with 9 deaths (53% of all violence) occurring over the period of 1990-1999 in the WHR.

Note: Due to small numbers of events in the five-year age groups for children, the age groups were combined into one age group of those under 15 years of age. Also, since all mechanisms other than child maltreatment were so infrequent that they required suppression (i.e. <5), a graphic could not be displayed.

Table 51: Mechanisms of Violence Injury Death for Children, Under 15 Years of Age, in the Winnipeg Health Region, 1990-1999

	Age Group	
	under 15	
Mechanism or Cause	Number of Events	Rate per 100,000
Cut/pierce	0	0.0
Drowning/submersion	0	0.0
Fall	0	0.0
Fire/burn	0	0.0
Fire/flame	0	0.0
Hot object/substance	0	0.0
Firearm	s	s
Motor vehicle traffic	0	0.0
Poisoning	0	0.0
Medication	0	0.0
Struck by, against	s	s
Suffocation	s	s
Hanging, not in bed or cradle	s	s
Other specified, classifiable	9	0.7
Child maltreatment	9	0.7
Other specified, NEC	0	0.0
Unspecified	s	s
Other Violence	0	0.0
Total Violence	17	1.3

Violence Injury Deaths by Mechanism of Injury- Youth, Young Adults and Adults

Cutting and piercing ("stabbing") was the leading cause of violence injury death among youth, young adults and adults, responsible for 44% of all violence deaths in this age range (age groups are listed in Table 52).

For those 15 to 24 years of age, *firearm* was the second leading cause of violence injury death, responsible for 25% of violence deaths in this age span. For those 25-44 years of age the second leading cause was the category of *unspecified* causes. In the 25-44 year age group, *struck by/against* ("beating") and *firearm* were the third and fourth leading causes. No other specific mechanism was prominent other than cut/pierce in the 45-64 year age group.

Table 52: Mechanisms of Violence Death for Youth, Young Adults and Adults, 15-64 Years of Age, in the Winnipeg Health Region, 1990-1999

	Age Group					
	15-24		**25-44**		**45-64**	
Mechanism or Cause	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Cut/pierce	13	1.5	25	1.2	9	0.4
Drowning/submersion	0	0.0	0	0.0	0	0.0
Fall	0	0.0	0	0.0	0	0.0
Fire/burn	s	s	0	0.0	0	0.0
Fire/flame	s	s	0	0.0	0	0.0
Hot object/substance	0	0.0	0	0.0	0	0.0
Firearm	7	0.8	6	0.3	s	s
Motor vehicle traffic	0	0.0	0	0.0	0	0.0
Poisoning	s	s	0	0.0	0	0.0
Medication	0	0.0	0	0.0	0	0.0
Struck by, against	0	0.0	8	0.4	s	s
Suffocation	s	s	s	s	0	0.0
Hanging, not in bed or cradle	s	s	s	s	0	0.0
Other specified, classifiable	0	0.0	s	s	0	0.0
Child maltreatment	0	0.0	0	0.0	0	0.0
Other specified, NEC	0	0.0	s	s	5	0.2
Unspecified	5	0.6	12	0.6	s	s
Other Violence	0	0.0	0	0.0	0	0.0
Total Violence	**28**	**3.2**	**55**	**2.6**	**25**	**1.2**

Violence Injury Deaths by Mechanism of Injury- Older Adults

Further detail about violence injury deaths among older adults, 65 years of age and older, are not provided because of the low total number of deaths due to violence. There were only 10 violence injury deaths among older adults in the WHR during this period of time. This low rate is notable given a high level of community concern about the vulnerability of older adults related to violence.

Overview of Violence Injury Hospitalization

During the period of 1994 to 2003, many more male than female residents received in-patient hospital treatment for an injury due to *violence*. In actual numbers, there were 2,838 males of all ages, who received in-patient hospital treatment for a *violence* injury, while there were 747 females. This is the largest gender gap in any of the priority injury causes. Overall, there was a rate of 55 hospitalizations per 100 000 population.

The 25-34 years of age group had the largest number of hospitalizations for violence injury with a total of 1,071. Of the age-sex groups represented here, males, 25-34 years of age had the largest number of hospitalizations for violence injury with 840. Among females the largest number of violence injury hospitalizations also occur at 25-34 years of age. However, given the transition from 5 to10 year age spans at 25, the rate of violence injury hospitalizations peaks in the 20-24 year age group.

Note: Number of hospitalizations for violence injury for the following age groups: under 1 year of age: males, n=17, females, n=10; 1-4 years of age: males, n=11, females, n=10; 5-9 years of age: males, n=12, females, n=8; 10-14 years of age: males, n=44, females, n=19. For those 75-84 years of age: males, n=21, females, n=17; for those 85+ years of age: males, n=6 and females, n=7.

Figure 78: Violence Injury Hospitalization by Sex, Winnipeg Health Region, 1994-2003

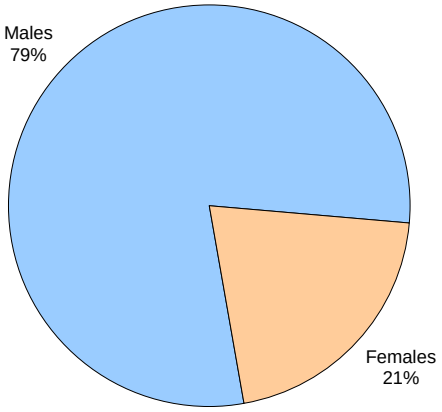
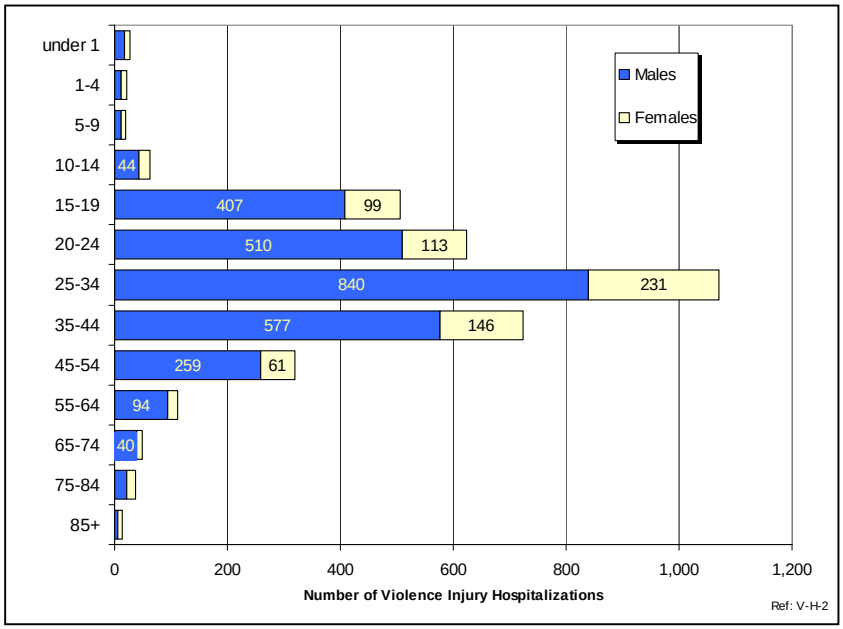


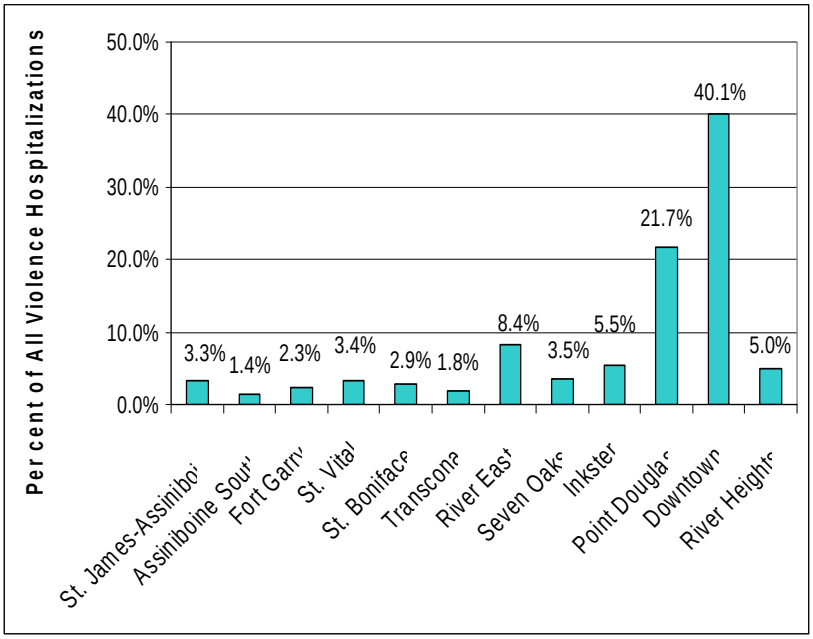
Figure 79: Violence Injury Hospitalization by Age-Sex Group, Winnipeg Health Region, 1994-2003



Violence Injury Hospitalization by Community Area

In nine of the twelve community areas, the rate of injury is so low that the overall percentage of violence injury hospitalization does not vary greatly in response to population size. Point Douglas and Downtown, experience rates of violence hospitalization substantially above the WHR average, with Inkster just marginally above. It should be noted that about 61% of injury hospitalizations due to violence in the WHR occurred to residents of Point Douglas and Downtown. Similar to violence deaths, a large gradient occurs between the highest and lowest community area rates. There is a nearly 10-fold difference between the lowest (Assiniboine South) and the highest (Downtown) hospitalization rates for violence. While Downtown has the highest rates overall, Point Douglas males have higher rates of violence hospitalization than Downtown males.

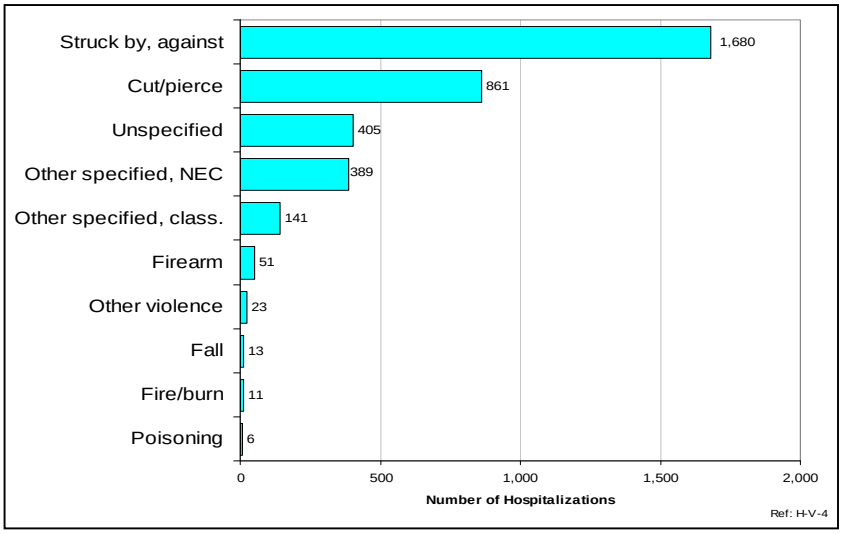
Figure 80: Violence Injury Hospitalization-Per cent Distribution by Community Area in the Winnipeg Health Region, 1994-2003



Violence Injury Hospitalization by Mechanism of Injury

The leading cause of violence injury hospitalization was *struck by or against* (an object or person), with 1,680 hospitalizations. This is followed by *cut and pierce* and *unspecified* with 861 and 405 hospitalizations, respectively.

Figure 81: Leading Mechanisms of Violence Injury Hospitalization for Residents of the Winnipeg Health Region, Both Sexes, All Ages, 1994-2003



Please note that 's' denotes a suppressed value of less than five events

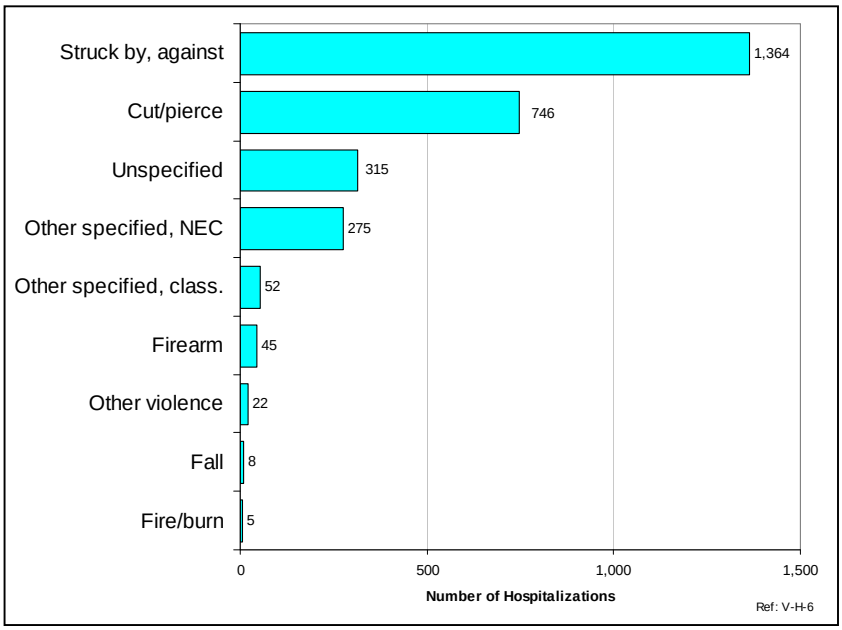
Table 82: Mechanisms of Violence Injury Hospitalization for Residents of the Winnipeg Health Region, 1994-2003

Mechanism or Cause	Both Sexes		Females		Males	
	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Cut/pierce	861	13.2	115	3.4	746	23.6
Drowning/submersion	0	0.0	0	0.0	0	0.0
Fall	13	0.2	5	0.1	8	0.3
Fire/burn	11	0.2	6	0.2	5	0.2
Fire/flame	7	0.1	s	s	s	s
Hot object/substance	s	s	s	s	s	s
Firearm	51	0.8	6	0.18	45	1.4
Motor vehicle traffic	s	s	s	s	s	s
Poisoning	6	0.09	s	s	s	s
Medication	s	s	s	s	s	s
Struck by, against	1680	25.8	316	9.4	1364	43.08
Suffocation	s	s	s	s	s	s
Hanging, not in bed or cradle	s	s	s	s	s	s
Other specified, classifiable	141	2.2	89	2.7	52	1.6
Child maltreatment	121	1.9	73	2.2	48	1.5
Other specified, NEC	389	6.0	114	3.4	275	8.7
Unspecified	405	6.2	90	2.7	315	9.9
Other violence	23	0.4	s	s	22	0.7
Total Violence	**3585**	**55.0**	**747**	**22.3**	**2838**	**89.6**

Violence Injury Hospitalization by Mechanism of Injury - Females

The leading cause of violence injury hospitalization among females was *struck by or against*, with 316 hospitalizations. This is followed by *cut/pierce* and *other specified NEC,* with 115 and 114 respectively. The top two causes accounted for 58% of all violence hospitalizations for females. While *firearm* was a prominent cause of violence death, it accounted for less than 1% of violence hospitalizations

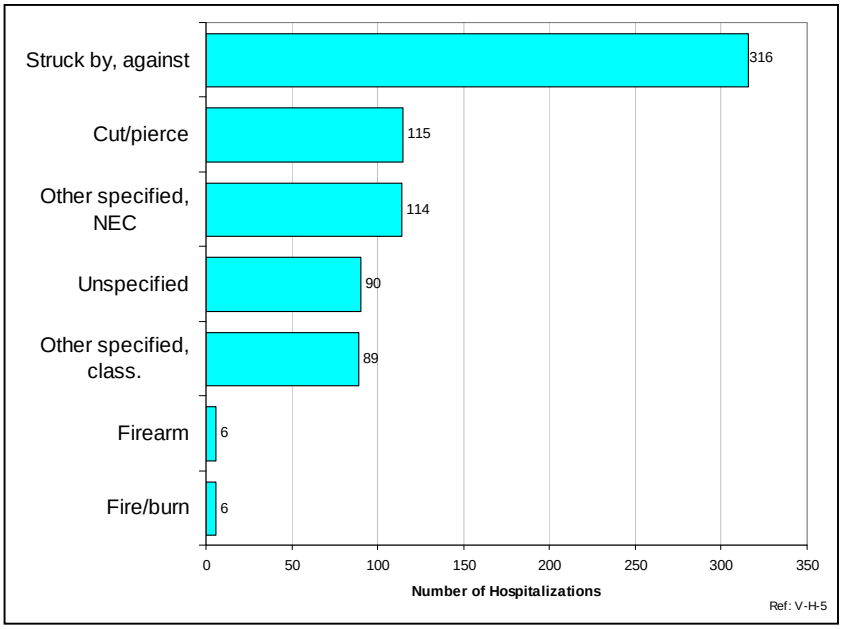
Figure 83: Leading Mechanisms of Violence Injury Hospitalization for Female Residents of the Winnipeg Health Region, 1994-2003



Violence Injury Hospitalization by Mechanism of Injury - Males

The leading cause of *violence* injury hospitalization among males was also *struck by or against* (an object or person) with 1,364 hospitalizations. This is followed by *cut and pierce* and *unspecified*. Each cause had 746 and 315 hospitalizations, respectively. The top two causes accounted for 74% of all violence hospitalizations for males. Firearms accounted for just under 2% of violence hospitalizations for males. While the rate of firearm deaths were similar for males and females, firearm hospitalizations were nearly double for males.

Figure 84: Leading Mechanisms of Violence Injury Hospitalization for Male Residents of the Winnipeg Health Region, 1994-2003



Note: The graphs on this page are on different scales

Violence Injury Hospitalization by Mechanism of Injury - Children

Child maltreatment (a sub-category of *Other specified, classifiable*) was the leading cause of violence injury hospitalizations among younger children (nine years of age and under). It is important to note that infants, less than one year of age have the highest rate of *child maltreatment* injury hospitalization, and violence hospitalizations overall, among the children's age groups. *Child maltreatment* also comprises the majority of violence injury hospitalizations for children and infants four years of age and under. For children 5 to 9 years of age, there was more variety in the causes of violence injury hospitalization. For older children, 10 to 14 years of age, *struck by or against* (an object or person) was the leading cause of violence injury hospitalization, which is followed by *child maltreatment*. *Cut/pierce* also started to appear as a measurable mechanism in the 10-14 year age group.

Table 53: Mechanisms of Violence Injury Hospitalization for Children in the Winnipeg Health Region, 1994-2003

	Age Group							
	under 1		**1-4**		**5-9**		**10-14**	
Mechanism or Cause	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Cut/pierce	0	0.0	0	0.0	0	0.0	5	1.2
Drowning/submersion	0	0.0	0	0.0	0	0.0	0	0.0
Fall	0	0.0	0	0.0	0	0.0	0	0.0
Fire/burn	0	0.0	0	0.0	s	s	0	0.0
Fire/flame	0	0.0	0	0.0	s	s	0	0.0
Hot object/substance	0	0.0	0	0.0	0	0.0	0	0.0
Firearm	0	0.0	0	0.0	0	0.0	0	0.0
Motor vehicle traffic	0	0.0	0	0.0	0	0.0	0	0.0
Poisoning	0	0.0	s	s	0	0.0	0	0.0
Medication	0	0.0	0	0.0	0	0.0	0	0.0
Struck by, against	0	0.0	s	s	s	s	29	6.9
Suffocation	0	0.0	0	0.3	0	0.0	0	0.0
Hanging, not in bed or cradle	0	0.0	s	s	0	0.0	0	0.0
Other specified, classifiable	22	27.8	17	5.1	5	1.2	14	3.3
Child maltreatment	22	27.8	16	4.8	s	0.9	14	3.3
Other specified, NEC	s	s	s	s	9	2.1	6	1.4
Unspecified	s	s	0	0.0	0	0.0	6	1.4
Other Violence	0	0.0	0	0.0	s	s	s	s
Total Violence	**27**	**34.1**	**21**	**6.3**	**20**	**4.6**	**63**	**14.9**

Violence Injury Hospitalization by Mechanism of Injury - Youth and Young Adults

Struck by or against was the leading cause of violence injury hospitalizations among youth and young adults (age groups are listed in Table 54). This is followed by *cut and pierce* injury in each of these age groups.

It is important to note that although adults 25 to 34 years of age have the largest number of violence injury hospitalizations, those 20 to 24 years of age have the highest rate of violence injury hospitalization. Similarly, with the leading causes of violence injury, *struck by or against* and *cut and pierce injury*, those 20 to 24 years of age have the highest rates of hospitalization, among the age groups compared here and all age groups studied.

Child maltreatment still results in hospitalizations in the 15-19 year age group. Firearms are responsible for about 3% of violence hospitalizations in this age group.

Table 54: Mechanisms of Violence Injury Hospitalization for Youth and Young Adults 15-34 Years of Age, in the Winnipeg Health Region, 1994-2003

	Age Group					
	15-19		**20-24**		**25-34**	
Mechanism or Cause	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Cut/pierce	149	35.8	180	40.0	272	27.5
Drowning/submersion	0	0.0	0	0.0	0	0.0
Fall	s	s	s	s	s	s
Fire/burn	s	s	s	s	s	s
Fire/flame	0	0.0	s	s	s	s
Hot object/substance	s	s	s	s	0	0.0
Firearm	10	2.4	10	2.2	23	2.3
Motor vehicle traffic	0	0.0	0	0.0	0	0.0
Poisoning	0	0.0	s	s	s	s
Medication	0	0.0	s	s	s	s
Struck by, against	238	57.1	301	66.9	497	50.2
Suffocation	0	0.0	s	s	0	0.0
Hanging, not in bed or cradle	0	0.0	s	s	0	0.0
Other specified, classifiable	25	6.0	7	1.6	14	1.4
Child/adult maltreatment	20	4.8	s	s	10	1.0
Other specified, NEC	44	10.6	57	12.7	139	14.0
Unspecified	35	8.4	59	13.1	115	11.6
Other Violence	s	s	s	s	s	s
Total Violence	**506**	**121.5**	**623**	**138.5**	**1071**	**108.2**

Violence Injury Hospitalization by Mechanism of Injury - Adults

Struck by or against was, again, the leading cause of violence injury hospitalizations among adults (age groups are listed in Table 55). This is followed by *cut and pierce* injury in those 35 to 44 and 45 to 54 years of age. For those 55 to 64 years of age, *unspecified* injury (of various causes) was the second leading cause of violence injury hospitalization.

A low level of adult maltreatment continues from the age 25—44. Further analysis would help to explore whether this is more likely to involve disabled adults.

Firearms hospitalization fall to a low rate by adulthood 35 years and older. Violence hospitalization rates overall continue to fall through these age groups after peaking in the 20-24 year age group.

Table 55: Mechanisms of Violence Injury Hospitalization for Adults, 35-64 Years of Age and Older, in the Winnipeg Health Region, 1994-2003

	35-44		45-54		55-64	
Mechanism or Cause	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Cut/pierce	165	15.3	68	7.8	17	3.1
Drowning/submersion	0	0.0	0	0.0	0	0.0
Fall	s	s	s	s	s	s
Fire/burn	s	s	0	0.0	0	0.0
Fire/flame	0	0.0	0	0.0	0	0.0
Hot object/substance	s	s	0	0.0	0	0.0
Firearm	s	s	s	s	s	s
Motor vehicle traffic	0	0.0	s	s	s	s
Poisoning	0	0.0	0	0.0	0	0.0
Medication	0	0.0	0	0.0	0	0.0
Struck by, against	356	33.1	165	19.0	53	9.5
Suffocation	s	s	s	s	0	0.0
Hanging, not in bed or cradle	s	s	s	s	0	0.0
Other specified, classifiable	11	1.0	5	0.6	s	s
Adult maltreatment	9	0.8	s	s	s	s
Other specified, NEC	80	7.4	26	3.0	9	1.6
Unspecified	99	9.2	48	5.5	24	4.3
Other Violence	s	s	s	s	s	s
Total Violence	**723**	**67.2**	**320**	**36.8**	**111**	**20.0**

Violence Injury Hospitalization by Mechanism of Injury - Older Adults

Struck by or against was the leading cause of violence injury hospitalizations among older adults, 65 to 74 years of age, followed by *other specified, NEC* injury. For those and 75 to 84 years of age, the leading cause was also *struck by or against.* However, this is closely followed by *unspecified* injury.

For those 85 years of age and older, it was difficult to determine the leading cause of violence injury, due to small numbers of events in each of the cause categories.

It should be noted that adult maltreatment is evident in low numbers in both the 65 -74 and the 75 - 84 year age groups at 12% and 21% of violence injury hospitalizations respectively. Numbers were too small to assess this mechanism in the 85 and over age group.

Table 56: Mechanisms of Violence Injury Hospitalization for Adults, 65 Years of Age and Older, in the Winnipeg Health Region, 1994-2003

	Age Group					
	65-74		**75-84**		**85+**	
Mechanism or Cause	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000	Number of Events	Rate per 100,000
Cut/pierce	5	1.1	0	0.0	0	0.0
Drowning/submersion	0	0.0	0	0.0	0	0.0
Fall	0	0.0	0	0.0	s	s
Fire/burn	0	0.0	s	s	0	0.0
Fire/flame	0	0.0	s	s	0	0.0
Hot object/substance	0	0.0	0	0.0	0	0.0
Firearm	s	s	0	0.0	0	0.0
Motor vehicle traffic	0	0.0	0	0.0	0	0.0
Poisoning	s	s	0	0.0	0	0.0
Medication	0	0.0	0	0.0	0	0.0
Struck by, against	23	5.0	11	3.4	s	s
Suffocation	0	0.0	0	0.0	0	0.0
Hanging, not in bed or cradle	0	0.0	0	0.0	0	0.0
Other specified, classifiable	6	1.3	9	2.8	s	s
Adult maltreatment	6	1.3	8	2.5	s	s
Other specified, NEC	7	1.5	s	s	s	s
Unspecified	6	1.3	10	3.1	s	s
Other Violence	0	0.0	s	s	s	s
Total Violence	**49**	**10.6**	**38**	**11.9**	**13**	**11.8**

Injury by Community Area

There is variability in the injury death and hospitalization rates among the community areas. This section will compare injury rates by community area for all injuries combined (All Injury) as well as the four leading causes of injury in the WHR. Unless otherwise specified, death data are for the period of 1990-1999 and hospitalization data are for the period of 1994-2003. Changes over time are also presented using rates generated for two five-year periods for injury deaths and hospitalizations.

