



Provincial Injury Prevention Priorities

Report of the BC Injury Prevention Committee
July 2017



BC Injury Prevention Committee (BCIPC): July 2017

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Introduction and Background

In British Columbia (BC), injury is the leading cause of death for ages 1 to 44 years and the fourth-leading cause of death for all ages. From ages 1 to 44 years, injuries account for approximately 40% of all Potential Years of Life Lost and over 70% of Preventable Years of Life Lost.

The purpose of the BC Injury Prevention Committee (BCIPC) is to provide guidance and recommendations on injury prevention to the Provincial Prevention and Health Promotion Policy Advisory Committee and the Provincial Public Health Executive Committee.

From ages 1 to 44 years, injuries account for approximately 40% of all Potential Years of Life Lost and over 70% of Preventable Years of Life Lost.

The deliverables of the BCIPC are to:

1. Develop a three-year strategic plan for injury prevention that includes, but is not limited to, the objectives of Goal #5 in *Promote, Protect, Prevent – BC's Guiding Framework for Public Health and Healthy Families BC Policy Framework*.
2. Develop an annual work plan and performance report, to be approved by the Prevention and Health Promotion Policy Advisory Committee (PHPPAC) and Public Health Executive Committee (PHEC).
3. Inform the development of provincial (Ministry of Health or cross-government) policies and guidelines for injury prevention based on evidence.
4. Make recommendations for implementation of specific programs for injury prevention.
5. Make recommendations for use of specific indicators to monitor injury prevention programs and burden of injury of both the work plan and the *Guiding Framework for Public Health*.
6. Make recommendations for training of health care practitioners on injury prevention.
7. Make recommendations for research priorities for injury prevention.

Why Set Provincial Priorities?

To fulfill the deliverables, the BCIPC sought to develop provincial injury prevention priorities using a rigorous, mixed-method approach to achieve a group consensus and reduce unintended bias of the results.

The drivers for health authorities/Ministry of Health supported provincial priorities are:

- The BC Guiding Framework for Public Health requires that injury prevention be addressed.
- Public health is faced with numerous competing priorities.

- There is little flexibility in resource allocation.
- Efficiencies can be gained in planning by starting with the highest priorities and working across health authorities to address these priorities.
- Priorities may facilitate accessing new resources, if available.

On January 26, 2017, the PHPPAC approved the Provincial Injury Prevention Priorities.

BCIPC Membership

	Number of Representatives	Position/Program
Health Authorities		
First Nations Health Authority	2	1 Injury Prevention Lead 1 Director
Regional Health Authorities	2 each (10 in total)	1 Medical Health Officer 1 Injury Prevention Lead
Provincial Health Services Authority	3	1 Provincial Manager, BCCDC 1 Director of Surveillance, BCCDC 1 Medical Director, Trauma Services BC
Ministry of Health		
Office of the Provincial Health Officer	1	1 Deputy Provincial Health Officer
Ministry of Health – Healthy Living Branch	2	1 Senior Policy Analyst 1 Director
Other		
BC Injury Research and Prevention Unit	1 (ex-officio)	1 Director
BC Falls and Injury Prevention Coalition	1 (ex-officio)	1 Physician/UBC Family Medicine
Regional Trauma Services	1 (ex-officio)	1 Regional Lead

Prioritization Process Overview

To determine the provincial injury prevention priorities:

- Metrics to demonstrate burden of injury were selected.
- Evidence reviews for interventions were selected.
- A 3-round Modified Delphi process was used.

The Delphi Technique was designed to reach consensus among experts who may have differing views and perspectives as well as to gather input from participants without requiring them to work face-to-face. The Delphi Technique enables group problem-solving and consensus building using an iterative process of problem definition, feedback, and reflection. To reach agreement on the provincial injury prevention priorities, three rounds of decision-making took place and two different prioritization techniques were used to ensure that the results would:

- Reflect the consensus of all health authorities/agencies.
- Be free of individual member bias and values.
- Reflect all the expertise and knowledge of the group.

The BCIPC used the National Association for County and City Health Officials (NACCHO) *Guide to Prioritization Techniques* document to help determine which prioritization techniques to use during the three-round modified Delphi (see Appendix A).

The table on page 8 shows the process used to determine the Provincial Injury Prevention Priorities.



Prioritization Process Overview			
Date	Action	Methods	Participants
July-Sept 2016	Metrics and Evidence	<p>A working group identified the various metrics available to illustrate burden of injury by cause.</p> <p>BCIPC chose:</p> <ul style="list-style-type: none"> • Mortality • Potential Years Life Lost (PYLL) • Emergency Department data (VCH and BC Children's Hospital) • Cost (Direct and Indirect) <p>Burden of Injury Measures were presented by cause of injury both provincially and at the health authority level, by age and sex, and for transport-related injuries by road user type.</p>	BCIPC members
Oct-Nov 2016	Prioritization Round 1 Stage 1 Matrix (See Page 12)	<p>Prioritization matrix used to rate each major mechanism of injury (10 total) on a scale of 0-3, based on five criteria: Importance, Modifiability, Acceptance, Feasibility, and Evaluability. Large participant sessions were held in Northern Health, Fraser Health, Island Health, PHSA, and the BCIRPU, which included decision-makers beyond the BCIPC membership to ensure expertise and knowledge of local communities and injury issues. Vancouver Coastal Health and Interior Health used their existing priorities to guide matrix rankings.</p>	BCIPC members (Excluding MoH) Large sessions: Public Health, Patient Safety and Quality, Trauma, Mental Health, Aboriginal Health, Environmental Health and Home Health
Dec 2016-Jan 2017	Prioritization Round 2 Stage 2 Matrix (See Page 15 or for complete results see Appendix D)	<p>Prioritization matrix used to rate each sub-mechanism of injury (42 total) on a scale of 0-3, of the major mechanisms of injury on five criteria: Importance, Modifiability, Acceptance, Feasibility, and Evaluability. Stage 1 matrix results were used as a guide to complete the Stage 2 matrix. Sub-mechanisms of injury were then serially ranked based upon mean scores to form a top 10 list.</p>	BCIPC members
Jan 2017	Prioritization Round 3 Pairwise Comparison Analysis (See Page 17)	<p>The top 10 sub-mechanisms of injury were compared to each other using a pairwise comparison soliciting a vote as to which of each pairing should be given greater priority. Scores were recorded for each comparison (total 45 comparisons) and total scores for each sub-mechanism were compared and ranked. This method was chosen to validate and adjust the rankings of the top 10 sub-mechanisms of injury priorities and allow for a "sober second thought" on the Stage 2 results.</p>	BCIPC members

