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The Canadian Census of Population

Administrative data usage

CNSTAT Public Webinar Series:

International Approaches to Conducting a Census in the 21st Century
May 24, 2023





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Statistics Canada: Who we are and what we do

- Canada's national statistical agency
- One of the leading statistical organizations in the world
- More than 5,000 employees across Canada
- More than 350 active surveys
- Trusted source of information – accurate, objective and unbiased
- Privacy and confidentiality are paramount





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The organization

PROVIDING INSIGHT THROUGH DATA

Statistics Canada is an independent, arm's-length agency with a national mandate to **provide statistical information** on every aspect of our country and its communities, including its population, economy, society and environment.

As the **National Statistical Office**, Statistics Canada provides Canadians with vital information to help monitor inflation, promote economic growth, plan cities and roads, adjust pensions, and develop employment and social programs. The agency **provides data and insights to help governments, businesses and individuals make informed decisions.**

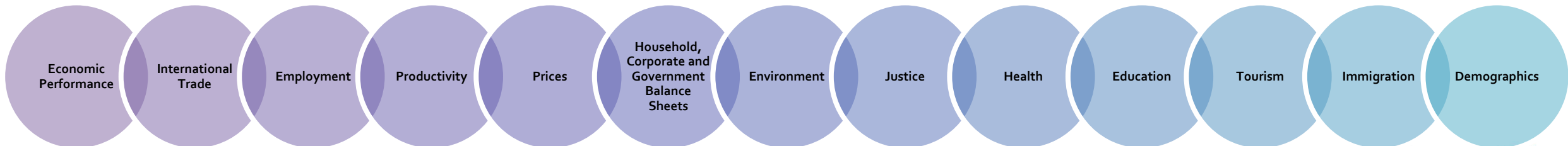
The legislation supporting Statistics Canada makes provisions for transparent and accountable decisions on statistical matters.



The *Statistics Act* establishes Statistics Canada as a federal agency with a national mandate to address statistical needs of all Canadians and governments.



The *Constitution Act*, 1982 assigns census and statistics to the federal jurisdiction and requires the conduct of a general Census of Population.

