

Injury Profile 2014

Vancouver Coastal Health Authority

Summary Report

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Our Region

The Vancouver Coastal Health Authority (VCH) is one of five geographically distinct health authorities in British Columbia (BC). The VCH region covers a large geographic area and includes both urban and rural communities. It is comprised of three health service delivery areas (HSDA): North Shore/Coast Garibaldi (i.e. Coastal Urban and Coastal Rural), Richmond, and Vancouver.

The Vancouver HSDA is further divided into six local health areas (LHA), and the North Shore/Coast Garibaldi HSDA further divided into seven (two LHAs in Coastal Urban and five in Coastal Rural). The estimated VCH population is 1.2 million, approximately 25% of BC's population.

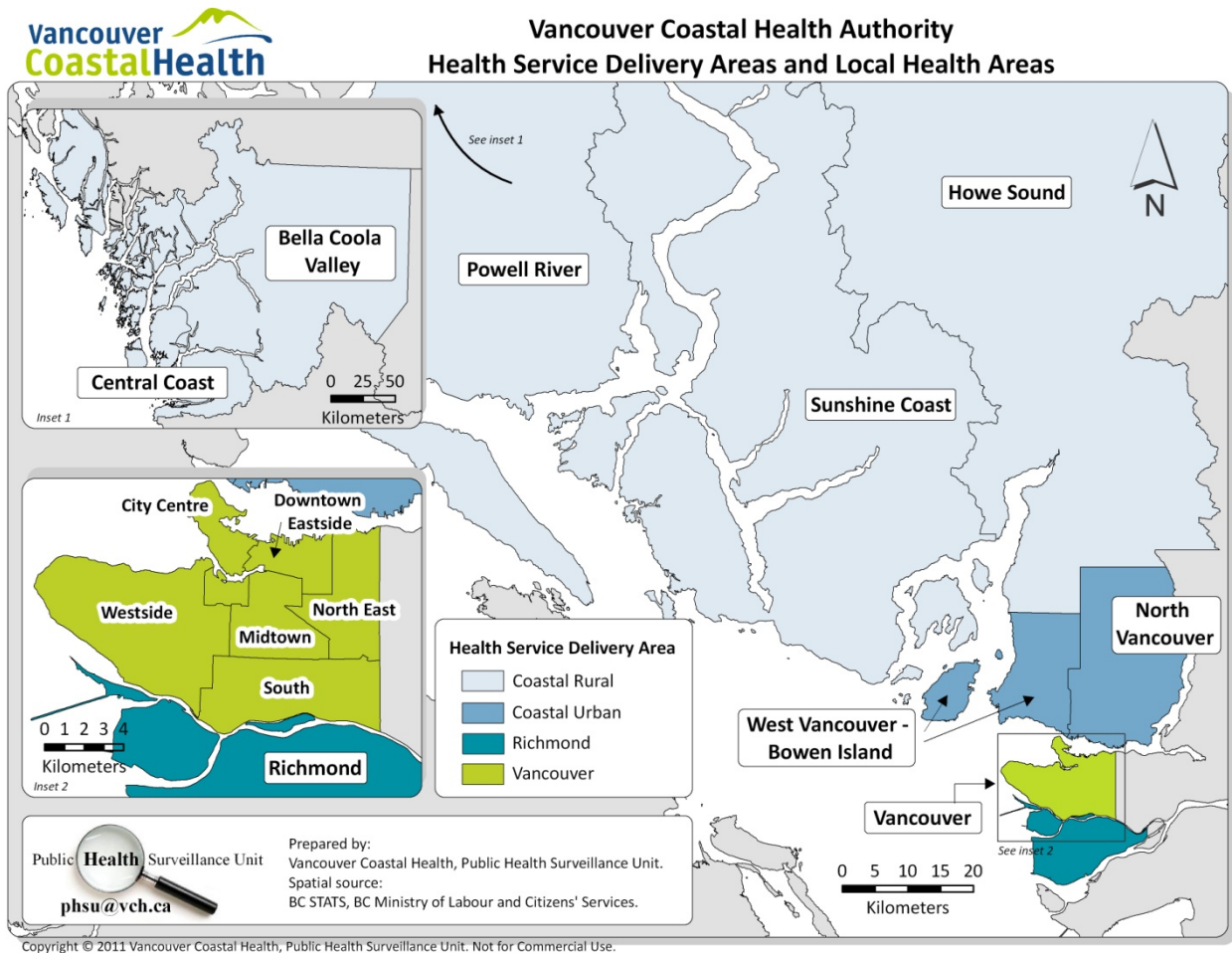


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1. Executive Summary

The VCH Injury Profile was developed to highlight the burden of injury and identify the cause of injury and trends, as well as support discussion about injury prevention priorities.