Results

July-September 2016: Metrics and Evidence

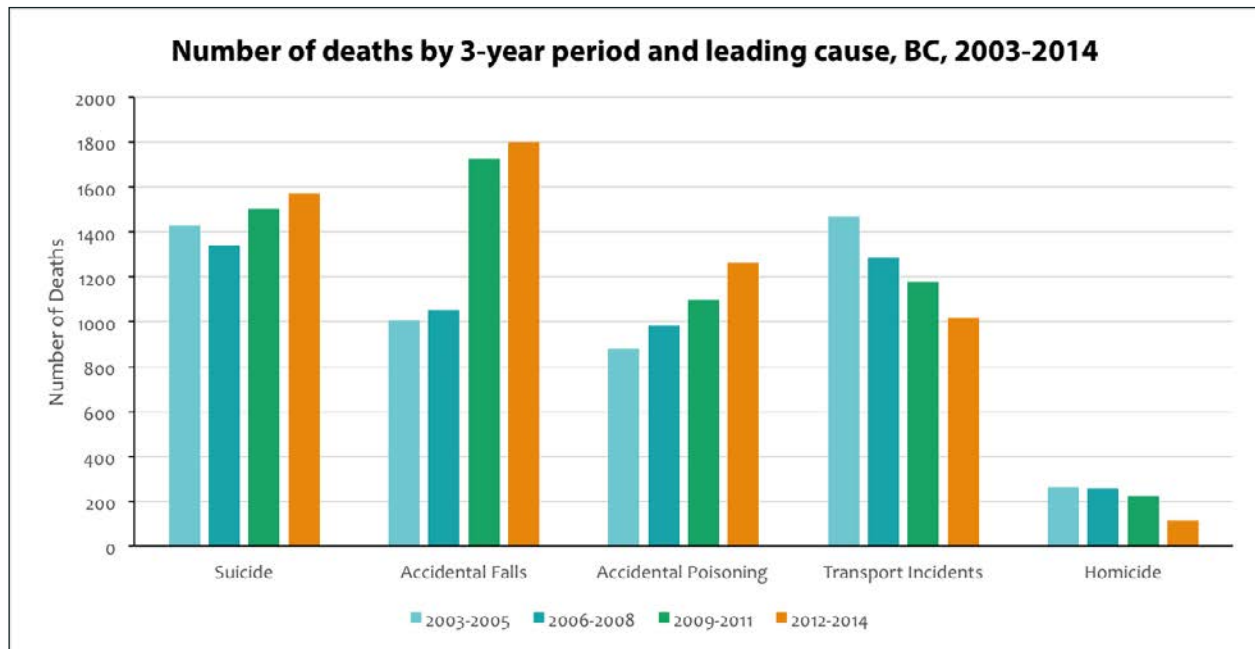
A working group of the BCIPC identified all metrics available in BC to illustrate burden of injury by cause (see Appendix B). These included:

Mortality Measures	<ul style="list-style-type: none"> • Mortality (Vital Statistics) • Premature mortality (Vital Statistics) • Potential Years of Life Lost (Vital Statistics) • Preventable Years of Life Lost (DAD, Algorithm used to calculate using ICD 10 codes) • Motor Vehicle Crash Fatality (TAS, ICBC) • Fatalities (BC Coroners Service)
Morbidity Measures	<ul style="list-style-type: none"> • Severe Injury Hospitalization ISS>9 (TSBC) • Hospitalization (DAD) • Ambulatory health care utilization (NACRS) • Emergency health care utilization (Vancouver Coastal Health Emergency Department: VCH Public Health Surveillance Unit) • Emergency health care utilization (BCEHS) • Emergency health care utilization—Paediatric (CHIRPP) • Primary care utilization (MSP) • Serious Injury Indicator Ages 0-19 (DAD) • Self-reported injury (CCHS) • Self-reported injury (My Health My Community: VCH and FH Public Health) • Crash rates (Transport Canada Traffic Accident Information Database, TAS) • Poisoning help line utilization (DPIC) • Prescription drug use (Pharmanet) • Nurse help line utilization (Health Link BC) • Health care site injuries and mortality (PSLS)
Composite Measures	<ul style="list-style-type: none"> • Disability Adjusted Life Years (DAD)
Cost Measures	<ul style="list-style-type: none"> • Economic Burden/Cost (Electronic Resource Allocation Tool) • Work-related death and injury claims (Claims Data, WorkSafe BC)
Equity Measures	<ul style="list-style-type: none"> • None

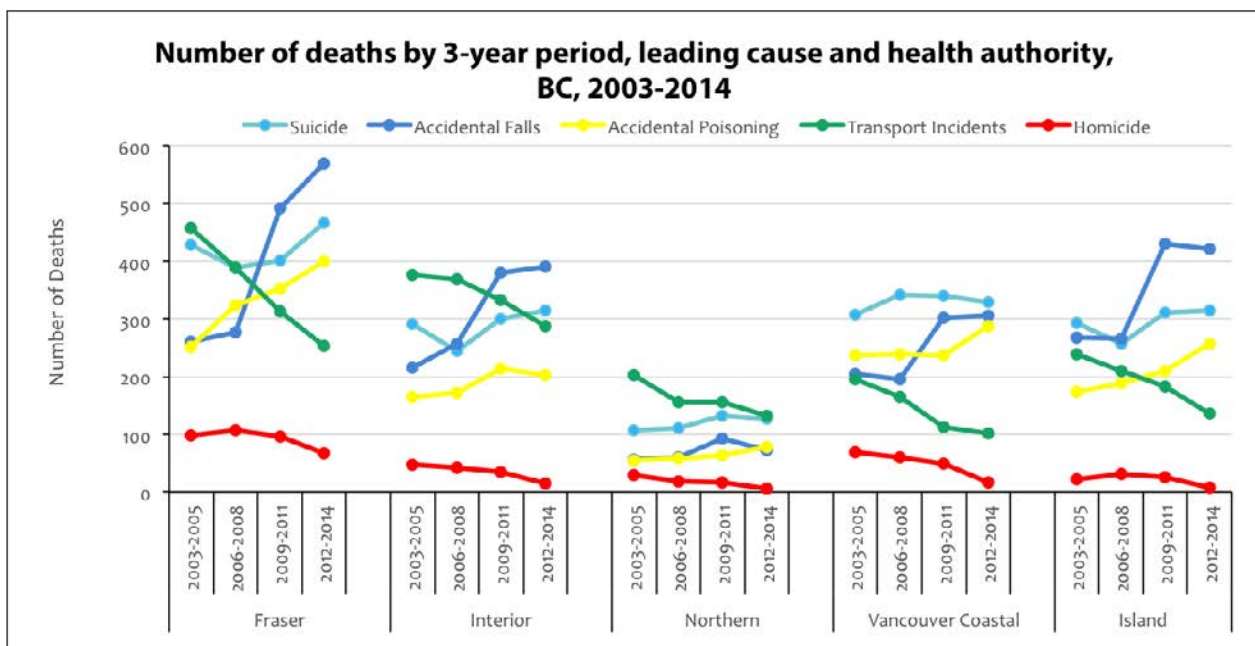
July-September 2016: Metrics and Evidence

