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Field Reengineering of the Canadian Census

International Conference on Census Methods

July 31st , 2014

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Outline

- Recent History of the Canadian Census
- Canadian Context
- Census Field Infrastructure
- Staffing Structure
- Collection Cycle
- Response Management Strategy
- Collection Management Systems
- Handheld Devices for Field Collection?
- Developing new ideas for testing in 2016

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Recent History of the Canadian Census

- 2001 Census
  - Expansion of the use of the Address Register, but not for mail-out
  - List/Leave or Canvasser methodologies only
  - Small pilot test for Internet response
- 2006 Census
  - Introduction of Mail-Out methodology in urban areas
    - About 70% of the dwellings
  - Internet response option (no push)
    - 18.3% of internet response
- 2011 Census
  - Expansion of the Mail-Out areas
    - About 78% of the dwellings
  - Introduction of the Wave collection methodology – push for Internet response
    - 54.4% of internet response

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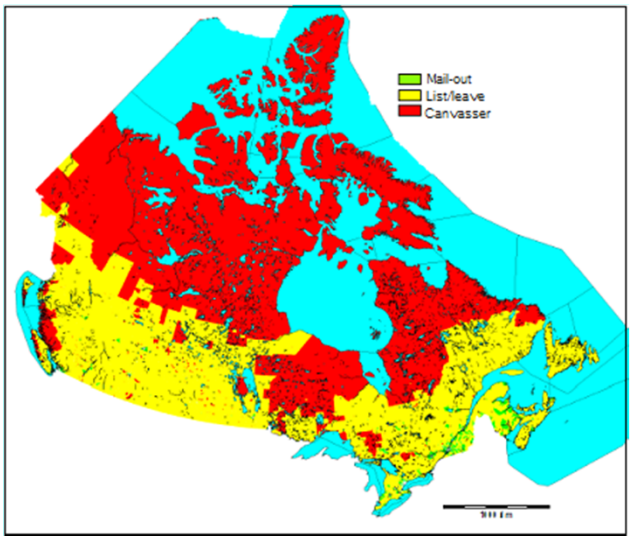
The Canadian Context

- On May 10th, 2011: 33,476,688 persons, in 14,569,633 dwellings
- Area: 8,965,121 km^2



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The Census Field Infrastructure

- Head Office
  - Manage the Census Program
  - Responsible for Self-response phase
  - Develop procedures, material, manuals, forms, systems, etc.
  - Provide Communications / media relations strategy and support
- Regional Census Centres - RCC (5)
  - Set the overall direction of collection in the region
  - Liaison with HO on availability of resources and achievement of results
  - Plan and manage Census collection in the region
- Local Census Offices - LCO (37 in 2011, 25 in 2016)
  - Manage all components of field logistic/activities/operations
  - Recruitment and pay (pay units moved to RCC in 2016)

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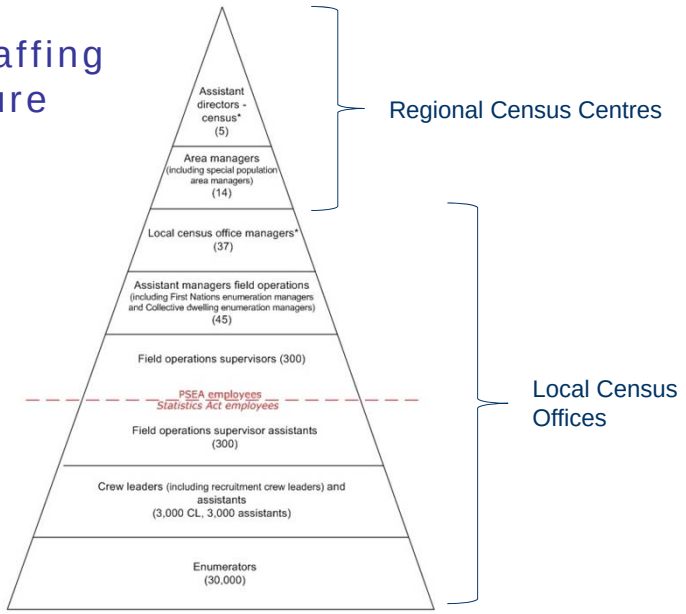
The Staffing Structure

(2011 counts)



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The Collection Cycle

- Census Day: a Tuesday in May, second Tuesday of May in 2011 and 2016
  - The Canadian Census is a *de jure* Census (usual place of residence)
- May: Self-Response
  - Introduction of Wave methodology in 2011
    - 2006: Self-response rate: 79%
    - 2011: Self-response rate: 85%
  - Challenges and constraints:
    - Find a balance between self-response VS internet response
    - Find a balance between self-response VS timing of the waves/start of NRFU
      - NRFU should not start too far from Census Day
      - Summer vacations in July and August

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The Collection Cycle

- Until 2006: Block Canvass (8 months prior to Census)
  - Since 2011, replaced by on-going targeted listing and increased use of admin data
- Self-Response (May)
- Dwelling Occupancy Verification (close to Census Day)
  - Field visits to determine the occupancy status of the dwellings (in targeted areas)
- Early-Non-Response Follow-up (May 20th)
  - Earlier starting date for NRFU in areas where self-response rate is expected to be low
- Non-Response Follow-up (June and July)
  - Census enumerators complete questionnaires with respondents
- Failed-Edit Follow-up (During NRFU)
  - Phone follow-up for incomplete questionnaires (sample)
- Dwelling Classification Survey (After NRFU)
  - Independent follow-up to validate the status of unoccupied and cancelled dwellings (in selected areas)
- Special enumeration procedures for collective dwellings (group quarters), aboriginal communities, and remote areas

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Response Management Strategy

- Progress and expenditures are monitored daily
  - Various MIS reports analysed daily by Regional and Head Office managers
- Response management strategy, called *Tolerance Strategy* put in place to obtain response rates that are:
  - as high as possible
  - consistent across Canada (at small geographic levels – will be better aligned with the dissemination geography in 2016).
- Concept of the Tolerance strategy
  - Managed from Head Office
  - Strategy consists of 4 tiers (steps) to manage tolerance.
  - Automated and manual process to stop collection in a Collection Unit (CU) when the tolerance target is met.