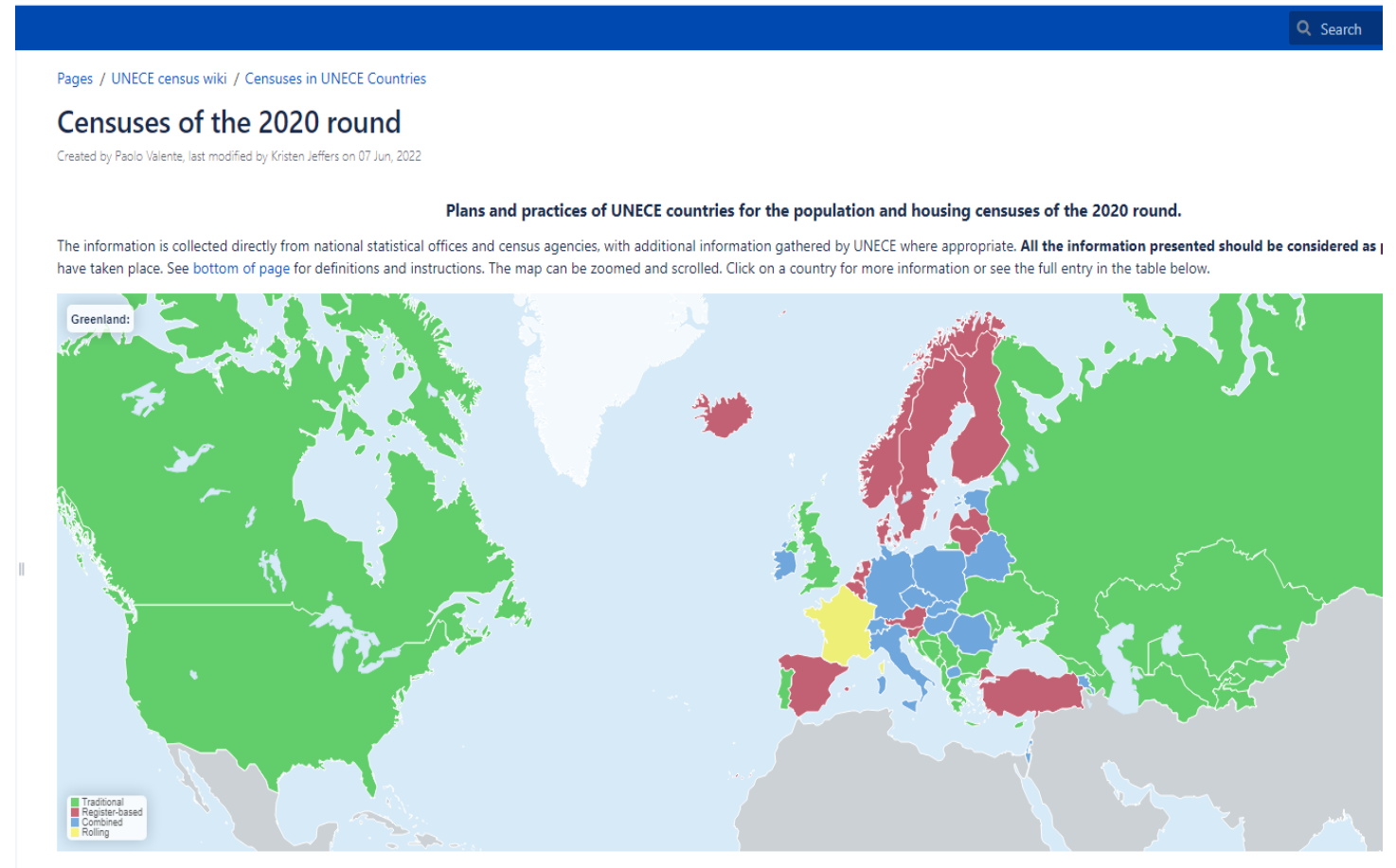




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Census Around the World – 2020 Round

- Of the 52 UNECE Countries with information available, less than half are conducting a traditional Census in the 2020 round