Note: Data tables of counts, and rates, for the community areas are placed at the end of this chapter.

Injury Death

All Injury

Although there is a large difference between the lowest and highest rates of *all injury* death, the majority of community areas (ten of the twelve) had rates that were similar to or lower than the WHR rate.[35] There are two community areas that have extremely high injury death rates: Downtown and Point Douglas. These rates are substantially higher than for the WHR, at 63 and 65 per 100 000 population respectively, compared to the 36 per 100 000 population for the WHR.

The lowest rate of injury death was found in the Fort Garry community area, at 18 per 100 000. The remaining nine community areas had rates that range from 26 to 39 per 100 000 population. These community areas include: Inkster, Transcona, Seven Oaks, Assiniboine South, St. Boniface, St. Vital, River East, St. James-Assiniboia, and River Heights.

Figure 85 shows the differences in the crude rates of all injury death between male and female residents by community area. In most community areas, as for the region as a whole, males have higher rates of injury death than females. This ranges from 1.5 to 2.5 times higher rates for males than females. The exception to this is the Assiniboine South community area, which had rates that were similar between male and female residents. It is of interest to note that male residents in Point Douglas had the highest injury death rate, at 89 per 100 000 population and Downtown had the highest rate among female residents by community area, at 43 per 100 000 population.

There is value in examining the age-adjusted rates by community area, as this controls for the differences in the age distribution of the respective community area populations. In other words, this can be one way of determining if the age distribution of the community areas is a probable reason for the differences seen in the crude rates of injury death. After age-adjusting the injury death rates, only Point Douglas and Downtown have rates that remain higher than that of the adjusted WHR rate (Figure 86). This can be interpreted to mean that differences in the underlying age distribution of these populations is not a significant factor that explains the higher rates of injury death in these two community areas. In contrast, in River Heights (which had a crude rate of injury death that was higher than that of the WHR) the age distribution of the population may explain the higher crude rate, as the age-adjusted rate was not higher than that of the WHR. Overall, the age-adjusted rates were similar between most community areas except for Point Douglas and Downtown, which have the highest rates.

[35] Unless otherwise noted, the discussion of injury death rate refers to the crude rate for both sexes combined (i.e. all residents of all ages) in each community area. This applies throughout this chapter. *All Injury* includes all causes of injury that can be assigned an ICD-9 E-code, but excludes adverse events (in medical care).

Figure 85: All Injury- Crude Rates of Death in the WHR by Community Area, 1990-1999

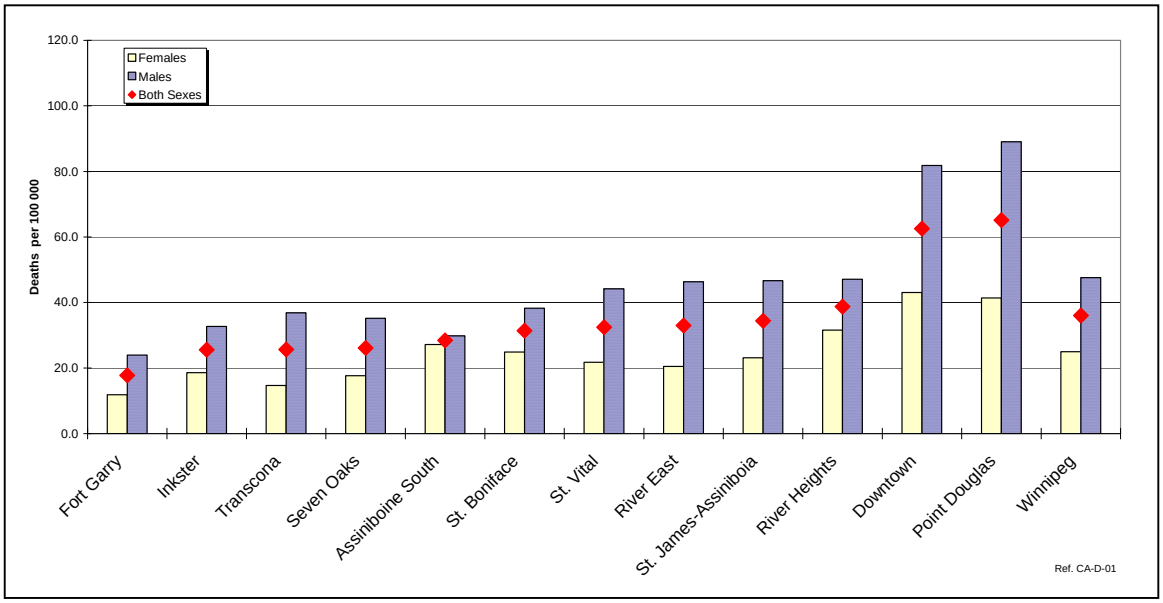
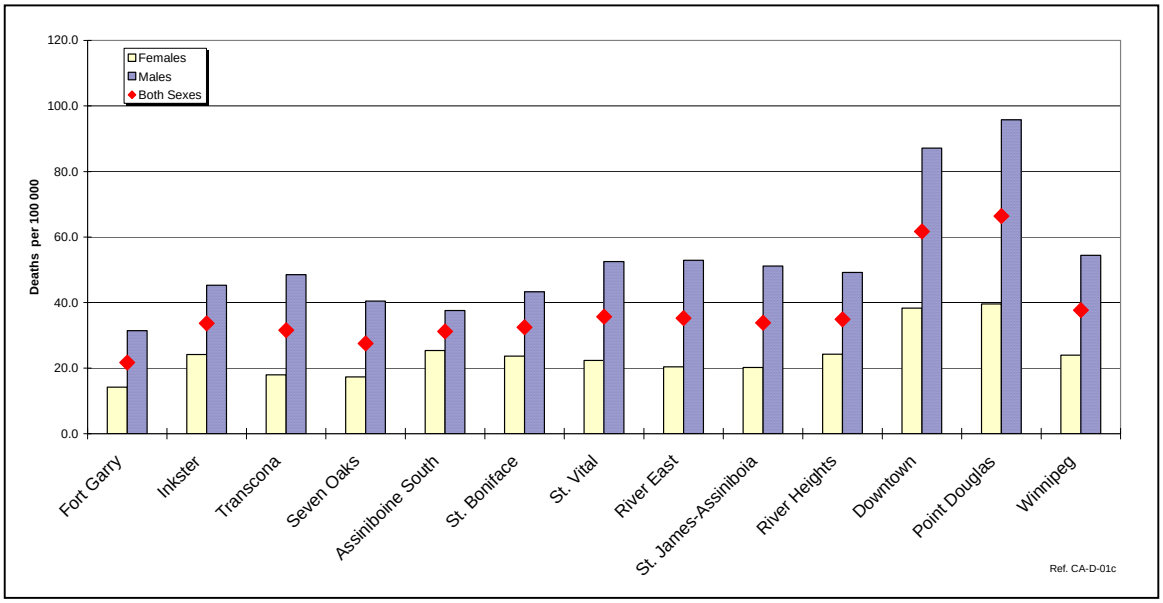


Figure 86: All Injury- Age-adjusted Rates of Death in the WHR by Community Area, 1990-1999



Leading Causes of Injury Death

The four leading causes of injury death in the WHR are examined by community area. Between 1990 and 1999, these were suicide, falls, motor vehicle traffic and violence.

Suicide

Although there is a large difference between the lowest and highest rates of suicide, the majority of community areas (nine of the twelve) had rates that were similar to or lower than the WHR rate. However, there are two community areas with extremely high rates: Downtown and Point Douglas. At 19 deaths per 100 000 population (in each community area), these rates are substantially higher than that of the WHR at 11 per 100 000 population. It should be noted that River Heights community area also had a rate that was higher than that of the WHR, at 13 per 100 000 population.

The Fort Garry community area had the lowest crude rate of suicide of all the community areas, at 5.6 per 100 000 population: less than half the rate of the WHR. The remaining community areas had crude rates of suicide that were similar, yet slightly lower than that of the WHR, which ranged between 8.1 and 10.0 per 100 000 population. These community areas include: St. James-Assiniboia, River East, Assiniboine South, Inkster, Seven Oaks, St. Vital, Transcona, and St. Boniface.

Figure 87 shows the differences in the crude rates of suicide for male and female residents in each community area. These rates are much higher for males than for females in every community area. There is a wide range in this sex difference between community areas: from 2.2 times higher for males in Downtown to 6.7 times higher for males in St. James-Assiniboia. There does not appear to be a consistent pattern in this sex difference among the community areas. It is of interest to note that male residents in Point Douglas had the highest suicide rate, at 27.5 per 100 000 population and Downtown had the highest rate among female residents by community area, at 11.7 per 100 000 population.

Age-adjusting the suicide rates of the respective community area populations had little effect on the rates (Figure 88). Only Point Douglas and Downtown community areas have age-adjusted suicide rates that remain higher than that of the adjusted WHR rate. The rates of the remaining community areas do not have great variability. Age-adjusting the rates also did not affect the pattern of the sex differences that was noted for the crude rates (where males had a higher rate of suicide compared to females).

Figure 87: Suicide- Crude Rates of Death by Community Area, 1990-1999

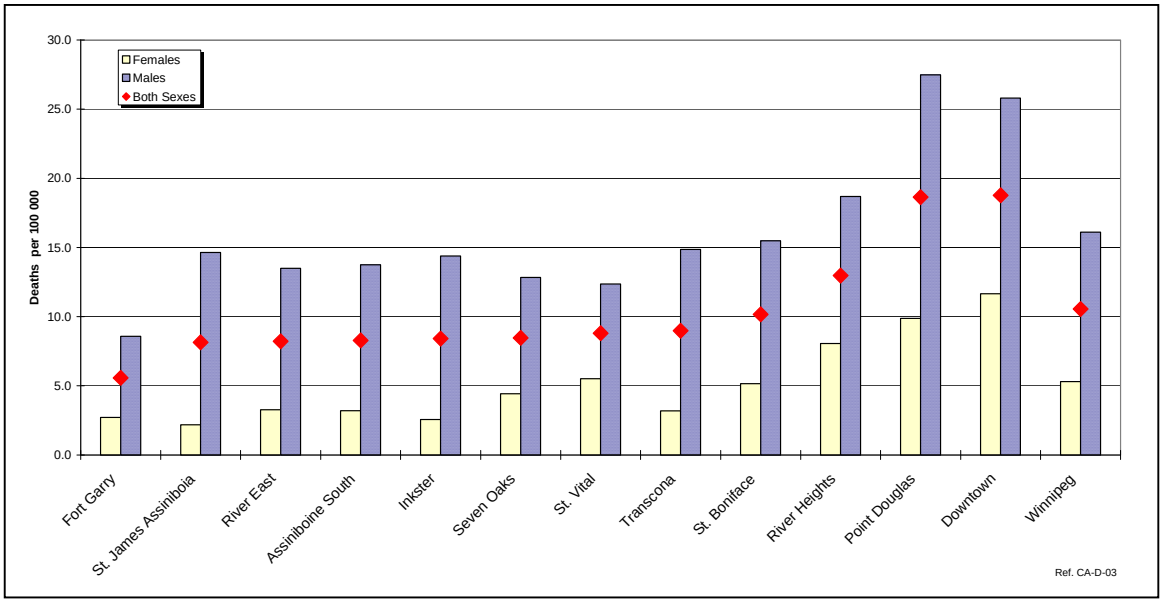
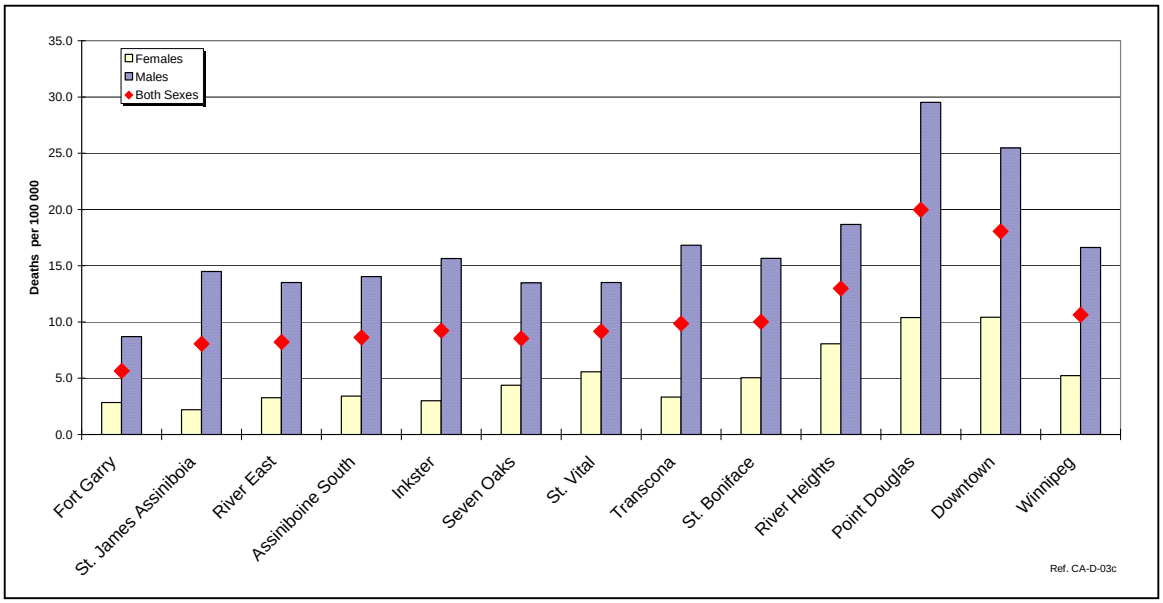


Figure 88: Suicide- Age-adjusted Rates of Death by Community Area, 1990-1999



Fall Injury

There is wide variation in the crude rates of fall injury death between all of the twelve community areas. Approximately half of the community areas had rates that were higher than that for the WHR and half were lower. However, two community areas have very high rates, these are St. James-Assiniboia and Point Douglas. These community areas had a rate of 9.0 per 100 000 population (in each community area), which is substantially higher than the 6.2 per 100 000 population for the WHR as a whole. The Downtown and River Heights community areas also had rates that were higher than that of the WHR, at 8.4 and 8.5 per 100 000 population, respectively. This is followed by River East and Assiniboine South community areas, with rates of 6.8 and 6.9 per 100 000 population, respectively.

The Transcona community area had the lowest crude rate of fall injury death at 1.9 per 100 000 population, approximately three times lower than the WHR rate. The remaining community areas had crude rates that ranged between 2.9 and 5.3 per 100 000 population. These community areas include: Inkster, Seven Oaks, Fort Garry, St. Vital, and St. Boniface.

Figure 89 shows the differences in crude rates of fall injury death between male and female residents for each community area in the WHR. Although the regional rate shows that males and females have similar rates, this is not consistent between the twelve community areas. In some of the community areas, females have higher rates than males and in some community areas the opposite is true. There are four community areas where female residents have higher rates than male residents: St. Boniface, Assiniboine South, Downtown and River Heights. It is noteworthy also that the two community areas with the highest rates of fall injury also have the highest rates among males: St. James-Assiniboia and Point Douglas. The rates for males in these two community areas were 12.4 and 11.3 per 100 000 population, respectively. However, the highest rates for females of were found in River Heights and Downtown: with rates of were 9.3 and 9.4 per 100 000 population, respectively.

Age-adjusting the rates of fall injury death for age distribution in the community area populations had a profound effect on the rates, minimizing the differences observed in the crude rates in most of the community areas (Figure 90). Therefore it appears that differences in age distribution of the community area populations may explain the differences observed with the crude rates. However, the highest age-adjusted rates were still found in St. James-Assiniboia, Point Douglas, Downtown and River East.

Age-adjusting the rates also had a marked effect on the sex differences seen in the crude rates. Where females had had higher crude rates than males did in seven community areas, the pattern of the age-adjusted rates showed the opposite in most community areas. This is particularly apparent in St. Boniface, Assiniboine South, Downtown and River Heights. This may indicate that in these community areas it is the difference in the age distribution of each sex that accounts for the sex differences seen in the crude rates. However, males in St. James-Assiniboia and Point Douglas still have the highest age-adjusted rates of fall injury death.

Figure 89: Fall Injury- Crude Rates of Death by Community Area, 1990-1999

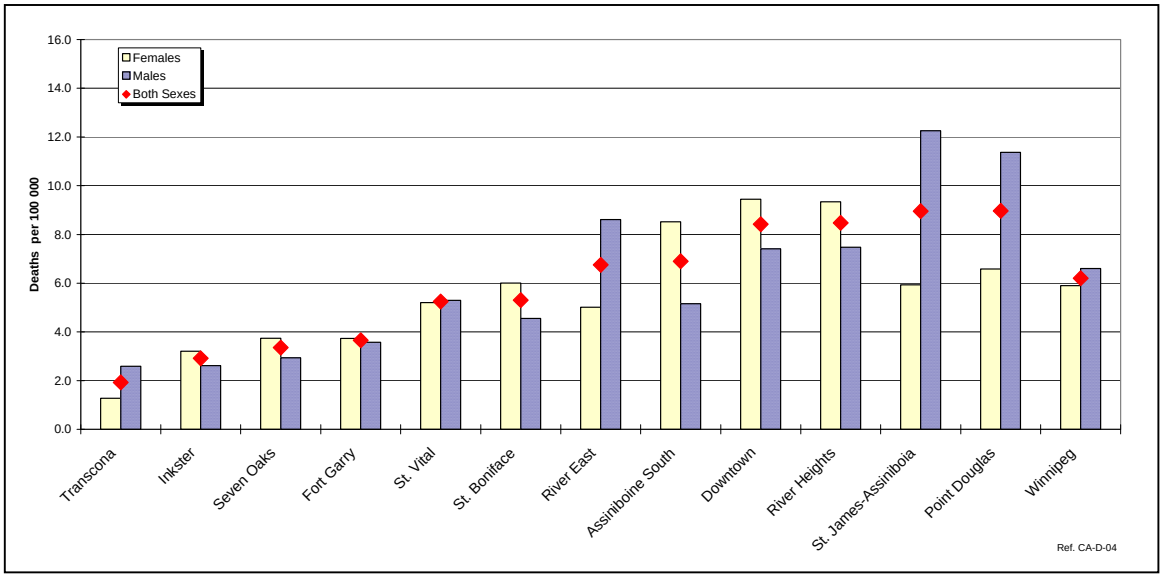
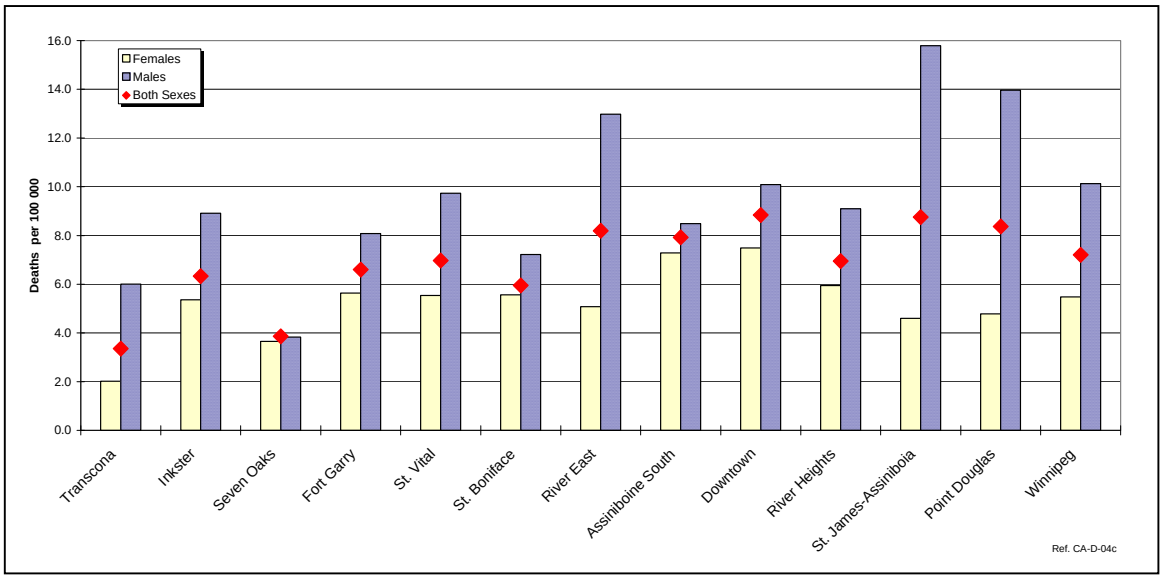


Figure 90: Fall Injury- Age-Adjusted Rates of Death by Community Area, 1990-1999



Motor Vehicle Traffic Injury

There is less variation in the crude rates of motor vehicle traffic injury death (compared to the previous causes of injury) between the twelve community areas. Five of the community area had rates that were higher than that of the WHR, while seven were similar or lower. The two community areas with the highest rates were Downtown and Point Douglas, at 7.2 and 7.3 per 100 000 population, respectively. These rates are higher than that of the WHR, at 5.5 per 100 000 population. The three other community areas with rates that were higher than that of the WHR were: River East, Seven Oaks, and Transcona (with rates of 6.1, 6.2, and 6.7 per 100 000 population, respectively).

The lowest crude rate of motor vehicle traffic injury death was found in the Fort Garry community area, at 3.8 per 100 000 population. The remaining community areas had rates that ranged between 4.1 and 5.6 per 100 000 population. These were: St. James-Assiniboia, Assiniboine South, St. Boniface, Inkster, River Heights and St. Vital.

Figure 91 shows the differences in the crude rates of motor vehicle traffic injury death between male and female residents. In nine of the twelve community areas males had higher rates than females, which is similar to the sex difference seen at the regional level. In the remaining three community areas (Point Douglas, St. James-Assiniboia, and Inkster) the rates were similar for males and females. This might at least partially be explained by a different proportion of pedestrian deaths in those community areas, although this analysis was not done. Pedestrian deaths tend to be more evenly distributed between males and females, where motor vehicle occupant deaths predominantly involve males. It is of interest to note that Downtown had the highest rate for male residents among the community areas, at 10.2 per 100 000 population, while Point Douglas had the highest rate for females, at 7.5 per 100 000 population.

Age-adjusting the motor vehicle traffic injury death rates of the respective community area populations had little effect on the rates in most community areas (Figure 92). The exception to this was in the Inkster and Transcona community areas, where the rates for males increased substantially after age-adjustment. Transcona had the highest age-adjusted rate. Although the Point Douglas and Downtown community areas have adjusted rates that remain higher than that of the adjusted WHR rate, their ranking falls to second and third. For the remaining nine community areas, there is little variation in the age-adjusted rates. Age-adjusting the rates also did not change the pattern of gender differences that were noted in the crude rates.

In summary, although Point Douglas and Downtown are of particular concern for motor vehicle traffic injury death, Transcona also appears to be of concern, particularly for males. It is possible that differences in age distribution of the populations of the community areas may be “masking” some issues with motor vehicle traffic injury death, particularly in Transcona.

Figure 91: Motor Vehicle Traffic Injury- Crude rates of Death by Community Area, 1990-1999

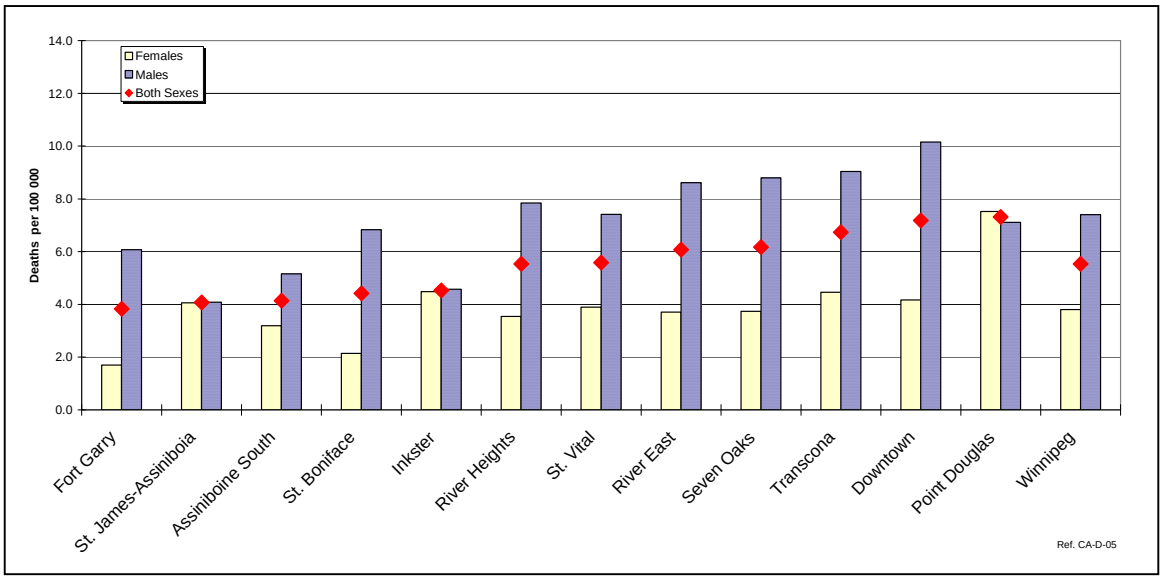
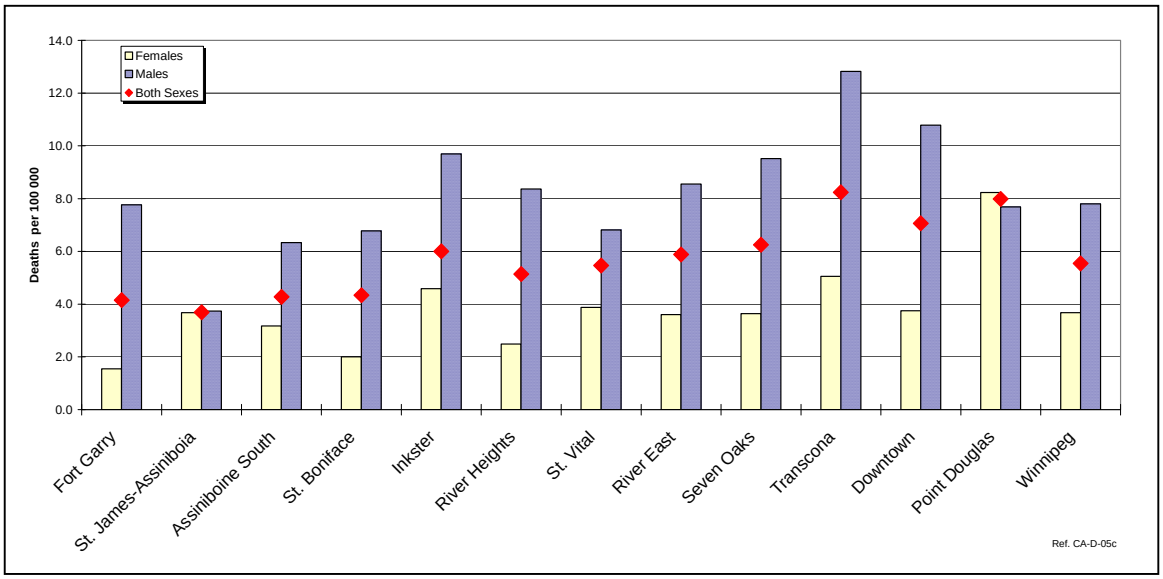


Figure 92: Motor Vehicle Traffic Injury- Age-adjusted Rates of Death by Community Area, 1990-1999



Violence Injury

Although there is a large difference between the lowest and highest rates of injury death due to violence, the majority of community areas (nine of the twelve) had rates that were much lower than that for the WHR. However, two community areas have extremely high rates of death due to violence: Point Douglas and Downtown. These community areas had crude rates of 6.1 and 6.9 per 100 000 population, respectively. These are more than three times higher than the rate for the WHR as a whole, at 2.1 per 100 000 population.

