![Western SocialScience | Network for Economic and Social Trends (NEST)]

# Canadian Communities Policy Observatory

VISUALIZE · ANALYZE · UNDERSTAND

## White Paper

**REPORT 1**

Version 1.0
July 2, 2020

## Place-based problems require place-based solutions

From deindustrialization to immigrant integration, from climate change mitigation to public health, and from social exclusion to the infrastructure deficit, many of Canada's greatest policy challenges are defined by geography. Canadian governments at all levels, as well as the OECD and other international organizations, increasingly recognize that place-based problems require place-based solutions.

To this end, Canada has witnessed the emergence of new, federal government–led intergovernmental partnerships and policy frameworks over the past decade that seek to address specific problems in particular places: the National Housing Strategy, the Investing in Canada infrastructure program, Local Immigration Partnerships, Urban Programming for Indigenous Peoples, and others. These programs harness federal and sometimes provincial resources to local priorities and needs, sometimes with municipal participation. At the same time, local governments have moved beyond their historical role as deliverers of services to become increasingly active as social and economic policymakers.

Much of this policy focus has been on Canada's large cities and metropolitan areas, which have captured an increasing share of national population growth, most of it through international immigration, and produce a growing share of economic output. Nevertheless, smaller centres and rural areas, many of them in relative long-term decline, have distinctive needs, which are increasingly being recognized through targeted policies and programs. Even as we recognize growing income and wealth inequality among individuals and households, we must also recognize the growing gap between places. These manifest at multiple scales: between regions of the country, between large and small urban centres, between urban and rural areas, and between neighbourhoods within cities.

## Unlocking the potential of place-based data

As noted by the Canadian Urban Institute and others, Canada is held back from achieving its full potential by the inaccessibility of current and historical place-based information. Those who would most benefit from it—local and regional governments, public agencies, non-profit organizations, businesses, planners, journalists, and the general public—do not have easy access to this information. While Statistics Canada and other federal agencies, provincial and municipal governments, and think tanks and foundations produce a wealth of place-based information, manipulating, analyzing, and visualizing it often requires special training and specialized software.

The purpose of the **Canadian Communities Policy Observatory** is to break down these barriers. Created using open-source technologies, the Observatory is a web platform that can

be used without special training yet enables sophisticated analyses and visualizations. It will empower Canadians and support evidence-based decision-making and public discourse by unlocking the potential of existing data.

## Guiding principles

The Observatory is conceived according to the following guiding principles:

### 1. Ease of use

The Observatory must be useable by non-specialists and require a minimal level of training.

### 2. Domestic focus

The Observatory focuses exclusively on Canada to facilitate domestic comparison and analysis.

### 3. National coverage

Where possible, the Observatory contains data pertaining to all Canadian localities.

### 4. Maximum linkage

The Observatory links data across time to enable the identification of trends and analysis of change. It also links data across levels of aggregation, from the neighbourhood to municipality to metropolitan area to region to province.

### 5. Transparency

All data can be manipulated in unmodified form. All sources are fully acknowledged. All methods and processes are fully documented.

### 6. Open

All data are available to users under an open license, though product fees may apply. All technologies used are open source.

# Features

The Observatory has four main features:

### 1. Visualize

Visualizing information is often the best way to understand it. In addition to displaying numerical tables, the Observatory contains visualization tools that will enable you to:

- compare one or more places, or groups of places, across time with line graphs
- compare two or more places, or groups of places, within the same year or over time with line graphs, bubble charts, and choropleth maps

### 2. Analyze

The Observatory enables you to better understand relationships between variables and places. Using its tools, you will be able to:

- examine the strength of the relationship between two variables with scatter plots or correlograms
- examine the distribution of places on a variable, and compare groups of places
- identify clusters and develop typologies of places based on their characteristics
- starting with one place, identify its peers based on their characteristics

### 3. Communicate

Need to document and communicate your work? The Observatory will export PDF reports of any visualization you create or analysis you perform with explanatory text and documentation of sources. You can also embed visualizations within other websites, including in NEST-hosted "data stories" that explain policy issues.