*Significant **increases** in population injury rates over time*

- ER visits across VCH are increasing modestly for 7 of the top 8 causes of injury, with the largest increase being poisoning/overdose (32% increase from 2010-11 to 2012-13)
- Hospitalizations across VCH are increasing significantly for injuries due to overexertion (9% increase from 2005-7 to 2008-10) driven primarily by a 63% increase in overexertion hospitalizations in Coastal Rural.
- Mortality due to injury across VCH is increasing significantly for deaths due to falls (40% increase from 2006-8 to 2009-11)

*Significant **decreases** in population injury rates over time*

- Hospitalizations across VCH are decreasing significantly for suicide/attempted suicide (17% decrease from 2005-7 to 2008-10) and homicide/assault (22% decrease from 2005-7 to 2008-10)
- Mortality due to injury across VCH is decreasing significantly for transport-related causes (39% decrease from 2006-8 to 2009-11)

Premature Mortality

- Potential Years Life Lost (PYLL) has been decreasing in most HSDAs 1997 to 2011, particularly the Downtown Eastside.

Notable cause specific injuries rates in the different sub regions compared to the VCH average

- Fall injury rates in Howe Sound and Coastal Urban are higher compared to the VCH average for both ER visits and hospitalizations
- Motor Vehicle Collisions (MVC) injury rates in Howe Sound are over twice the ER visit rate compared to the VCH average
- Sports-related injury rates in Howe Sound are almost four times the ER visit rate compared to the VCH average
- Vancouver experiences a higher ER visit rate due to poisoning /overdose compared to the average of the other sub regions, primarily due to alcohol, followed by illicit drugs

2. Introduction

1.1. About this injury profile summary report

This injury profile summary report looks at injuries occurring in the VCH region overall and within the VCH Health Service Delivery Areas (HSDA); Richmond, Vancouver, Coastal (Urban and Rural). The injury data included here is from available emergency room visits, hospital admissions, and vital statistics. Primarily, cause of injury is presented as the number of cases, the rate of injury per 100,000 population, age and sex. This is a summary of the descriptive epidemiological report *Injury Profile 2014, Vancouver Coastal Health Authority*. <link>

1.2. Purpose

The objective of this report is to:

- Highlight the burden of injury in Vancouver Coastal Health and its communities
- Identify the cause of injury and trends stratified by age, sex and local health area

It is intended to:

- Contribute to a better understanding of the current burden of injury in VCH
- Support discussion of injury prevention priorities by a broad range of stakeholders
- Guide injury prevention collaboration between VCH and its partners

1.3. VCH Regional Injury Prevention Priorities

The VCH Regional Injury Prevention priorities were agreed on, after the release of the 2012 VCH Injury Profile, by multiple VCH programs, including: Public Health, Regional Trauma Services, Aboriginal Strategic Health Initiative, Primary Care, Acquired Brain Injury Program, Regional Fall and Injury Prevention Program, Mental Health & Addictions, and BC Children's Hospital.

The VCH regional injury priorities are:

- Road safety
- Falls for all ages
- Sport-related injuries
- Suicide and self-inflicted injuries

3. Methodology

Injury information used in this profile comes from several data sources. Data limitations exist and are listed below.

3.1. Data Sources

VCH ER Visits

Visits to emergency rooms (ER) come from nine out of 13 acute care hospitals across the region which provide coverage for approximately 95% of the population in VCH. ER visits are not available from acute care hospitals from Sunshine Coast, Powell River and the Central Coast. Injury-related visits are captured through ICD-9 codes 800-999, all ICD-9 E codes, and a key word search through the following data fields: presenting complaint, nature of injury, mechanism of injury and activity at time of injury.