The Burden of Injury metrics chosen by the BCIPC to guide the provincial prioritization were:

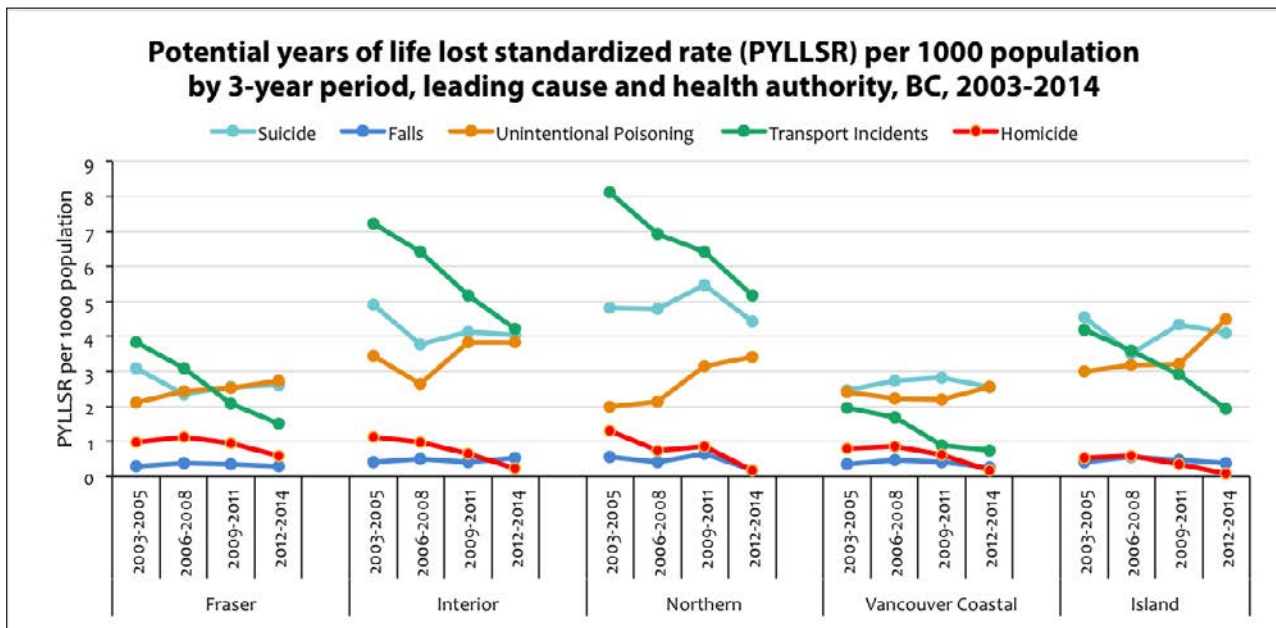
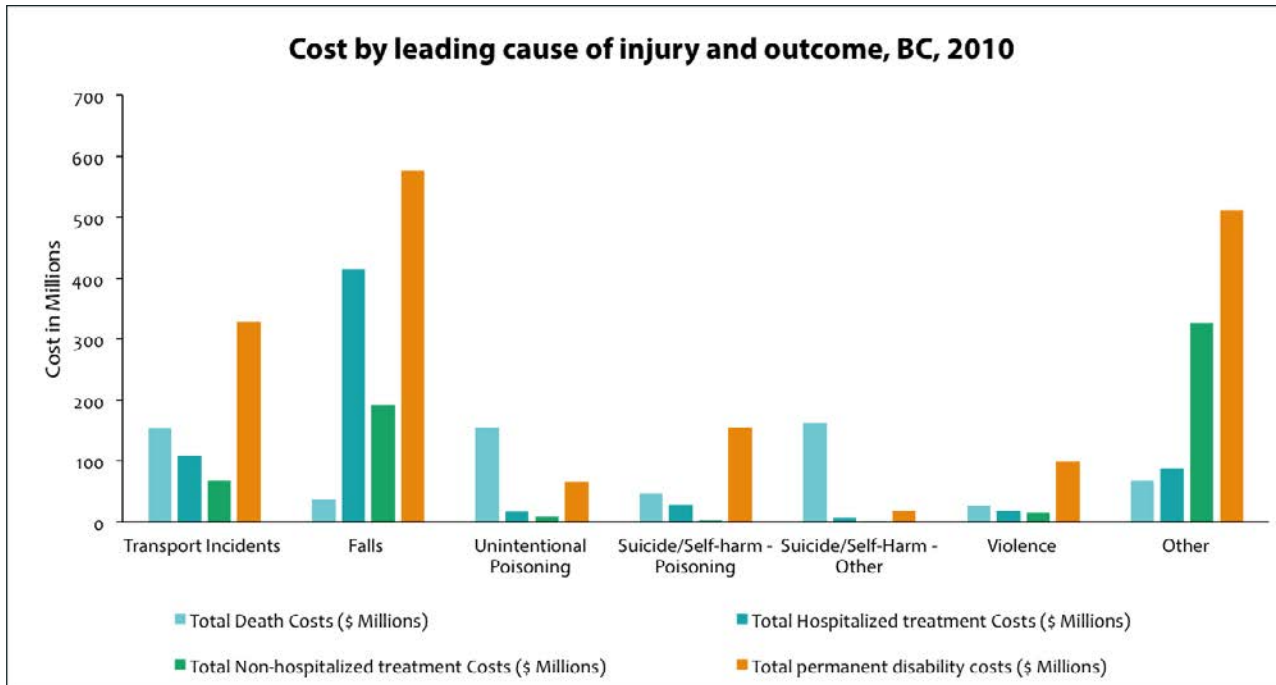
- Mortality
- Potential Years of Life Lost
- Emergency Department data (VCH and BC Children's Hospital)
- Cost (Direct and Indirect)



Data source: BC Vital Statistics, Ministry of Health. Data extract provided by BC Centre for Disease Control, data version October 2016.