The Transcona community area had no deaths due to violence during the ten-year period. The remaining community areas had crude rates that ranged between 0.7 and 1.4 per 100 000 population. These community areas include: Fort Garry, Seven Oaks, St. James-Assiniboia, St. Boniface, St. Vital, River East, River Heights, and Assiniboine South. The Inkster community area appears to be unique in that it is the only community area with a rate that is in between those with the highest and the remaining nine community areas with relatively low rates. This community area had crude rate of death due to violence that was slightly higher than that of the WHR, at 2.9 per 100 000 population. It may also be of interest to note that violence is not the fourth leading cause of injury death in eight of the twelve community areas (see table at end of chapter).

Figure 93 shows the difference in crude rates of death due to violence between male and female residents. In eight of the twelve community areas males had higher rates than females, which is similar to the gender difference seen at the regional level. However, there is variability in the magnitude of this difference. It is particularly noteworthy that the two community areas with the highest rates also had the highest rates among males. With rates of 8.8 and 8.5 per 100 000 population (for Point Douglas and Downtown, respectively) these are nearly four times higher than the rate for the WHR as a whole. Inkster also had a very high rate of violence for male residents, but the rate for female residents was similar to that of the WHR females.

Age-adjusting the injury death rates for violence had little effect on the rates in most community areas (Figure 94). Point Douglas and Downtown, as well as Inkster, had adjusted rates that were substantially higher than the WHR rate. There was little variation in the age-adjusted rates of the remaining nine community areas.

Figure 93: Violence Injury- Crude rates of Death by Community Area, 1990-1999

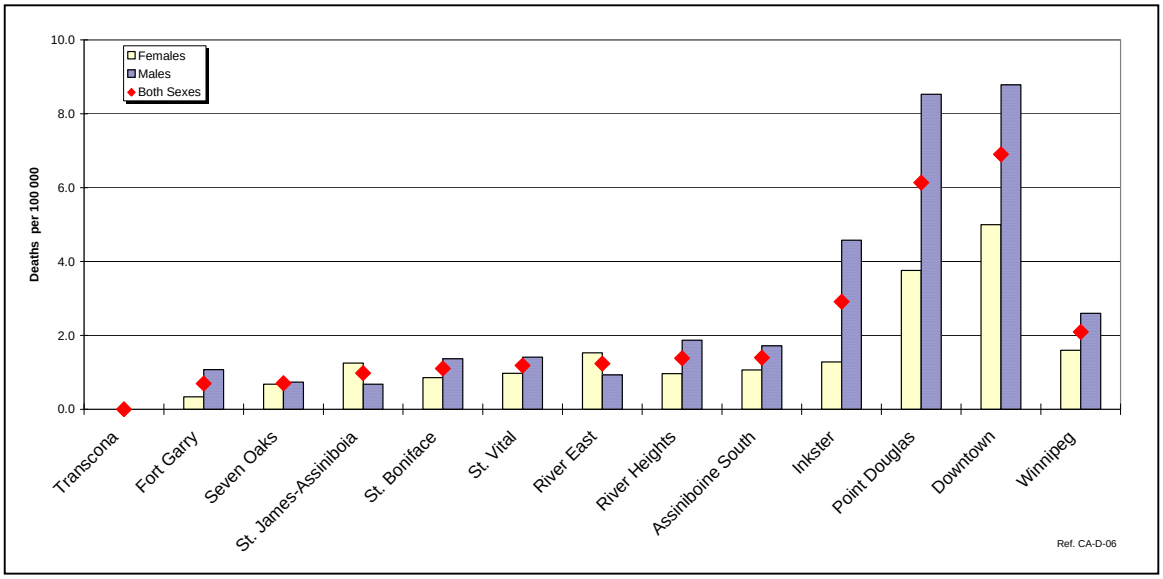
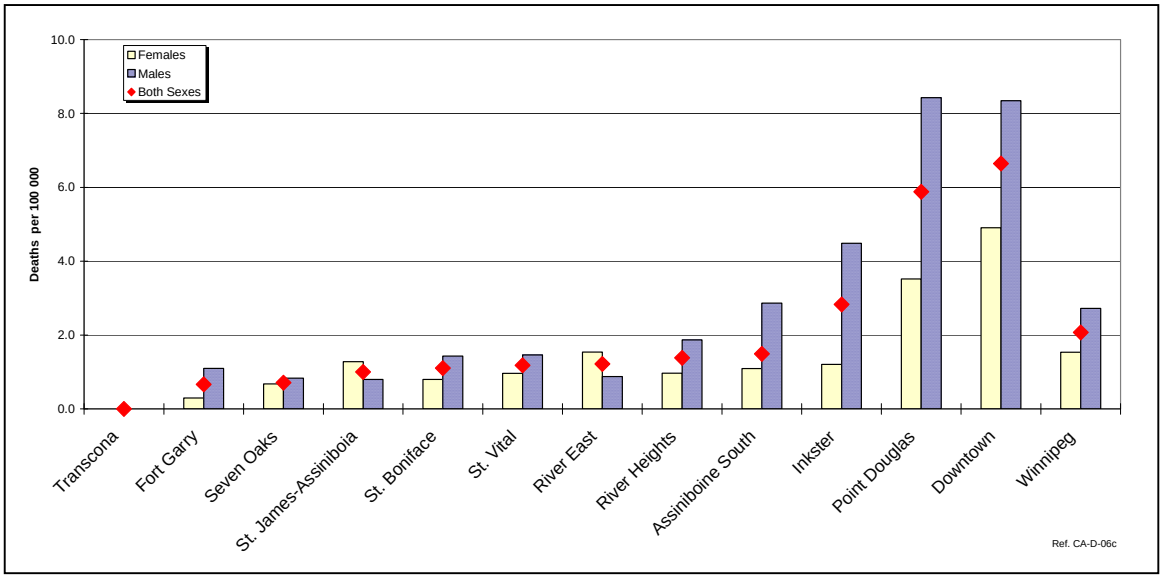


Figure 94: Violence Injury- Age-adjusted Rates of Death by Community Area, 1990-1999



Have there been changes in injury deaths over time among the Community Areas?

The injury death rate (*All Injury)* for the WHR increased from 31.7 to 40.3 deaths per 100 000 population, an increase of 27% between the two five year periods of 1990-1994 and 1995-1999. Similarly, increases were experienced by all of the community area populations (Figure 95). However, these increases ranged from 2% in Inkster, to 68% in River Heights. No community areas experienced a decrease in the *All Injury* death rate.

The age-adjusted rates of the respective community areas showed a similar pattern to that of the crude rates in most community areas. The exceptions include Transcona and Inkster. For Transcona, the difference in the age-adjusted rates was minimized between the two time periods, resulting in a slight decrease between the two five-year periods. In Inkster there was a larger difference in the age-adjusted rates between the two five-year periods increase compared to the crude rates. For the remaining community areas, the adjusted rates show a trend towards increase in injury death rates between the two five-year periods. This increase varies in magnitude between the community areas.

Figure 95: Time Trend Comparison of Crude Rates of Injury Death by Community Area in the WHR, 1990-1994 and 1995-1999

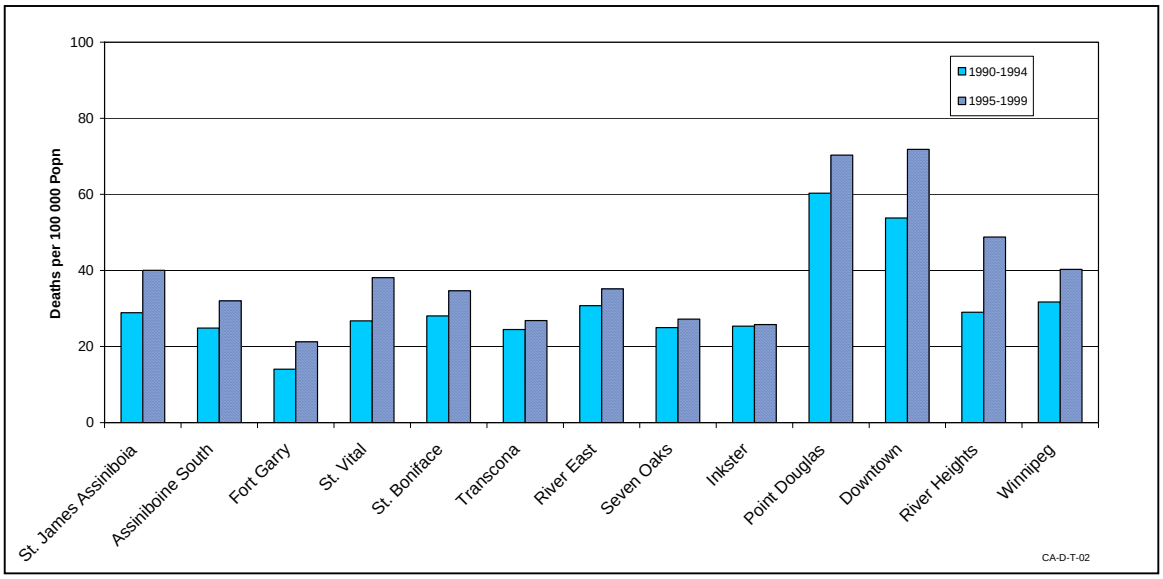
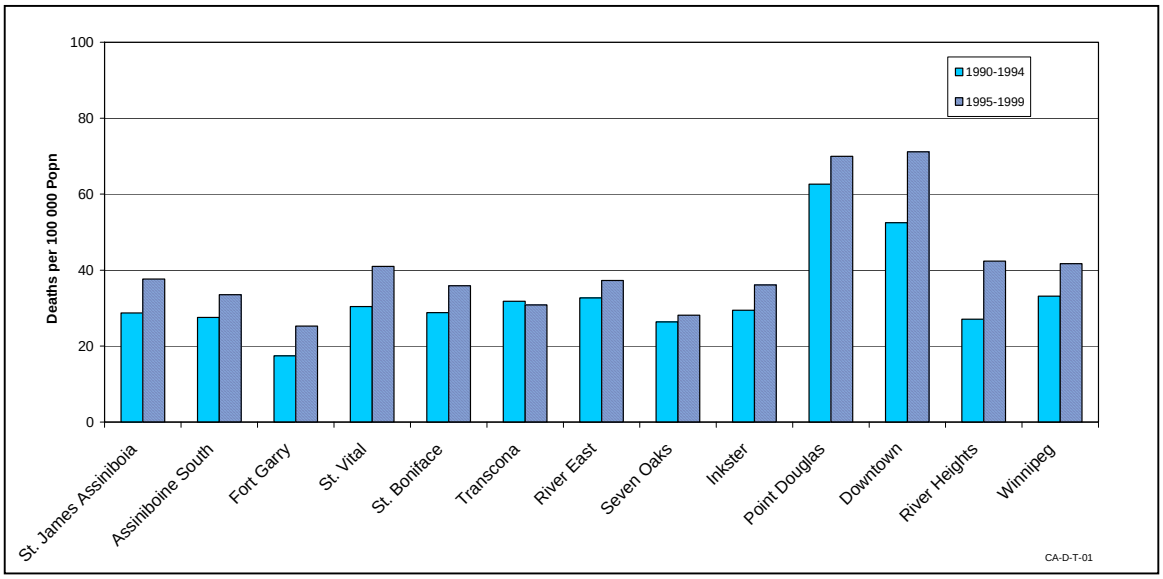


Figure 96: Time Trend Comparison of Age-adjusted Rates of All Injury Death by Community Area in the WHR, 1990-1994 and 1995-1999



Injury Hospitalization

All Injury

There is wide variation in the crude rates of injury hospitalization (*All injury*) between the twelve community areas. Although the majority of the community areas have similar rates, there are two community areas with extremely high injury hospitalization rates: Point Douglas and Downtown. These rates were substantially higher than that of the WHR, at 1182 and 1342 per 100 000 population respectively, compared to the 763 per 100 000 population in the WHR as a whole. It should also be noted that River Heights community area had a crude rate that was higher than that of the WHR, at 837 per 100 000 population.

The lowest crude rate of injury hospitalization was found in the Fort Garry community area, at 517 per 100 000. The remaining community areas have rates of injury hospitalization that range from 521 to 755 per 100 000 population. These were: Transcona, St. Vital, Seven Oaks, Inkster, St. Boniface, Assiniboine South, River East, and St. James-Assiniboia.

Although at the regional level, the rate of injury hospitalization is nearly equal between male and female residents, this is not consistently seen in all community areas (Figure 97). In Inkster, Point Douglas, and Downtown, males have higher rates than females, while in St. Boniface, Assiniboine South, St. James-Assiniboia, and River Heights, the opposite is true. Male residents of Downtown had the highest rate of injury hospitalization, at 1389 per 100 000 population, while female residents had the highest rate among females by community area at 1294 per 100 000 population.

For the majority of community areas, age-adjusting the rates had the effect of reducing the differences seen in the crude rates (Figure 98). There is little variation in the age-adjusted rates for most community areas, with the exceptions of the Point Douglas and Downtown community areas. In these two community areas the age-adjusted rates were higher than that of the age-adjusted WHR rate. It is of interest to note that although the adjusted rate for River Heights was higher than those of most of the other community areas, it was lower than the WHR adjusted rate. It is therefore more likely that the older age of this population is the reason for the higher crude rate found in this community area.

The other noticeable effect of age-adjustment of the injury rates is for community areas where females had higher crude rates than males (i.e. St. Boniface, Assiniboine South, St. James-Assiniboia, and River Heights). This sex difference was reduced in the age-adjusted rates. This indicates that differences in the underlying age distribution of each sex in these community area populations may explain, to a certain degree, the sex differences seen in the crude rates. (One hypothesis to further explore is that these populations tend to have higher proportions of senior women, who become hospitalized for injury).

Figure 97: All Injury- Crude Rates of Hospitalization in the WHR by Community Area, 1994-2003

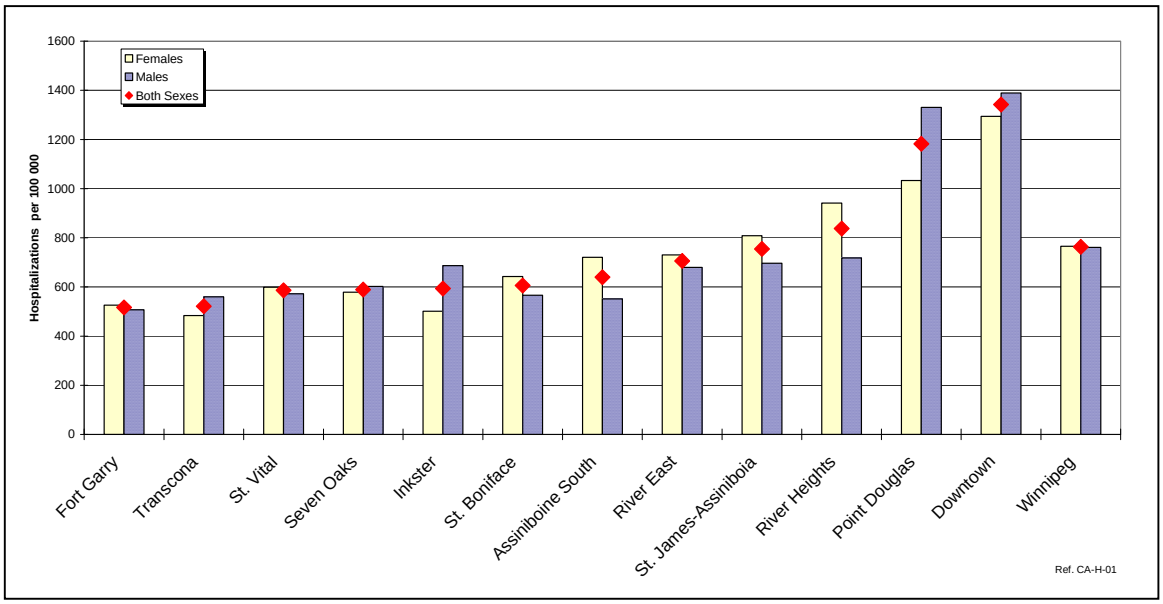
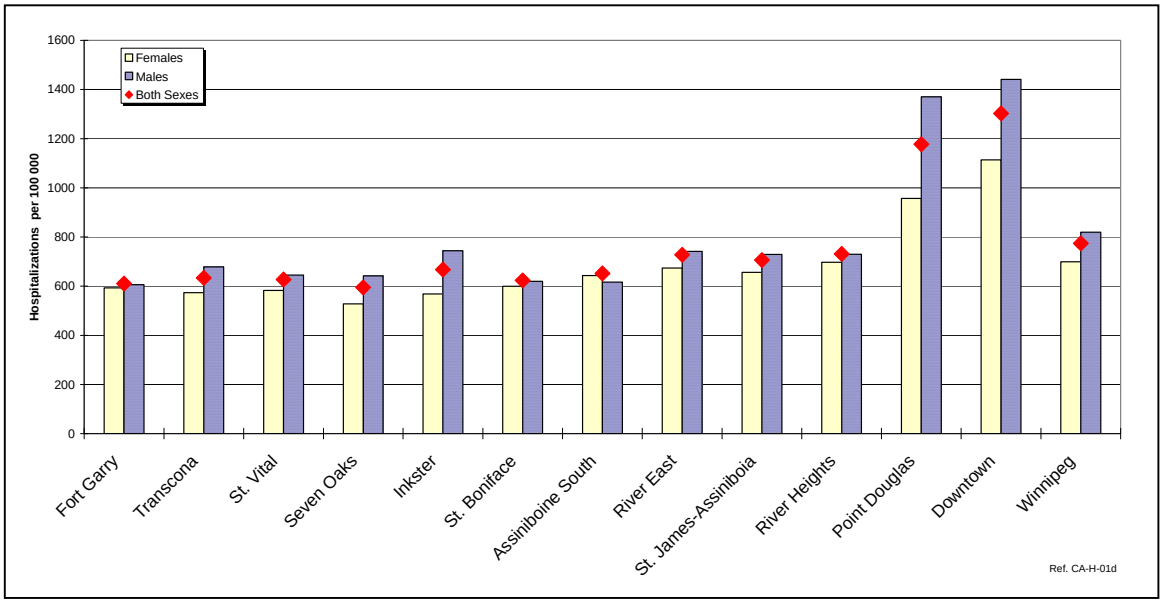


Figure 98: All Injury- Age-adjusted Rates of Hospitalization by Community Area, 1994-2003



Leading Causes of Injury Hospitalization

The four leading causes of injury hospitalization in the WHR are examined by community area. Between 1994 and 2003 these were: falls, self-inflicted, motor vehicle traffic, and violence.

Fall Injury

There is wide variation in the crude rates of fall injury hospitalization between all of the twelve community areas. Eight of the twelve community areas had crude rates that were equal to or lower than that for the WHR. The two community areas with the highest rates were River Heights and Downtown. These community areas had rates of 499 and 585 per 100 000 population, which are substantially higher than the 376 per 100 000 population for the WHR as a whole. This is followed by the St. James-Assiniboia and Point Douglas community areas at 423 and 447 per 100 000 population, respectively.

The Inkster community area had the lowest rate, at 217 per 100 000 population. The remaining community areas had rates that ranged between 228 and 368 per 100 000 population. These community areas include: Transcona, Fort Garry, Seven Oaks, St. Vital, St. Boniface, River East and Assiniboine South.

Figure 99 highlights the substantial difference in the rates of fall injury hospitalization between female and male residents by community area. Females have higher rates in every community area, which is consistent with that found at the regional level (This contrasts with the death data where this tendency is not consistent in all community areas). Female residents of Downtown had the highest rate, at 728 per 100 000 population. Downtown males had the highest rate among males by community area, at 445 per 100 000 population.

For the majority of community areas, age-adjusting the rates had the effect of reducing the differences seen in the crude rates (Figure 100). There is little variation in the age-adjusted rates for most community areas, with the exceptions of Point Douglas, River Heights and Downtown. These three community areas had adjusted rates that were higher than the WHR adjusted rate.

Similar to the *All Injury* rates, the other noticeable effect of age-adjustment of the rates is that where females had substantially higher crude rates than males, this difference was reduced in the age-adjusted rates. Females still tend to have higher age-adjusted rates than males (the exception being Point Douglas, where males had a slightly higher adjusted rate than females). This indicates that differences in the underlying age and sex distribution in the community area populations, most likely the higher proportion of females in the oldest age groups, may explain to a certain degree, the sex differences seen in the crude rates.

Figure 99: Falls Injury- Crude Rates of Hospitalization by Community Area, 1994-2003

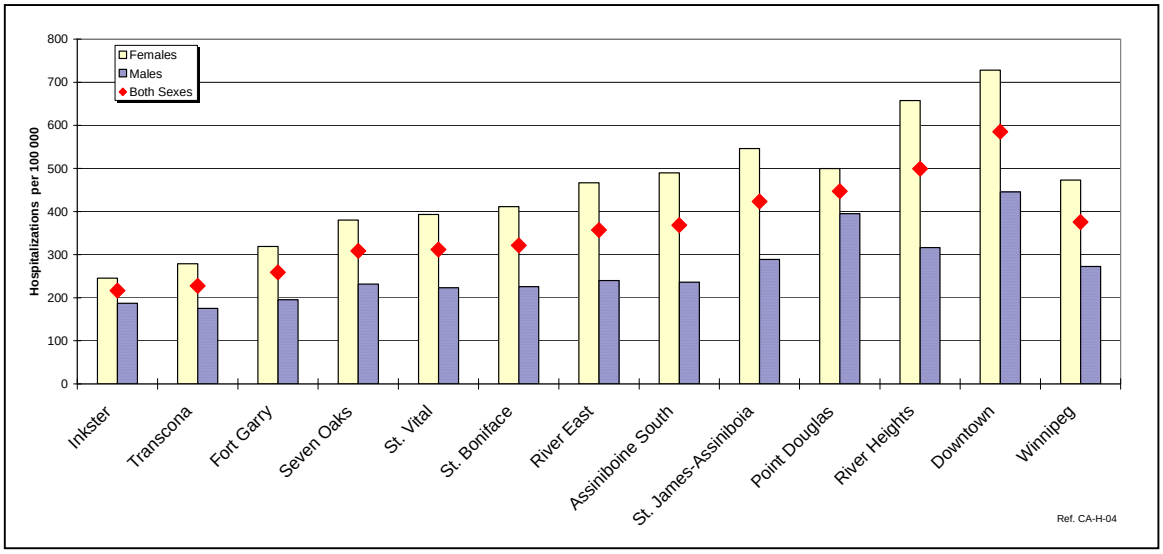
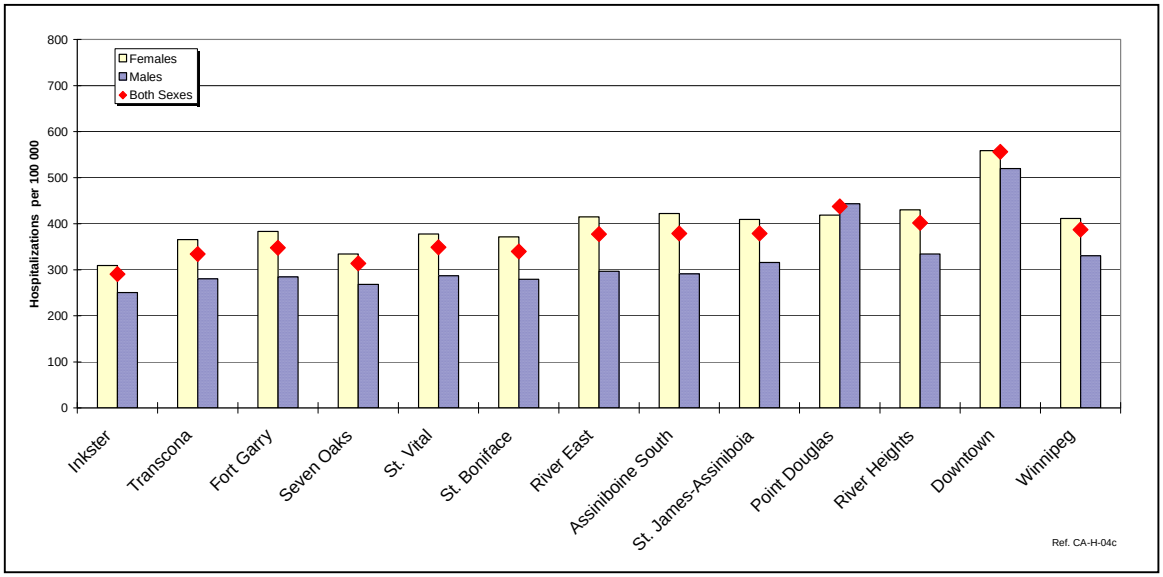


Figure 100: Falls Injury- Age-adjusted Rates of Injury Hospitalization by Community Area, 1994-2003



Self-inflicted Injury

Although there is a large difference between the lowest and highest crude rates of hospitalization for self-inflicted injury, the majority of community areas (ten of the twelve) had rates that were similar to or lower than the WHR rate. The two community areas with the highest crude rates were Point Douglas and Downtown. These community areas had crude rates of 103 and 109 per 100 000 population (respectively), which were substantially higher than that for the WHR, at 56 per 100 000 population.