BC Children's Hospital ER Visits

BC Children's Hospital provides care for the province's most seriously ill or injured children. Many of the specialized pediatric services are not available anywhere else in the province. Only children residing in the VCH region at the time of their injury were included in this profile. The data is from the Canadian Hospitals Injury Reporting and Prevention Program (CHIRPP), Public Health Agency of Canada. The CHIRPP database contains information about the circumstances of the injury that is completed by the patient or an accompanying adult on a one page self-administered questionnaire. Injury-related visits are captured through ICD-9 codes.

Hospitalization

All Canadian hospitals (except those in Québec) submit their hospitalization records directly to the Canadian Institute of Health information (CIHI) for inclusion in the Discharge Abstract Database (DAD). Data for Vancouver Coastal Health is broken down by fiscal year, age group, local health area, and cause of injury. Cases include all hospitalizations types - acute, surgical and rehab cases.

Mortality

BC Vital Statistics Agency collects death records for BC residents. Data was collected for Vancouver Coastal Health residents and analyzed by age group, local health area and cause of injury.

3.2. Limitations

Physicians and other health professionals are responsible for diagnosing and documenting the cause of injury for ER visits, hospitalization admissions and deaths, therefore consistency and accuracy of our results cannot be assumed. Additionally, each source differs in the number of years of data that could be collected; therefore, comparing results between ER, hospitalizations and deaths should be done with caution. Some causes of injury may be over reported as it may

be commonly documented as the cause of injury, (i.e. Cuts/pierces) although these may not be the primary cause of injury. Here are some specific limitations to data sources:

Some specific limitations to the data sources include:

VCH ER

- Nine out of thirteen VCH hospitals are included in the VCH ER dataset. Individuals may visit all thirteen hospitals and individuals may visit ER's outside of the VCH region.
- Residents of Richmond HSDA, Vancouver HSDA, Coastal Urban HSDA and Howe Sound LHA were included in the VCH ER data. All other Coastal Rural LHA's, Powell River, Sunshine Coast, Bella Coola Valley and Central Coast, are excluded from the analysis due to small numbers.
- Individuals may have more than one visit to the ER for the same injury, which may lead to over reporting of injuries.
- Children's data comes from two data sources that have different collection methods; merging the data sets is not possible. Therefore, children and youth (0-19 years old) are presented within BC Children's ER data and within ER data from the nine participating ER's in VCH separately.

Hospitalizations

- Hospitalization data can vary over time and between areas for factors not related to health, such as accessibility of treatment, and medical or administrative decisions that may affect the number of hospitalizations and lengths of hospital stay (BC Injury, Research and Prevention Unit, 2013).
- The number of cases refers to hospitalizations and is not the number of individuals hospitalized.

4. VCH Burden of Injury

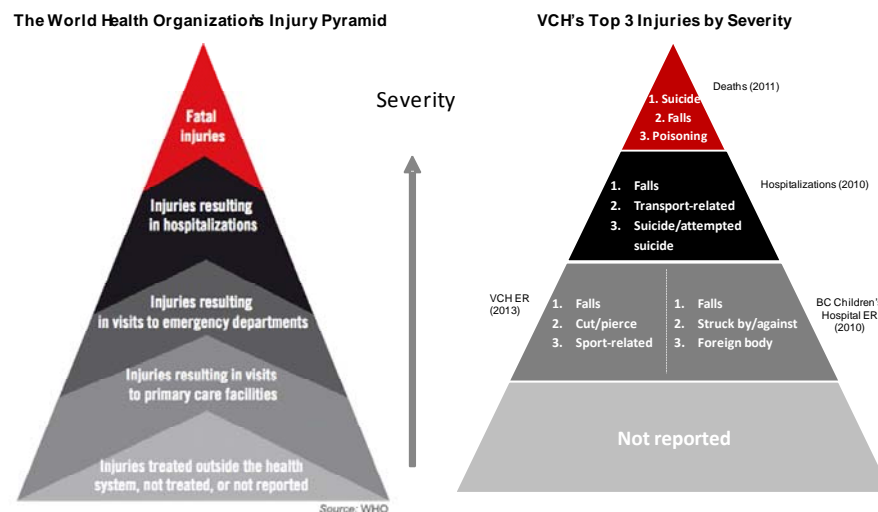
The burden of injury can be measured by financial cost, mortality, morbidity, or other indicators. In this summary report, mortality is represented by deaths and premature mortality by potential years of life lost (PYLL), morbidity by emergency room (ER) visits and hospitalizations and financial cost of injury by hospital costs.