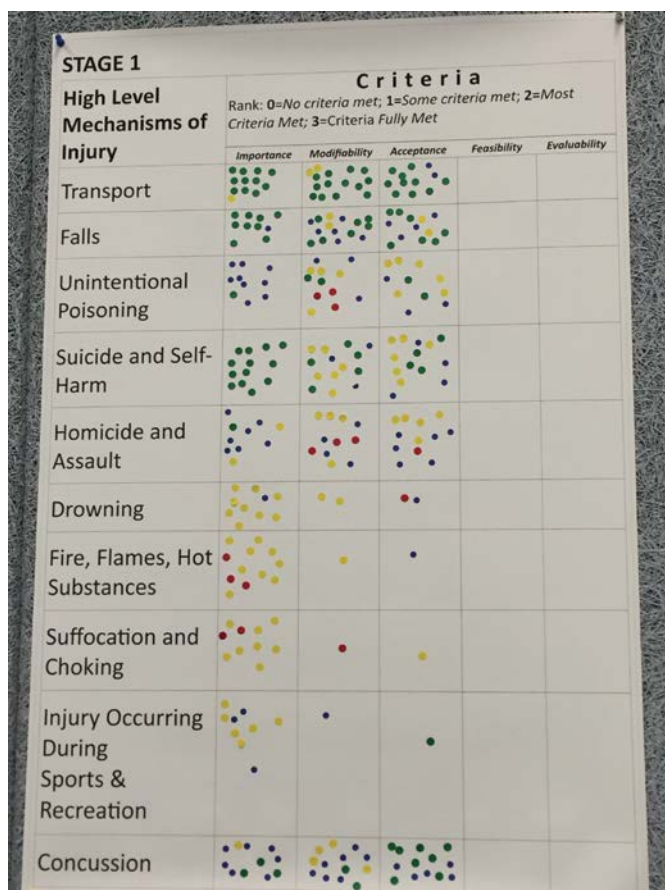
Data source: BC Vital Statistics, Ministry of Health. Data extract provided by BC Centre for Disease Control, data version October 2016.



Data source: BC Vital Statistics, Ministry of Health. Data extract provided by BC Centre for Disease Control, data version October 2016.

The BC Injury Research and Prevention Unit generated the required Burden of Injury Measures by cause of injury analysed for BC and each health authority by age and sex, and for transport-related injuries by road user type. To determine the evidence for injury prevention interventions three reviews were used by members of the BCIPC:

- *Where the Rubber Meets the Road: Reducing the Impact of Motor Vehicle Crashes on Health and Well-being in BC*, Office of the Provincial Health Officer
- *Seniors Falls in Canada - SECOND Report*, Public Health Agency of Canada
- *Model Core Program Paper: Prevention of Unintentional Injury*, BC Injury Research and Prevention Unit



Left: Northern Health prioritization matrix.

Above: Fraser Health prioritization session participants and resulting matrix.

October-November 2016: Round 1—Prioritization Matrix (10 high-level causes of injury)

For Round 1 of the modified Delphi, a prioritization matrix was used to rate each major mechanism of injury (10 total) based on five criteria: Importance, Modifiability, Acceptance, Feasibility, and Evaluability. A scale of 0 to 3 was used for these rankings, where: 0=Not at all; 1=Satisfactory; 2=Some Criteria Met; 3=Criteria Fully Met (see Appendix C).

One matrix was completed and results entered into a FluidSurvey survey, for each of the five regional health authorities, the First Nations Health Authority, the Provincial Health Services Authority, the Office of the Provincial Health Officer, and the BC Injury Research and Prevention Unit. The Ministry of Health abstained from participating in rounds 1 and 2. All nine matrices were then averaged to obtain a provincial matrix, to be used to guide decision-making for completing their Round 2 prioritization matrix.

Workshop sessions were held in Northern Health, Fraser Health, Island Health, the Provincial Health Services Authority, and the BC Injury Research and Prevention Unit to complete their matrix. These sessions included decision-makers beyond the BCIPC membership to ensure that expertise and knowledge of local communities and injury issues were incorporated into the prioritization process. Session participants were presented the provincial and health authority burden of injury data and then proceeded to complete one collective Stage 1 matrix following small group discussion. Participants completed the matrix by placing coloured stickers, which corresponded to the 0, 1, 2, or 3 rankings, for each of the 5 for criteria and mechanism of injury (see photos of Stage 1 workshop sessions).

Vancouver Coastal Health used their existing priorities to guide their Stage 1 matrix rankings. Interior Health held a facilitated discussion session to confirm using their existing priorities for the provincial prioritization process and to discuss challenges and opportunities for injury prevention within their health authority.



	Importance	Modifiability	Acceptance	Feasibility	Evaluability	
Transport	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	● = 3
Falls	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	● = 2
Unintentional Poisoning	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	● = 1
Suicide/Self-Harm	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	● = 0
Drowning	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	
Fire, Flame, Hot Substance	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	
Suffocation/Choking	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	
Sports Injury	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	
Concussion						
Homicide + Assault	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	

Top: Island Health prioritization session participants with prioritization matrix.

Bottom: Provincial Health Services Authority prioritization matrix.

Round 1 Provincial Prioritization Results—Response Averages

High Level Mechanisms of Injury ²	Criteria ¹				
	Ranking: 0=Not at all; 1=Satisfactory; 2=Some Criteria Met; 3=Criteria Fully Met				
	Importance	Modifiability	Acceptance	Feasibility	Evaluability
Transport	2.7	2.9	2.2	2.1	2.6
Falls	2.9	2.3	2.4	2.3	2.2
Unintentional Poisoning	2.7	2.1	2.0	1.8	2.1
Suicide and Self-Harm	2.9	1.8	2.6	1.3	1.7
Homicide and Assault	2.1	1.7	2.0	1.2	1.6
Drowning	1.6	2.1	2.4	1.9	2.2
Fire, Flames, Hot Substances	1.4	2.2	2.2	1.9	1.9
Suffocation and Choking	1.3	1.6	2.0	1.7	1.6
Injury Occurring During Sports and Recreation	2.1	2.0	2.1	1.9	1.1
Concussion ³	1.9	2.0	2.3	1.8	1.4

¹ Averages are based on a total of nine responses for each box, using a ranking system as indicated in the table.