The Assiniboine South community area had the lowest rate of hospitalization for self-inflicted injury, at 35 per 100 000 population. The remaining community areas had rates that ranged between 38 and 59 per 100 000 population. These community areas include: St. James-Assiniboia, Seven Oaks, Transcona, St. Vital, Fort Garry, Inkster, River East, St. Boniface, and River Heights.

Figure 101 shows the differences in the rates of hospitalization for self-inflicted injury between female and male residents by community area. This is consistent with that found at the regional level (but contrasts with the death data where the opposite occurs). Females had higher rates than males in most community areas, ranging from 20% higher in St. James-Assiniboia to twice as high in Assiniboine South and Fort Garry. The exception to this is the Seven Oaks community area, where the rates were nearly equal between females and males. Female residents in Point Douglas and Downtown had the highest rates, at 121 per 100 000 population (in each community area). The highest rate among males by community area occurred in Downtown at 97 per 100 000 population.

The age-adjusted rates of self-inflicted injury hospitalization were similar to the crude rates. There is little variation in the age-adjusted rates for most community areas, with the exceptions of the Point Douglas and Downtown community areas. These two community areas had the highest age-adjusted rates, much higher than that of the WHR age-adjusted rate.

Figure 101: Self-inflicted Injury- Crude rates of Hospitalization by Community Area, 1994-2003

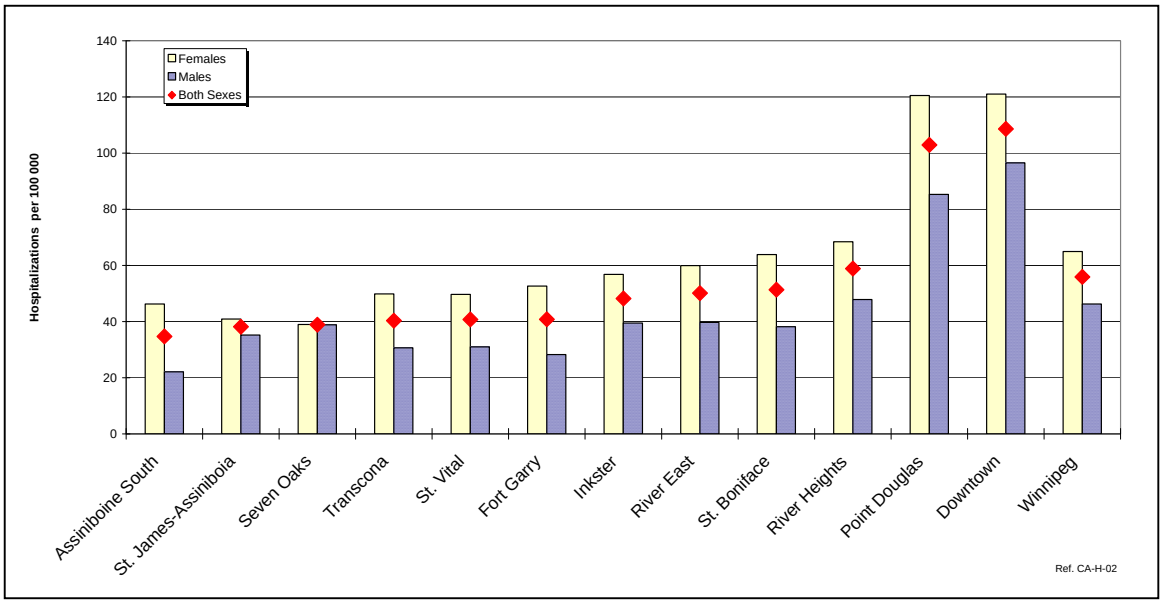
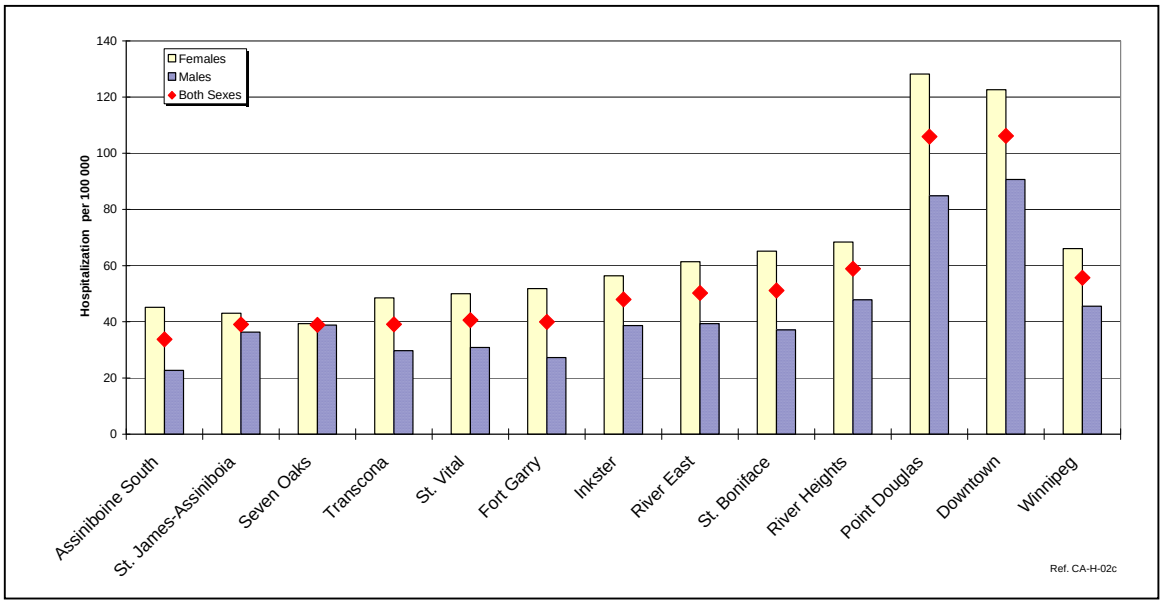


Figure 102: Self-inflicted Injury- Age-adjusted rates of Hospitalization by Community Area, 1994-2003



Motor Vehicle Traffic Injury

There is less variation in the crude rates of motor vehicle traffic injury hospitalization between the twelve community areas, compared to the previous causes of injury. Ten of the twelve community areas had rates that were equal to or lower than that for the WHR. Two community areas had the highest rates: Downtown and Point Douglas. These community areas had crude rates of 86 and 87 per 100 000 population, which are substantially higher than the 56 per 100 000 population for the WHR as a whole.

The Seven Oaks and St. Vital community areas had the lowest crude rate of 43 per 100 000 population (in each community area). The remaining community areas had crude rates that ranged between 45 and 55 per 100 000 population. These community areas include: Transcona, Assiniboine South, St. Boniface, River Heights, Fort Garry, St. James-Assiniboia, Inkster, and River East.

Figure 103 shows the difference in the rates of hospitalization for motor vehicle traffic injury between female and male residents by community area. Males have higher rates in most community areas, which is consistent with that found at the regional level. However, there is less variability in the magnitude of this difference between the community areas. This contrasts with the death data where there were large differences in rates between males and females for death due to motor vehicle traffic in most community areas. Male residents of Point Douglas had the highest hospitalization rate, at 102 per 100 000 population, while female residents of Downtown had the highest rate among females by community area, at 73 per 100 000 population.

The age-adjusted rates of hospitalization for motor vehicle traffic injury were similar to the crude rates (Figure 104). There is little variation in the age-adjusted rates for most community areas, with the exceptions of the Point Douglas and Downtown community areas. These community areas had age-adjusted rates that were the highest of the community areas, and also were much higher than the WHR age-adjusted rate.

Figure 103: Motor Vehicle Traffic Injury- Crude Rates of Injury Hospitalization by Community Area, 1994-2003

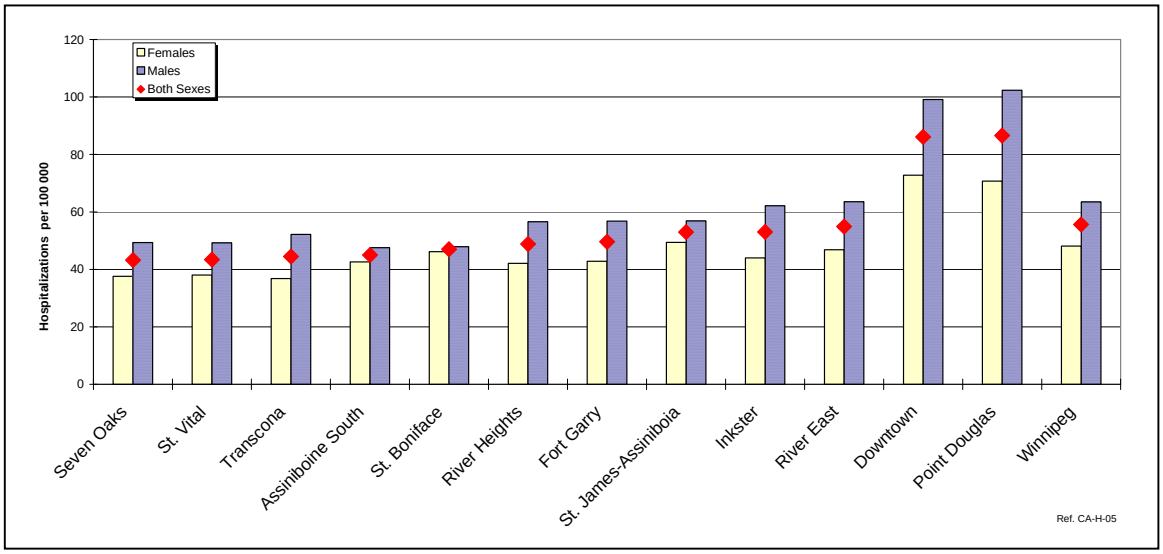
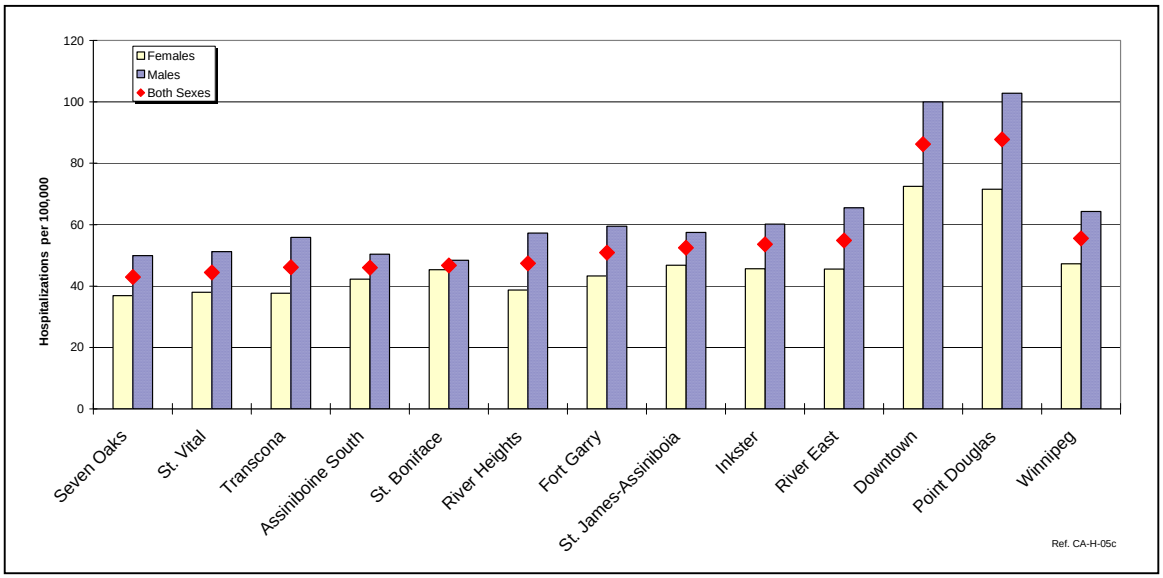


Figure 104: Motor Vehicle Traffic Injury- Age-adjusted Rates of Injury Hospitalization by Community Area, 1994-2003



Violence Injury

Although there is a large difference between the lowest and highest rate of hospitalization due to violence injury, the majority of community areas (nine of the twelve) had rates that were much lower than that for the WHR. Two community areas have extremely high rates of hospitalization due to violence: Point Douglas and Downtown. These community areas had rates of 190 and 193 per 100 000 population, respectively. These are more than three times higher than the rate for the WHR as a whole, at 55 per 100 000 population.
The Inkster community area also had a rate that was higher than that for the WHR, at 63 per 100 000 population.

The Assiniboine South community area had the lowest rate of 13 per 100 000 population. The remaining community areas had rates that ranged between 14 and 33 per 100 000 population. These community areas include: Fort Garry, Transcona, St. James-Assiniboia, St. Vital, Seven Oaks, St. Boniface, River Heights, and River East. It is also of interest to note that due to the low rates in these community areas, violence is often not the fourth leading cause of injury hospitalization in these community areas.

Figure 105 shows that hospitalization rates for violence injury were substantially higher for male residents than for female residents in all community areas, which is similar to the regional data. However, there is variability in the magnitude of this difference between the community areas. This is similar to the death data where the rates were higher for males compared to females in most community areas. Male residents of Point Douglas had the highest hospitalization rate, at 288 per 100 000 population, while female residents of Downtown had the highest rate among females by community area, at 93 per 100 000 population.

The age-adjusted rates of hospitalization due to violence injury were similar to the crude rates. There is little variation in the age-adjusted rates for most community areas, with the exceptions of the Point Douglas and Downtown community areas. These community areas had age-adjusted rates that were the highest of the community areas, and also were much higher than the WHR age-adjusted rate. In addition, Inkster also had an age-adjusted rate that was slightly higher than the age-adjusted WHR rate.

Figure 105: Violence Injury- Crude Rates of Injury Hospitalization by Community Area, 1994-2003

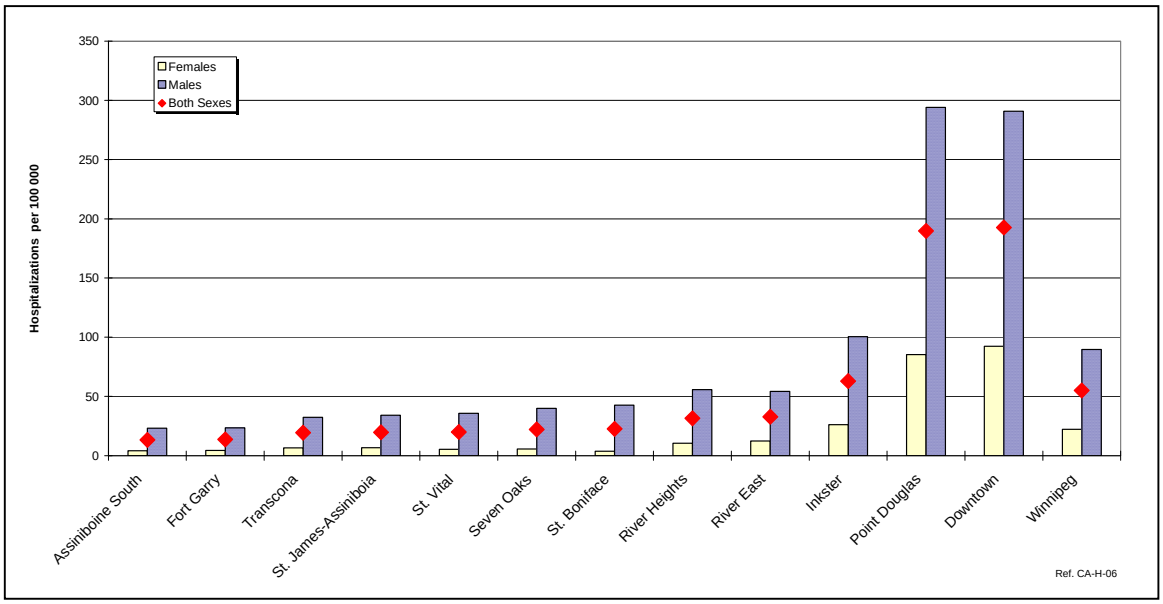
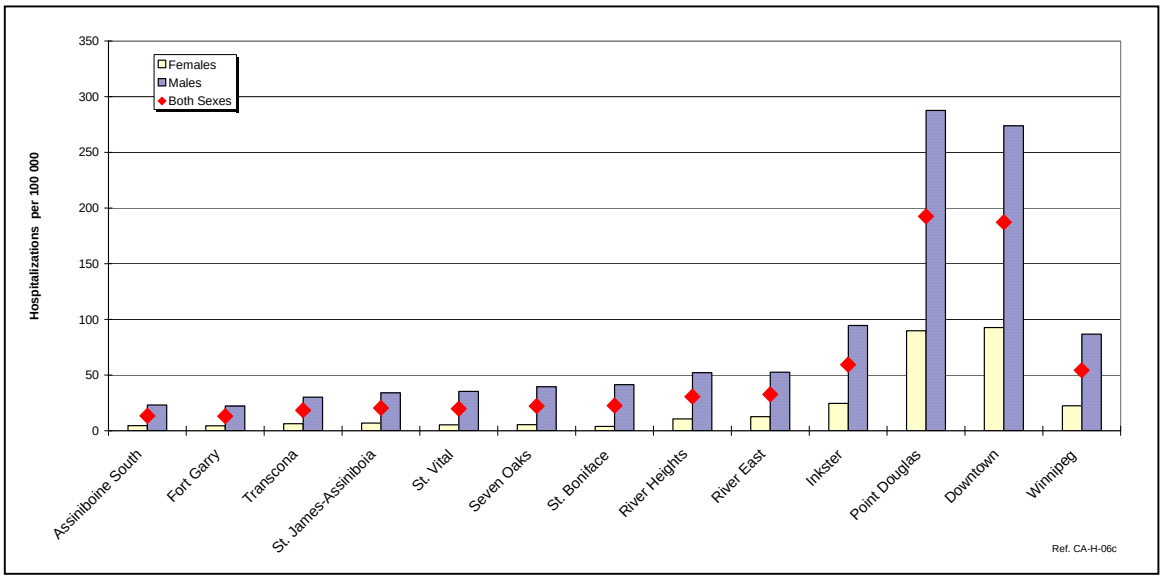


Figure 106: Violence Injury- Age-adjusted Rates of Injury Hospitalization by Community Area, 1994-2003



Have there been changes in injury hospitalization rates over time among the Community Areas?

Changes in the rates of injury hospitalization vary somewhat between the twelve community areas. The majority of community areas experienced decreases in hospitalization rate for injury, between 1% and 14%, between the two five-year periods of 1994-1998 and 1999-2003 (Figure 107). Although Assiniboine South was the only community area to experience an increase in the crude rate of injury, at 14%, when the rate was adjusted for age distribution this increase was lowered to approximately 4%. The Region overall experienced a decrease in the hospitalization rate of approximately 7%. This may be reflective of changes in admission policies and procedures, rather than a true decrease in the number of injuries, as hospital admissions overall decreased between these two periods of time as well.

The age-adjusted rates of injury hospitalization of the community areas were similar to the crude rates. In most community areas, the trend was a slight decrease in the injury hospitalization rates between the two five-year periods. However, for Assiniboine South the age-adjusted rates showed a slight increase over time, but this was a less substantial increase than that of the crude rates. This may indicate that differences in age structure of the underlying population may be a factor explaining the larger difference that was seen for the crude rates in this community area. It is of interest to note that the two community areas with the highest age-adjusted rates in both five-year time periods were Point Douglas and Downtown.

Figure 107: Time Trend Comparison of Crude Rates of Injury Hospitalization by Community Area in the WHR, 1994-1998 and 1999-2003

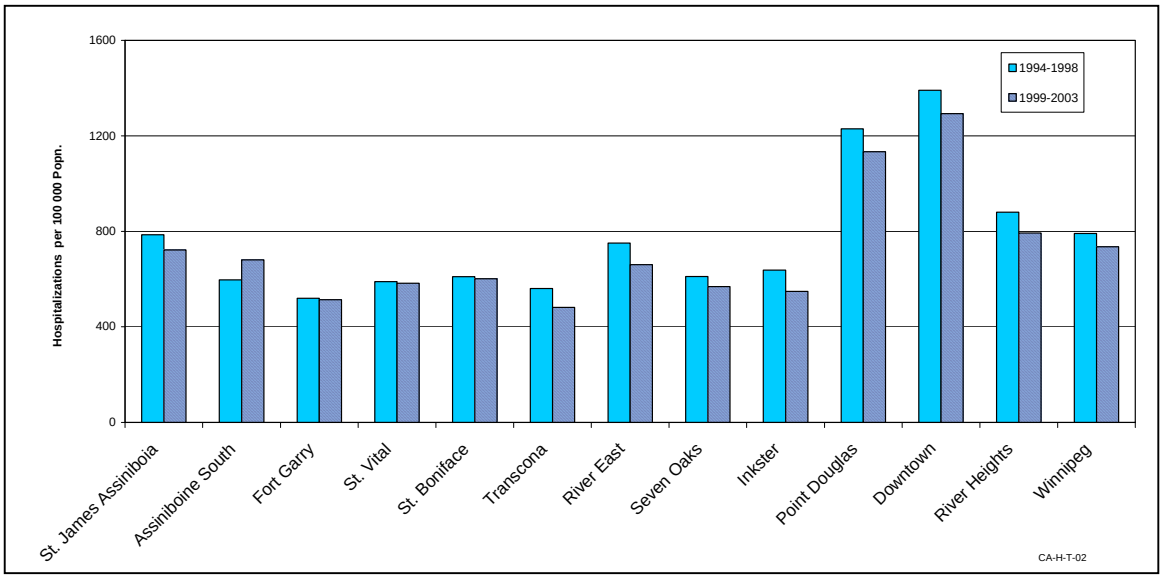
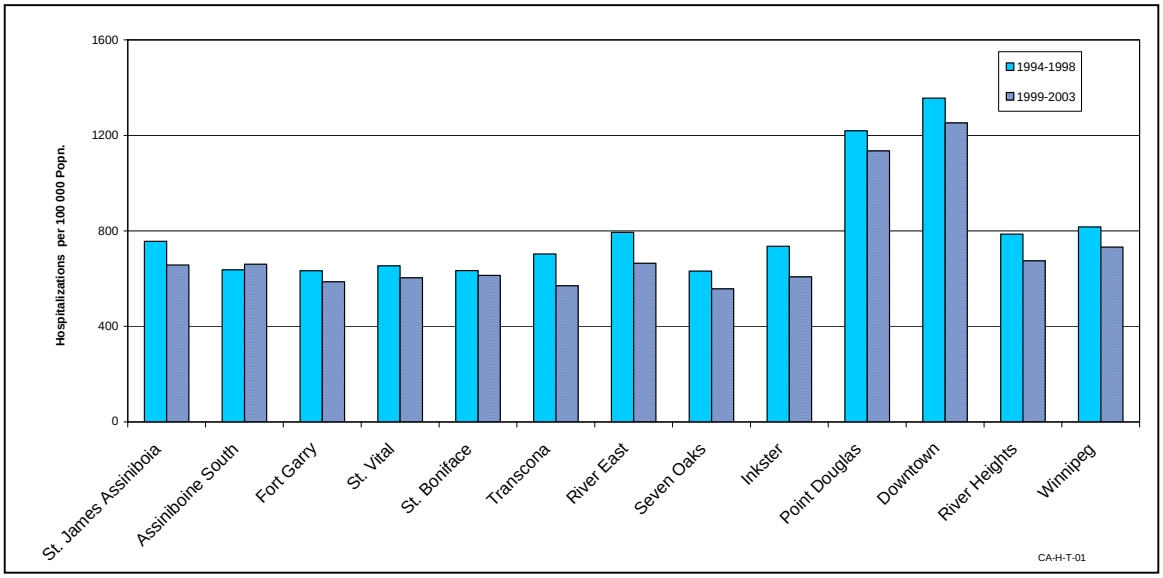


Figure 108: Time Trend Comparison of Age-adjusted Rates of Injury Hospitalization by Community Area in the WHR, 1994-1998 and 1999-2003



Summary

There is variation in the rates of injury, for both deaths and hospitalization, between the community areas. For all injuries combined (*All Injury*), the rates for the majority (ten of the twelve) of community areas tend to cluster together; these were similar to, or lower than, the rate for the WHR. In contrast, two community areas had considerably higher rates: Point Douglas and Downtown. The age-adjusted rates (which account for differences in the age structure of the community area populations) of these two community areas are also higher. Therefore age structure of the populations alone does not explain the high rates. For three of the four leading causes of injury (suicide/self-inflicted injury, motor vehicle traffic and violence) rates for Point Douglas and Downtown are also high, with the highest rates for both deaths and hospitalization. Fall injury has a different pattern: for fall injury death, St. James-Assiniboia and Point Douglas have the highest rates, while Downtown and River Heights have the highest rates of fall injury hospitalization.

The time trend data show substantial variation in the increases in the injury death rates among the community areas. River Heights experienced the largest increase in the crude rate of death at 68%, while Inkster experienced the smallest increases of approximately 2%. The remaining community areas have rate increases that range from 9% to 51%. It is interesting to note that Point Douglas experienced an increase of only 16% and that for Downtown was 34%, both of which are in the middle of this range. The age-adjusted rates show a similar pattern, with a couple of exceptions. The Transcona community area shows a slight decrease in age-adjusted injury death rates, while Inkster shows an increase in age-adjusted death rates that is not apparent in the crude death rate. This could suggest a relative aging of the Transcona population and a trend towards a younger age structure in the Inkster population. For the hospitalization time trend analysis, most community areas showed a slight decrease. Fort Garry, St. Boniface and St. Vital community area showed very slight decreases of approximately 1%, while the largest decreases were in Transcona and Inkster, at 14%. Assiniboine South was the only community area to show an increase in injury hospitalization rates of approximately 14%. The age-adjusted rates showed greater decreases across the community areas, ranging from 3% in St. Boniface to 18% in Transcona. It is likely that differences in the age structure of the community area populations have an impact on the changes over time observed in the crude injury rates.