Figure 1, below, shows the World Health Organization’s injury pyramid, which illustrates the distribution of injury severity types contributing to the overall burden of injury. Deaths represent a small percentage of those injured, followed by hospitalization, visits to the emergency department or general practitioner, and finally, untreated injuries or unreported medical care (World Health Organization, 2004).

The top three injuries by severity in ER, hospitalization, and mortality data, measured by rate per 100,000 people, are presented in Figure 1 to show a summary of the burden of injury by cause amongst VCH residents presenting to VCH hospitals.

- The top three causes of death due to injury per 100,000 VCH residents are caused by suicide, falls, and poisoning
- The top three causes of hospitalization due to injury per 100,000 VCH residents are falls, transport-related and suicide/attempted suicide
- The top three causes of ER visits due to injury per 100,000 VCH residents are falls, cut/pierces and sport-related
- The top three causes of BC Children’s Hospital ER visits per 100,000 VCH residents aged 0-19 years old is falls, struck by/against and foreign body

Figure 1: The Injury Pyramid and the VCH Top Three Injuries by Severity



4.1. VCH Cause of Injury Ranking (Rates per 100,000 population)

- The number one ranked cause of injury for ER visits and hospitalizations is falls (Table 1 and Table 2)
- The number one ranked cause of injury for mortality is suicide (Table 3)

Table 1. ER Visits due to injury in residents of Vancouver Coastal Health (VCH) and Health Service Delivery Areas/Howe Sound LHA. Rates per 100,000 population.

Cause of Injury	VCH				Richmond				Vancouver				Coastal Urban				Howe Sound			
	2012-2013		2010-2011		2012-2013		2010-2011		2012-2013		2010-2011		2012-2013		2010-2011		2012-2013		2010-2011	
	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank
Falls	1381.0	1	1273.2	1	1337.3	1	1230.7	1	1108.5	2	1000.0	2	2173.4	1	1986.6	1	2371.8	3	2621.4	3
Cut/pierces	1372.8	2	1183.1	2	1304.3	2	1108.1	2	1461.9	1	1226.0	1	853.4	3	837.0	3	2882.2	2	2692.9	2
Injuries involving sport activities	789.8	3	775.1	3	732.6	3	737.4	3	514.2	4	478.8	4	1309.7	2	1292.8	2	3349.7	1	3570.0	1
Poisoning including overdoses	554.9	4	419.9	4	256.2	5	192.0	5	756.7	3	562.4	3	219.3	6	202.1	6	330.1	8	286.2	8
Motor Vehicle Collisions	363.1	5	338.2	5	430.7	4	371.7	4	317.7	5	311.1	5	357.2	4	323.0	4	841.9	5	724.0	5
Bicycling	231.5	6	220.5	6	106.2	7	99.4	7	152.2	7	154.9	6	296.8	5	266.5	5	2016.7	4	1841.5	4
Bite/sting	180.9	7	164.0	7	145.0	6	133.3	6	166.7	6	150.8	7	152.6	7	139.2	7	787.8	6	711.1	6
Fire/Burn	111.3	8	89.5	8	95.5	8	76.5	8	106.4	8	81.7	9	91.4	9	70.3	9	392.5	7	407.8	7

Table 2. Hospitalization due to injury in residents of Vancouver Coastal Health (VCH) and Health Service Delivery Areas (HSDA). Rates per 100,000 population.