### 4. Mobilize

If you have the capacity to analyze data on your own, you can download tables containing variables for selected geographic units, or the entire underlying dataset. If you want to query data extracts for use in your own web services, or for analysis in R or Python, you can use the Observatory's API.

# Use cases

There are as many potential uses for the Observatory as there are users. Here are a few:

## 1. Targeting policies

Customizing policy interventions to the needs of specific places requires fully understanding of their characteristics and how they are changing over time. The Observatory will enable users to:

- *Identify types:* Typologize municipalities, neighbourhoods, or other geographic configurations based on similarities and differences
- *Identify "hot spots":* Identify places with exceptionally high or low scores on particular variables
- *Predict needs:* Analyze municipalities' demographic profiles to predict, for example, how many childcare spaces or long-term care beds are required.

## 2. Economic development

Municipal economic development departments and investment attraction agencies often compare their jurisdiction to others. The Observatory will enable users to:

- *Identify peers:* Identify comparable jurisdictions based on their demographic characteristics or the composition of their employment base by industrial sector or occupations
- *Benchmark performance:* Compare municipalities' economic base, population growth rates, or any other characteristics in the database, within a single year or over time
- *Economic base analysis:* Visualize location quotients, which are commonly used to compare municipalities' or regions' employment bases by sector
- *Labour market analysis:* Assess mismatches between local skills and employer needs.

## 3. Neighbourhood change

The internal social and economic structure of Canadian cities is changing rapidly through postindustrialization, gentrification, immigration, and other processes. The Observatory will enable users to:

- *Visualize neighbourhood trajectories:* Compare neighbourhoods based on how their characteristics have changed over time
- *Identify neighbourhood types:* Typologize neighbourhoods based on their trajectories
- *Forecast future neighbourhood change:* Develop probabilistic forecasts of how neighbourhoods will change in the future

# Project roadmap

The Observatory is an ongoing project. Initially conceived in late 2018 and funded in late 2019, the prototype will launch in Fall 2020. The platform is designed to be modular, enabling the addition of new visualization and analysis tools. The underlying data structure is flexible, permitting the addition of new data pertaining to any level of geographic aggregation. Additional functionality and data will be added in stages, in consultation with experts and community stakeholders.

## Starting with the national Census

At its launch, the Observatory will contain complete Canadian Census data for the quarter-century period spanning 1991 to 2016. Users will be able to access data at several levels of geographic aggregation: metropolitan areas (census metropolitan areas and census agglomerations), communities (census divisions and subdivisions) and neighbourhoods (census tracts). Over the next year, we will incorporate available Census data for earlier periods, and additional datasets.

**INNOVATION**
**True longitudinal Census analysis**
The Observatory links *all* consistently defined variables across Census years. This enables users to easily analyze stability and change over time as well as across space—tasks that previously required considerable effort and were often done on an ad hoc basis. This feature is supported by integration with the Canadian Longitudinal Tract Database, which uses spatial analysis techniques to apportion census tract–level data pertaining to 1971–2011 boundaries to 2016 census tract boundaries.

## More than a Census engine

The Observatory is designed to easily accommodate additional data. As long as data tables are structured appropriately, the Observatory will be able to incorporate them, subject to review by the project team. The table structure standard will be published when the Observatory beta launches in Fall 2020.

With stakeholder support and contributions, we envision that the Observatory will expand beyond demographic, social and economic data to include many other kinds of information:

- Institutional characteristics
- Public health data
- Health outcomes data
- Labour force statistics
- Municipal public finance
- Municipal performance measures

- Housing and homelessness data
- Business and industry data
- Education and skills training data
- Immigration and mobility data
- Election results
- Public attitudes data

