Developing housing statistics using innovative approaches: Applied work from Statistics Canada

Brahim Boualam
Chief, Canadian Housing Statistics Program
Statistics Canada

Introduction

- Housing is a fundamental human right and a critical point where individual needs intersect with **economic, social, and environmental factors**.
- New vision on housing statistics requires **more data and integration** to see housing as a system.
- Showcase **innovative approaches** to develop new housing statistics by using administrative data, web scraping, satellite imaging, AI and other techniques.
- Discuss **lessons learned** and challenges.

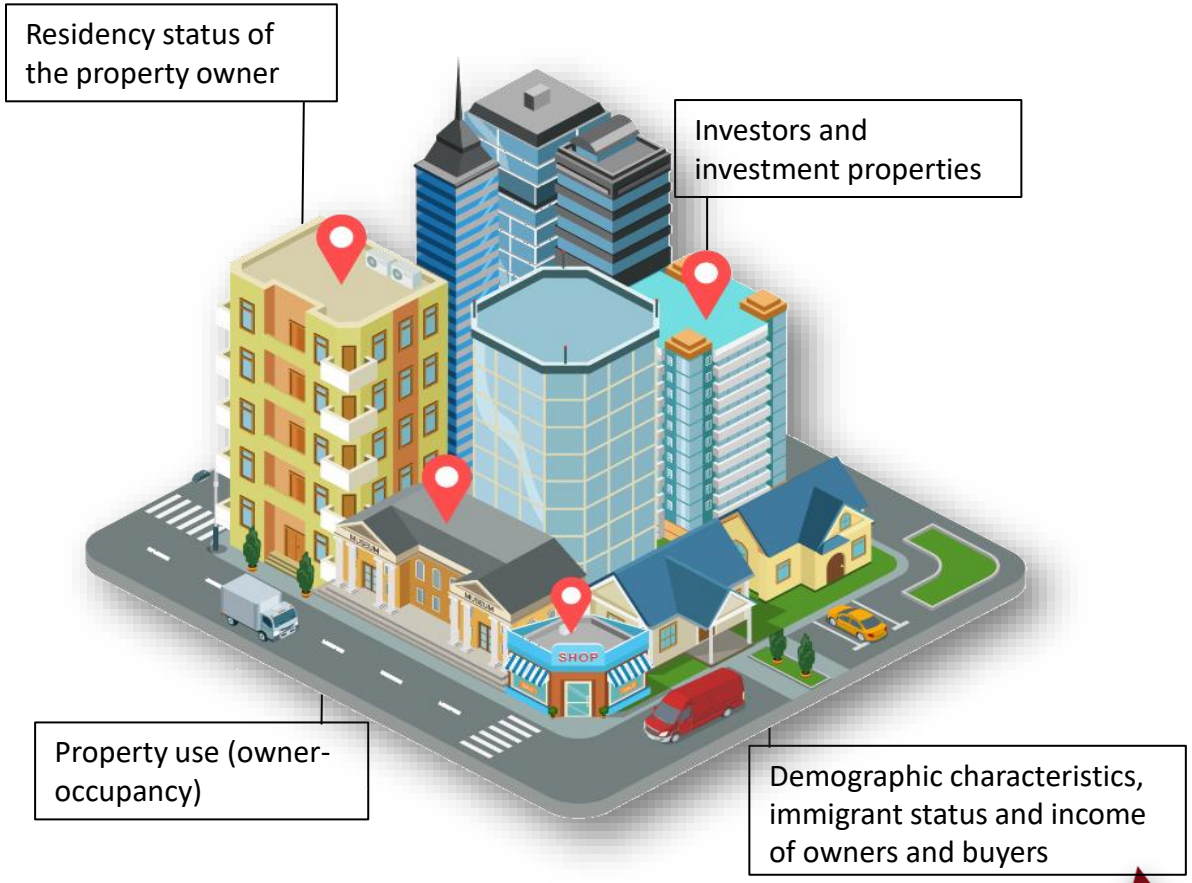
Understanding housing markets

- Statistics Canada launched the Canadian Housing Statistics Program (CHSP) in 2017 to build a **residential property database**.
- The CHSP leverages existing data from provincial and territorial **land registries** and **municipal property tax assessments** to create a repository of all residential properties in Canada.
- Properties are linked with tax, business, and immigration data to derive a variety of **owner characteristics**.

→ More information about the Canadian Housing Statistics Program

Understanding housing markets

- The CHSP now publishes a yearly **administrative census** of residential properties and their owners.
- **Data integration** enables the creation of new housing indicators, reduces response burden and provides highly disaggregated statistics.



