



Material Wealth, Social Connectedness, and Injury

What are material wealth and social connectedness?

Material wealth involves the possession of goods and conveniences that are part of life, such as adequate housing, a car, access to high speed internet, or a neighbourhood with recreational areas. Material wealth is characterized by the quality and extent of resources associated with education, job situation measured by the employment to population ratio, and sufficient income.

Social connectedness refers to the quality and extent of connections among individuals, reflecting both family and community social networks and support. Social connectedness is characterized by whether individuals live alone or with others, parenting situations, and marital status.

How are material wealth and social connectedness measured?

In Canada, there are two key indices, both of which have been validated.

1. Canadian Index of Multiple Deprivation (CIMD)

Source: [Statistics Canada](#)

The CIMD index is based on 4 dimensions, with multiple measurements which relate to:

- (1) Ethno-cultural composition, for instance, individuals that are foreign born and part of a visible minority
- (2) Situational vulnerability includes proportion of dwellings needing major repairs, or proportion of population aged 25-64 without a high school diploma
- (3) Economic dependency includes ratio of employment to population as well as proportion of population receiving government support payments
- (4) Residential instability includes proportion of dwelling that are owned, and proportion of persons living alone

2. Material and Social Deprivation Index

Source: [Institut national de santé publique du Québec \(INSPQ\)](#)

The INSPQ index is based on six measures for those aged 15 years or older, which relate to health and either material wealth or social connectedness.

Metrics describing material wealth include:

- (1) proportion of people without a high school diploma
- (2) employment to population ratio
- (3) average income.

Metrics describing social connectedness include:

- (4) proportion of individuals living alone
- (5) proportion of people separated, divorced, or widowed
- (6) proportion of single-parent households

Why consider material wealth and social connectedness in relation to injury?

Research shows that living conditions, age, sex, health status, social characteristics, and geographic location can illuminate patterns of injury. Specific causes of injury have been found to vary with age, and higher rates of injury hospitalizations are seen among children, youth, and older adults. For instance, youth in neighborhoods with the least social connectedness have been shown to have high rates of self-harm by poisoning. By understanding the patterns and risk factors of injury, targeted injury prevention programs can be developed to reduce the burden of injury.¹

How do we use the measures of material wealth and social connectedness?

Indices allow for an understanding of inequalities through various measures of social well-being, including health, education, and justice. While the indices are geographically-based measures of deprivation and marginalization, they also serve as a very useful proxy for individuals living in that particular area.

Indices are available by Dissemination Area (DA). In Canada, a DA is a geographic region inhabited by approximately 400 to 700 individuals. Deprivation scores, representing quintiles that each include approximately 20% of the population, can be calculated for each DA, and an understanding of the measures of material wealth and social connectedness for those living within that DA are apparent. However, it is important to note, that the area-based score has the potential for ecological fallacy² since not every person who lives in a DA that is identified at a certain level of wealth or connectedness necessarily experiences that level. That said, where no comprehensive individual information is readily available, the index can provide very useful contextual information about the population for research and programming purposes. And, previous evidence has shown that neighborhood area socioeconomic status effects do reflect an individuals' social economic condition well.³ In addition, many factors need to be considered when interpreting differences in wealth and social connectedness, such as economic conditions, nature of jobs, types and availability of social supports, and ethnic composition and culture.¹

Material wealth and social connectedness indices can be applied to injury rates. This is accomplished by first calculating the injury rates by geographic region (DAs) and assigning material wealth and social connectedness indices to the DAs. The DAs will then have associated quintiles. Injury rates can then be depicted by each of the material and social quintiles.

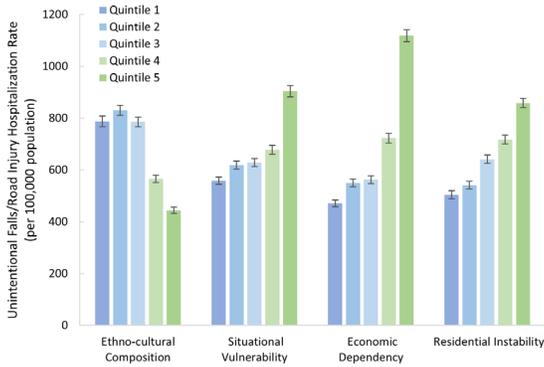
Example: Unintentional Injury Hospitalizations in British Columbia

Unintentional, Falls-related, and Motor Vehicle/Transport-related Injuries, using the Canadian Index of Multiple Deprivation (CIMD), with 2017/18-2019 data

Legend/Reference to explain Quintiles, using the CIMD:

