Knowledge Update

BC Centre for Disease Control
Provincial Health Services Authority

Topic	British Columbia Index of Multiple Deprivation 2021
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Data source	British Columbia Index of Multiple Deprivation 2021
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Key messages

- Deprivation indices can be used to help understand relative inequalities in a standardized way through measures of social well-being such as health, education and justice.

- The British Columbia Index of Multiple Deprivation (BCIMD) was updated without inclusion of the variable "proportion of the population identified as Indigenous" as a component in the Situational Vulnerability dimension.

- The resulting index produced similar results when comparing the original and revised models.

- Potential uses of the BCIMD include surveillance, policy planning, evaluation, research and analysis on the role of social and structural determinants of health, and targeted resource allocation by identifying and directing services to priority populations and communities.

Background

- Deprivation indices can be used to help understand relative inequalities in a standardized way through measures of social well-being such as health, education and justice.

- The British Columbia Index of Multiple Deprivation (BCIMD) is a reprojection of the Statistics Canada Canadian Index of Multiple Deprivation (CIMD) at the Community Health Service Area (CHSA) geography.

- The BCIMD is an area-based index that is composed of four dimensions of deprivation and marginalization: ethno-cultural composition, economic dependency, residential instability, and situational vulnerability.

- However, Statistics Canada's inclusion of the variable "proportion of the population identified as Indigenous" as a component in the Situational Vulnerability dimension is problematic. Indigenous people are the only ethnic group being "flagged" in this manner in the index. This not only has the impact of furthering stigma, but also completely ignores the actual problem, which is that Indigenous people have been and continue to be systematically discriminated against by multiple racist and colonial policies and practices.

- Accordingly, the BCIMD has been produced without inclusion of the "proportion of the population identified as Indigenous" as a component in the Index.

Study Design and Methods

A custom data product of the 2021 Census at the CHSA v.2022 geography (n=231) was acquired from Statistics Canada, following technical correction to the original Statistics Canada CIMD index.

Principal Components Analysis (PCA) was performed on census demographic and socioeconomic data to create the four dimensions of the BCIMD, mirroring the structure of CIMD but excluding the variable "proportion of the population identified as Indigenous" as a component in the Situational Vulnerability dimension (Figure 1). Within a dimension, ordered scores were assigned a quintile value, 1 through 5, where 1 represents the least deprived/diverse and 5 represents the most deprived/diverse.

Findings

- Exclusion of the "proportion of the population identified as Indigenous" as a component in the Index for the PCA resulted in a small reduction in the amount of variation explained by the Situational Vulnerability domain, which decreased from 0.217 to 0.191 between the original and revised models.

The cumulative variance for the overall index remained similar as it only differed at the third decimal point: 0.792 (original) vs 0.793 (revised).

- Less than 7% of CHSAs shifted in their relative ranking by one quintile within the deprivation dimensions: Ethnocultural Composition (16 CHSAs), Economic Dependency (12 CHSAs), Residential Instability (12 CHSAs), and Situational Vulnerability (14 CHSAs). There was no observable geographic clustering of affected CHSAs.

- The geographic distribution of Ethnocultural Composition, Economic Dependency, Residential Instability, and Situational Vulnerability are illustrated in the following Figures section (Figures 2 to 6).

- CHSAs with >25% Indigenous population have been suppressed in the public version of the reassessed BCIMD consistent with guidance received from First Nations Health Authority.

Interpretation

- Area-level equity indicators are estimates of relative differences in several environmental and contextual factors. Many arise from historic and ongoing discriminatory policies and/or practices that favor one group over another.

- Area-level indicators do not represent individual risk for health outcomes for specific populations. They can, however, create an increased risk beyond the control of the individual or specific population.

Limitations

We acknowledge that using the labelling terminology of "Ethnocultural Composition" in the context of measuring "deprivation" is also problematic. As presented, the chosen language could be interpreted to imply that areas with rich ethnic diversity and/or high immigrant populations are a risk factor for higher deprivation. It places the "blame" on the individuals and does not recognize that diversity is a source of strength, community, and resilience. Instead, the constituent variables could be seen as proxies for structural determinants of health – namely, higher likelihood of experiencing racism and discrimination that in turn impact health outcomes.

Supporting Information

Document citation

Binay Adhikari, Sunny Mak, Prital Patel, Kate Smolina, Hind Sbihi. British Columbia Index of Multiple Deprivation 2021. Knowledge Update. Vancouver, BC. BC Centre for Disease Control, 2025.

Data steward(s) disclaimer

All inferences, opinions, and conclusions drawn in this Knowledge Update are those of the authors.