 - 23 traditional census
 - 13 register-based census
 - 16 combined approach



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Traditional; Register-based; Combined, Rolling

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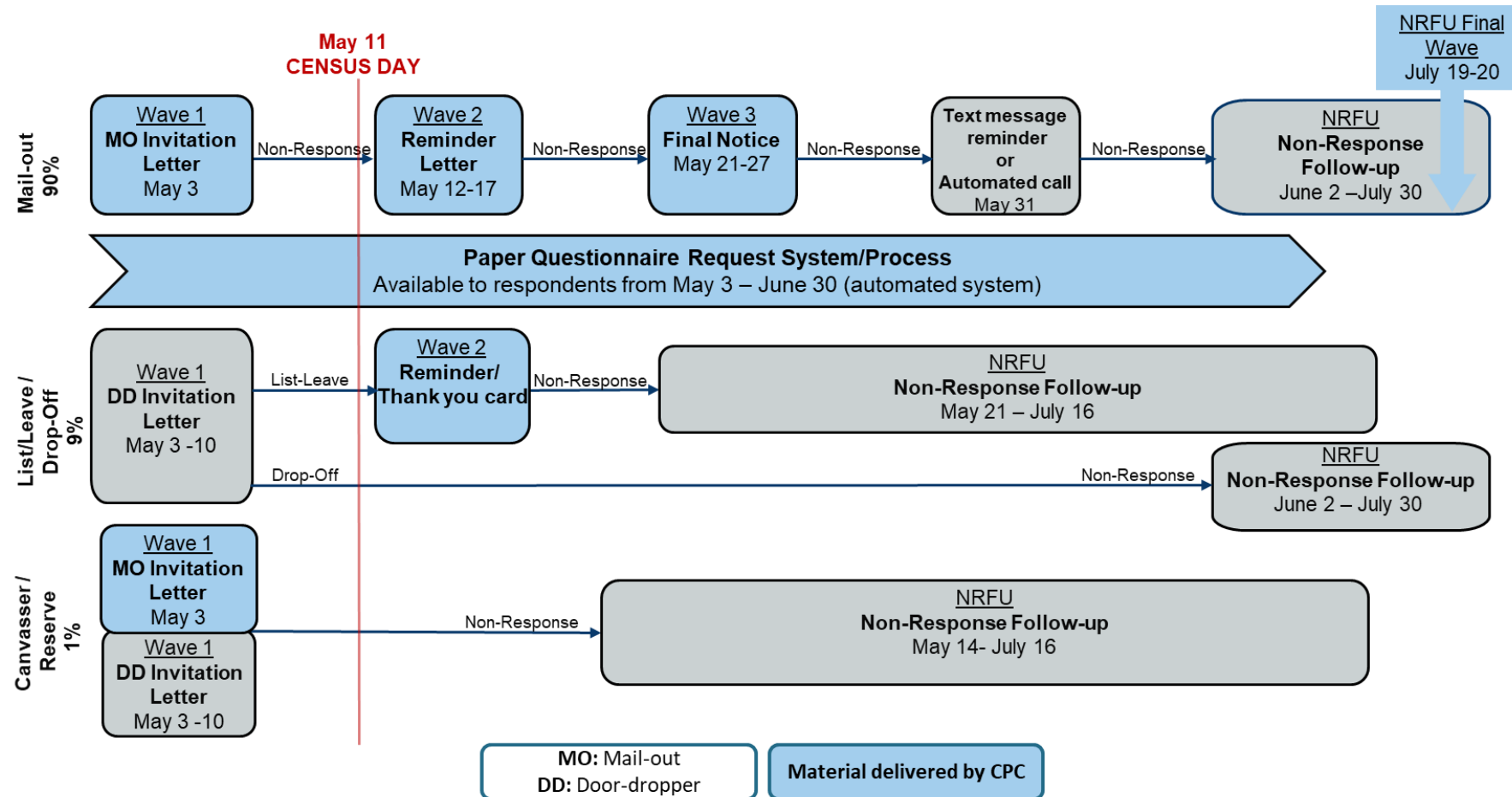