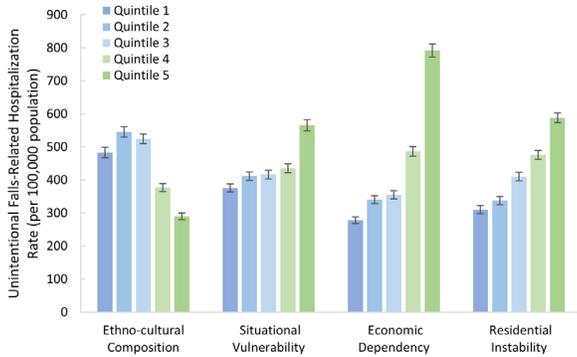
Quintile	1	2	3	4	5
Ethno-cultural Composition	Less diversity			More diversity	
Situational Vulnerability	Best socio-demographic conditions			Worst socio-demographic conditions	
Economic Dependency	Most wealth			Least wealth	
Residential Instability	Most stable neighbourhoods			Least stable neighbourhoods	

Figure 1: Unintentional falls/road injury hospitalization rates, by CIMD quintiles and dimensions



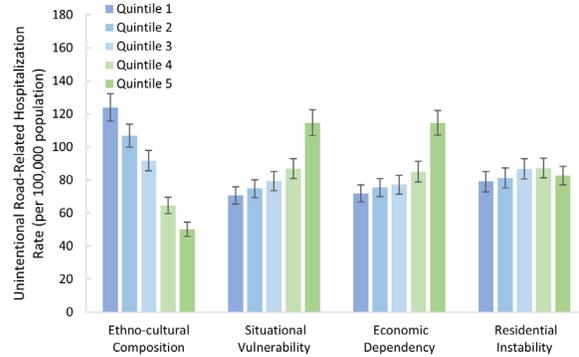
Overall, unintentional falls and road injury hospitalization rates (**Figure 1**) increased with higher situational vulnerability and greater economic dependency. This is most notable for those with the worst socio-demographic conditions and least wealth. Rates also increased with greater residential instability, but decreased with ethno-cultural composition, meaning that neighbourhoods with more visible minorities and immigrants experienced lower rates of unintentional injury hospitalizations. The error bars in the graph provide an indication of similarity versus differences between the quintiles. For example, the first three quintiles for ethno-cultural composition appear to have overlapping error bars, indicating that they have very similar unintentional falls and road injury hospitalization rates, whereas the fourth and fifth quintiles have visibly different rates.

Figure 2: Unintentional fall-related injury hospitalization rates, by CIMD quintiles and dimensions



In similar fashion, isolating just unintentional falls-related injury hospitalization rates (**Figure 2**), we see increased rates with higher situational vulnerability, greater economic dependency, and greater residential instability, but generally decreased rates with ethno-cultural composition, particularly evident in quintiles 4 and 5.

Figure 3: Unintentional road-related injury hospitalization rates, by CIMD quintiles and dimensions



In the case of unintentional road-related injury (**Figure 3**), hospitalization rates were highest with higher situational vulnerability and higher economic dependency, whereas residential instability did not appear to have an effect (indicated by the overlapping error bars across all 5 quintiles). Ethno-cultural composition was once again seen to be protective, with a more definite decreasing pattern in hospitalization rates as neighbourhood diversity increased, particularly among the fourth and fifth quintiles.

RESOURCES

1. Pauer, S., Rajabali, F., Zheng, A., Pike, I., Purssell, R., Zargaran, A., & Babul, S. (2021). Socioeconomic factors and substances involved in poisoning-related emergency department visits in British Columbia, Canada. *Health Promotion and Chronic Disease Prevention in Canada: Research, Policy and Practice*, 41(7/8)
2. Zandy, M., Zhang, L. R., Kao, D., Rajabali, F., Turcotte, K., Zheng, A., Oakey, M., Smolina, K., Pike, I., & Rasali, D. (2019). Area-based socioeconomic disparities in mortality due to unintentional injury and youth suicide in British Columbia, 2009-2013. *Health promotion and chronic disease prevention in Canada : research, policy and practice*, 39(2), 35-44. <https://doi.org/10.24095/hpcdp.39.2.01>

REFERENCES

1. Rajabali, F., Zheng, A., Turcotte, K. et al. The association of material deprivation component measures with injury hospital separations in British Columbia, Canada. *Inj. Epidemiol.* 6, 20 (2019). <https://doi.org/10.1186/s40621-019-0198-7>
2. Young T. *Population Health: Concepts and methods*. 2nd ed. New York, NY: Oxford University Press; 2005.
3. Townsend P, Phillmore P, Beattie A. *Inequality and the North. Health and deprivation*. London: Croon Helm Limited; 1987.