It may be of interest to note that Point Douglas and Downtown together account for approximately 30% of injury hospitalizations and injury deaths in the WHR. Although the Downtown community area is fairly large (accounting for 11.5% of the WHR population in 2003), residents of this community area account for about 20% of injuries (both in deaths and hospitalizations). It should be noted that the Downtown population has a high proportion of residents that are considered by the WRHA to be "persons in care". This population sub-group has been identified as those who are legal wards of either the Public Trustee's Office or of Child and Family Services, both of which have offices located in Downtown Winnipeg.[36] Therefore some Downtown residents who have been treated in-hospital for an injury may not actually reside in Downtown, thus producing an over-estimate of the Downtown rates of injury. Point Douglas contributes 6.3% to the WHR population in 2003, but accounts for 9.7% of injury hospitalizations and 12.7% of injury deaths. Both community areas account for more injuries than would be expected on a population basis. These two community areas also experience disproportionately low socioeconomic conditions and lower educational levels, which are well known to be associated with higher injury burdens.

Fall injuries have somewhat unique patterns for its distribution among the twelve community areas. For fall injury death, St. James-Assiniboia and Point Douglas have the highest rates, and it may appear difficult to explain what factors these two community areas have in common that contribute to high rates of fall death. Both community areas have high rates of fall injury death for male residents. It is possible that the high rates in these two community areas are driven by different at-risk populations. In St. James-Assiniboia, with the highest proportion of seniors of the twelve community areas, older adults in this area may be at greater risk of fall injury leading to death. In Point Douglas with a relatively young population, particularly young males compared to the other community areas, it is possible that it is higher than average unintentional falls in young males that contributes to the high rates. This would need to be explored in a follow-up analysis.

[36] The significance of this is that there are persons who are registered with Manitoba Health as having an address in the Downtown area for administrative reasons but may not actually reside there. Postal code of residence is the basis for assignment of residence to a community area. Because postal codes were not provided to the WRHA in this dataset used for the injury analysis, they could not be separated from the Downtown population. It is also hypothesized (but not proven) that the "persons in care", may be made-up of those who are most vulnerable in the population, and may use a higher proportion of health care services.

For fall injury hospitalization, Downtown and River Heights have the highest rates. Here is it is a bit more intuitive to suggest a possible common factor: they have higher percentages of seniors in their respective populations. As previously mentioned, Downtown has the highest percentage of seniors who live alone while the River Heights community area has the second highest percentage. Although these community areas differ with regards to socioeconomic status, one British study has shown that socioeconomic status is not a prominent factor associated with fall injury hospitalization among seniors.[37]

In summary, the Point Douglas and Downtown community areas experience high rates of injury, including suicide/self-inflicted, violence, motor vehicle traffic, and to a lesser extent, falls. These rates are consistently higher than those of the other ten community areas, as well as that of the WHR as a whole. This demonstrates a health disparity that is most likely attributed to the differences in many underlying determinants of health in these two community areas.

[37] West, J. et al. (2004) *Do rates of hospital admission for falls and hip fracture in elderly people vary by socio-economic status?* Public Health. 118(8):576-81.

Data Tables

The following injury data tables support the graphs: counts and rates that were used to generate the graphs in this chapter. They are ordered as each graph appears in the chapter.
A separate file contains data tables of injury death and hospitalization by the 22 cause-categories (by sex) for each community area.

Notes: All rates are per 100 000 population.
The letter 's' denotes where cell values have been suppressed (when the number of events is <5).

Table 56: All Injury- Crude and Age-adjusted Rates of Death by Community Area, 1990-1999

	Both Sexes			Females			Males		
	Number of Deaths	Crude Rate	Age-adjusted Rate	Number of Deaths	Crude Rate	Age-adjusted Rate	Number of Deaths	Crude Rate	Age-adjusted Rate
St. James-Assiniboia	211	34.4	33.8	74	23.1	20.2	137	46.6	51.1
Assiniboine South	103	28.4	31.2	51	27.2	25.4	52	29.8	37.6
Fort Garry	102	17.8	21.7	35	11.9	14.2	67	23.9	31.4
St. Vital	192	32.5	35.7	67	21.8	22.3	125	44.1	52.5
St. Boniface	142	31.4	32.5	58	24.9	23.7	84	38.3	43.3
Transcona	80	25.7	31.6	23	14.7	18.0	57	36.8	48.5
River East	293	33.0	35.2	94	20.5	20.4	199	46.3	52.9
Seven Oaks	148	26.1	27.5	52	17.7	17.3	96	35.2	40.5
Inkster	79	25.6	33.7	29	18.6	24.2	50	32.7	45.3
Point Douglas	276	65.1	66.4	88	41.4	39.6	188	89.1	95.8
Downtown	453	62.5	61.7	155	43.0	38.3	298	81.8	87.2
River Heights	224	38.7	34.9	98	31.6	24.3	126	47.1	49.2
Winnipeg	2303	36.0	37.7	824	25.0	24.0	1479	47.6	54.4

Table 57: Suicide- Crude and Age-adjusted Rates of Death by Community Area, 1990-1999

	Both Sexes			Females			Males		
	Number of Deaths	Crude Rate	Age-adjusted Rate	Number of Deaths	Crude Rate	Age-adjusted Rate	Number of Deaths	Crude Rate	Age-adjusted Rate
St. James-Assiniboia	50	8.1	8.1	7	2.2	2.2	43	14.6	14.5
Assiniboine South	30	8.3	8.6	6	3.2	3.4	24	13.8	14.0
Fort Garry	32	5.6	5.6	8	2.7	2.9	24	8.6	8.7
St. Vital	52	8.8	9.2	17	5.5	5.6	35	12.4	13.5
St. Boniface	46	10.2	10.0	12	5.1	5.0	34	15.5	15.7
Transcona	28	9.0	9.8	5	3.2	3.3	23	14.9	16.8
River East	73	8.2	8.2	15	3.3	3.1	58	13.5	13.7
Seven Oaks	48	8.5	8.5	13	4.4	4.4	35	12.8	13.5
Inkster	26	8.4	9.2	s	2.6	3.0	22	14.4	15.6
Point Douglas	79	18.6	20.0	21	9.9	10.4	58	27.5	29.5
Downtown	136	18.8	18.1	42	11.7	10.4	94	25.8	25.5
River Heights	75	13.0	12.2	25	8.1	7.7	50	18.7	18.2
Winnipeg	675	10.6	10.6	175	5.3	5.2	500	16.1	16.6

Table 58: Fall Injury- Crude and Age-adjusted Rates of Death by Community Area, 1990-1999

	Both Sexes			Females			Males		
	Number of Deaths	Crude Rate	Age-adjusted Rate	Number of Deaths	Crude Rate	Age-adjusted Rate	Number of Deaths	Crude Rate	Age-adjusted Rate
St. James-Assiniboia	55	9.0	8.8	19	5.9	4.6	36	12.3	15.8
Assiniboine South	25	6.9	7.9	16	8.5	7.3	9	5.2	8.5
Fort Garry	21	3.7	6.6	11	3.7	5.6	10	3.6	8.1
St. Vital	31	5.2	7.0	16	5.2	5.5	15	5.3	9.7
St. Boniface	24	5.3	6.0	14	6.0	5.6	10	4.6	7.2
Transcona	6	1.9	3.4	s	1.3	2.0	s	2.6	6.0
River East	60	6.8	8.2	23	5.0	5.1	37	8.6	13.0
Seven Oaks	19	3.4	3.9	11	3.7	3.7	8	2.9	3.8
Inkster	9	2.9	6.3	5	3.2	5.4	s	2.6	8.9
Point Douglas	38	9.0	8.4	14	6.6	4.8	24	11.4	14.0
Downtown	61	8.4	8.8	34	9.4	7.5	27	7.4	10.1
River Heights	49	8.5	6.9	29	9.3	5.9	20	7.5	9.1
Winnipeg	398	6.2	7.2	194	5.9	5.5	204	6.6	10.1

Table 59: Motor Vehicle Traffic Injury- Crude and Age-adjusted Rates of Death by Community Area, 1990-1999

	Both Sexes			Females			Males		
	Number of Deaths	Crude Rate	Age-adjusted Rate	Number of Deaths	Crude Rate	Age-adjusted Rate	Number of Deaths	Crude Rate	Age-adjusted Rate
St. James-Assiniboia	25	4.1	3.7	13	4.1	3.7	12	4.1	3.7
Assiniboine South	15	4.1	4.3	6	3.2	3.2	9	5.2	6.3
Fort Garry	22	3.8	4.2	5	1.7	1.5	17	6.1	7.8
St. Vital	33	5.6	5.5	12	3.9	3.9	21	7.4	6.8
St. Boniface	20	4.4	4.3	5	2.1	2.0	15	6.8	6.8
Transcona	21	6.7	8.2	7	4.5	5.1	14	9.0	12.8
River East	54	6.1	5.9	17	3.7	3.6	37	8.6	8.6
Seven Oaks	35	6.2	6.2	11	3.7	3.6	24	8.8	9.5
Inkster	14	4.5	6.0	7	4.5	4.6	7	4.6	9.7
Point Douglas	31	7.3	8.0	16	7.5	8.2	15	7.1	7.7
Downtown	52	7.2	7.1	15	4.2	3.8	37	10.2	10.8
River Heights	32	5.5	5.1	11	3.5	2.5	21	7.8	8.4
Winnipeg	354	5.5	5.5	125	3.8	3.7	229	7.4	7.8

Table 60: Violence Injury- Crude and Age-adjusted Rates of Death by Community Area, 1990-1999

	Both Sexes			Females			Males		
	Number of Deaths	Crude Rate	Age-adjusted Rate	Number of Deaths	Crude Rate	Age-adjusted Rate	Number of Deaths	Crude Rate	Age-adjusted Rate
St. James-Assiniboia	6	1.0	1.0	s	1.2	1.3	s	0.7	0.8
Assiniboine South	5	1.4	1.5	s	1.1	1.1	s	1.7	2.9
Fort Garry	s	0.7	0.7	s	0.3	0.3	s	1.1	1.1
St. Vital	7	1.2	1.2	s	1.0	1.0	s	1.4	1.5
St. Boniface	5	1.1	1.1	s	0.9	0.8	s	1.4	1.4
Transcona	0	0.0	0.0	0	0.0	0.0	0	0.0	0.0
River East	11	1.2	1.2	7	1.5	1.5	s	0.9	0.9
Seven Oaks	s	0.7	0.7	s	0.7	0.7	s	0.7	0.8
Inkster	9	2.9	2.8	s	1.3	1.2	7	4.6	4.5
Point Douglas	26	6.1	5.9	8	3.8	3.5	18	8.5	8.4
Downtown	50	6.9	6.6	18	5.0	4.9	32	8.8	8.3
River Heights	8	1.4	1.3	s	1.0	0.8	5	1.9	1.8
Winnipeg	135	2.1	2.1	52	1.6	1.5	83	2.6	2.7

Table 61: All Injury- Crude and Age-adjusted Rates of Hospitalization by Community Area, 1994-2003

	Both Sexes			Females			Males		
	Number of Events	Crude Rate	Age-adjusted Rate	Number of Events	Crude Rate	Age-adjusted Rate	Number of Events	Crude Rate	Age-adjusted Rate
St. James-Assiniboia	4589	754.9	705.9	2569	808.2	655.6	2020	696.4	729.3
Assiniboine South	2359	639.2	651.5	1386	720.4	643.2	973	550.8	616.6
Fort Garry	3166	516.6	610.6	1657	525.6	592.8	1509	507.2	605.6
St. Vital	3553	586.1	627.1	1890	598.7	582.7	1663	572.5	645.0
St. Boniface	2807	605.7	623.4	1530	642.8	599.8	1277	566.5	619.6
Transcona	1746	521.2	633.3	814	483.4	573.3	932	559.4	678.1
River East	6462	705.5	727.3	3448	730.1	673.5	3014	679.3	741.6
Seven Oaks	3380	589.5	594.8	1722	578.1	527.5	1658	601.8	642.0
Inkster	1846	593.3	667.5	785	500.9	568.2	1061	687.0	743.8
Point Douglas	4847	1182.1	1177.3	2118	1033.4	957.1	2729	1330.7	1370.4
Downtown	10020	1342.0	1302.5	4780	1294.0	1113.5	5240	1389.1	1441.5
River Heights	4751	837.3	730.7	2862	941.1	697.1	1889	717.4	729.5
Winnipeg	49742	763.0	774.0	25661	765.3	698.9	24081	760.6	819.4

Table 62: Fall Injury- Crude and Age-adjusted Rates of Hospitalization by Community Area, 1994-2003

	Both Sexes			Females			Males		
	Number of Events	Crude Rate	Age-adjusted Rate	Number of Events	Crude Rate	Age-adjusted Rate	Number of Events	Crude Rate	Age-adjusted Rate
St. James-Assiniboia	2574	423.4	378.7	1736	546.1	409.4	838	288.9	315.8
Assiniboine South	1359	368.3	378.8	942	489.6	421.9	417	236.1	291.0
Fort Garry	1587	259.0	347.7	1006	319.1	383.3	581	195.3	284.2
St. Vital	1889	311.6	348.6	1241	393.1	377.8	648	223.1	286.8
St. Boniface	1489	321.3	339.6	980	411.7	371.1	509	225.8	279.1
Transcona	762	227.5	334.2	470	279.1	365.3	292	175.3	280.5
River East	3270	357.0	377.4	2205	466.9	415.0	1065	240.0	296.5
Seven Oaks	1770	308.7	313.8	1132	380.1	334.2	638	231.6	268.3
Inkster	674	216.6	290.3	385	245.7	309.2	289	187.1	250.3
Point Douglas	1834	447.3	437.4	1024	499.6	418.6	810	395.0	443.3
Downtown	4370	585.3	556.2	2690	728.2	558.5	1680	445.3	519.4
River Heights	2833	499.3	401.7	2000	657.7	430.0	833	316.3	334.2
Winnipeg	24489	375.7	387.1	15865	473.2	411.4	8624	272.4	330.2

Table 63: Self-inflicted Injury- Crude and Age-adjusted Rates of Hospitalization by Community Area, 1994-2003

	Both Sexes			Females			Males		
	Number of Events	Crude Rate	Age-adjusted Rate	Number of Events	Crude Rate	Age-adjusted Rate	Number of Events	Crude Rate	Age-adjusted Rate
St. James-Assiniboia	232	38.2	39.1	130	40.9	43.0	102	35.2	36.3
Assiniboine South	128	34.7	33.8	89	46.3	45.1	39	22.1	22.8
Fort Garry	250	40.8	39.9	166	52.7	51.8	84	28.2	27.3
St. Vital	247	40.7	40.6	157	49.7	50.0	90	31.0	30.8
St. Boniface	238	51.4	51.1	152	63.9	65.1	86	38.2	37.2
Transcona	135	40.3	39.1	84	49.9	48.5	51	30.6	29.7
River East	459	50.1	50.2	283	59.9	61.4	176	39.7	39.3
Seven Oaks	223	38.9	38.9	116	38.9	39.3	107	38.8	38.9
Inkster	150	48.2	48.0	89	56.8	56.4	61	39.5	38.7
Point Douglas	422	102.9	105.9	247	120.5	128.2	175	85.3	84.8
Downtown	811	108.6	106.2	447	121.0	122.6	364	96.5	90.7
River Heights	334	58.9	59.2	208	68.4	71.6	126	47.9	46.5
Winnipeg	3644	55.9	55.7	2179	65.0	66.1	1465	46.3	45.6

Table 64: Motor Vehicle Traffic Injury- Crude and Age-adjusted Rates of Hospitalization by Community Area, 1994-2003

	Both Sexes			Females			Males		
	Number of Events	Crude Rate	Age-adjusted Rate	Number of Events	Crude Rate	Age-adjusted Rate	Number of Events	Crude Rate	Age-adjusted Rate
St. James-Assiniboia	322	53.0	52.5	157	49.4	46.8	165	56.9	57.5
Assiniboine South	166	45.0	46.0	82	42.6	42.2	84	47.6	50.4
Fort Garry	304	49.6	50.9	135	42.8	43.3	169	56.8	59.5
St. Vital	263	43.4	44.5	120	38.0	38.0	143	49.2	51.2
St. Boniface	218	47.0	46.7	110	46.2	45.3	108	47.9	48.4
Transcona	149	44.5	46.1	62	36.8	37.7	87	52.2	55.9
River East	503	54.9	54.9	221	46.8	45.5	282	63.6	65.5
Seven Oaks	248	43.3	43.0	112	37.6	36.9	136	49.4	49.9
Inkster	165	53.0	53.6	69	44.0	45.7	96	62.2	60.2
Point Douglas	355	86.6	87.8	145	70.7	71.5	210	102.4	102.8
Downtown	643	86.1	86.2	269	72.8	72.5	374	99.1	100.0
River Heights	277	48.8	47.4	128	42.1	38.7	149	56.6	57.3
Winnipeg	3625	55.6	55.6	1614	48.1	47.3	2011	63.5	64.3

Table 65: Violence Injury- Crude and Age-adjusted Rates of Hospitalization by Community Area, 1994-2003

	Both Sexes			Females			Males		
	Number of Events	Crude Rate	Age-adjusted Rate	Number of Events	Crude Rate	Age-adjusted Rate	Number of Events	Crude Rate	Age-adjusted Rate
St. James-Assiniboia	120	19.7	20.4	21	6.6	6.8	99	34.1	34.1
Assiniboine South	49	13.3	13.4	8	4.2	4.5	41	23.2	23.1
Fort Garry	84	13.7	13.1	14	4.4	4.4	70	23.5	22.1
St. Vital	121	20.0	19.8	17	5.4	5.4	104	35.8	35.3
St. Boniface	105	22.7	22.6	9	3.8	3.8	96	42.6	41.4
Transcona	65	19.4	18.4	11	6.5	6.3	54	32.4	30.2
River East	300	32.8	32.6	59	12.5	12.7	241	54.3	52.5
Seven Oaks	127	22.1	22.2	17	5.7	5.5	110	39.9	39.5
Inkster	196	63.0	59.4	41	26.2	24.6	155	100.4	94.5
Point Douglas	778	189.7	192.5	175	85.4	89.8	603	294.0	287.7
Downtown	1438	192.6	187.3	341	92.3	92.6	1097	290.8	273.8
River Heights	179	31.5	30.6	32	10.5	10.6	147	55.8	52.2
Winnipeg	3585	55.0	54.3	747	22.3	22.4	2838	89.6	86.8

Table 66: Time Trend Comparison of Crude and Age-adjusted Rates of Injury Death by Community Area in the WHR, 1990-1994 and 1995-1999

	Both Sexes			
	Crude Rates		Age-adjusted Rate	
	1990-1994	1995-1999	1990-1994	1995-1999
St. James-Assiniboia	28.9	40.0	28.8	37.6
Assiniboine South	24.9	32.0	27.6	33.5
Fort Garry	14.0	21.2	17.4	25.3
St. Vital	26.7	38.1	30.5	41.0
St. Boniface	28.0	34.6	28.8	35.9
Transcona	24.5	26.9	31.8	30.8
River East	30.8	35.1	32.7	37.3
Seven Oaks	25.0	27.2	26.3	28.1
Inkster	25.4	25.8	29.4	36.1
Point Douglas	60.3	70.3	62.6	70.0
Downtown	53.8	71.8	52.5	71.1
River Heights	29.0	48.8	27.1	42.4
Winnipeg	31.7	40.3	33.2	41.7

Table 67: Time Trend Comparison of Crude and Age-adjusted Rates of Injury Hospitalization by Community Area in the WHR, 1994-1998 and 1999-2003

	Both Sexes			
	Crude Rates		Age-adjusted Rate	
	1994-1998	1999-2003	1994-1998	1999-2003
St. James-Assiniboia	786.3	722.5	756.2	656.7
Assiniboine South	597.2	680.8	637.3	660.5
Fort Garry	519.5	513.9	633.5	586.6
St. Vital	589.5	582.8	654.1	603.3
St. Boniface	609.9	601.6	634.1	613.5
Transcona	560.2	481.8	703.2	570.2
River East	751.2	660.6	794.2	664.6
Seven Oaks	610.6	568.7	631.7	557.1
Inkster	637.9	548.7	735.7	607.8
Point Douglas	1229.6	1133.6	1219.4	1134.9
Downtown	1391.4	1293.0	1356.0	1251.9
River Heights	880.3	793.2	786.9	674.4
Winnipeg	791.0	735.3	816.5	732.3

Injury and Age

This chapter examines the leading causes of injury by age group, for both death and hospitalization. All of the injury death data is for the period of 1990-1999, and all of the injury hospitalization data is for the period of 1994-2003.

Injury Death

Infants - Less than One Year of Age

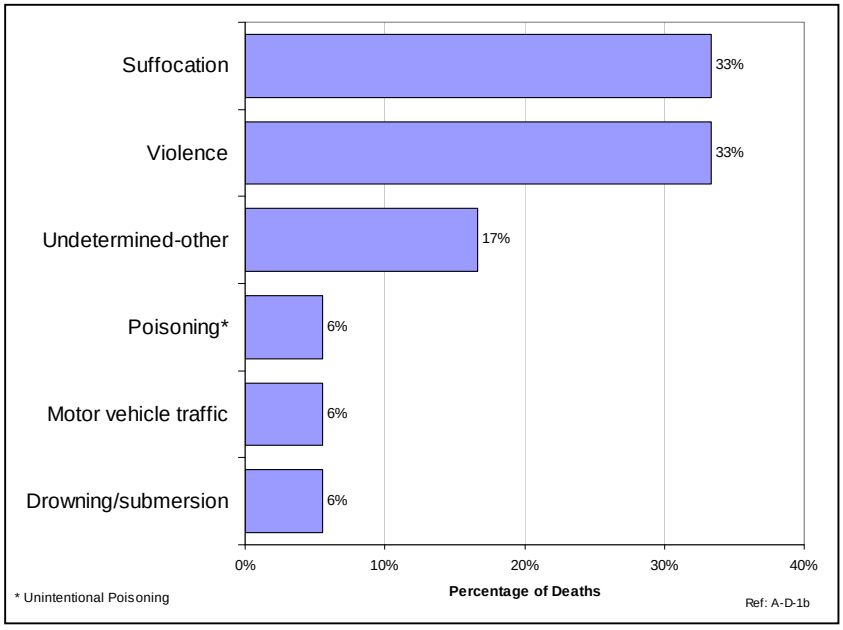
For the period of 1990 to 1999, 18 infants, under one year of age, died as a result of injury in the WHR.

Suffocation and *Violence* were the leading causes of injury death in this age group, each cause accounted for 6 deaths (33% of all injury deaths).

The remaining causes of injury deaths in this age group can be attributed to: *undetermined-other*, *drowning/submersion*, *motor vehicle traffic*, and *poisoning* (unintentional). Together, these causes account for the remaining six deaths among infants in the ten-year period.[38]

It is important to note that for infants, less than one year of age, 11 (or 61%) of the injury deaths occurred in female infants. Of these, nearly half (45.5%) were due to *violence*. This is somewhat unusual in that most injury causes affect males more than females at nearly every age group. This tendency for higher rates of infant female child abuse has been seen elsewhere.

Figure 109: Leading Causes of Injury Death for Infants, Less Than One Year of Age, in the Winnipeg Health Region, 1990-1999, n=18



◈ *Note to readers: The injury matrix categories of Other specified, classifiable; Other specified, NEC; and Unspecified were excluded from the determination of leading injury causes due to the heterogeneity of causes included in these categories. More information about this topic may be found in the Methods section.*

Data tables that include the number of deaths, crude rates, and percentages of all injury that is attributable to the 22 major injury causes (including the leading causes) that were examined for this report are provided at the end of the chapter. More detailed analyses of the four leading causes of injury in the WHR are presented earlier in this report.

[38] The number of events are not provided for each of these injury causes, as WRHA policy does not permit the release data when the number of events is less than five (but not equal to zero).

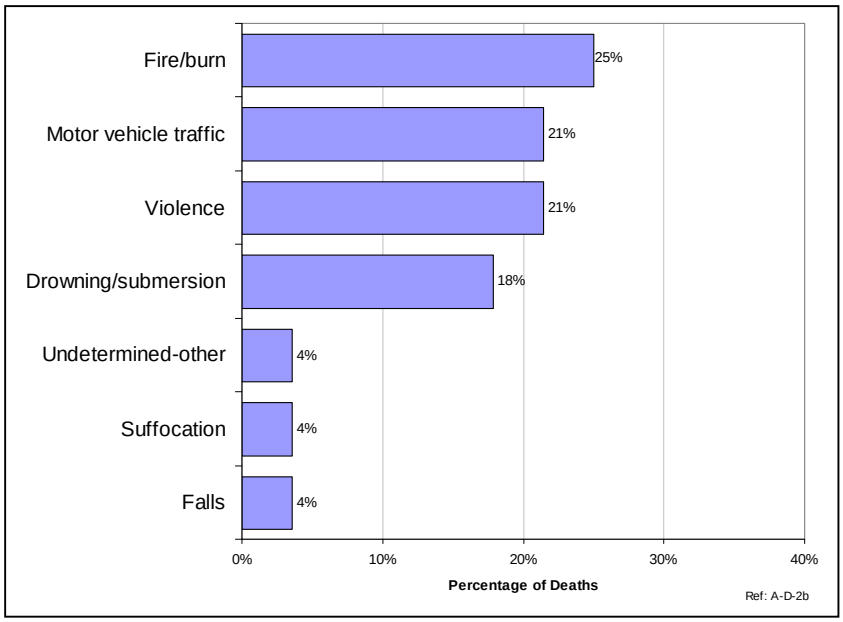
1-4 Years of Age

There were 28 injury deaths among children, 1-4 years of age, in the WHR between 1990 and 1999. The leading cause of injury death was *fire/burn*, which accounted for 7 of the injury-related deaths (25% of all injury deaths).

This is followed by *motor vehicle traffic* and *violence*. Each of these causes accounts for 6 injuries in this age group (21%). The third leading cause was *drowning/ submersion*, accounting for 5 deaths in 1-4 year-olds (18%).

It should be noted that among children 1 to 4 years of age, 61% of injury deaths occurred in males. *Fire/burn* accounted for the largest number of deaths among males (5 deaths).