² The Top 3 ranking for each of the five criteria are shaded (including ties).

³ Responses for “Concussion” are based on a total of eight responses, with one respondent abstaining.



December 2016: Round 2—Prioritization Matrix (42 sub-mechanisms of injury)

For Round 2 of the modified Delphi, a prioritization matrix was again used, this time to rate sub-mechanisms of injury (43 total) based on five criteria: Importance, Modifiability, Acceptance, Feasibility, and Evaluability. A scale of 0 to 3 was used for these rankings, where: 0=Not at all; 1=Satisfactory; 2=Some Criteria Met; 3=Criteria Fully Met (see Appendix C).

The high-level mechanisms of injury were broken down by age and sex (0-14 yrs, 15-24 yrs, 25-64 yrs, 65+ yrs) except transport injuries, which was broken down into road user type.

One matrix was completed and results entered into a FluidSurvey survey, for each of the five regional health authorities, the First Nations Health Authority, the Provincial Health Services Authority, the Office of the Provincial Health Officer, and the BC Injury Research and Prevention Unit. The Ministry of Health abstained for Rounds 1 and 2. The Stage 1 matrix results were used as a guide to complete the Stage 2 matrix. All nine matrices were then averaged to obtain a provincial matrix where the mean scores were serially ranked (see Appendix D for the full list of Round 2 results).

Round 2 Provincial Prioritization Results—Response averages (Top 15)

Mechanism of Injury by Total Rank ¹	Criteria					
	Ranking: 0=Not at all; 1=Satisfactory; 2=Some Criteria Met; 3=Criteria Fully Met					
	Importance	Modifiability	Acceptance	Feasibility	Evaluability	Total
1. Falls: Seniors 65+ yrs	2.8	2.2	2.6	2.4	2.7	12.7
2. Young Drivers	2.8	2.7	2.2	2.2	2.6	12.5
3. Motor Vehicle Occupant Injury	2.7	2.6	2.3	2.1	2.6	12.3
4. Pedestrian Injury	2.6	2.7	2.2	2.2	2.6	12.3
5. Cyclist Injury	2.4	2.7	2.2	2.2	2.4	11.9
6. Falls: Children 0-14 yrs	2.6	2.1	2.3	2.4	2.0	11.4
7. Suicide: Youth 15-24 yrs	2.9	2.3	2.3	1.7	2.1	11.3
8. Poisoning: Children 0-14 yrs	1.9	2.3	2.4	2.1	2.4	11.1
9. Sports & Rec: Youth 15-24 yrs	2.3	2.4	2.4	2.0	1.8	10.9
10. Older Drivers	2.3	2.4	1.9	1.9	2.3	10.8
11. Fire: Children 0-14 yrs	2.0	2.3	2.3	2.0	2.1	10.7
12: Motorcyclist Injury	2.3	2.2	2.0	1.8	2.3	10.6
13: Drowning: Children 0-14 yrs	1.7	2.3	2.3	2.0	2.3	10.6
14. Falls: Youth 15-24 yrs	1.9	2.1	2.2	2.3	1.9	10.4
15: Poisoning: Youth 15-24 yrs	2.4	1.9	2.1	1.8	2.0	10.2

¹ For the full list of Round 2 results, see Appendix D.

January 2017: Round 3—Pairwise Comparison (Top 10 sub-mechanism of injury from Round 2)

The Top 10 sub-mechanisms of injury were compared to each other using a pairwise comparison, soliciting a vote from each BCIPC member present at the meeting, as to which of each pairing should be given greater priority. Scores were recorded for each comparison, with 1 point

for each pair won (total 45 comparisons). Total scores for each sub-mechanism were compared and ranked. This method was chosen to validate and adjust the rankings of the Top 10 sub-mechanisms of injuries and to allow for a “sober second thought” on the Stage 2 results.

Round 3 Pairwise Comparison Results

	Fall: Seniors 65+ yrs	Young Drivers	MV Occupant Injury	Pedestrian Injury	Cyclist Injury	Fall: Children 0-14 yrs	Suicide: Youth 15-24 yrs	Poisoning: Children 0-14 yrs	Sports & Rec: Youth 15-24 yrs	Older Drivers
Fall: Seniors 65+ yrs		0	0	0	0	0	0	0	0	0
Young Drivers	1		0	0	0	0	0	0	0	0
MV Occupant Injury	1	1		1	1	0	1	0	0	0
Pedestrian Injury	1	1	0		0	0	0	0	0	0
Cyclist Injury	1	1	0	1		0	1	0	0	0
Fall: Children 0-14 yrs	1	1	1	1	1		1	0	1	0
Suicide: Youth 15-24 yrs	1	1	0	1	0	0		0	0	0
Poisoning: Children 0-14 yrs	1	1	1	1	1	1	1		1	1
Sports & Rec: Youth 15-24 yrs	1	1	1	1	1	0	1	0		0
Older Drivers	1	1	1	1	1	1	1	0	1	
TOTALS	9	8	4	7	5	2	6	0	3	1

The results of the pairwise comparison process to determine the provincial injury prevention priorities were:

1. Falls: Seniors aged 65+ yrs
2. Transport-related injuries: Young drivers
3. Transport-related injuries: Pedestrians
4. Suicide and Self-Harm: Youth aged 15-24 yrs
5. Transport-related injuries: Cyclists
6. Transport-related injuries: Motor vehicle occupants
7. Sport and recreation injuries: Youth aged 15-24 yrs
8. Falls: Children aged 0-14 yrs
9. Transport-related injuries: Older drivers
10. Poisoning: Children aged 0-14 yrs

Final Injury Prevention Priority Results*

The Top 4 highest ranking transport-related injuries were combined into one priority due to similar intervention approaches and a final Top 3 list was produced:

1. Seniors falls
2. Transport-related injuries¹
3. Youth suicide and self-harm

¹ Young drivers, pedestrians, cyclists, motor vehicle occupants)



*These priorities will be addressed in a staged approach over a 3-year period, starting with seniors falls and transport-related injuries. Concurrently, injury indicators will be developed by generating needed consensus among decision-makers and funders in BC around preferred population-level indicators of injury prevention effectiveness. These indicators will be used to recommend a data management framework for policy-relevant whole-system reporting.