Acknowledgements

Figures

Figure 1. Four Dimensions of CMID, BC, 2021 (in green differences in revised October 2024 Statistics Canada dataset)
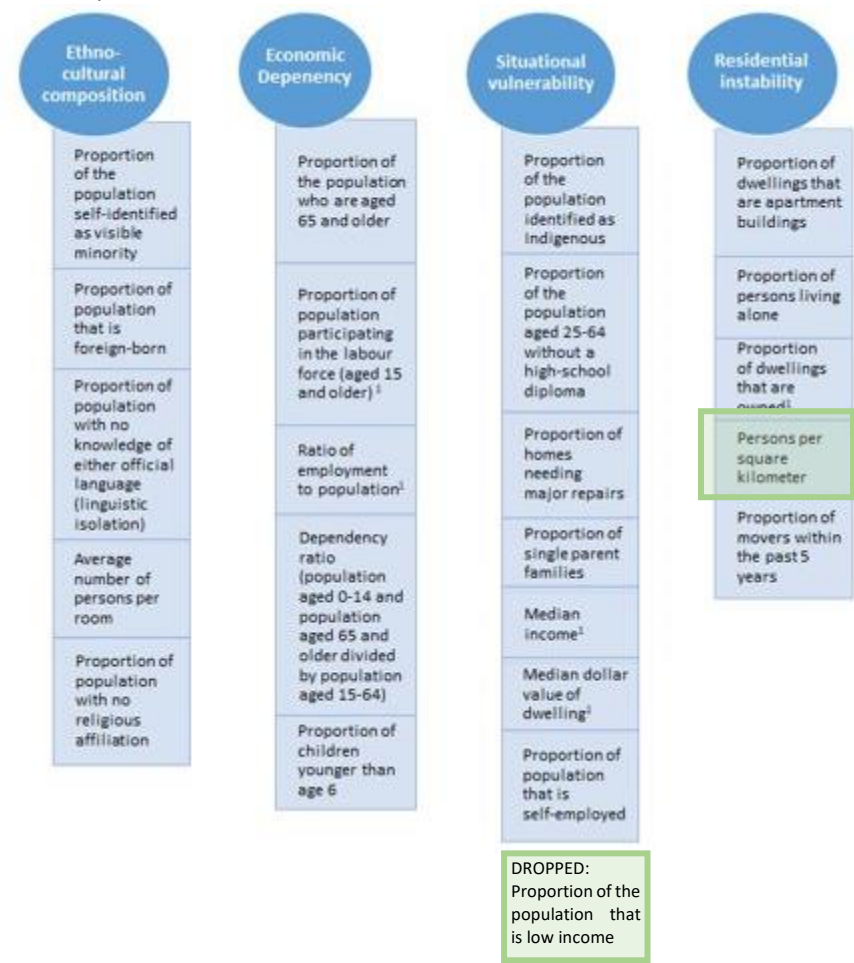
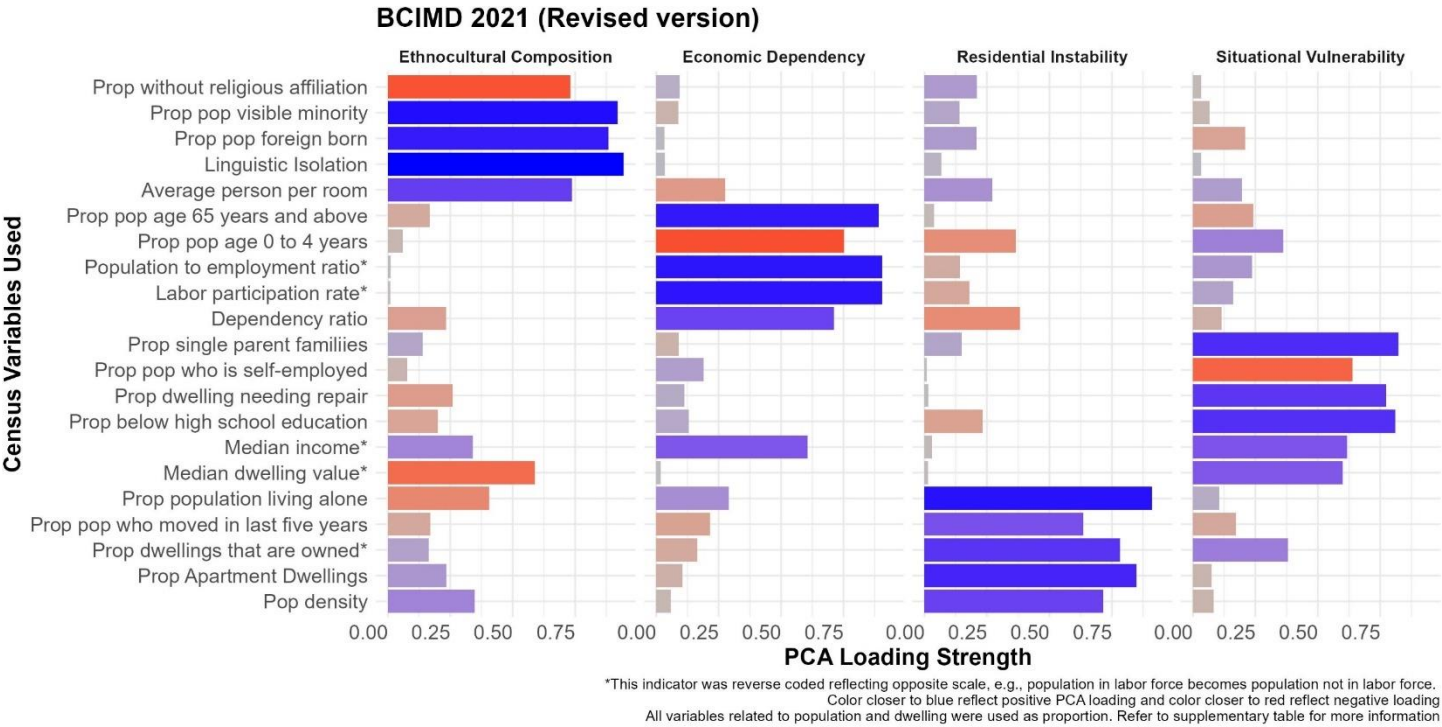**Figure 2. Census variables data loading.**