Figure 110: Leading Causes of Injury Death for Children, 1-4 Years of Age, in the Winnipeg Health Region, 1990-1999
n= 28



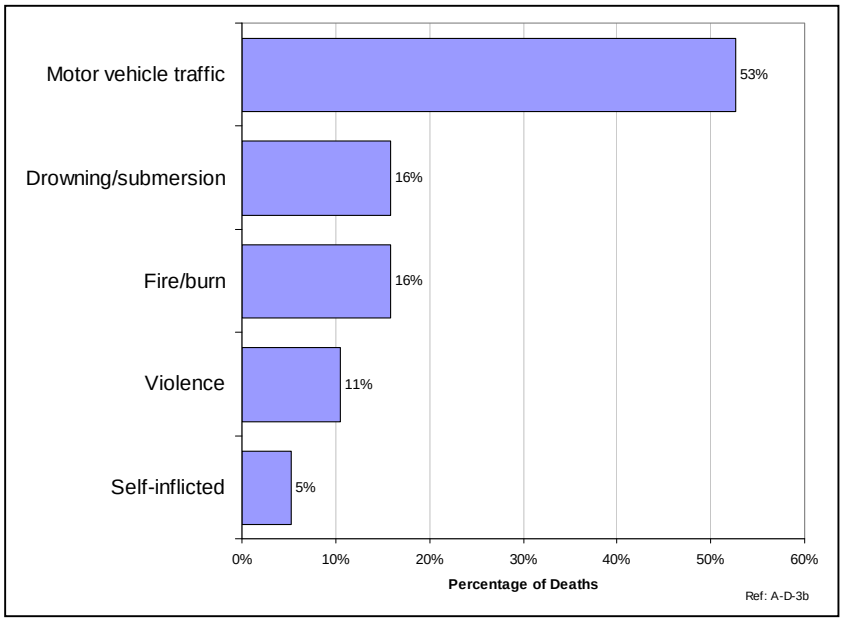
5-9 Years of Age

There were 19 deaths among children, 5-9 years of age, in the WHR between 1990 and 1999. The leading cause of injury death was *motor vehicle traffic*. This accounted for 10 of the injury-related deaths (53% of all injury deaths). Pedestrian deaths accounted for 6 of the 10 motor vehicle deaths.

Drowning/ submersion and *fire/burn*, each accounted for 16% of injury deaths in this age group. The remaining deaths can be attributed to v*iolence* and *self-inflicted* injury. [39]

It should be noted that among children 5 to 9 years of age, 58% of injury deaths occurred to females. *Motor vehicle traffic* accounted for most deaths among females, however these numbers are small.

Figure 111: Leading Causes of Injury Death for Children, 5-9 Years of Age in the Winnipeg Health Region, 1990-1999
n= 19



Please note that the graphs on this page have different scales.

[39] The number of events are not provided for each of these injury causes, as WRHA policy does not permit the release data when the number of events is less than five (but not equal to zero).

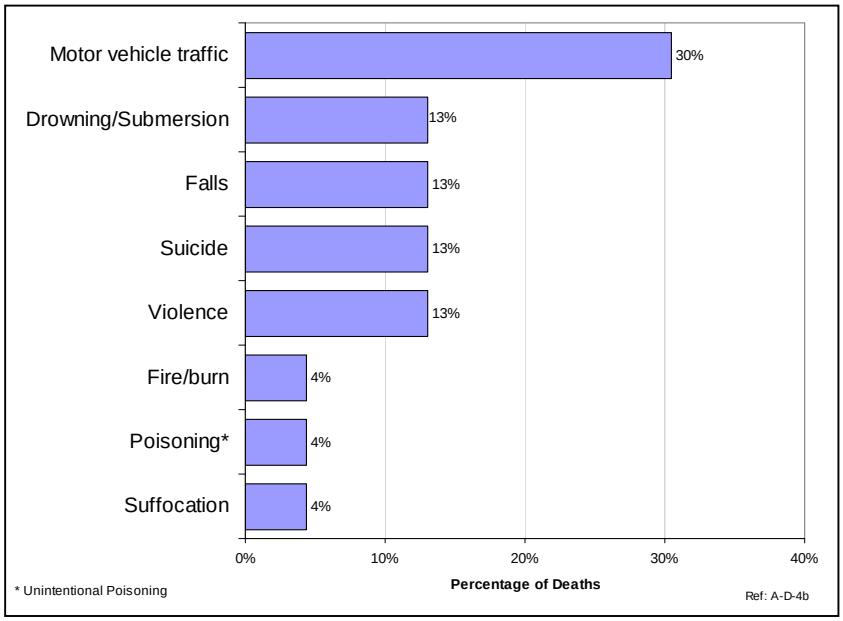
10-14 Years of Age

There were 23 deaths among older children, 10-14 years of age, in the WHR between 1990 and 1999. *Motor vehicle traffic* was the leading cause of injury death, which accounted for 7 deaths (30% of all injury deaths).

The remaining causes of injury death in this age group can be attributed to: *drowning/ submersion*, *falls*, *violence*, and *self-inflicted, fire/burn, poisoning* (unintentional), and *suffocation*. Together, these causes account for the remaining 16 injury deaths in this age group of the ten-year period.[40]

It should be noted that among children 10 to 14 years of age, 65% of injury deaths occurred to males. *Motor vehicle traffic* accounted for the largest number of deaths among males.

Figure 112: Leading Causes of Injury Death for Children, 10-14 Years of Age, in the Winnipeg Health Region, 1990-1999
n= 23

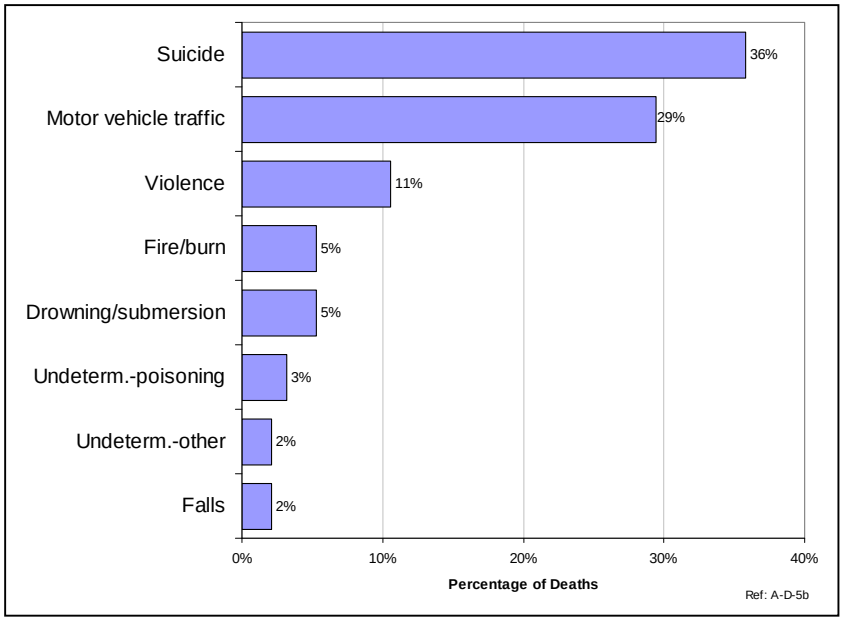


15-19 Years of Age

There were 95 deaths among youth, 15-19 years of age, in the WHR between 1990 and 1999. *Suicide* was the leading cause of injury death, which accounted for 34 deaths (36% of all injury deaths). The second and third leading causes were *motor vehicle traffic* and *violence*. Each accounts for 28 and 10 deaths respectively, in this age group (29% and 11% of all injury deaths).

In this age group, 74% of injury deaths occurred in males. *Suicide* accounted for the largest number of deaths, with 29 deaths among males, 15-19 years of age. *Motor vehicle traffic* was the leading cause of injury death for females of this age group.

Figure 113: Leading Causes of Injury Death for Youth, 15-19 Years of Age, in the Winnipeg Health Region, 1990-1999
n= 95



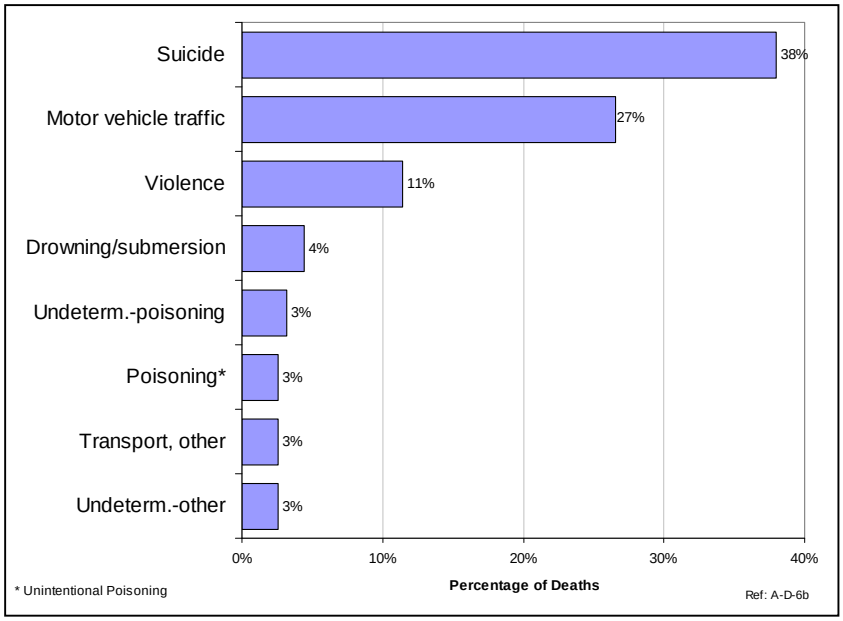
[40] The number of events are not provided for each of these injury causes, as WRHA policy does not permit the release data when the number of events is less than five (but not equal to zero).

20-24 Years of Age

There were 158 deaths among young adults, 20-24 years of age, in the WHR between 1990 and 1999. *Suicide* was the leading cause of injury death, which accounted for 60 deaths (38% of all injury deaths). The second and third leading causes were *motor vehicle traffic* and *violence*. Each accounts for 42 and 18 deaths respectively, in this age group (27% and 11% of all injury deaths).

In this age group, 71% of injury deaths occurred to males. *Suicide* accounted for the largest number of deaths, with 42 deaths among males. *Suicide* was also the leading cause of injury death for females of this age group.

Figure 114: Leading Causes of Injury Death for Young Adults, 20-24 Years of Age, in the Winnipeg Health Region, 1990-1999, n= 158

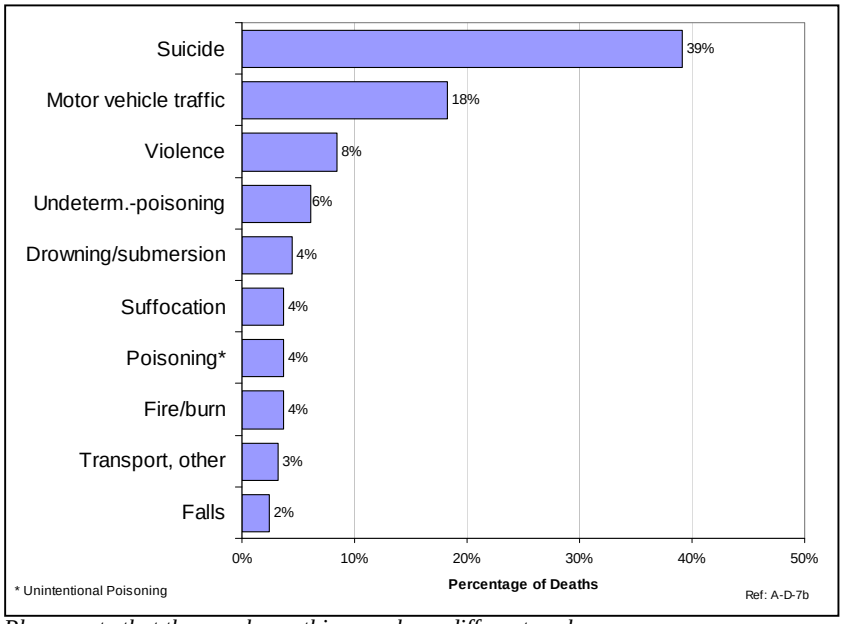


25-34 Years of Age

There were 378 deaths among adults, 25-34 years of age, in the WHR between 1990 and 1999. *Suicide* was the leading cause of injury death, which accounted for 148 deaths (39% of all injury deaths). The second and third leading causes were *motor vehicle traffic* and *violence*. Each accounts for 69 and 32 deaths respectively, in this age group (18% and 8% of all injury deaths).

In this age group, 71% of injury deaths occurred in males. *Suicide* accounted for the largest number of deaths, with 105 deaths among males. *Suicide* was also the leading cause of injury death for females of this age group.

Figure 115: Leading Causes of Injury Death for Adults, 25-34 Years of Age, in the Winnipeg Health Region, 1990-1999 n= 378



Please note that the graphs on this page have different scales.

Note to readers: Age groupings for adults 25 years and older are in ten-year age groupings, in contrast to the five-year age groupings used for analyses of those in the population who were under 25 years of age.

35-44 Years of Age

There were 365 deaths among adults, 35-44 years of age, in the WHR between 1990 and 1999. *Suicide* was the leading cause of injury death, which accounted for 159 deaths (44% of all injury deaths). The second leading cause was *motor vehicle traffic,* which accounted for 45 deaths (12% of all injury deaths). *Undetermined-poisoning* (poisoning of undetermined intent) and *poisoning* (unintentional) were tied as the third leading cause of injury death for this age group. Each cause accounted for 29 deaths (8% of all injury deaths).

It is of interest to note that 75% of injury deaths in this age group occurred in males. *Suicide* accounted for the largest number of deaths, with 125 deaths among males. *Suicide* was also the leading cause of injury death for females of this age group.

45-54 Years of Age

There were 243 deaths among adults, 45-54 years of age, in the WHR between 1990 and 1999. *Suicide* was the leading cause of injury death, which accounted for 101 deaths (42% of all injury deaths). The second and third leading causes were *motor vehicle traffic* and *undetermined-poisoning*. Each accounts for 30 and 21 deaths respectively, in this age group (12% and 9% of all injury deaths).

It is of interest to note that 76% of injury deaths in this age group occurred in males. *Suicide* accounted for the largest number of deaths, with 81 deaths among males. *Suicide* was also the leading cause of injury death for females of this age group.

Figure 116: Leading Causes of Injury Death for Adults, 35-44 Years of Age, in the Winnipeg Health Region, 1990-1999
n= 365

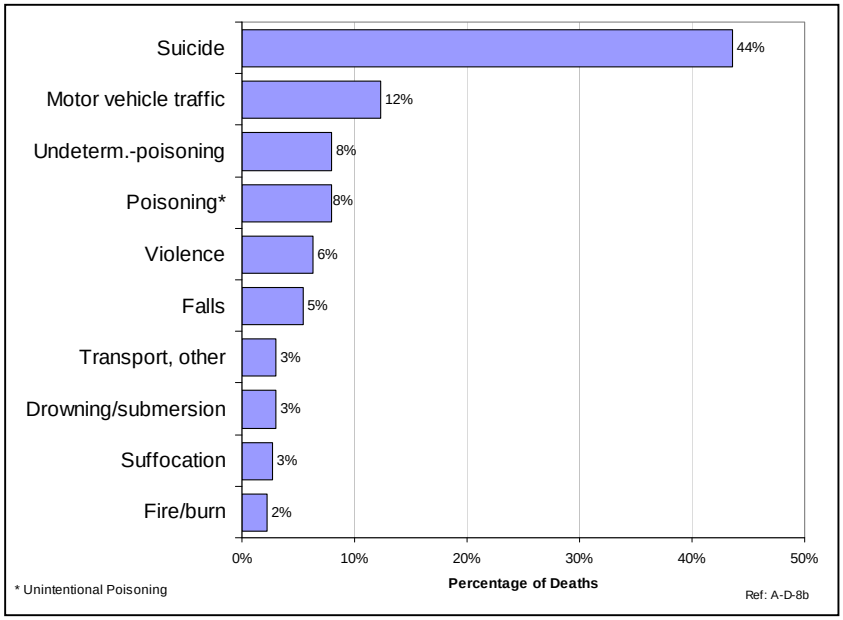
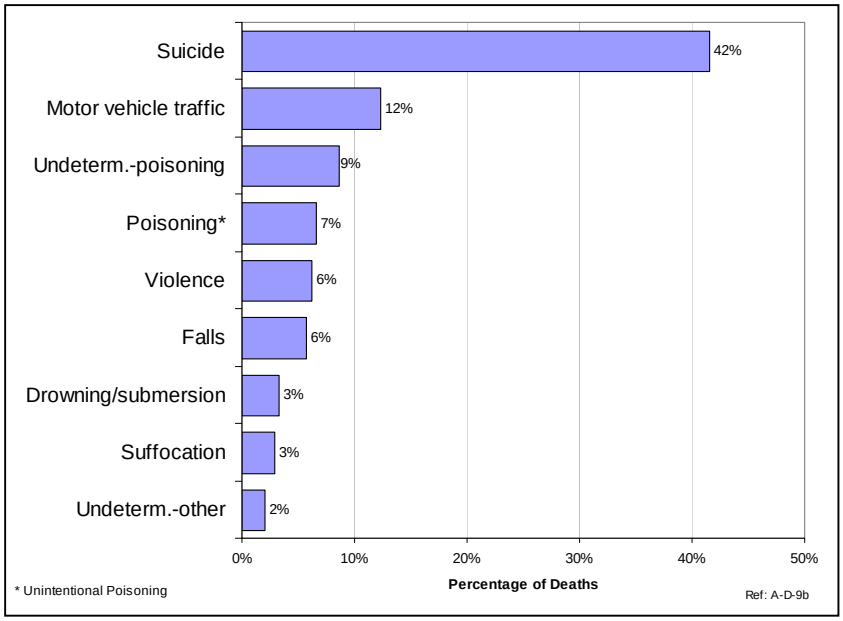


Figure 117: Leading Causes of Injury Death for Adults, 45-54 Years of Age, in the Winnipeg Health Region, 1990-1999
n= 243



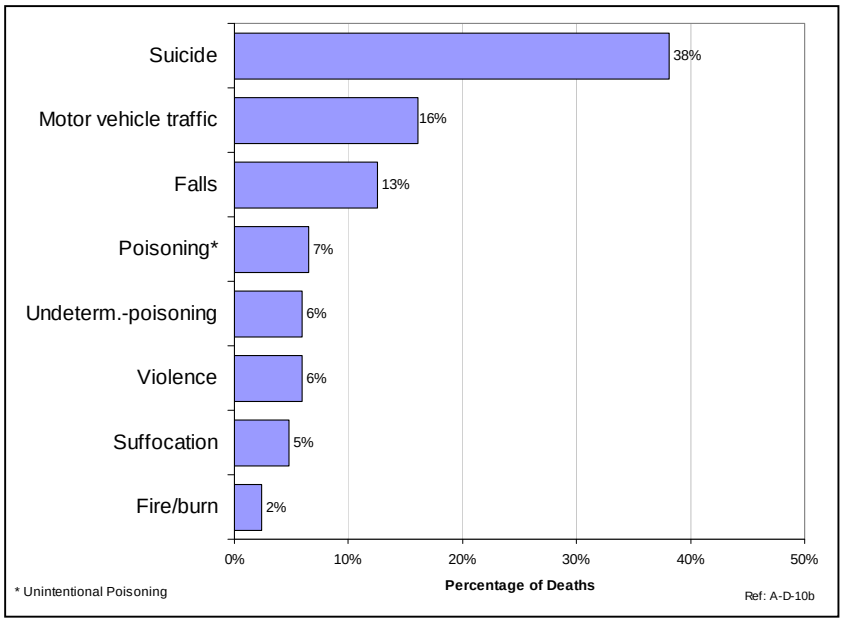
Please note that the graphs on this page have different scales.

55-64 Years of Age

There were 168 deaths among adults, 55-64 years of age, in the WHR between 1990 and 1999. *Suicide* was the leading cause of injury death, which accounted for 64 deaths (38% of all injury deaths). The second and third leading causes were *motor vehicle traffic* and *falls*. Each accounted for 27 and 21 deaths respectively, in this age group (16% and 13% of all injury deaths).

In this age group, 68% of injury deaths occurred in males. *Suicide* accounted for the largest number of deaths, with 46 deaths among males. *Suicide* was also the leading cause of injury death for females of this age group.

Figure 118: Leading Causes of Injury Death for Adults, 55-64 Years of Age, in the Winnipeg Health Region, 1990-1999
n= 168

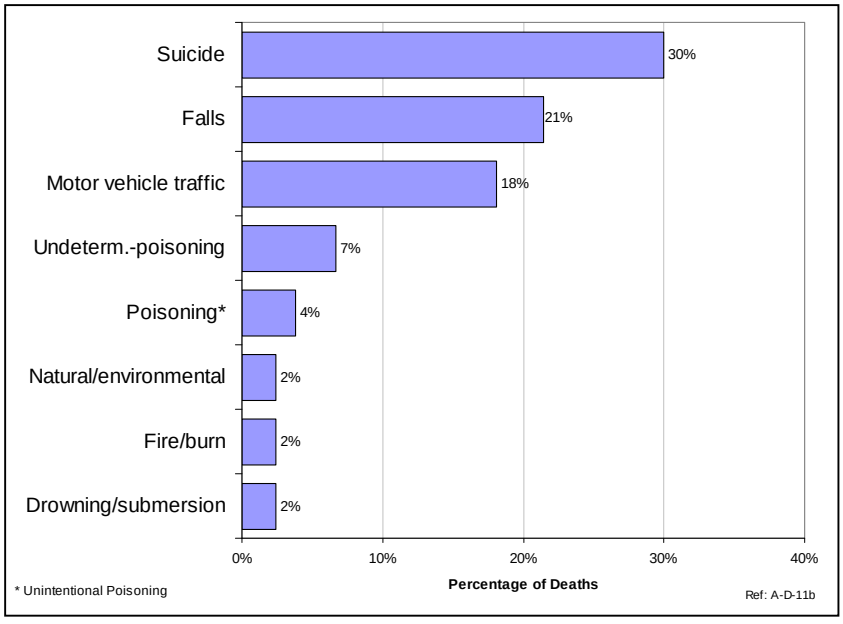


65-74 Years of Age

There were 210 deaths among older adults, 65-74 years of age, in the WHR between 1990 and 1999. *Suicide* was the leading cause of injury death, which accounted for 63 deaths (30% of all injury deaths). The second and third leading causes were *falls* and *motor vehicle traffic*. Each accounted for 45 and 38 deaths respectively, in this age group (21% and 18% of all injury deaths).[41]

In this age group, 64% of injury deaths in this age group occurred to males. *Suicide* accounted for the largest number of deaths, with 47 deaths among males. *Suicide* was tied with *motor vehicle traffic* as the leading cause of injury death for females of this age group (each with 16 deaths).

Figure 119: Leading Causes of Injury Death for Adults, 65-74 Years of Age, in the Winnipeg Health Region, 1990-1999
n= 210



Please note that the graphs on this page have different scales.

[41] Please note that the number of *falls* deaths does not include fractures, cause unspecified, which accounted for 10 deaths (5%) of injury deaths in the 65-74 years of age group.

75-84 Years of Age

There were 287 deaths among older adults, 75-84 years of age, in the WHR between 1990 and 1999. *Falls* was the leading cause of injury death, which accounted for 113 deaths (39% of all injury deaths).[42] The second and third leading causes were *motor vehicle traffic* and *suicide*. Each accounted for 36 and 34 deaths respectively, in this age group (13% and 12% of all injury deaths).

It is of interest to note that males and females in this age group have nearly equal numbers of injury deaths. About 52% of injury deaths occurred in males. *Falls* accounted for the largest number of deaths, with 57 deaths among males. *Falls* was also the leading cause of injury death for females of this age group.

85 Years of Age and Older

There were 311 deaths among the oldest adults, 85 years of age and older, in the WHR between 1990 and 1999. *Falls* was the leading cause of injury death, which accounted for 168 deaths (54% of all injury deaths).[42] The second and third leading causes were *motor vehicle traffic* and *suffocation.* Each accounted for 15 and 11 deaths respectively, in this age group (5% and 4% of all injury deaths).

In this age group 60% of injury deaths occurred in females*. Falls* accounted for the largest number of deaths, with 103 deaths. *Falls* was also the leading cause of injury death for males in this age group.

[42] Please note that the number of *falls* deaths does not include *fractures, cause unspecified*, which accounted for 41 deaths (14% of all injury) in the 75-84 years of age group and 81 deaths (26% of all injury) in the 85+ years of age group.