Discussion

The Priorities

The final injury prevention priorities for BC largely reflect those mechanisms of injury which place the largest burden of injury and cost on society. The only mechanism of injury where this did not hold true was unintentional poisoning, which in 2016 saw over 900 fatalities. At every health authority prioritization session, participants did not prioritize this mechanism of injury as they felt that the current overdose crisis was either too difficult to address from a modifiability standpoint or because there is already a provincial strategy in place to address the issue.

The final pairwise comparison saw a large change in ranking of Youth Suicide and Self-Harm from 7th in the Round 2 matrix to 4th in the pairwise comparison. This large change happened despite the low feasibility rankings from the Stage 2 matrix. This indicates an acknowledgement of the importance of youth suicide and self-harm in BC, and a willingness of the group to explore and challenge whether it is feasible to implement effective initiatives to reduce this large burden.

Prioritization Sessions

The workshops held to complete the Round 1 matrix in Northern Health, Fraser Health, Provincial Health Services Authority, Island Health, and the BC Injury Research and Prevention Unit, plus a facilitated group discussion with Interior Health, were well-received. Many participants were unaware of the magnitude of injury in their health authorities and the burden it places on their residents.

Frequent themes of discussion from all prioritization rounds were:

- Injury prevention is the most under-resourced area of prevention when compared to societal burden and the preventability potential of injuries as compared to other areas of prevention.
- More resources should be allocated to injury prevention.
- Considering both intentional and unintentional injuries simultaneously in the prioritization process is a positive step to building a culture of safety, however participants noted that there is little historical upstream work in suicide and self-harm.

- Developing priorities, both at the health authority and provincial level, is important to ensure the best allocation of resources.
- Working intentionally within and across health authorities on a limited number of injury prevention priorities will be helpful/efficient and will reduce duplication of work given the limited resources.
- Reducing alcohol consumption should be considered as an injury prevention strategy across several causes of injury such as falls, transport-related injuries, violence, suicide/self-harm, and drowning.



Road Safety

It was noted at most of the health authority prioritization sessions that there is not a lot of historical work done in population and public health on transport-related injuries, or that the work is often considered the unspoken foundation of Healthy Built Environment work. Given that the evidence for modifiability of transport-related injury is very high, intentional efforts should be improved to help local governments and the province with road safety initiatives. Providing health data to local government was often discussed as a way to support road safety initiatives such as Vision Zero.

Homicide and Assault

Both Northern Health and Island Health discussed and recognized the importance of intimate partner violence/ domestic violence within their health authorities, although neither health authority ranked violence above seniors falls, transport-related injuries, or suicide and self-harm.

Weighting of Matrix Criteria

It was decided by the BCIPC not to weight any criteria of the matrix more heavily than the others; each criteria contributed the same amount of potential value to the total score for any given mechanism of injury. This decision was made for two reasons: (1) weighting could inject a value judgment regarding certain criteria into what was intended to be an impartial process; (2) the criteria are seen to be dependent upon each other in the order in which they appear within the matrix.

Concussion

Concussion was included in the first two rounds as there have been several recent initiatives to address concussion management and prevention such as the Concussion Awareness Training Tool (CATT) and associated actions within a few health authorities. However, concussion was removed from the third prioritization round as it is not a mechanism of injury.



Conclusion

To fulfill the deliverables of the BCIPC, the committee developed provincial injury prevention priorities using a 3-round Modified Delphi approach.

The final results of the prioritization process were:

1. Seniors falls
2. Transport-related injuries (young drivers, pedestrians, cyclists, motor vehicle occupants)
3. Youth suicide and self-harm

The BCIPC will use the provincial injury prevention priorities to develop a 3-year action plan, including performance reporting. The next steps of the BCIPC are to:

1. Conduct environmental scans of public health initiatives and best-practice reviews in the three priority areas.
2. Conduct a gap analysis for each of the three priority areas.
3. Develop recommendations for each of the three priority areas, for approval.
4. Develop injury indicators for each of the three priority areas in concert with this process in order to support a data management framework for policy-relevant whole-system reporting.

Appendices

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A. NACCHO Prioritization Matrix

The BCIPC used defined prioritization techniques during the three-round modified Delphi to provide a structured mechanism for objectively ranking issues and making decisions, while at the same time gathering input from agency wide staff and taking into consideration all facets of the competing health issues. The BCIPC used the National Association for County and City Health Officials (NACCHO) Guide to Prioritization Techniques document to help determine which prioritization techniques to use during the three-round modified Delphi.

To view the prioritization matrix, please visit:

<http://www.naccho.org/uploads/downloadable-resources/Guide-to-Prioritization-Techniques.pdf>.

B. BC Burden of Injury Measures

Data Measures	Data Sources	Dimensions	Availability and Access	Notes/Limitations
Mortality Measures				
Mortality	Vital Statistics	Year, Age, Sex, Injury Type, Mechanism, Rate, Volume, Geographic region (place of residence), place of injury setting	Yes through BCCDC, date of access to be determined. Current availability for years 2001-2011.	Codes may not be easily interpreted to understand cause
Premature mortality	As above			Premature mortality uses a threshold cutoff, after which further mortality is not included (age 75, 80, or life expectancy)
Potential Years of Life Lost (PYLL)	Vital Statistics			
Preventable Years of Life Lost	DAD, Algorithm used to calculate using ICD 10 codes			Likely not as useful in comparing different injury burdens, because most of them are considered "preventable" given the ICD codes. More useful in comparing burden of injury to burden of other conditions, as many of those are less preventable
Motor Vehicle Crash Fatality	Traffic Accident System (TAS), ICBC	Currently available through BCIRPU: Year, Age, Sex, road user type, vehicle type, Rate, Volume, Geographic region (place of crash), contributing factors, restraint use, position in vehicle, injury type, location of most severe injury, primary collision occurrence Other information in the TAS data not available at BCIRPU: Road class, traffic flow, collision location, land usage in collision area, road type, traffic control, roadway character, pedestrian action, pedestrian location, roadway surface condition,	Current availability for years 2001 to 2014. Injury data not available post 2007 due to change in police reporting for injuries where it is now not mandatory for them to attend to every injury crash. Therefore, reporting of injury data is underestimated and not available for public use as it may result in misinterpretations.	

