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# Geographic Infrastructure to Support the Canadian Census


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## Outline

- Dwelling Register
  - Maintenance sources
  - On-going listing
- Geographic Database
  - Core content
  - Maintenance sources
  - Updating process

2



## Dwelling Register



## Sources: Administrative Data

- Telephone Files (landline, cell, directory)
- Tax files
  - Personal income tax file
  - Goods and Services Tax New Housing Rebate File (< \$450K sale price)
  - Canada Child Tax Benefit File
- Canada Post Point-of-Call File
  - Relatively new data product
  - Areas with civic style mailing addresses
- Canada Mortgage and Housing Corporation Starts and Completions File
  - granularity of units – apartment building vs. Apartments
- Municipal Files
  - data available from municipalities varies
  - concept – property vs. dwelling
  - granularity of units – apartment building vs. apartments



## Sources: Internal Operations

- Survey feedback
  - Dwelling Register is used by social surveys (e.g. Labour Force Survey)
- Census feedback
  - Mailout areas – register is the frame
  - Non-mailout areas – harvest dwelling info from the listing operations conducted during census activities

5



## On-going Listing Operation

- Background
  - C2001 and prior: admin updates only prior to census, harvested listing info post-census
  - C2006: admin updates and 100% listing done in mailout areas (70% of dwellings) prior to census
    - 80% of dwelling growth occurred in 1/3 of the collection units, opportunity for targeted listing
    - Use stable workforce of interviewers, increased quality of listing results
  - C2011: admin updates and targeted listing done in mailout areas (79% of dwellings in mailout, 47% in targeted listing areas) prior to census
  - C2016: admin updates and targeted listing done in mailout areas (82% of dwellings in mailout, more focused listing) prior to census
- Quarterly updating of register using admin data
- Selection of small areas for field verification
  - Focused on areas of growth based on updates from administrative files
  - Listing areas are delineated quarterly based on growth to maximize efficiency and effectiveness

6



## On-going Listing Operation

- Listing verification includes:
  - Confirmation of addresses
  - Confirmation of linkage to block structure – required to support linkage to operational and statistical geographies
  - Addition of missing addresses
  - Confirmation of dwelling type
  - Confirmation of collective dwellings and privates associated with collectives
  - Quality control
    - Suppressed/fictitious dwellings are used to QC listing work
    - Control listing units – 5% of listing units are considered to be zero/low growth and used to evaluate targeting method
- Currently testing verification of dwelling coverage in apartment buildings by contacting building managers by telephone

7



## Coverage mitigation strategies for Census

- Non-field validated admin growth used by census mailout activity
- Developing more advanced business rules to reduce the overcoverage in list of dwellings provided for mailout in census
- Census Help Line
- Coverage improvement activities, e.g. clustering of Census Help Line data, non-response follow-up findings

8



## Geographic Database



## Core Content

- **Boundaries**
  - Statistical geographies to support dissemination
    - Governmental organization, e.g. local municipalities, regional governmental structures, provinces/territories
    - Population centres, metropolitan areas, census tracts, dissemination areas, dissemination blocks, etc.
  - Operational geographies to support collection and processing activities
- **Road network – named and addressed**
  - Used to define statistical geography
  - Key data for coding data to both statistical and operational geographies
- **Hydrographic data**
  - Helps to define statistical geographies
  - Contextual information for interpreting statistical and operational geographies
- **Other reference data**
  - Railway lines
  - Utility lines

## Sources: National Initiative → GeoBase

- Federal-Provincial-Territorial government initiative
  - Canadian Council on Geomatics – Mapping agencies, Statistics Canada is a member of council, and member of GeoBase Steering Committee
- General principle: collect once, closest to source and use many times
  - Municipality → Province/Territory → Federal
- Focus on core infrastructure datasets
  - e.g. road network, hydrography, governmental boundaries
- Data model standards
- Challenges: timeliness, coverage, content

11

## Sources: Internal Operations

- Boundaries:
  - Continuous monitoring of local governmental changes
  - Well-defined updating process for Census Tracts, engages local planners
- Field observed feedback
  - Targeted on-going listing of dwellings
  - Census program
  - Social surveys, e.g. Labour Force Survey
- Key Trigger → Dwelling Register administrative updates
  - Inability to relate dwellings to road network
    - Missing roads
    - Missing address ranges
    - Overlapping address ranges
  - Used to focus on local deficiencies in road network

12



## Updating Process – Road Network

- Jointly managed common maintenance database with Elections Canada, since 2002
  - Similar business needs
  - Additional maintenance resources
  - Improved efficiency of federal electoral redistribution activity
- Continuously updated
  - Geocoding results from Dwelling Register updates focuses maintenance efforts
  - Survey, Census, and Listing feedback on collection maps incorporated into base on a regular basis

13



## Convergence to Provincial/Territorial Road Network

- Project to improve road network
  - Improve positional accuracy of road network data (i.e. GPS compliant)
  - Improve data coherence of Statistics Canada geographic data products to improve ease of data integration by users
  - Increase efficiency of future maintenance activity
- Post-convergence maintenance activity in-development
  - Increased automation of ingestion of provincial/territorial data
  - Feedback mechanism to provinces/territories to identify local deficiencies in source data
- Challenges:
  - Constant minor changes in coordinates of road network data – impact on coherence amongst other core data (boundaries and hydrography)
  - Due to timeliness and coverage of source data, will continue to perform maintenance beyond what is available from the provinces/territories' data

14



Questions?