Cause of Injury	VCH				Richmond				Vancouver				Coastal Urban				Coastal Rural			
	2008-2010		2005-2007		2008-2010		2005-2007		2008-2010		2005-2007		2008-2010		2005-2007		2008-2010		2005-2007	
	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank
Falls	397.6	1	390.7	1	295.5	1	264.3	1	339.8	1	350.5	1	530.0	1	519.1	1	755.9	1	677.9	1
Transport Related	96.4	2	98.9	2	62.8	2	60.5	2	87.6	2	90.8	2	105.4	2	105.2	2	214.6	2	227.4	2
Suicide/Attempted Suicide	41.5	3	49.8	3	36.4	3	46.5	3	37.1	3	46.5	3	39.4	5	41.3	5	89.6	3	100.4	3
Struck by/against	36.1	4	41.2	4	21.1	5	29.3	4	32.3	5	38.7	5	45.2	4	47.7	4	76.8	4	70.2	4
Overexertion	35.4	5	32.4	6	27.3	4	24.4	5	27.7	6	27.4	6	53.4	3	52.1	3	70.4	5	43.3	6
Assault	28.2	6	36.2	5	13.6	7	13.5	6	32.8	4	43.5	4	21.5	7	24.0	6	41.0	7	59.9	5
Unintentional Poisoning	21.1	7	20.9	7	16.1	6	11.8	7	18.9	7	21.4	7	24.0	6	18.7	7	41.0	6	42.1	7
Foreign Body	11.4	8	11.6	8	8.8	8	7.1	8	11.0	8	10.6	8	10.9	8	13.9	8	21.5	8	23.4	8
Fire Flame and Hot Substance	5.6	9	5.6	9	4.5	9	3.5	9	5.5	9	6.0	9	3.9	9	4.0	9	13.2	9	10.7	9

Table 3. Mortality due to injury (unintentional and intentional) in Vancouver Coastal Health (VCH) and Health Service Delivery Areas (HSDA). Rates per 100,000 population.

Cause of injury	VCH				Richmond				Vancouver				Coastal Urban				Coastal Rural			
	2009-2011		2006-2008		2009-2011		2006-2008		2009-2011		2006-2008		2009-2011		2006-2008		2009-2011		2006-2008	
	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank
Suicide	9.8	1	10.6	1	5.0	2	7.9	1	10.5	1	11.7	1	10.8	1	8.0	1	13.8	1	14.2	2
Accidental falls	8.5	2	6.0	3	7.7	1	3.6	3	7.5	3	5.7	3	10.8	2	6.9	2	12.3	2	11.9	3
Accidental poisoning	6.8	3	7.4	2	2.9	3	1.6	4	9.0	2	10.2	2	2.8	3	4.2	3	7.7	4	6.7	4
Transport accidents	3.1	4	5.1	4	2.1	4	4.9	2	3.0	4	4.3	4	2.1	4	4.0	4	8.1	3	14.2	1
Homicide/assault	1.5	5	1.8	5	1.0	5	1.6	5	1.9	5	2.2	5	*	*	1.1	5	*	*	*	*

* two few observations

4.2. Significant Changes in Cause of Injury

Statistically significant changes, which are greater than 5%, in the causes of injury leading to ER, hospitalization or death per 100,000 population have been identified and summarized below. The following tables show the causes of injury that have significantly increased in recent years (Table 4) and the causes of injury that have significantly decreased in recent years (Table 5). Key interpretation points are listed below for the significant changes for VCH and its HSDAs.

Significant Changes in Causes of Injury – VCH

- ER:
 - The ER visit rate has significantly increased for seven of the top eight causes of injury
 - The largest increase in ER visit rate is due to poisoning/overdose (32%)
- Hospitalization:
 - The hospitalization rate is significantly increasing across VCH for injuries caused by overexertion (9%), driven primarily from a large increase in hospitalization due to overexertion in Coastal Rural (63%)
 - The hospitalization rate is significantly decreasing for injuries caused by suicide/attempted suicide (17%), homicide/assault (22%), and struck by/against (12%)
- Mortality:
 - The mortality rate is significantly increasing for deaths caused by falls (40%)
 - The mortality rate is significantly decreasing for deaths caused by transport (39%)