Data Measures	Data Sources	Dimensions	Availability and Access	Notes/Limitations
Fatalities	BC Coroner's	weather conditions, lighting, first conditions, ejection from vehicle, vehicle use, first and second contact, type of collision Complete investigation of a fatality. Collects general demographics as well as circumstances around the death. Toxicology reports available.		
Morbidity Measures				
Hospitalization	Discharge Abstract Database (DAD), Ministry of Health, CIHI	Year, Age, Sex, Injury Type, Mechanism, Rate, Volume, Geographic region (place of residence), place of injury setting, length of stay, hospitalization utilization cost, volume by hospital setting	Current availability for years 2001/02 to 2013/14. Future update through BCCDC.	Can be subclassified by injury severity
Ambulatory health care utilization	National Ambulatory Care System (NACRS)			
Emergency health care utilization	Vancouver Coastal Health Emergency Department : VCH Public Health Surveillance Unit Emergency Health Services			Not provincial
Emergency health care utilization (pediatric)	Paediatric Emergency Department Data at BC Children's Hospital & Canadian Hospitals Injury Reporting and Prevention Program (CHIRPP)	Year, Age, Sex, Injury Type, Mechanism, postal code, Volume, Geographic region (place of residence), place of injury setting, activity when injured, body part injured, narrative describing the injury event, safety equipment	Current availability 2009 to 2013	
Primary care utilization	Medical Services Plan (MSP)			
Serious Injury Indicator for Ages 0-19 Years	Pike and McPherson et. Al. DAD, Calculation using ICD 10 Codes			

Data Measures	Data Sources	Dimensions	Availability and Access	Notes/Limitations
Self-reported injury	Canadian Community Health Survey (CCHS)	Rates of self-reported injuries, including injury type, part of body, location, activity, mechanism, health care required, current life impact; similar questions about repetitive strain and workplace injuries		Can examine proportion of population affected ("spread" of injuries) as well as severity of impact
Self-reported injury	My Health My Community: VCH and FH Public Health	Questions about falls and risk factors only		Not provincial
Crash rates	Transport Canada Traffic Accident Information Database, TAS			
Poisoning help line utilization	Drug and Poisoning Information Centre (DPIC)			
Prescription drug use	Pharmanet			
Nurse help line utilization	Health Link BC			
Healthcare site injuries and mortality	Patient Safety Learning System			Very limited scope of injuries and primarily a quality assurance issue
Severe Injury Hospitalization (ISS>9)	Trauma Services BC	Year, Age, Sex, Injury Type, Injury location, Mechanism, Rate, Volume, Geographic region (place of residence), place of injury (address?), protective gear.		Available through Trauma Registry
Composite measures				
Disability Adjusted Life Years (DALY's)	DAD, World Health Organization algorithms used to calculate			
Cost measures				
Economic Burden/Cost	Electronic Resource Allocation Tool	Total cost, direct costs and indirect costs		
Selected health care costs				May be calculated in association with any of the above morbidity measures by selecting out direct hospitalization costs, ambulatory care costs, emergency services cost, prescription drug costs, etc.

Data Measures	Data Sources	Dimensions	Availability and Access	Notes/Limitations
Work-related death and injury claims	Claims Data, WorkSafe BC	Year, Age, Sex, Industry, Cause of injury, source of injury, occupation, main type of injury and main body part injured, rate by industry	Current availability 2001 to 2015	
Equity Measures		Geography (rural/urban, by region), age, sex, ethnicity, Aboriginal status, socioeconomic status, immigration status, sexual orientation		Can be based on any of the measures above, using a variety of methods to demonstrate disparities between sub-populations. Data sources may not have granular data in population subgroups. May require substantial additional calculation.

C. Instructions for Prioritization Matrix Completion

Prior to your injury prevention prioritization session we would like participants to complete Stage 1 of the prioritization matrix below. This input and forethought will help us complete the matrix as a group by the end of the in-person session. The matrix has been developed with the mechanisms of injury in each row and the dimensions for ranking each mechanism of injury in adjoining columns. The dimensions to be considered include Importance, Modifiability, Acceptability, Feasibility, and Evaluability. The criteria on which you judge each dimension have been included on page 2 of this document; please familiarize yourself with these criteria prior to completing the Stage 1 matrix.

Please rank each dimension, for each mechanism of injury, from 0-3:

0=No criteria met; 1=Some criteria met; 2=Most Criteria Met; 3=Criteria Fully Met.

For example, start with the dimension of Importance and complete this dimension for all mechanisms of injury, then proceed to the dimension of Modifiability and complete this before proceeding to the next dimensions. Please note that several mechanisms of injury can score the same rank for each of the different dimensions. If there are dimensions for some mechanisms of injury about which you feel you do not have enough information or knowledge to provide a ranking, please leave the box blank. We will discuss these during the session.

To rank the dimension of Importance:

- A. Consider the criteria for this dimension (see next page).
- B. Use the burden of injury data provided (includes mortality, person years of life lost (PYLL), emergency room data, self-reported data from the Canadian Community Health Survey, and cost data—both direct and indirect).

To rank the dimension of Modifiability:

- A. Consider the criteria for this dimension (see next page).
- B. Use the evidence summaries and/or evidence documents provided, including the *PHO Annual Report, Where the Rubber Meets the Road: Reducing the Impact of Motor Vehicle Crashes on Health and Well-being in BC*, the *PHAC Seniors' Falls in Canada: Second Report*, and the *Core Functions Evidence Review: Unintentional Injury Prevention and Sport & Recreation Policy Review*.

To rank the dimensions of Acceptability, Feasibility, and Evaluability:

- A. Consider the criteria for these dimensions (see next page).
- B. Use your knowledge of your health authority and your populations.

Thank you for your participation in contributing to the prioritization of injury prevention for your health authority and BC. Your time and input is valued and appreciated.

Five criteria for prioritization of public health promotion and disease prevention interventions/programs:

A - Importance

1. Magnitude – burden of illness, incidence/prevalence of the negative or positive outcome, risk factor or risk condition, resilience factor or condition, cost—direct and indirect
2. Trend
3. Significance/impact/seriousness—of the outcome or condition or risk factor, resilience factor on the individual's life, family life, or society
4. Population potentially affected—entire, most, some, high-risk groups, certain age groups, etc.
5. Urgency—the immediacy of the need to address the issue
6. Justice/ethical obligations/considerations of equity

B - Modifiability

1. Is the condition or outcome modifiable by a public or population health intervention? What is the level of modifiability?
2. Are there good conceptual bases for the strategies?
3. Effective strategies—what are the effective strategies and the potential contribution of each to optimally modifying the outcome/condition/risk factor/resilience factor or condition?
4. Expected uptake (coverage rates) of the intervention(s)/program(s)?
5. What is the expected effect of the intervention(s)/program(s)? Absolute numbers/proportion of population impacted—reduction in deaths, disease, condition, risk factor, etc, reduction in PYLL?
6. What is the time to outcome/condition/factor improvement over what population?
7. What is the cost-effectiveness of the intervention/ program (cost per life saved; cost per year of life saved; cost per QALY; cost per DALY averted)?