## Project development roadmap

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| **Construct and format datasets, including cross-year variable linkage files:**<br>• Census data for 1991, 1996, 2001, 2006, 2011, and 2016, pertaining to census tracts, census subdivisions, census divisions, and census metropolitan areas and census agglomerations. Includes all variables. | Summer 2020 |
| **Launch version 0.9 beta, including:**<br>• Change over time tool<br>• Compare units and groups tool<br>• Group selector tool<br>• Peer identification tool<br>• Table and report export tool | Fall 2020 |
| **Construct and format datasets, including cross-year variable linkage files:**<br>• Census data for 1961, 1971, 1981, and 1986 pertaining to census tracts, census subdivisions, census divisions, and census metropolitan areas and census agglomerations. Includes all variables.<br>• Election results and selected census data for 1867–2019 pertaining to federal electoral districts, created by the Cities in Canadian Political Development Project.<br>• Immigrant settlement data created by the Pathways to Prosperity Project.<br>**Integrate the Canadian Longitudinal Tract Database (LTDB), which apportions census tract–level data from 1971–2011 to 2016 boundaries.** | Fall 2020 |
| **Launch version 1.0 release, adding:**<br>• Embedding visualizations in other websites<br>• Data story creation<br>• Mapping tool<br>• API for remote query | January 2021 |
| **Construct and format datasets, including cross-year variable linkage files:**<br>• Census data for 1951, 1956, 1961, and 1966 digitized by the Early Postwar Canadian Urban Change Data Creation Project pertaining to census tracts<br>• Selected Census data for 1911, 1921, 1931, 1941, 1951, pertaining to census subdivisions and census divisions, digitized by the Canadian Century Research Infrastructure project. | Spring 2021 |
| **Launch version 1.5 release, adding:**<br>• Scenario builder tool for future forecasting | July 2021 |

# Project team

**Zack Taylor**   Project Manager and Co-Investigator
*Director, Centre for Urban Policy and Local Governance*
*Assistant Professor, Department of Political Science*

Dr. Taylor specializes in urban politics and public administration with an empirical focus on local governance, policymaking, and spatial analysis. He is also a non-practicing Registered Professional Planner.

**David Armstrong**   Co-Investigator
*Director, Centre for Computational and Quantitative Social Science*
*Canada Research Chair in Political Methodology*
*Associate Professor, Department of Political Science*

Dr. Armstrong specializes in statistics and data analysis. His research spans topics from measurement and latent trait estimation to the role of non-linearity and data mining techniques in statistical models. He is a regular instructor at the Inter-university Consortium for Political and Social Research (ICPSR).

**Victoria Esses**   Co-Investigator
*Director, Network for Economic and Social Trends (NEST)*
*Professor, Department of Psychology*
*Co-Chair, Pathways to Prosperity Partnership*

Dr. Esses's research focuses on immigration policy and practice, including public attitudes toward immigration and cultural diversity; promising practices in settlement and integration; factors promoting the settlement and integration of immigrants; and the measurement of community welcome-ability and immigrant outcomes. Esses is regularly consulted by federal, provincial, and municipal governments on immigration issues, and her research has had a major impact on immigration policy and practice in Canada and internationally.

# Staff

**Kyle Hendricks** is enrolled in an Honours Specialization in Synthetic Biology at Western University and is continually working to take an interdisciplinary approach to investigate and solve problems.

**Alissa McGinnis** is a General Science student at Western University, majoring in Biology and Women and Gender Studies.

## Learn more

For more information or to make suggestions, visit http://observatory.uwo.ca or email us at observatory@uwo.ca.

## About Western's Network for Economic and Social Trends

The Canadian Communities Policy Observatory is a project of Western University's Network for Economic and Social Trends (NEST).

Housed within Western University's Faculty of Social Science, NEST was created in 2017 to produce world-class research of relevance to social and economic policy and facilitate interdisciplinary collaboration across the social sciences. NEST also aims to train the next generation of policy researchers through mentorships, fellowships, and the new MA in Research for Policy and Evaluation program.

The Observatory leverages the expertise of leading experts affiliated with NEST's seven research centres:
- Centre for Computational and Quantitative Social Science
- Centre for Human Capital and Productivity
- Centre for Research on Migration and Ethnic Relations
- Centre for Research on Social Inequality
- Centre for the Study of Political Behaviour
- Centre for Transitional Justice and Post-Conflict Reconstruction
- Centre for Urban Policy and Local Governance

For more information, visit http://nest.uwo.ca.