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2011 Census Tolerance Strategy

- Tier 1: A collection unit (CU) meets response targets if:
  - the CU level threshold (98%) is met, or
  - the CU response rate is between 96% - 98% and it's Census Tract or Census Subdivision is at 98%
- During census NRFU, if:
  - projections are that collection will end beyond the end of July, AND/OR
  - projections are that budget will be exhausted prior to the "work" being completed
- Then, progressive relaxation of the criteria (Tiers 2-4):
  1) Stop collection in "small impact" CUs, or
  2) Stop collection when CU response rate equals 2006 rate and meets a minimal quality threshold, or
  3) Stop collection after a case by case review:
     - Based on indicators measuring the effort accomplished, the number of outstanding cases, the homogeneity of the CU population, the variation of response rate among CUs in the CT/CSD, etc…
- Similar approach will be used in 2016

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The Collection Management Systems

From 2006…

- NRFU System located in the Local Census Offices (LCO)
  - NRFU System linked to the Master Control System, used by the Field Operation Supervisors located in the LCO
  - Assignment Lists, Notification Lists, NRFU Control Forms and other forms faxed or shipped by courier (to/from Field Operation Supervisors, Crew Leaders and Enumerators)

…to 2011…

- Field Management System (FMS)
  - Controlled-access web portal for field enumerators and supervisors
  - Linked to the Master Control System, and used by all levels of field staff (assignment lists, pay claims, tracking shipments, birthing dwellings, notifications, etc.)
  - Provided field staff and managers with timely information to manage workloads and control costs

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The Collection Management Systems

… towards 2016

- Integrated Collection and Operation System (ICOS)
  - New initiative currently being developed at the Bureau level
  - Single multi-mode, multi-site, generic and integrated collection environment.
  - Common collection platform for all programs and surveys
  - Unique portal for all collection users (respondents, interviewers, collection managers, etc.)
  - Replaces/combines existing systems for various activities, such as:
    - Sample management
    - Survey management
    - Data management
    - Electronic questionnaire rendering service (i-EQ and r-EQ)
    - HR (pay, recruitment, productivity)
    - Logistic and shipping
    - MIS

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The Collection Management Systems

… towards 2016 (cont)

- ICOS' Collection Management Portal (CMP) and 2016 Collection Strategy:
  - A unique collection system allows for a better coordinated NRFU approach with shared workload between field and telephone staff
    - More optimal, efficient and uniform use of the 25 LCO's Collection Support Units (telephone)
    - Cases will be delivered to telephone operators via call scheduler and based on a priority score (at national level)
  - Managing by attempts is key
    - All attempts logged in Collection Management Portal
    - Crew Leaders generate/manage assignment lists in system using paradata, including the number of attempts – more flexibility in assigning geography / dwellings to enumerators
    - Expecting even less variability in response rates across the country than in 2011
    - Goal is to leverage the effort required at the CU to limit large shift of enumerators across regions at the end of NRFU
  - Increased focus on performance management and cost control
    - Better productivity key indicators and reports, productivity dashboard for each enumerator
    - Link pay and travel claims to productivity (daily)

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Handheld Devices for Field Collection?

- Paper collection until 2011 Census incl.
- Based on planning decisions made after the 2011 Census, the successes of FMS and EQ in 2011, and the successful implementation in other countries, we explored the possibility of moving to a mobile platform for 2016.
- Pros identified:
  - Elimination of NRFU paper questionnaires, reduced printing, handling, shipping and warehousing costs
  - Increased Enumerators / Crew Leaders ratios
  - Real-time capture of addresses in List/Leave areas
  - Quicker update to Master Control System, reduced unlinked forms
  - Increased data quality (hard and soft edits)
  - Real-time capture or attempts, more accurate information on enumerator productivity
  - Potential use of mapping software

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Handheld Devices for Field Collection?

- 2 options considered for 2016:
  - 1- Use of mobile devices owned by field staff
    - Independent TRA analysis did not support enumerator owned devices for security reasons (eg: no control on the devices owned by the staff, security protocol too permissive for some types of devices, downloading and transmitting on owned device less secure, etc.).
  - 2- Purchase of mobile devices for field staff
    - No business case, at least for 2016:
      - significant savings but high implementation cost. The net savings did not justify the operational additional risks
      - Limited IT resources due to the ongoing development of ICOS
- Collection Research Unit newly created at the Bureau level to coordinate research activities, including the use of mobile devices. The decision will be re-evaluated for 2021

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Developing new ideas for testing in 2016

- Using an administrative population spine to replace some of the field operations:
  - 1- To replace NRFU in some cases – possibly integrated in tolerance management strategy
    - If complete enough, administrative records could be counted as responses.
  - 2- To support other field activities
    - Dwelling occupancy verification
    - Dwelling classification survey
- Develop a concordance between civic (listed) addresses and mailing address
  - Reduce reliance on list and leave approach in rural areas in 2021, further reducing the need for expensive field infrastructure
  - Support research with administrative sources – build better geographic concordance with Census geography
- More targeted Communication and media strategy

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Questions?