C - Acceptance

1. What is the level of public/health authority/government interest in and support for addressing the issue?
2. What is the anticipated acceptability of the intervention/program at various levels—individual, neighbourhood, community, municipality, region, provincial, etc.?
3. Are similar program(s)/intervention(s) occurring in other jurisdictions in Canada?
4. National or other group/health agency/government recommendation for program/intervention?

D - Feasibility

1. Are there available appropriately trained human resources to plan, implement, and evaluate the intervention or program?
2. Ability to have multiple stakeholders deliver the intervention/program?
3. Sustainability—is there a stable infrastructure to coordinate/deliver the intervention and see it through?

4. How much would the program/intervention cost—over the anticipated time of the intervention; annually?
5. Who will be paying?
6. What are the constraints to consider—e.g. policy, “space”, etc.?
7. Is there adequate sustained funding available for the intervention/program? From what source(s)? Over what period of time?
8. What is the level of safety of the intervention/program?

E – Evaluability

1. Are there established measures/indicators to monitor the outcome/factor/condition/intervention?
2. What are the data strengths and weaknesses: availability, quality, and validity?
3. Are there suitable benchmarks to use as comparators by which to judge the outcome of the interventions?
4. Ability to properly evaluate the program/intervention (adequate numbers of appropriately trained program evaluators)?
5. What would the cost of the evaluation be?
6. Is there funding to properly evaluate the program/intervention?

D. Provincial Stage 2 Matrix Rankings—Full List

Mechanism of Injury	Importance	Modifiability	Acceptance	Feasibility	Evaluability	Total
1. Falls: Seniors 65+ yrs	2.8	2.2	2.6	2.4	2.7	12.7
2. Young Drivers	2.8	2.7	2.2	2.2	2.6	12.5
3. Motor Vehicle Occupant Injury	2.7	2.6	2.3	2.1	2.6	12.3
4. Pedestrian Injury	2.6	2.7	2.2	2.2	2.6	12.3
5. Cyclist Injury	2.4	2.7	2.2	2.2	2.4	11.9
6. Falls: Children 0-14 yrs	2.6	2.1	2.3	2.4	2.0	11.4
7. Concussion: Youth 15-24 yrs	2.5	2.1	2.5	2.4	1.9	11.4
8. Suicide: Youth 15-24 yrs	2.9	2.3	2.3	1.7	2.1	11.3
9. Poisoning: Children 0-14 yrs	1.9	2.3	2.4	2.1	2.4	11.1
10. Sports & Rec: Youth 15-24 yrs	2.3	2.4	2.4	2.0	1.8	10.9
11. Older Drivers	2.3	2.4	1.9	1.9	2.3	10.8
12. Concussion: Children 0-14 yrs	2.1	2.1	2.5	2.3	1.8	10.8
13. Fire: Children 0-14 yrs	2.0	2.3	2.3	2.0	2.1	10.7
14. Motorcyclist Injury	2.3	2.2	2.0	1.8	2.3	10.6
15. Drowning: Children 0-14 yrs	1.7	2.3	2.3	2.0	2.3	10.6
16. Falls: Youth 15-24 yrs	1.9	2.1	2.2	2.3	1.9	10.4
17. Poisoning: Youth 15-24 yrs	2.4	1.9	2.1	1.8	2.0	10.2
18. Suicide: Adults 25-64 yrs	2.8	2.0	2.1	1.4	1.9	10.2
19. Poisoning: Adults 25-64 yrs	2.4	2.0	2.0	1.7	2.0	10.1
20. Sports & Rec: Children 0-14 yrs	2.1	2.3	2.2	1.9	1.6	10.1
21. Falls: Adults 25-64 yrs	2.2	2.0	1.9	1.9	1.8	9.8
22. Off Road	1.9	1.9	1.8	1.8	2.1	9.5

Mechanism of Injury	Importance	Modifiability	Acceptance	Feasibility	Evaluability	Total
23. Poisoning: Seniors 65+ yrs	1.9	1.9	1.9	1.7	1.9	9.3
24. Homicide: Youth 15-24 yrs	2.2	2.0	2.0	1.4	1.7	9.3
25. Drowning: Youth 15-24 yrs	1.7	2.0	1.7	1.7	2.0	9.1
26. Suicide: Seniors 65+ yrs	2.1	1.9	2.0	1.3	1.8	9.1
27. Concussion: Adults 25-64 yrs	2.1	1.9	2.1	1.9	1.1	9.1
28. Suicide: Children 0-14 yrs	1.4	1.8	2.4	1.6	1.8	9.0
29. Sports & Rec: Adults 25-64 yrs	1.8	2.0	2.0	1.8	1.4	9.0
30. Concussion: Seniors 65+ yrs	1.8	1.9	2.0	1.9	1.3	8.9
31. Fire: Seniors 65+ yrs	1.4	1.9	1.9	1.7	2.0	8.9
32. Homicide: Adults 25-64 yrs	2.2	1.9	1.8	1.2	1.7	8.8
33. Drowning: Adults 25-64 yrs	1.1	1.9	1.7	1.7	2.0	8.4
34. Suffocation: Children 0-14 yrs	1.1	1.9	1.9	1.9	1.6	8.4
35. Sports & Rec: Seniors 65+yrs	1.1	1.9	2.0	1.8	1.3	8.1
36. Fire: Youth 15-24 yrs	1.1	1.7	1.7	1.6	1.9	8.0
37. Fire: Adults 25-64 yrs	1.0	1.7	1.6	1.7	2.0	8.0
38. Homicide: Children 0-14 yrs	1.2	1.8	1.9	1.1	1.6	7.6
39. Homicide: Seniors 65+yrs	1.7	1.6	1.6	1.0	1.6	7.5
40. Drowning: Seniors 65+yrs	0.9	1.6	1.4	1.6	1.9	7.4
41. Suffocation: Youth 15-24 yrs	0.7	1.3	1.4	1.6	1.4	6.4
42. Suffocation: Seniors 65+ yrs	1.0	1.0	1.3	1.3	1.3	5.9
43. Suffocation: Adults 25-64 yrs	0.6	1.1	1.3	1.4	1.3	5.7