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Introduction to the Canadian Census of Population

- The Canadian Census of Population aims to enumerate and to collect information on the entire population of Canada every five years
 - Full field enumeration is conducted → Traditional Census
- Short form and long form questionnaires
 - Short form questions on basic socio-demographic information and languages (100% of population)
 - Long form (25% sample in the 2016 and 2021 censuses): dwelling characteristics and additional demographic and socio-economic characteristics on individuals
- Collection:
 - Collection modes: “mail out” and “list leave”
 - Various field operations conducted to ensure appropriate dwelling classification and response level
 - Non Response Follow Up (NRFU)

2021 Wave Methodology



Wave 1
15.6 million one-day delivery of self-mailers (including 225,000 for Census of Agriculture)

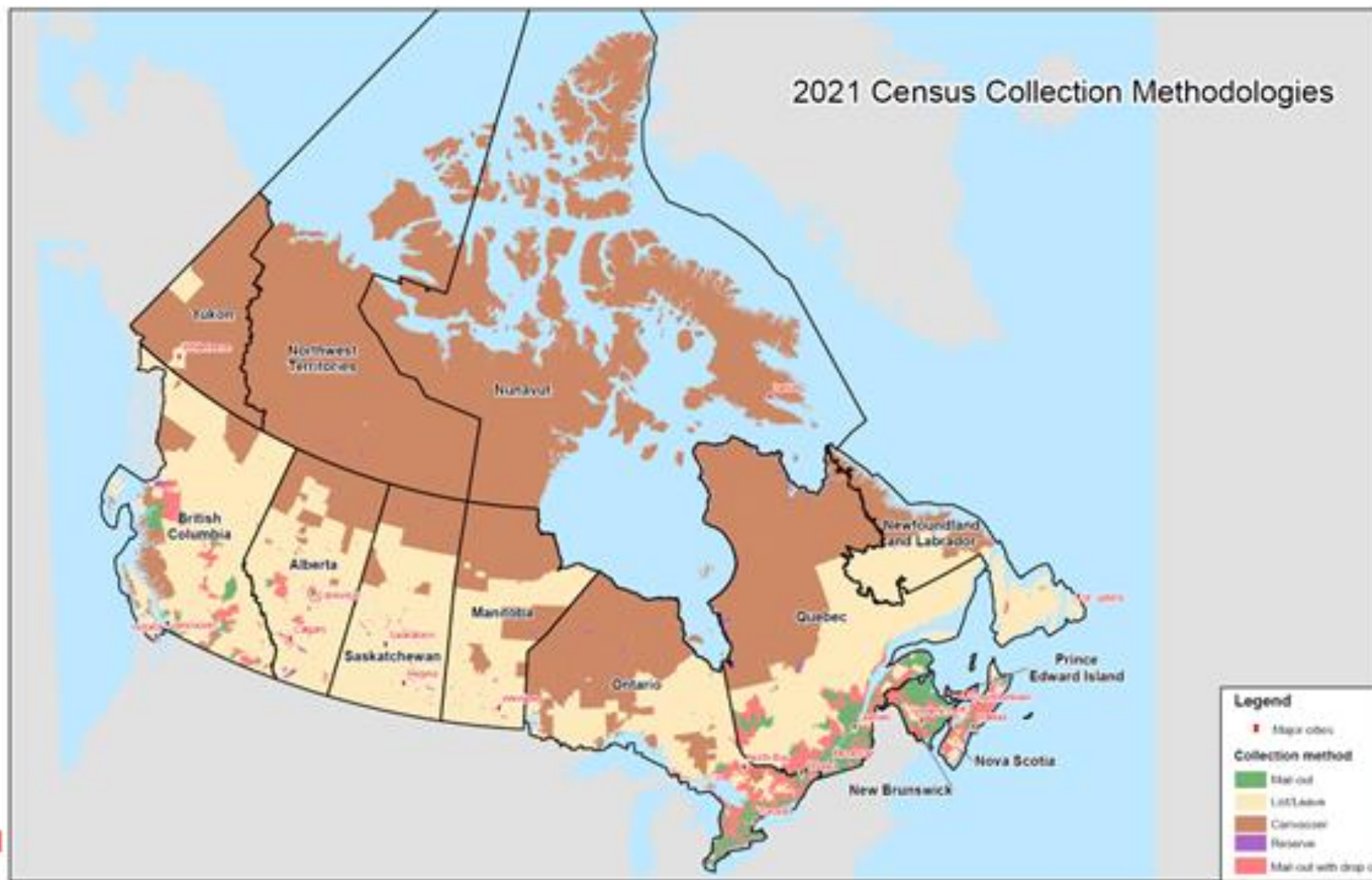
Wave 2
11.2 million self-mailers
1.1 million ad cards

Wave 3
5.7 million letters in envelope

NRFU Final Wave
1.9 million letters in envelope



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Global Collection Response Rates - Highlights

Collection Rate	2016 Census	2021 Census	
	Actual	Planned	Actual
Global Census Collection Rate	98.4%	98%	98.0%
Long Form Collection rate	97.9%	96%	97.4%
Internet	68.3%	80%	84.1%
Paper	20.5%	10%	4.1%
Self-Response	88.8%	90%	88.1%
NRFU	9.7%	8%	9.9%
Workload at start of NRFU	3.7 M	4.0M	4.6M





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Introduction to the Canadian Census of Population

- Coverage Studies: measured through 3 statistical activities
 - Dwelling Classification Survey (DCS): follow-up operation to estimate and correct for misclassification of dwellings on Census Day
 - Census Coverage Measurement Program: Main sources of information are administrative data
 - Census Undercoverage Survey (CUS) which was formerly known as the Reverse Record Check: estimates the population missed by the Census using various administrative data sources and to create an independent frame and follow-up with survey information
 - Census Overcoverage Study (COS), estimates the population enumerated more than once – mostly a linkage exercise
- Census of population direct use of administrative data
 - Income and some immigration variables
 - Disruption of collection, e.g. wildfires in northern region



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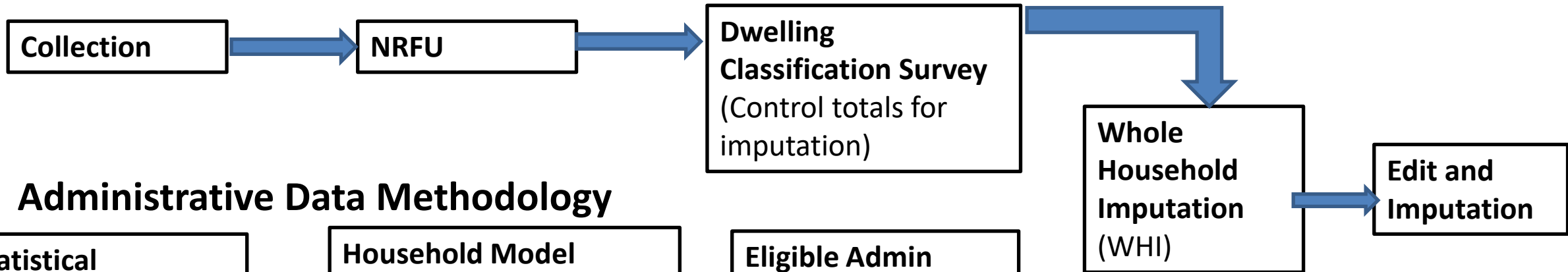
Statistical Contingency Plan for the 2021 Census