Understanding housing markets

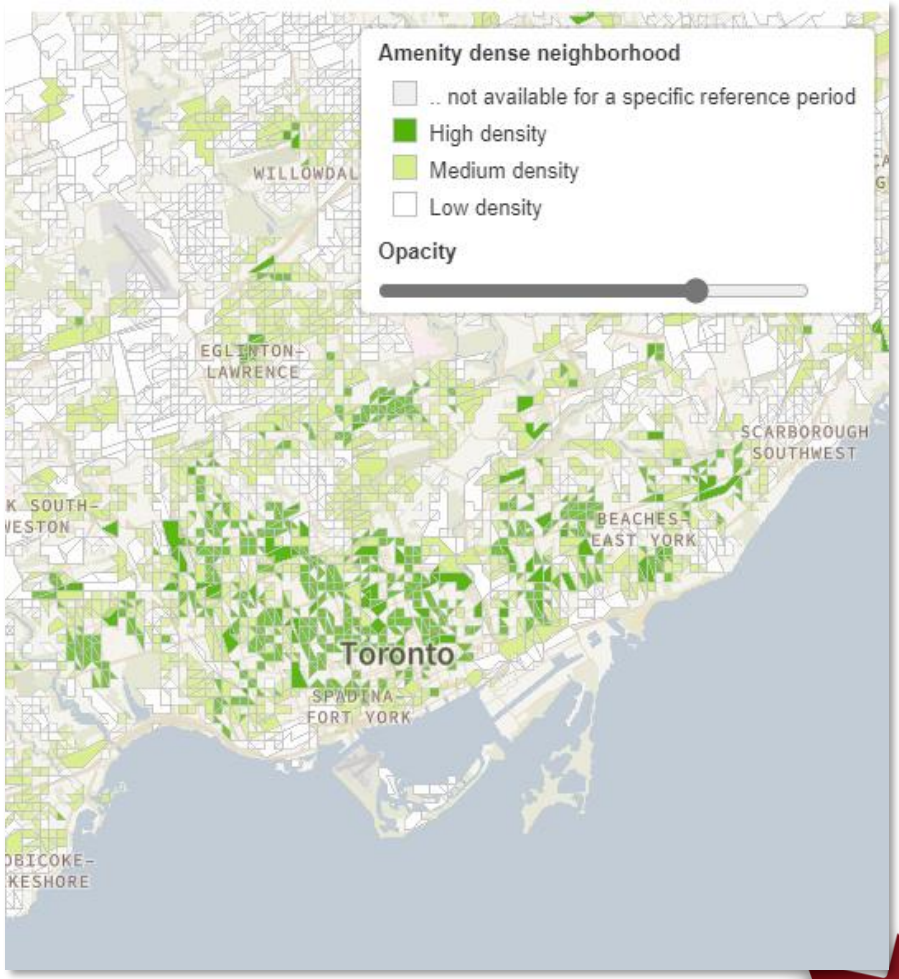
- These data can be linked to other datasets to derive new insights:
  - By linking with historical tax filings, new research was made possible on:
    - Intergenerational housing outcomes and the relationship between parental property ownership and the likelihood of their children to become owners in the future;
    - Parent and child property co-ownership arrangements and the indirect transmission of housing wealth.
  - By linking with geospatial information on flood risk, new insights are being developed to inform on the exposure of housing and homeowners to floods.

Deriving new attributes

- Micro-level information on **buildings and physical infrastructure** is increasing in relevance to social, economic and environmental statistical programs.
- Alternative data sources and advanced analytical methods can be used to generate some of this information.

Deriving new attributes

- Examples:
  - Use neural networks onto street-level imagery to derive new attributes on residential buildings (height and type).
  - Apply deep learning methods and use satellite imagery to establish the feasibility of detecting new construction starts.
  - Use integrated business tax data to publish block-level information on proximity to services and amenities.



Integration and alternative data

- Statistics Canada is currently working on several projects leveraging **administrative data**:
  - Web ads on rents and available dwellings;
  - Tribunal data on evictions;
  - Residents of homeless shelters;
  - Profile of residents in social housing and those receiving housing program benefits.

Benefits

- Overarching goals of those initiatives:
  - Administrative and alternative data are collected and used **in lieu of** or to **complement** survey data, and to support statistical operations;
  - Overcoming traditional survey methods limitations (sampling for rare events, longitudinal design, decreasing response rates);
  - Increasing coverage, frequency and granularity;
  - Testing feasibility at a low cost.

Lessons learned and challenges

- Commitment to openness and transparency:
  - Importance of communicating the **benefits** of using administrative data and the measures taken to protect the confidentiality of the data.
  - The list of mandatory requests for data from private and public organizations and relevant details is updated on a regular basis, prior to data being collected.
  - By law, Statistics Canada cannot hand over anyone's personal information. All information is anonymized; it's never possible to connect data that is made public to an individual, a household or a business.

→ For more information, see our Transparency and Accountability and Trust Centre sections.

Lessons learned and challenges

- Role of partnerships and collaborations with other stakeholders;
- Acquisition of private data (cost, quality, risk of project failure).
- Complexity:
  - Lack of standards (concepts, comparability, harmonization);
  - Lengthy process involved in integrating data from multiple sources;
  - Interpretability and the importance of subject-matter expertise.
- Representativeness of the data:
  - Measuring and correcting potential biases;
  - Challenges in producing national estimates.

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