

Injury Data 101: How do we monitor injury?

This factsheet is the fourth in a series on injury and injury data in British Columbia (BC). Visit injuryresearch.bc.ca/data for more information on data in BC.

Injury indicators

Indicators are used to gauge how a system is functioning. They provide a framework for collecting and reporting data to provide a complete picture of what is working, what is missing, and what can be changed to make things better.

The objective in selecting a set of indicators is to arrive at the most parsimonious number that gives a robust understanding of how well the system is working.

For example, a typical car has about six indicators placed within easy view for the driver, with easy to interpret scales. Transmission temperature is one of the indicators on the dashboard. Combined with a few others – speedometer, tachometer, fuel gauge, oil pressure, etc. – the driver gains a full understanding of how well the car is working, and any adjustments that may be needed for optimal functioning.



Injury indicators can measure changes in:

- Burden of injury
- Access to emergency and health care services
- Risk or protective factors for injury
- Policies related to injury prevention

The indicator development process considers a range of possible indicators, in terms of being:^{1,2}

- Reflective of an important injury issue
- Practical and measurable
- Sensitive in its ability to reflect changing conditions
- Easy to understand and acceptable to the relevant stakeholder, such as the public, government, or a municipality

Indicators have been developed specific to injury and injury prevention in BC:²

- 23 indicators for road safety, such as speed compliance, and multi-use pathways
- 8 indicators for falls among older adults, such as fall prevention designated staff, and fall-related costs
- 13 indicators for all-injury, such as communities with access to water safety and drowning prevention programs, and availability of fire and ambulance services

Indicators that have been developed to monitor injury in Canada include:

Injury Indicators for Children and Youth in Canada:³

34 indicators:

- 3 spanning across all domains
- 4 overall health service implications indicators
- 11 motor vehicle injury indicators



Indicators can be used to monitor an injury prevention system, shape prevention initiatives, and measure and evaluate changes related to interventions and programming.

- 5 sport, recreation and leisure injury indicators
- 2 other policy indicators
- 4 violence indicators
- 5 trauma care, quality and outcomes indicators

Injury Prevention Indicators for First Nations Children and Youth⁴ and Injury Prevention Indicators for Inuit Children and Youth:⁵

27 indicators:

- 4 across all injury areas
- 3 community injury prevention training/response systems indicators
- 2 animal bites indicators
- 1 hypothermia/frostbite indicator
- 3 violent/inflicted injury indicators
- 3 burns and falls indicators
- 4 drowning indicators
- 1 suicide/self-harm indicator
- 6 motorized vehicle collisions indicators

Children and Youth Serious Injury Indicator:⁶

Used to analyze changes in severe paediatric injury over time and to assess the performance of paediatric trauma systems, this indicator was developed to capture injuries that are serious enough to require hospitalization regardless of where in Canada they are treated. It is a better indicator than measuring all injury hospitalizations, as it is less influenced by differences in healthcare practice and policy between different regions. For example, a particular injury may be admitted to hospital in one location but treated as an ambulatory patient in another.

Injury indicators in public health

Injury Prevention is Goal 5 of B.C.'s Guiding Framework for Public Health,⁷ acknowledging the burden of both unintentional injuries and those resulting from violence. Its objectives are to:

1. Build a culture of safety at work, home and play by increasing awareness of injury risks, implementing prevention education and taking priority actions, such as designing and developing safe environments, systems and products.
2. Reduce the incidence of falls, fall-related injuries and fall-related risk factors among seniors in BC through surveillance, enhanced community capacity, public information and evidence-based prevention measures
3. Reduce the incidence of injuries among children and youth in BC through physical and social environmental modifications and increased awareness of safety-promoting behaviours.

The progress of these objectives is being monitored by these performance measures – or indicators:

- The age-standardized hospitalization rate for unintentional injuries (per 1,000)
- The age-standardized mortality rate for unintentional injuries (per 100,000)
- The age-standardized rate of fall-related hospitalizations for British Columbians age 75+ (per 1,000)

On the BCIRPU website, is an example of a data dashboard to present the summative information on key injury indicators in an intuitive interface, and easy to interpret.

[iDOT: Children and Youth Serious Injury Indicator, BC](#)

REFERENCES

1. Rigby, M.J.; Köhler, L.I.; Blair, M.E.; Metchler, R. Child health indicators for Europe: A priority for a caring society. *European Journal of Public Health* 2003, 13, 38–46. https://academic.oup.com/eurpub/article/13/suppl_3/38/432893
2. Oakey M, Evans DC, Copley TT, Karbakhsh M, Samarakkody D, Brubacher JR, Pauer S, Zheng A, Rajabali F, Fyfe M, Pike I. Development of policy-relevant indicators for injury prevention in British Columbia by the key decision-makers. *International Journal of Environmental Research and Public Health*. 2021 Jan;18(22):11837. <https://www.mdpi.com/1660-4601/18/22/11837>
3. Pike I, et al. *Measuring Injury Matters: Injury Indicators for Children and Youth in Canada*. UBC. Vancouver, BC. 2010. <https://open.library.ubc.ca/media/stream/pdf/52383/1.0397415/5>
4. Pike I, McDonald R, Macpherson A, et al. *Developing Injury Prevention Indicators for First Nations Children & Youth in Canada*. UBC. Vancouver, BC. 2010. <https://open.library.ubc.ca/media/stream/pdf/52383/1.0397432/5>
5. Pike I, Macpherson A, et al. *Injury Prevention Indicators for Inuit Children & Youth*. UBC. Vancouver, BC. 2010 <https://open.library.ubc.ca/media/stream/pdf/52383/1.0397474/5>
6. Pike I, Khalil M, Yanchar NL, Tamim H, Nathens AB, Macpherson AK. Establishing an injury indicator for severe paediatric injury. *Injury Prevention*. 2017 Apr 1;23(2):118-23. <https://injuryprevention.bmj.com/content/23/2/118>
7. Promote, Protect, Prevent: Our Health Begins Here [electronic resource]: BC's Guiding Framework for Public Health. British Columbia. Ministry of Health. March 2013 Updated March 2017. <https://www.health.gov.bc.ca/library/publications/year/2017/BC-guiding-framework-for-public-health-2017-update.pdf>