Figure 120: Leading Causes of Injury Death for Adults, 75-84 Years of Age, in the Winnipeg Health Region, 1990-1999
n= 287

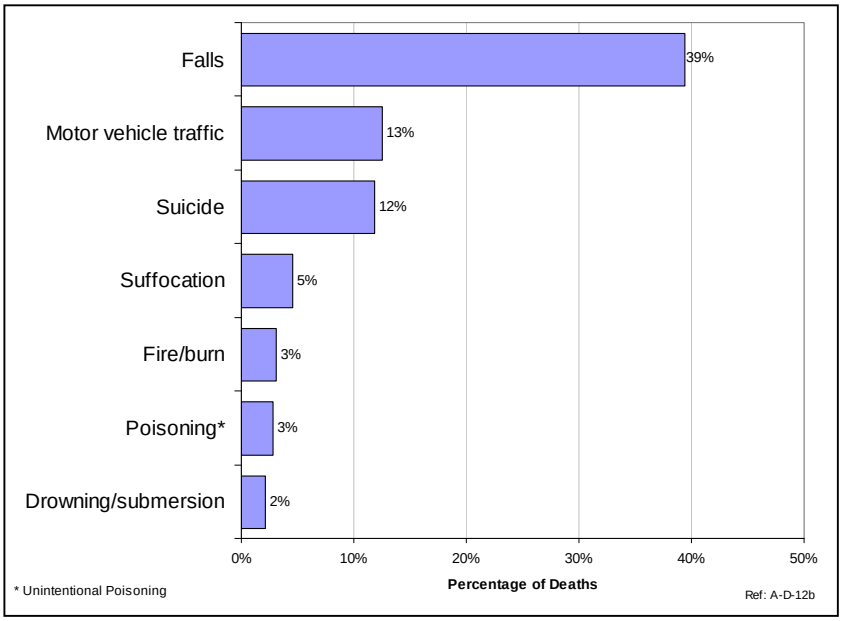
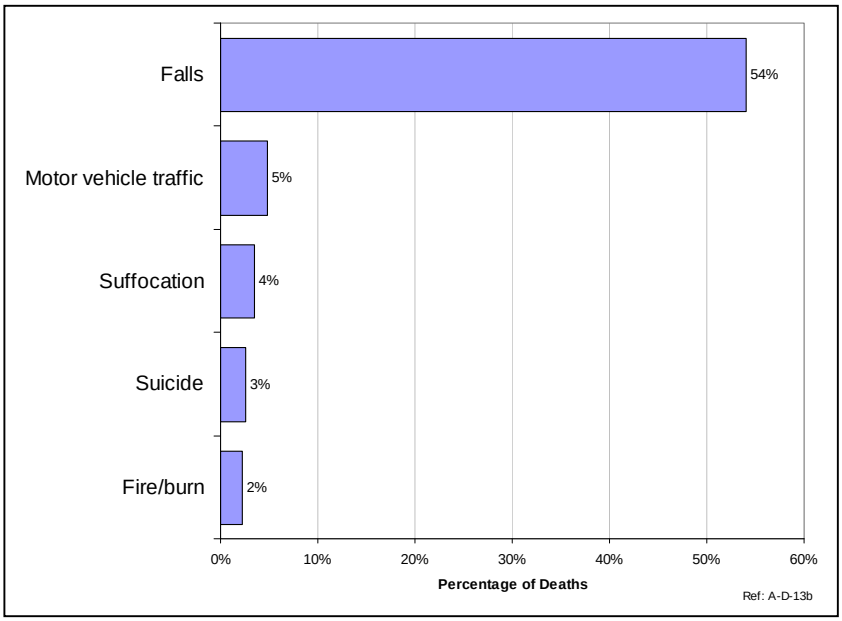


Figure 121: Leading Causes of Injury Death for Adults, 85 Years of Age and Older, in the Winnipeg Health Region, 1990-1999
n= 311



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Injury Hospitalization

Infants - Less than One Year of Age

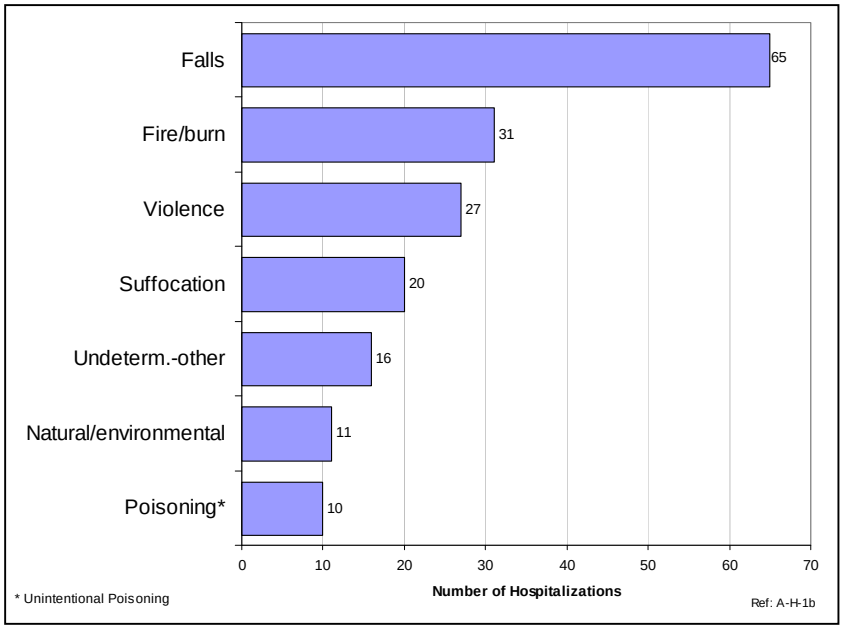
During the period of 1994 to 2003, 232 infants, under one year of age, received in-patient hospital treatment for an injury.[43]

Falls was the leading cause of injury hospitalization in this age group, accounting for 65 hospitalizations (28% of all injury hospitalizations).

The second and third leading causes were *fire/burn* and *violence*. Each accounts for 31 and 27 hospitalizations respectively, in this age group (13% and 12% of all injury hospitalizations).

It is important to note that for infants, less than one year of age, 60% of the injury hospitalizations occurred to male infants. *Falls* was the leading cause among male infants (with 41 hospitalizations). *Falls* was also the leading cause for female infants (with 24 hospitalizations).

Figure 122: Leading Causes of Injury Hospitalization for Infants, Less Than One Year of Age, in the Winnipeg Health Region, 1994-2003, n=232



Note to readers: The term 'hospitalization' is used in this report to refer to an injury event that was treated in-hospital with at least one overnight stay. It is possible that in some cases, the injury event was not the main reason for admission to hospital or for the majority of time spent in hospital. More information about this topic may be found in the Methods section.

The categories of Other specified, classifiable; Other specified, NEC; and Unspecified were excluded from the determination of leading injury causes due to the heterogeneity of causes included in these categories. As well, these categories point to methodological challenges in data coding for injury causes. More detailed information can be found in the Methods and/or Appendix.

[43] As with all data in this report, this refers to persons who were residents of the Winnipeg Health Region at the time of hospital admission.

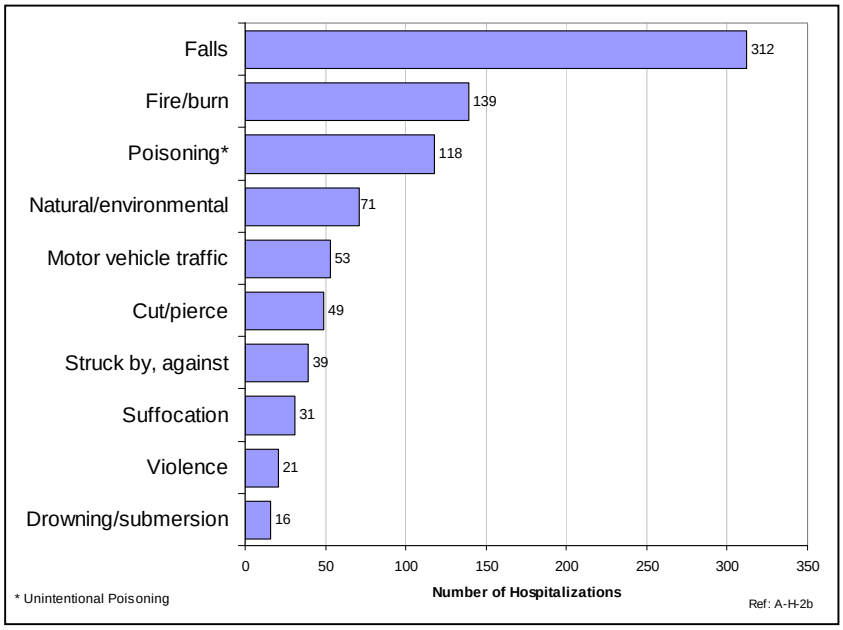
1-4 Years of Age

During the period of 1994 to 2003, 1073 children 1-4 years of age received in-patient hospital treatment for an injury. *Falls* was the leading cause of injury hospitalization in this age group, accounting for 312 hospitalizations (29% of all injury hospitalizations).

This is followed by *fire/burn* as the second leading cause for this age group. This cause accounts for 139 hospitalizations (13%). The third leading cause was *poisoning (unintentional)*, and accounted for 118 hospitalizations in 1-4 year-olds (11%).

In this age group, 60% of the injury hospitalizations occurred to male children. *Falls* was the leading injury cause among male children, and as it was for female children.

Figure 123: Leading Causes of Injury Hospitalization for Children, 1-4 Years of Age, in the Winnipeg Health Region, 1994-2003, n=1073



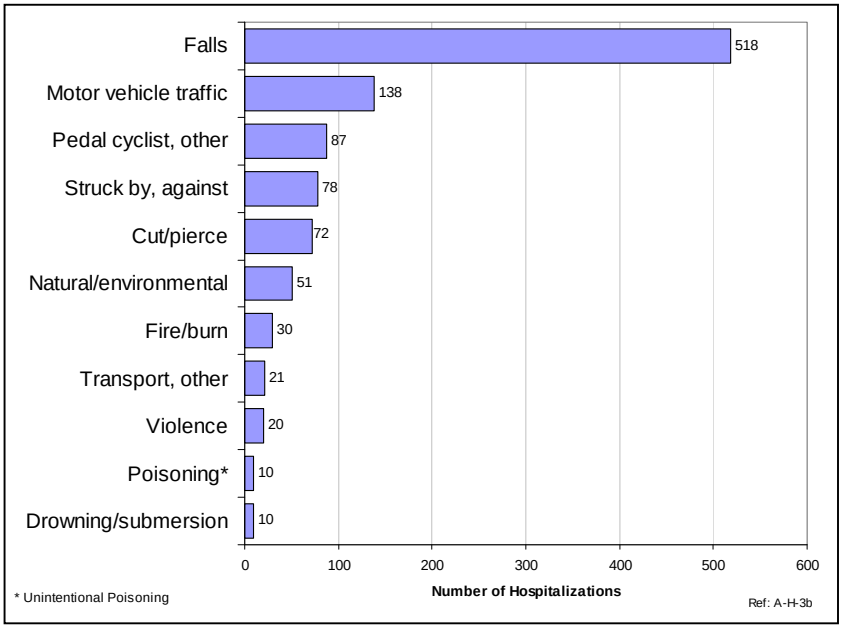
5-9 Years of Age

During the period of 1994 to 2003, 1202 children, 5-9 years of age, received in-patient hospital treatment for an injury. *Falls* was the leading cause of injury hospitalization in this age group, accounting for 518 hospitalizations (43% of all injury hospitalizations).

This is followed by *motor vehicle traffic* as the second leading cause for this age group. This cause accounted for 138 hospitalizations in this age group (11%). The third leading cause was *pedal cyclist, other*, accounted for 87 hospitalizations in 5-9 year-olds (7%).

In this age group 60% of the injury hospitalizations occurred to male children. *Falls* was the leading cause of injury among male children and as it was for female children.

Figure 124: Leading Causes of Injury Hospitalization for Children, 5-9 Years of Age, in the Winnipeg Health Region, 1994-2003
n= 1202



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10-14 Years of Age

During the period of 1994 to 2003, 1622 children, 10-14 years of age, received in-patient hospital treatment for an injury. *Falls* was the leading cause of injury hospitalization in this age group, accounting for 479 hospitalizations (30% of all injury hospitalizations).

This is followed by *struck by/against as* the second leading cause for this age group. This cause accounted for 170 hospitalizations in this age group (11%). The third leading cause was *self-inflicted*, accounted for 167 hospitalizations in 10-14 year-olds (10%).

In this age group 62% of the injury hospitalizations occurred to male children. *Falls* was the leading cause of injury among male children (with 341 hospitalizations). For females in this age group, *self-inflicted* was the leading cause (with 142 hospitalizations).

15-19 Years of Age

During the period of 1994 to 2003, 2795 youth, 15-19 years of age, received in-patient hospital treatment for an injury. *Self-inflicted* injury was the leading cause of injury hospitalization, which accounted for 549 (20% of all injury hospitalizations). The second and third leading causes were *violence* and *motor vehicle traffic*. Each accounted for 506 and 390 hospitalizations, respectively (18% and 14% of all injury hospitalizations).

In this age group 61% of the injury hospitalizations occurred to male youth and v*iolence* was the leading cause of injury (with 407 hospitalizations). For females in this age group, *self-inflicted* injury was the leading cause (with 391 hospitalizations).

Figure 125: Leading Causes of Injury Hospitalization for Children, 10-14 Years of Age, in the Winnipeg Health Region, 1994-2003, n= 1622

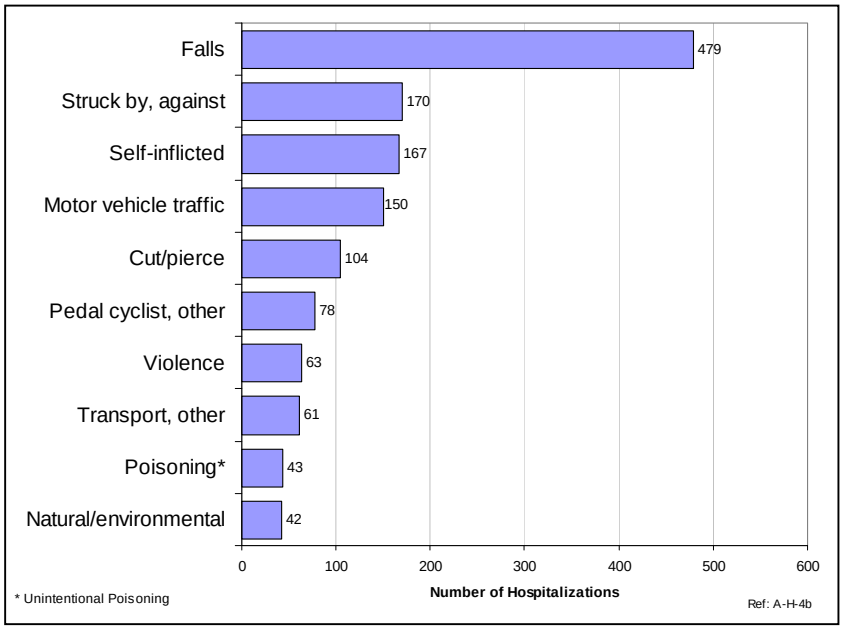
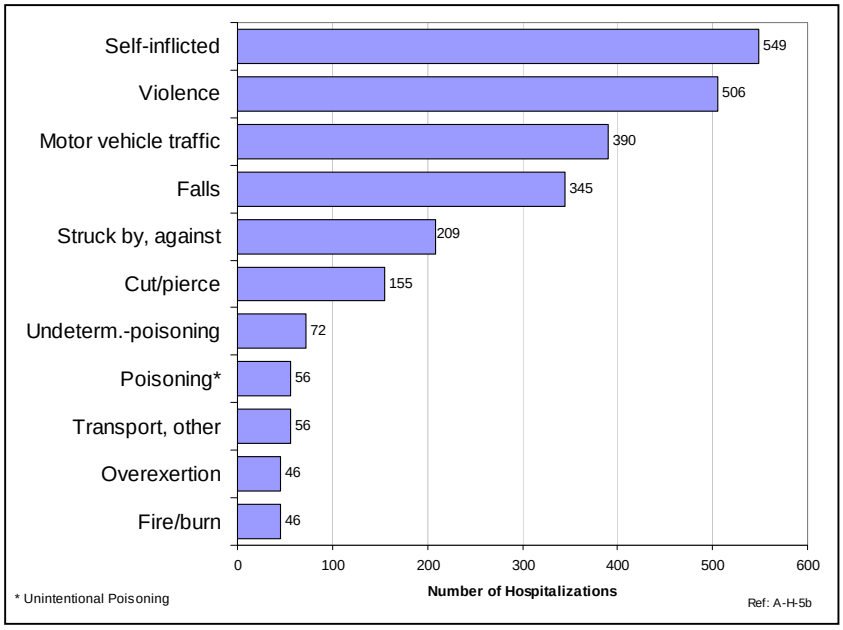


Figure 126: Leading Causes of Injury Hospitalization for Youth, 15-19 Years of Age, in the Winnipeg Health Region, 1994-2003, n= 2795

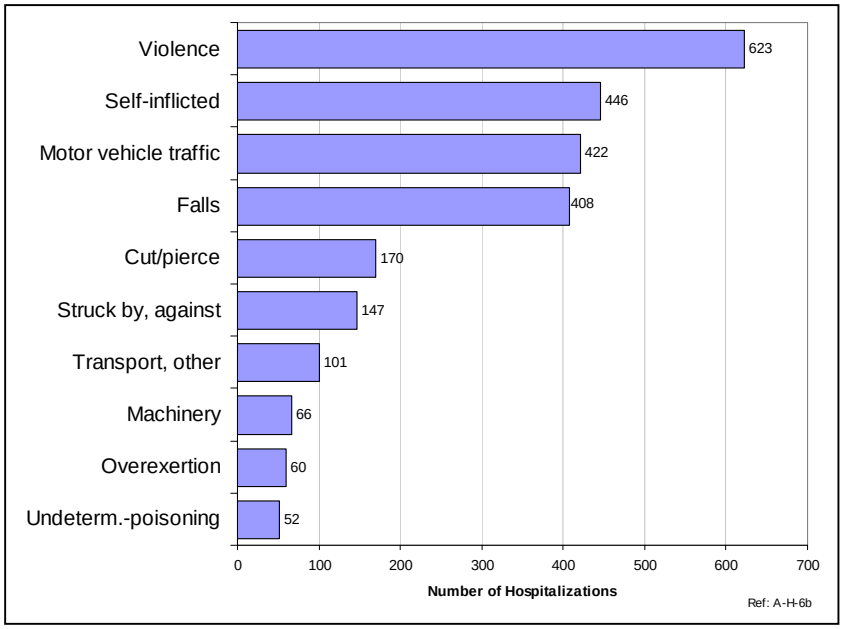


20-24 Years of Age

During the period of 1994 to 2003, 2978 young adults, 20-24 years of age, received in-patient hospital treatment for an injury. *Violence* was the leading cause of injury hospitalization, which accounted for 623 (21% of all injury hospitalizations). The second and third leading causes were s*elf-inflicted* injury and *motor vehicle traffic*. Each accounted for 446 and 422 hospitalizations, respectively (15% and 14% of all injury hospitalizations).

In this age group, 65% of the injury hospitalizations occurred to males and v*iolence* was the leading cause of injury (with 510 hospitalizations). For females in this age group, *self-inflicted* injury was the leading cause (with 255 hospitalizations).

Figure 127: Leading Causes of Injury Hospitalization for Young Adults, 20-24 Years of Age, in the Winnipeg Health Region, 1994-2003, n= 2978

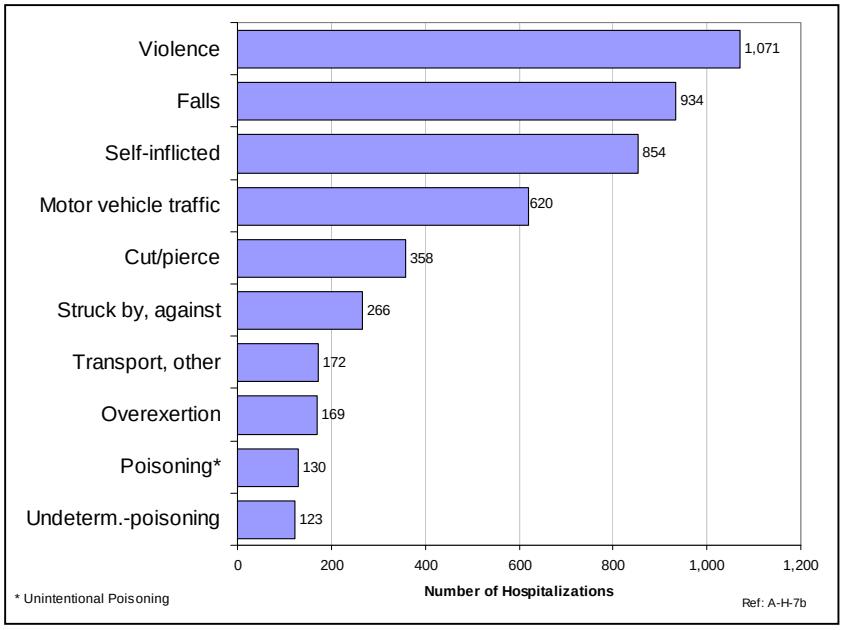


25-34 Years of Age

During the period of 1994 to 2003, 5836 adults, 25-34 years of age, received in-patient hospital treatment for an injury. *Violence* was the leading cause of injury hospitalization, which accounted for 1,071 (18% of all injury hospitalizations). The second and third leading causes were *falls* and s*elf-inflicted* injury. Each accounted for 934 and 854 hospitalizations, respectively (16% and 15% of all injury hospitalizations).

In this age group, 66% of the injury hospitalizations occurred to males and v*iolence* was the leading cause of injury (with 840 hospitalizations). For females in this age group, *self-inflicted* injury was the leading cause (with 437 hospitalizations).

Figure 128: Leading Causes of Injury Hospitalization for Adults, 25-34 Years of Age, in the Winnipeg Health Region, 1994-2003, n= 5836



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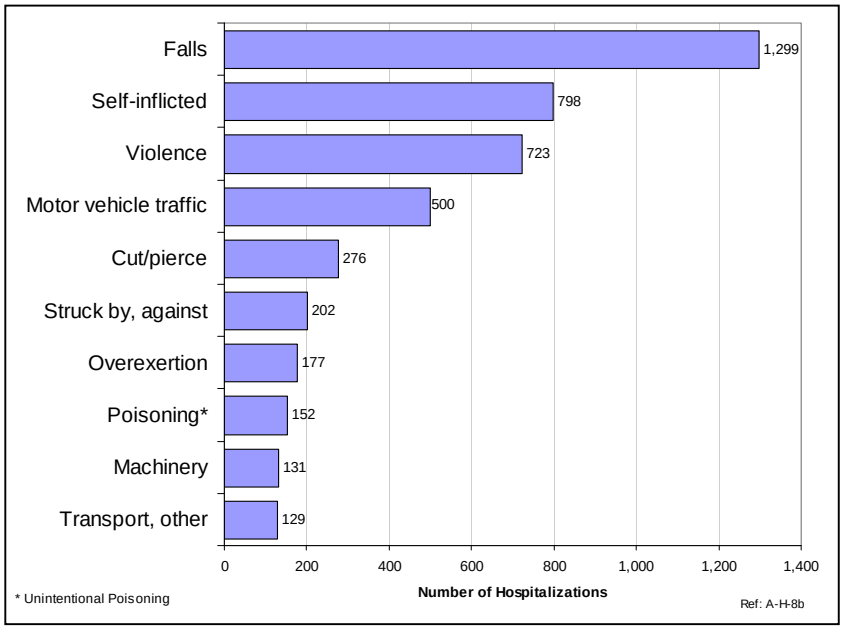
Note to readers: Age groupings for adults 25 years and older are in ten-year age groupings in contrast to the five-year age groups used for analyses of population sub-groups for those under 25 years of

35-44 Years of Age

During the period of 1994 to 2003, 5,549 adults, 35-44 years of age, received in-patient hospital treatment for an injury. *Falls* was the leading cause of injury hospitalization, which accounted for 1,299 (23% of all injury hospitalizations). The second and third leading causes were *violence* and s*elf-inflicted* injury*.* Each accounted for 798 and 723 hospitalizations, respectively (14% and 13% of all injury hospitalizations).

In this age group, 64% of the injury hospitalizations occurred to males and *falls* was the leading cause of injury (with 730 hospitalizations). For females in this age group, *falls* was also the leading cause (with 569 hospitalizations).

Figure 129: Leading Causes of Injury Hospitalization for Adults, 35-44 Years of Age, in the Winnipeg Health Region, 1994-2003, n= 5549

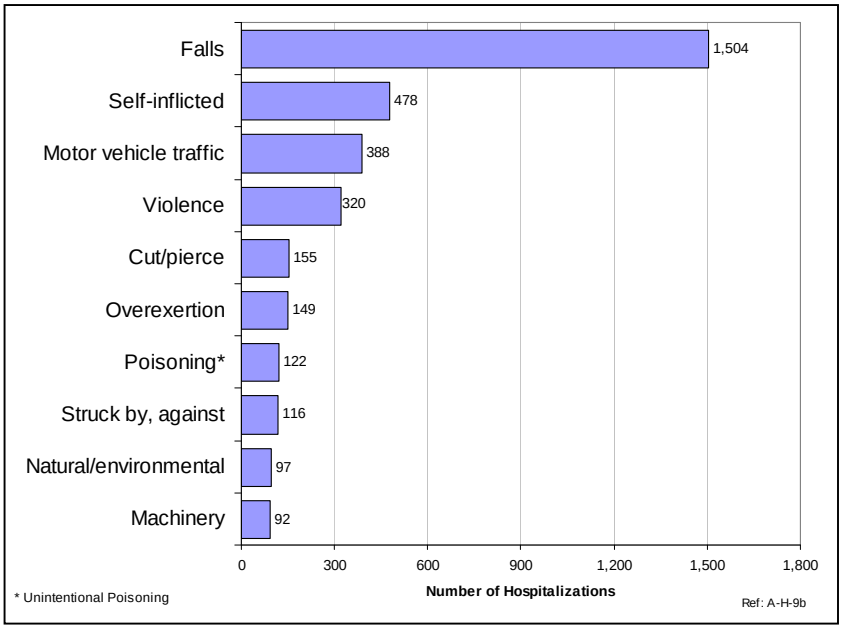


45-54 Years of Age

During the period of 1994 to 2003, 4,367 adults, 45-54 years of age, received in-patient hospital treatment for an injury. *Falls* was the leading cause of injury hospitalization, which accounted for 1,504 (34% of all injury hospitalizations). The second and third leading causes were s*elf-inflicted* injury and *motor vehicle traffic.* Each accounted for 478 and 388 hospitalizations, respectively (11% and 9% of all injury hospitalizations).

In this age group, 60% of the injury hospitalizations occurred to males and *falls* was the leading cause of injury (with 802 hospitalizations). For females in this age group, *falls* was also the leading cause (with 702 hospitalizations).

Figure 130: Leading Causes of Injury Hospitalization for Adults, 45-54 Years of Age, in the Winnipeg Health Region, 1994-2003, n= 4367



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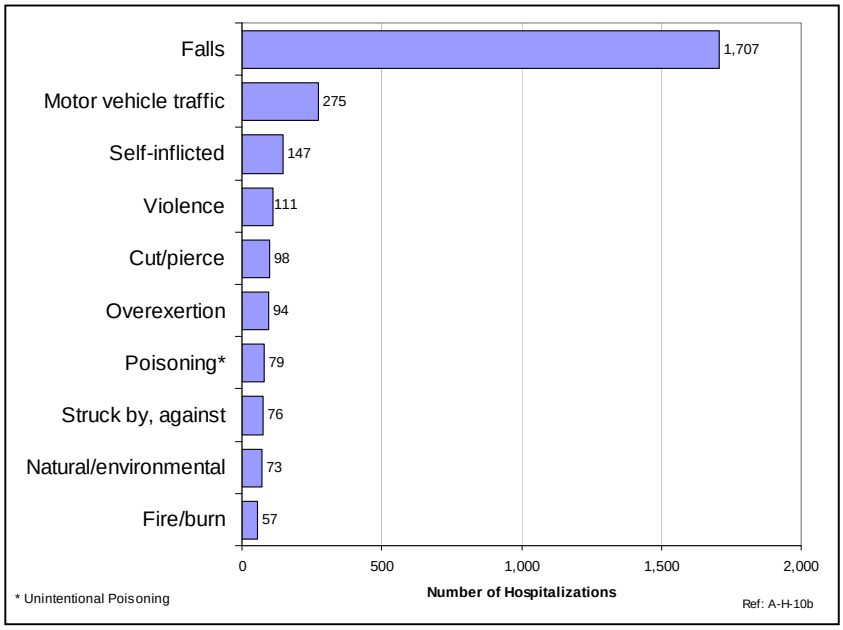
55-64 Years of Age

During the period of 1994 to 2003, 3,382 adults, 55-64 years of age, received in-patient hospital treatment for an injury. *Falls* was the leading cause of injury hospitalization, which accounted for 1,707 (51% of all injury hospitalizations). The second and third leading causes were *motor vehicle traffic* and s*elf-inflicted* injury. Each accounted for 275 and 147 hospitalizations, respectively (8% and 4% of all injury hospitalizations).