- In the event that COVID-19 or other disasters prevented the traditional census from a satisfactory enumeration
 - Statistics Canada developed (and eventually implemented) a “statistical contingency plan” based on the use of administrative data for post-collection imputation of 2021 Census non-responding households
 - Note that the contingency plan used data already provided to Statistics Canada, and meets the highest standards of privacy, confidentiality and data security.
 - Statistical models (see paper for details on the models) were used extensively to form households from individual government-provided administrative information (e.g., tax records) and quality indicators were developed to determine household eligibility for inclusion in imputation processes.

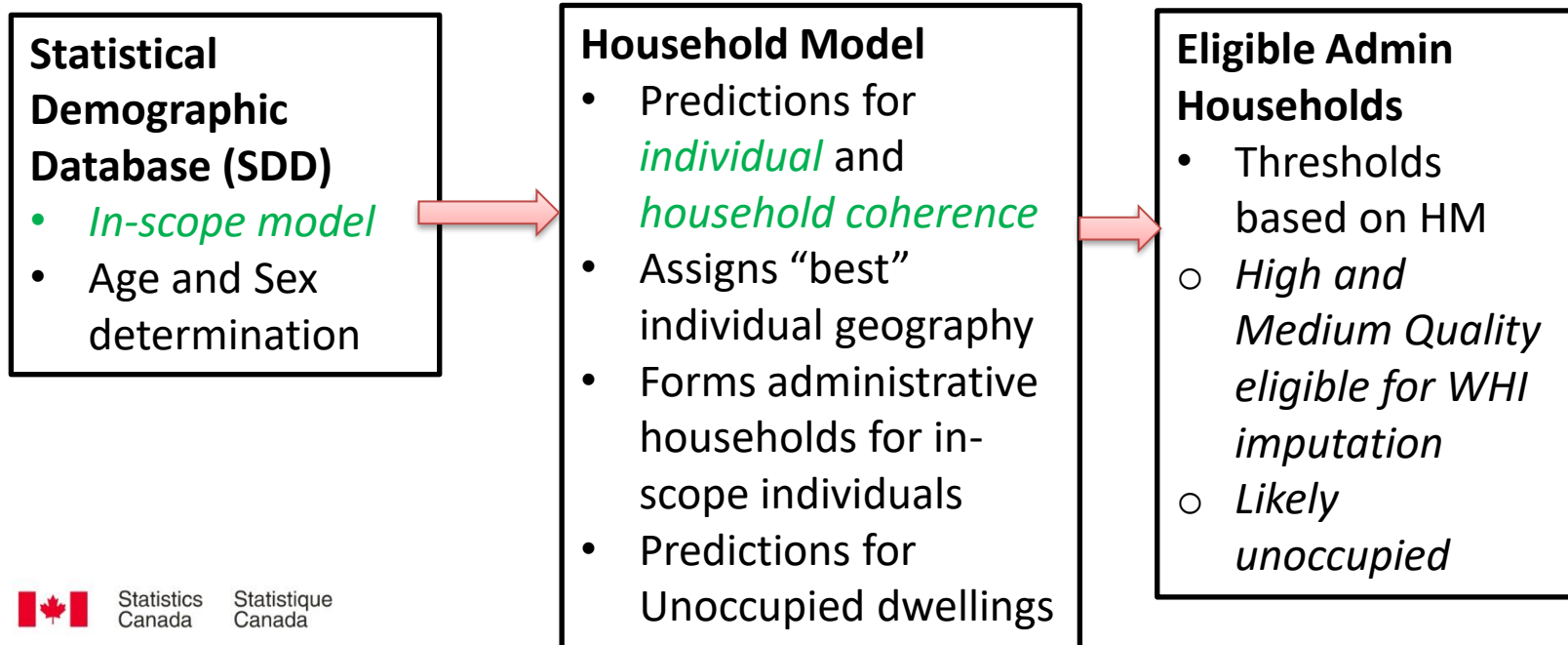


Administrative Data Contingency Methodology Census 2021 (Post-collection)