Significant Changes in Causes of Injury – VCH Health Service Delivery Areas

- ER:
 - The ER visit rate is significantly increasing for most top eight causes in injury for all HSDAs, most notably ER visit rates in Richmond (33%) and Vancouver (35%) due to poisoning/overdose
 - The ER visit rate is significantly decreasing in Howe Sound only for sport-related (6%) and falls (10%)
- Hospitalization:
 - The hospitalization rate is significantly increasing for injuries caused by overexertion in Coastal Rural (63%)
 - The hospitalization rate is significantly decreasing for injuries caused by suicide/attempted suicide in Richmond (22%) and Vancouver (20%), as well as homicide/assault in Vancouver (25%) and Coastal Rural (32%)
- Mortality:
 - The mortality rate is significantly increasing for deaths caused by falls in Richmond (114%), Vancouver (30%) and Coastal Urban (58%)
 - The mortality rate is significantly decreasing for deaths caused by transport in Richmond (58%), Vancouver (29%) and Coastal Rural (43%)

Table 4: A summary of significant increases in ER visits, hospitalizations and mortality rates per 100, 000 by HSDA

Significant Increases (crude rates per 100,000 population, based on statistically significant findings only, using a cut off of >5% change between time periods)		VCH*	Richmond	Vancouver	Coastal Urban	Coastal Rural*
VCH ER Visits (excluding BC Children's Hospital) Top 8 Cause of Injury. 2012-2013 average compared to the 2010-2011 average *Coastal Rural includes Howe Sound LHA only	Falls	↑8%	↑9%	↑11%	↑9%	-
	Cut / pierces	↑16%	↑18%	↑19%	-	↑7%
	Motor vehicle collision	↑7%	↑16%	-	↑11%	↑16%
	Poisoning / Overdose	↑32%	↑33%	↑35%	↑9%	↑15%
	Bite / Sting	↑10%	↑9%	↑11%	↑10%	↑11%
	Fire / Burn	↑24%	↑25%	↑30%	-	-
	Struck by/against	-	-	-	↑13%	-
	Bicycling	↑5%	↑7%	-	-	↑10%
Hospitalizations Top 9 Cause of Injury. 2008-2010 average compared to the 2005-2007 average	Overexertion	↑9%	-	-	-	↑63%
	Falls	-	↑12%	-	-	↑12%
Mortality Top 5 Cause of Injury. 2009-2011 average compared to the 2006-2008 average	Falls	↑40%	↑114%	↑30%	↑58%	-

Table 5: A summary of significant decreases in ER visits, hospitalizations and mortality rates per 100, 000 by HSDA

Significant Decreases (crude rates per 100,000 population, based on statistically significant findings only, using a cut off of >5% change between time periods)		VCH*	Richmond	Vancouver	Coastal Urban	Coastal Rural*
VCH ER Visits (excluding BC Children's Hospital) Top 8 Cause of Injury. 2012-2013 average compared to the 2010-2011 average *Coastal Rural includes Howe Sound LHA only	Sport related	-	-	-	-	↓6%
	Falls	-	-	-	-	↓10%
Hospitalizations Top 9 Cause of Injury. 2008-2010 average compared to the 2005-2007 average	Suicide / attempted suicide	↓17%	↓22%	↓20%	-	-
	Homicide / assault	↓22%	-	↓25%	-	↓32%
	Struck by / against	↓12%	↓28%	↓17%	-	-
Mortality Top 5 Cause of Injury. 2009-2011 average compared to the 2006-2008 average	Transport	↓39%	↓58%	↓29%	-	↓43%

4.3. Premature Mortality

- Potential Years of Life Lost Standardized Rate (PYLLSR) shows a decreasing trend for the majority of LHAs
- PYLLSR is below the BC average in urban LHAs, except the Downtown Eastside
- For rural LHAs, PYLL is often trending above the BC average. Due to the small population sizes in the rural areas these differences are not statistically significant but bare closer examination.

Figure 1: Potential years of life lost standardized rate (PYLLSR) per 1000 population due to external causes of death by LHAs



Source: BC Vital Statistics Agency (Vista)
 Prepared by: Public Health Surveillance Unit, Vancouver Coastal Health, April 2014

Further information

The VCH Injury Profile 2014 provides further information on VCH results, VCH Regional Injury Priorities and data from each community of care as well as definitions and data analysis methods.

This Summary Report and the full Injury Profile 2014 can be found at:
http://www.vch.ca/your_health/disease_surveillance/reports

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