In this age group, 54% of the injury hospitalizations occurred to males and *falls* was the leading cause of injury (with 771 hospitalizations). For females in this age group, *falls* was also the leading cause (with 936 hospitalizations).

Figure 131: Leading Causes of Injury Hospitalization for Adults, 55-64 Years of Age, in the Winnipeg Health Region, 1994-2003, n= 3382

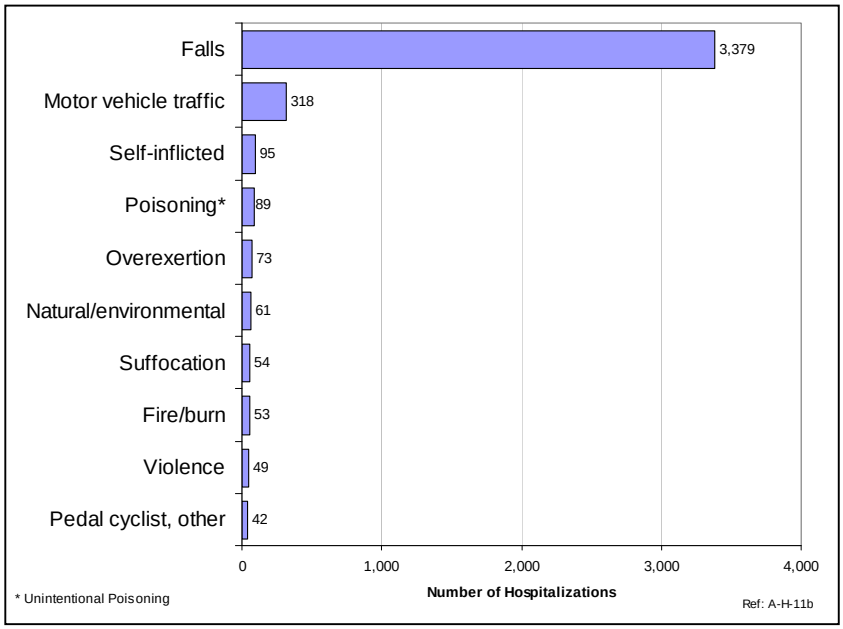


65-74 Years of Age

During the period of 1994 to 2003, 4,827 older adults, 65-74 years of age, received in-patient hospital treatment for an injury. *Falls* was the leading cause of injury hospitalization, which accounted for 3,379 (70% of all injury hospitalizations). The second and third leading causes were *motor vehicle traffic* and s*elf-inflicted* injury. Each accounted for 318 and 95 hospitalizations, respectively (7% and 2% of all injury hospitalizations).

In this age group, 59% of the injury hospitalizations occurred to females and *falls* was the leading cause of injury (with 2,146 hospitalizations). For males in this age group, *falls* was also the leading cause (with 1,233 hospitalizations).

Figure 132: Leading Causes of Injury Hospitalization for Adults, 65-74 Years of Age, in the Winnipeg Health Region, 1994-2003, n= 4827



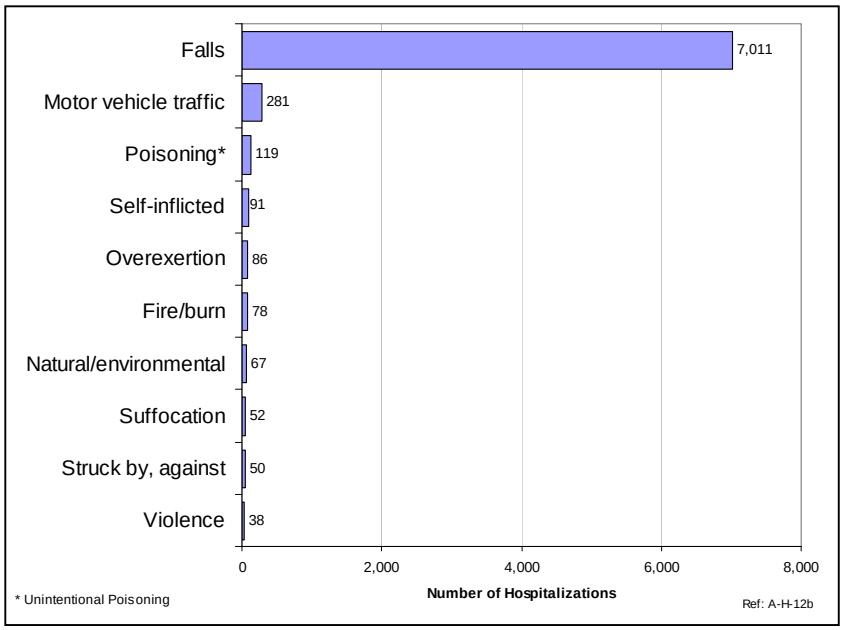
Please note that the graphs on this page have different scales.

75-84 Years of Age

During the period of 1994 to 2003, 4,827 older adults, 75-84 years of age, received in-patient hospital treatment for an injury. *Falls* was the leading cause of injury hospitalization, which accounted for 7,011 (82% of all injury hospitalizations). The second and third leading causes were *motor vehicle traffic* and *poisoning* (unintentional). Each accounted for 281 and 119 hospitalizations, respectively (3% and 1.4% of all injury hospitalizations).

In this age group, 71% of the injury hospitalizations occurred to females and *falls* was the leading cause of injury (with 5,171 hospitalizations). For males in this age group, *falls* was also the leading cause (with 1,840 hospitalizations).

Figure 133: Leading Causes of Injury Hospitalization for Adults, 75-84 Years of Age, in the Winnipeg Health Region, 1994-2003, n= 8590

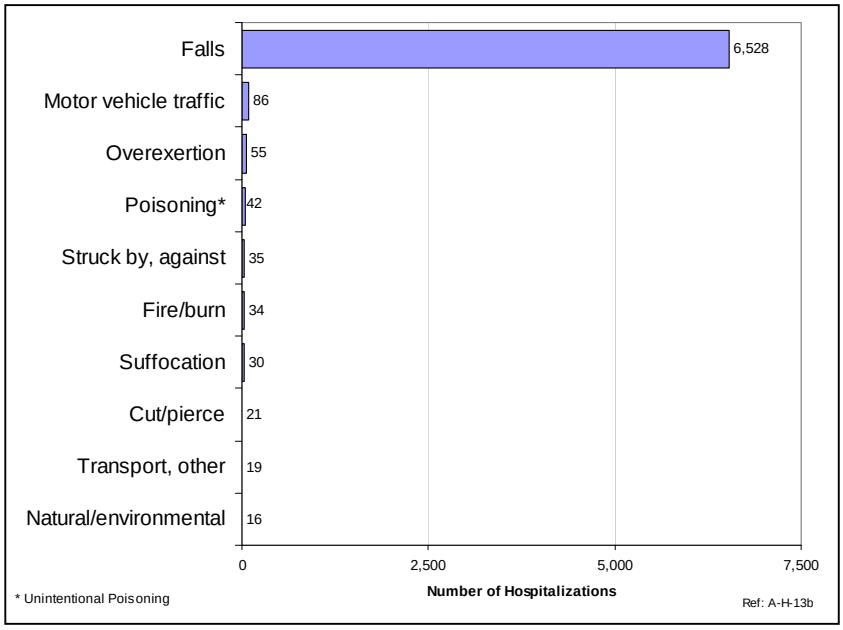


85 Years of Age and Older

During the period of 1994 to 2003, 7,289 oldest adults 85 years of age and older received in-patient hospital treatment for an injury. *Falls* was the leading cause of injury hospitalization, which accounted for 6,528 (90% of all injury hospitalizations). The second and third leading causes were *motor vehicle traffic* and *overexertion.* Each accounted for 86 and 55 hospitalizations, respectively (only 1.2% and 0.8% of all injury hospitalizations).

In this age group, 78% of the injury hospitalizations occurred to females and *falls* was the leading cause of injury (with 5,176 hospitalizations). For males in this age group, *falls* was also the leading cause (with 1,352 hospitalizations).

Figure 134: Leading Causes of Injury Hospitalizations for Adults, 85 Years of Age and Older, in the Winnipeg Health Region, 1994-2003, n= 7289



Please note that the graphs on this page have different scales.

Summary

This section summarizes key findings for each age group and addresses the question: How does the Winnipeg Health Region compare to Manitoba?

Infants: *Suffocation* and *violence* were the leading causes of injury death in this age group. *Falls* was the leading cause of injury hospitalization, followed by *fire/burn* and *violence* as the second and third leading causes. This is consistent with that found for Manitoba infants in the Manitoba Health report: *Injuries in Manitoba a Ten-year Review.*[44, 45, 46]

1-4 years: *Fire/burn* was the leading cause of injury death for this age group, followed by *motor vehicle traffic* and *violence*, which were tied as the second leading cause. This differs from that found for Manitoba children of this age group where the three leading causes of injury death were: *drowning/submersion*; *motor vehicle traffic*; and *fires/burns* (note that the majority were due to burns from hot objects or substances). *Falls* was the leading cause of injury hospitalization in the WHR, followed by *fire/burn* and *poisoning (unintentional)*, as the second and third leading causes for this age group. The three leading causes of injury hospitalization for Manitoba children 1-4 years of age were: *falls*; *poisoning (unintentional);* and *fire/burn*, the latter two being in opposite order as compared to the WHR.

5-9 years: *Motor vehicle traffic* was the leading cause of injury death for this age group.[47] *Falls* was the leading cause of injury hospitalization for this age group. This is followed by *motor vehicle traffic* and *pedal cyclist, other* [48]as the second and third leading causes of injury hospitalization for this age group. It should be noted that about 64% of *motor vehicle traffic injuries* in this age group can be attributed to child pedestrian collisions with a motor vehicle in traffic. The leading causes of injury are consistent with that found for Manitoba children 5-9 years of age, with the exception of *pedal cyclist, other*, which was the fourth leading cause of injury hospitalization among Manitoba children, 5-9 years of age. *Struck by/against* was found to be the third leading cause of injury hospitalization among Manitoba children, of this age group.

10-14 years: *Motor vehicle traffic* was the leading cause of injury death for this age group.[47] *Falls* was the leading cause of injury hospitalization, followed by *struck by/against* (an object or person) and *self-inflicted* injury. This is consistent with that found for Manitoba children 10-14 years of age.

15-19 years: *Suicide* was the leading cause of injury death, for this age group, followed by *motor vehicle traffic* and *violence,* as the second and third leading causes. *Self-inflicted* injury was the leading cause of injury hospitalization, followed by *violence* and *motor vehicle traffic*. This differs somewhat compared to that found for Manitoba youth, 15-19 years of age*:* the three leading causes of injury death for Manitoba youth were: *motor vehicle traffic, suicide* and *assault* (*violence*). The three leading causes of injury hospitalization for Manitoba youth were: *self-inflicted*, *motor vehicle traffic* and *assault (violence),* the latter two in reversed order*.*

20-24 years: *Suicide* was the leading cause of injury death, for this age group, followed by *motor vehicle traffic* and *violence* as the second and third leading causes. *Violence* was the leading cause of injury hospitalization, followed by s*elf-inflicted* injury and *motor vehicle traffic*. This differs from that found for Manitobans 20-24 years of age: *motor vehicle traffic*, which was the leading cause of injury death, followed by *suicide* and *assault (violence).* The leading causes of injury hospitalization are consistent with that found for Manitobans of this age group.

25-34 years: *Suicide* was the leading cause of injury death, for this age group, followed by *motor vehicle traffic* and *violence* as the second and third leading causes. *Violence* was the leading cause of injury hospitalization, followed by *falls* and s*elf-inflicted* injury. This is consistent with that found for Manitobans 25-34 years of age.

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[44] Government of Manitoba. Manitoba Health. *Injuries in Manitoba: A Ten-Year Review*. January, 2004. All comparisons were made to this report. It should be noted that injury deaths were examined in a different time period (1992-1999) and also injury hospitalizations were examined in a different time period (1992-2001. Therefore comparisons should be interpreted with some caution, however it is the most recently published injury rates for the province of Manitoba.

[45] The reader is reminded that the categories of *Other specified, classifiable; Other specified, NEC;* and *Unspecified* were excluded from the determination of leading injury causes. More detailed information can be found in the Appendix.

[46] See technical note at end of Chapter 2: Injury Death regarding *fractures, cause unspecified* and definitions of *violence* versus *assault*.

[47] Second and third leading causes of injury death were not provided as the remaining injury causes had events of less than five, which may be considered statistically unstable.

[48] Please see technical note 3 at end of chapter which further describes this category of injury.

35-44 years: *Suicide* was the leading cause of injury death, for this age group, followed by *motor vehicle traffic* as the second leading cause. *Undetermined-poisoning* (poisoning of undetermined intent) and *poisoning (unintentional)* were tied as the third leading causes of injury death. *Falls* was the leading cause of injury hospitalization, followed by *violence* and *self-inflicted* injury. The leading causes of injury death are consistent with that found for Manitobans 35-44 years of age. The leading causes of injury hospitalization for Manitobans in this age group were: *falls*; *self-inflicted;* and *motor vehicle traffic*.

45-54 years: *Suicide* was the leading cause of injury death, for this age group, followed by *motor vehicle traffic* and *undetermined-poisoning*. *Falls* was the leading cause of injury hospitalization, followed by *self-inflicted* injury and *motor vehicle traffic.* This differs slightly from that found for Manitobans 45-54 years of age, where the third leading cause of injury death was found to be *falls* (the leading and second leading causes of injury death were the same as that for WHR residents).[49] The three leading causes of injury hospitalization for Manitobans 45-54 years of age were: *falls*; *motor vehicle traffic* and *self-inflicted* injuries.

55-64 years: *Suicide* was the leading cause of injury death for this age group, followed by *motor vehicle traffic* and *falls*. *Falls* was the leading cause of injury hospitalization, followed by *motor vehicle traffic* and *self-inflicted* injury. The leading causes of injury death are consistent with that found for Manitobans 55-64 years of age. The leading and second leading causes of injury hospitalization were the same as those for Manitobans of this age group, however, the third leading cause of injury was *overexertion* (with 11 more hospitalizations than the *self-inflicted* injury category).

65-74 years: *Suicide* was the leading cause of injury death, for this age group, followed by *falls* and *motor vehicle traffic*. *Falls* was the leading cause of injury hospitalization, followed by *motor vehicle traffic* and *self-inflicted* injury. This differs from that found for Manitobans 65-74 years of age, where the three leading causes of injury death were: *motor vehicle traffic*, *falls* and *suicide*. The three leading causes of hospitalization for Manitobans of this age group were: *falls*; *motor vehicle traffic* and *fractures, cause unspecified* (however, if it is assumed that the latter injury cause is the result of a fall injury, and is counted as such, then *natural and environmental* injury becomes the third leading cause).

75-84 years: *Falls* was the leading cause of injury death, followed by *motor vehicle traffic* and *suicide. Falls* was also the leading cause of injury hospitalization, followed by *motor vehicle traffic* and *poisoning (unintentional)*. This is consistent with that found for Manitobans 75-84 years of age if it is assumed that *fractures, cause unspecified* is the result of a fall injury (this injury cause was ranked second for deaths and third for hospitalizations among Manitobans of this age group).

85 years and older: *Falls* was the leading cause of injury death, followed by *motor vehicle traffic* and *suffocation. Falls* was also *the* leading cause of injury hospitalization, followed by *motor vehicle traffic* and *overexertion.* This is consistent with that found for Manitobans 85 years of age and older, if it is assumed that *fractures, cause unspecified* is the result of a fall injury (this injury cause was ranked second for both deaths and hospitalizations among Manitobans of this age group).

Patterns of injury vary throughout the lifespan. Not surprisingly, infants and children are at risk for different types of injuries compared to youth and adults. Even within the children's age groups, there are distinct patterns of the leading causes of injury among the pre-school, school age and older children (1-4, 5-9 and 10-14 years of age groups). Although it is important to recognize the unique patterns of injury causes between the age groups, some commonalities also exist.

Infants have a unique pattern of injury death, indicated by the high numbers of *suffocation* and *violence* (most of the deaths due to *violence* were specifically due to *child maltreatment*). Children 1-4 years of age were at greatest risk of *fire and burn*-related injury resulting in death. For children, 5-9 years of age, *motor vehicle traffic* was the most common cause of injury death, as it was for children 10-14 years of age (where the majority of these deaths involved a collision between a child pedestrian and a motor vehicle). One of the commonalities is that of *falls* injury, which was the leading cause of hospitalization in infants as well as children, 1-14 years of age.

There is a prevalence of *suicide* and *self-inflicted* injury among many age groups beginning with the15-19 year age group and continuing through to 65-74 years of age. The youth, young adults, and adults 25-34 years of age in our region have the same leading causes of injury death: *suicide, motor vehicle traffic* and *violence* (in that order). It is disturbing to find that a large percentage of injuries in these age groups are intentional in nature (with

[49] It should be noted that the Manitoba Health report: *Injuries in Manitoba: A Ten-Year Review,* did not utilize a category for poisonings of undetermined intent, instead all injuries of undetermined intent were grouped together in one category.

intent to do harm to self or to others), and were also the leading causes of injury hospitalization for these age groups, albeit in varying order.

For adults, 35-44 years of age and 45-54 years of age, *suicide* and *motor vehicle traffic* were the leading causes of injury death. The number of suicide deaths peaks in 35-44 years of age group (with 159 in the ten-year period). It is interesting to note that *poisoning-undetermined* (poisoning of undetermined intent) follows as the third leading cause of injury death in these age groups (edging out *violence*). Although it should be noted that *unintentional poisoning* was tied for third in the 35-44 years of age group. This demonstrates the difficulty in the ascertainment of intent of self-harm in many poisoning deaths, and may point to even greater concerns regarding self-harm in these age groups. In these two age groups, *falls* was the leading cause of injury hospitalization.

In older adults, 55-64 years of age and 65-74 years of age, although the numbers of *suicide* deaths decrease, it remains the leading cause of injury death. *Falls* and *motor vehicle traffic,* round out the leading three injury causes in both age groups, however in varying order. *Falls* becomes a greater concern for older adults, as it moves into one of the three leading causes of death for these age groups. In addition, the numbers of *falls* injury hospitalizations increase dramatically in the older adult age groups: *falls* account for the majority of injury hospitalizations in older adults, 65-74 years of age. M*otor vehicle traffic* and *self-inflicted* injury, both follow, however in smaller proportion compared to the number of fall injuries.

Falls injury is clearly the greatest concern in the oldest adults in the region, 75-84 and 85 years of age and older. This is supported by the large number of fall-related deaths as well as the large number of fall injuries treated in hospital. In fact, the majority of fall-related deaths in the region occurred in these two age groups (approximately 71%). The remaining leading causes of death and hospitalization each comprise very small proportions of injury deaths and hospitalizations (respectively). However, it is noteworthy that nearly half of the *motor vehicle traffic* deaths involved an elderly pedestrian and a motor vehicle collision.

Injury prevention aims that should be targeted to specific age groups include:

- Infants: falls, suffocation and violence.
- Children: falls, burn prevention, pedal cyclist and pedestrian safety
- Youth and young adults: intentional injuries (suicide, self-inflicted and violence), and motor vehicle traffic
- Adults: suicide and self-inflicted as well as falls and motor vehicle traffic
- Older adults: falls.

Technical Notes:

1. In this report we have chosen not to include *unspecified* injury (which includes f*ractures, cause unspecified*) in the determination of leading causes as it is difficult to plan injury prevention programming activities around injuries coded in this manner, and it actually points to coding challenges, which should be addressed by the health information system. The code for *fractures, cause unspecified* originates from the ICD-9 code for an unintentional fall injury where the events leading to injury were not known, but assumed to be a fall. If these types of injuries were to be added to the number of fall deaths in the WHR, it would increase the rate and number of fall injuries, but this would not affect its ranking as the second leading cause of injury death for the WHR. The magnitude of falls injury death is therefore under-reported here but it does align this injury cause with the definition of falls in the Health Canada injury matrix.

2. It should also be noted that the WHR definition of *violence* injury includes *assault* and *other violence*, two categories of intent from the Health Canada injury matrix. However, there was only one death due to *other violence* in the WHR for ten-year period examined, making the *violence* category comparable to the *assault* category used by the provincial report. In the hospitalization data, *other violence* there were 23 events (less than half of one per cent of all injuries).

3. While p*edal cyclist, other* is a somewhat unique category defined as incidents on a pedal cycle that do not occur on a public road or highway (i.e. not in traffic) and not involving a motor vehicle (otherwise they would be classified within *motor vehicle traffic*). This category of injury includes collisions involving a pedal cyclist and railway cars or stock, including derailment; as well as pedal cyclist collisions with another pedal cyclist, pedestrian, off-road vehicle, or unspecified person. Further analysis would be needed to clarify which types of these collisions are most prevalent in *pedal cyclist, other* injuries in children 5-9 years of age.

Definitions for Injury Causes and Categories

Injury Causes/Categories	ICD-9 E-code(s)	Description
Cut/pierce	E920.0-.9	Unintentional injury caused by cutting and piercing instruments
Drowning/submersion	E830.0-.9, E832.0-.9,E910.0-.9	Unintentional injury caused by drowning and submersion with and without involvment of watercraft.
Falls	E880.0-E886.9, E888	Unintentional injury caused by falls associated with various mechanisms. Excludes E887: Fracture, cause unspecified.
Fire/burn	E890.0-E899, E924.0-.9	Unintentional injury caused by fire and flames and from hot objects and substances.
Firearm	E922.0-.3,.8, .9	Unintentional injury caused by firearms (excludes air guns).
Machinery	E919 (.0-.9)	Unintentional injury caused by machinery used in various industrial and occupational activities (including agricultural).
Motor vehicle traffic	E810-E819 (.0-.9)	Unintentional injury resulting from motor vehicle traffic involving automobiles, vans, trucks, motor cycles, and other motorized cycles known or assumed to be traveling on public roads or highways. Includes MVT injuries associated with passenger, motor cyclist, pedal cyclist, and pedestrian.
Pedal cyclist, other	E800-E807 (.3),E820-E825 (.6), E826.1,.9,E827-E829(.1)	Unintentional injury among pedal cyclists not involving motor-vehicle traffic accidents. Includes persons hit by a train or by a motor vehicle while not in traffic, or in collison with another pedal cycle.
Pedestrian, other	E800-807(.2),E820-E825(.7),E826-E829(.0)	Unintentional injury among pedestrians hit by a train or a motor vehicle where the collision did not occur in traffic (i.e. on a public road or highway).
Transport, other	E800-E807 (.0,.1,.8,.9), E820-E825 (.0-.5,.8,.9), E826.2-.8, E827-E829 (.2-.9), E831.0-.9, E833.0-E845.9	Unintentional injury associated with various means of transportation: railway, off-road and other motor vehicles not in traffic. Includes other surface transport (e.g. snowmobiles), water, and aircraft. Excludes motor vehicle traffic.
Natural/environmental	E900.0-E909, E928.0-.2	Unintentional injury caused by natural or environmental factors for example: excessive heat, excessive cold, hunger, cataclysmic storms (e.g. tornados, floods, and hurricanes) as well as bites and stings from insects or animals.
Overexertion	E927	Unintentional injury caused by excessive physical exercise, overexertion from lifting, pulling, pushing. Strenuous movements in: recreational activities, other activities.
Poisoning	E850.0-E869.9	Unintentional injury caused by poisoning without intent to cause harm. Includes chemicals, all drugs, medicinal substances, and gases.

Struck by, against	E916-E917.9	Unintentional injury resulting from being struck by or striking against an object or person.
Suffocation	E911-E913.9	Unintentional injury caused by inhalation or ingestion of food or other objects that block respiration and by other mechanical means that hinder breathing (e.g. plastic bag over nose or mouth, suffocation by bedding, unintentional hanging or strangulation).
Other specified, classifiable	E846-E848, E914-E915, E918, E921.0-.9, E922.4,E923.0-.9, E925.0-E926.9,E928.3, E929.0-.5	Unintentional injuries not assigned to the specific categories within the matrix. Includes (but not limited to) air gun, foreign body enetering an orifice, caught accidentally between objects, explosions, electric current.
Other specified, NEC	E928.8, E929.8	Unintentional injuries caused by mechanisms of injury that have been recorded but for which no specified E-codes exists.
Unspecified	E887, E928.9, E929.9	Unintentional injury codes used to indicate cases where the mechanisms are not recorded. Includes E887: Fracture, cause unspecified. Also includes:unspecified accidents (E928.9), and late effects of unspecified accidents (E929.9).
Suicide	E950.0-E959	Injury caused by intentional self-harm.
Violence	E960.0-E969+E970-E978, E990-E999	Injury caused by intentional violence from persons other than self (includes assault & other violence).
Undetermined-poisoning	E980.0-E982.9	Injury caused by poisoing where it was not possible to determine the intent.
Undetermined-other	E980.0-E989 excluding E980.0-E982.9	Injury caused by poisoing where it was not possible to determine the intent.
All Injury	E800-E999, excluding E870.0-E879.9, E930.0-E949.9	The total of all injury causes/categories. Excludes adverse events*.

*Additional Note:

Adverse events	E870.0-E879.9,E930.0-E949.9	A series of codes clustered under "misadventures to patients during surgical and medical care", "surgical and medical procedures as the cause of abnormal reaction of patient or later complication without mention of misadventure at the time of procedure"; "drugs, medicinal, and biological substances causing adverse effects in therapeutic use". Excludes accidental overdose or wrong drug administered.

[i] The Paediatric Death Review Committee. Annual Report, 1998. Winnipeg: College of Physicians and Surgeons of Manitoba; December 2000.

[ii] Injury and Child Maltreatment Section, Public Health Agency of Canada analysis of data from the Canadian Institute for Health Information.

[iii] SmartRisk. The Economic Burden of Unintentional Injury in Manitoba. The SmartRisk Foundation, Toronto, Ontario, 2003

[iv] Diekstra RF, Garnefski N. (1995). On the nature, magnitude, and causality of suicidal behaviour: an international perspective. *Suicide and Life Threatening Behaviour*, 25: 36-57.