• Traditional Census Collection Methodology



• Administrative Data Methodology





Statistical Contingency Plan for the 2021 Census

- 2021 Census had a successful enumeration, with 98% of Canadians responding to the census.
 - Widespread use of the contingency plan was not necessary
 - Administrative data were used to support the imputation of non-responding households for some localized areas of the country that had response rates well below the national rates.
 - 1,045 collection units (out of 49,000 in Canada) showed a response rate below 90%.
 - Dwellings that had good quality administrative data were in-scope.
 - About 12,000 non-responding households – representing less than 0.1% of occupied private dwellings in Canada.
 - However, there were 9.2 million dwellings eligible for imputation using administrative data



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Increased Usage of Administrative Data for the 2026 Census

- How ?
 - Operational efficiencies during the NRFU
 - Various models could be used to reduce field efforts away from some in-person activity (classification of dwelling)
 - Optimizing NRFU activities by using signal from good administrative data
 - Post-collection: Imputation of non-responding households
 - Mainly used in mail out areas in 2021; extend to non-mailout in 2026



Combined Census research: Could we conduct one in 2031?

A “combined census” combines information from self-response with administrative data to generate Census counts.

- Simulation and testing of various combined census models
- Research and testing using various admin data sources
- Research and testing of new types of post-censal coverage studies
- Admin data acquisitions



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Research on administrative population counts: What we have learned so far

- We have access to plenty of good quality administrative data, but not everywhere in the country or for all population groups
- We can produce population counts from administrative data
 - However, the administrative data over-count somewhat. That over-count is smaller than the under-count from the current traditional census...
- Of the individuals in those files, we are getting good at predicting if they are in-scope for census enumeration:
 - Current “in-scope” model accurately predicts if in/out of scope 88.4% of the time
- Our models are getting good at placing individuals from administrative data into households
 - “Household model” places individuals in correct addresses 80% of the time.
- The large majority of census households can be exactly re-created by administrative data
 - 60.6% of derived households match exactly to the Census



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Combined Census models under consideration

In order of increasing degree of admin data usage:

1. **No follow-up model:** No follow-up for short form dwellings after Wave 1 letter, admin data replaces NRFU. Long-form sample continues as usual, with follow-up if needed.
2. **Admin-zone model:** Determine “admin” and “traditional” geographic zones based on the quality of available admin data. No short-form in “admin zones”. Short-form as usual in “traditional zones”. Long-form sample as usual.
3. **Admin-first model with extended long-form:** Admin replacement for short-form (no census invitation sent). Long-form sample maintained or increased in some areas as needed.

* Assumption that long-form sample will persist as usual throughout all combined census options. Short-form characteristics not available in admin data collected on the long-form.



Social acceptability testing

Any major change to census collection methods will be predicated on a solid foundation of ongoing research, consultation, and transparent communication with internal and external stakeholders, and the Canadian public

- Research, testing, and consultation roadmap to 2027
- Qualitative and Quantitative social acceptability testing opportunities
- 2024 Census Behavioural Tests (BT4)



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Why measure the social acceptability of a combined census?

- Provides strategic information for the use of admin data in 2026
- Key input into decision in 2027
- Strong evidence basis required for 2031
- CSAC, OPC, and SMC have stated the need for social acceptability measures
- General public, researchers, data users, provinces and territories are all stakeholders

Consultation, outreach, communication

A proactive and reactive communications strategy to mitigate the risks of negative public reaction to combined census research and re-use of admin data

- Qualitative testing of communications materials
- Consultations with key stakeholders
- Privacy Impact Assessment (PIA), Necessity & Proportionality review (N&P), and consultation with Office of the Privacy Commissioner (OPC)
- Census Futures section on the Census website
- Media lines and Q&A



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Thank you / Merci

QUESTIONS / COMMENTAIRES?