BCIMD 2021 (Revised version)

*This indicator was reverse coded reflecting opposite scale, e.g., population in labor force becomes population not in labor force.
Color closer to blue reflect positive PCA loading and color closer to red reflect negative loading
All variables related to population and dwelling were used as proportion. Refer to supplementary table for more information

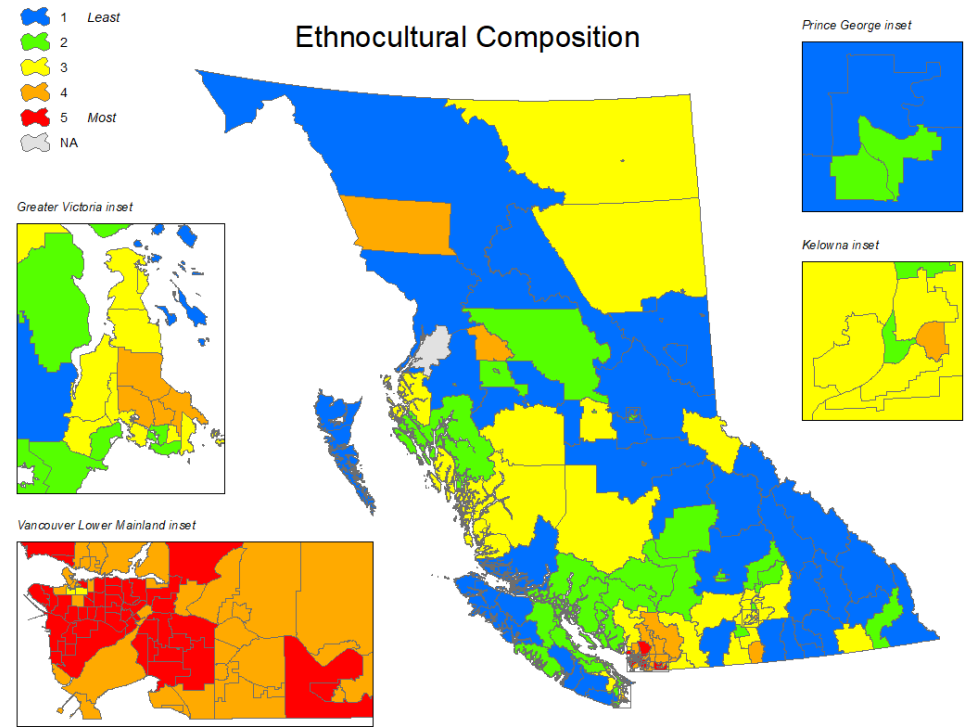**Figure 3. Ethnocultural Composition.**
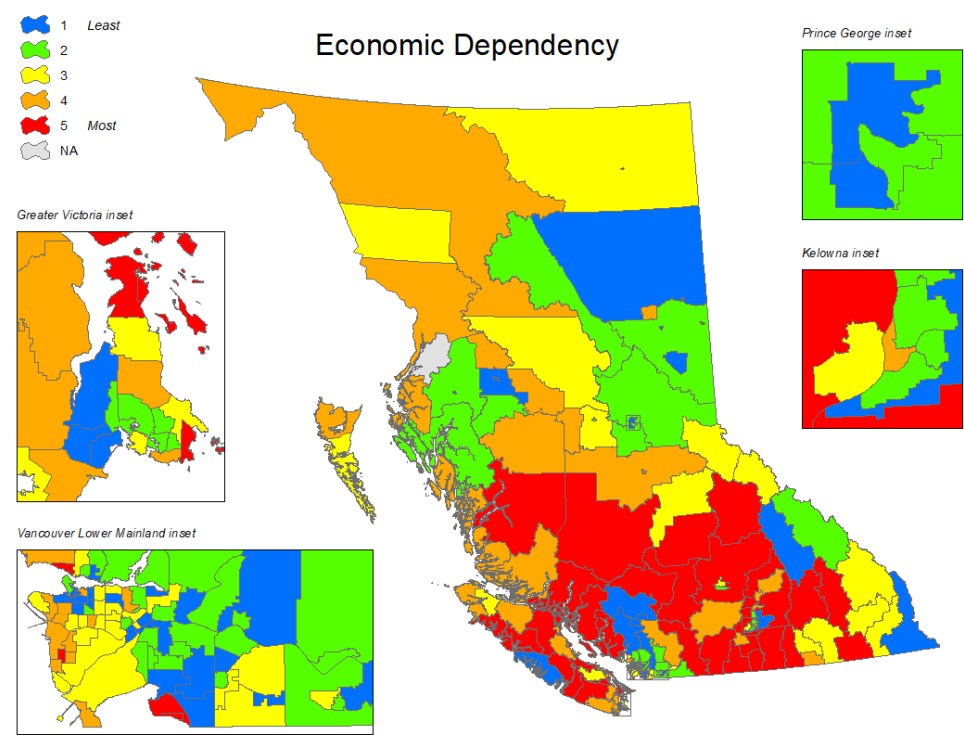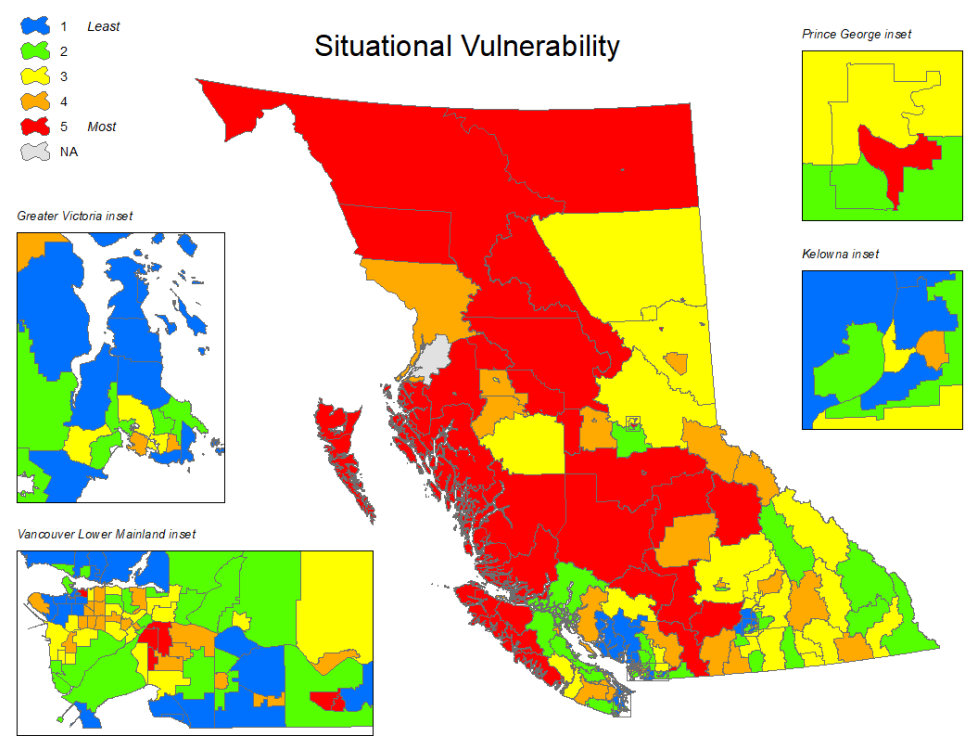
Figure 4. Economic Dependency.

Figure 5. Situational Vulnerability.

Figure 6. Residential Instability.