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The Canadian Census of Population: A review in preparation for 2016

Note by Statistics Canada¹

Summary

Statistics Canada launched the 2016 Census Strategy Project in December 2010 with the goal of studying methodology options for the 2016 Census Program. This paper presents the key findings of this review on three fronts: legislative requirements with respect to the conduct of a census of population in Canada, Census Program data uses and users, and assessment of possible methodological approaches within the Canadian context for 2016. The paper concludes with lessons learned from this project that may be valuable to other statistical agencies undertaking such a review.

I. Introduction

1. Statistics Canada is responsible under the Statistics Act for conducting the census every five years. The Canadian census has always relied on a traditional approach, with data collected from individuals and housing units at a specific point in time. Since 1971, two questionnaires have been used: a long form, distributed to a sample of households, which contained the full set of questions; and a short form, distributed to the remaining households, which contained only a basic set of questions. Up to and including 2006, both the short and the long forms were mandatory. In 2011, the mandatory long-form census was

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replaced by the voluntary National Household Survey (NHS). At the time, the notion of privacy intrusiveness was brought to the forefront, raising questions as to whether Canadians should be obliged to answer certain questions and whether the information collected is relevant.

2. As part of Statistics Canada's customary process to review and evaluate its statistical programs and in light of the changes in 2011 and changes to census-taking approaches internationally, Statistics Canada launched the 2016 Census Strategy Project in December 2010 with the goal of studying methodology options for the 2016 Census Program². A recommendation had to be delivered to the federal government in early 2012, to allow sufficient time for the planning, funding, development, testing and implementation of the 2016 Census Program methodology.

3. This one-year project was fairly wide in scope, meant to review the approaches for population censuses that exist around the world and evaluate their applicability to the Canadian context, as well as their adherence to Statistics Canada's mandate and business model. It also comprised a review of the constitutional and statutory requirements and the provision of a content determination framework, including criteria for inclusion of content in the 2016 Census Program.

4. This paper presents the key findings of this review on three fronts: legislative requirements with respect to the conduct of a census of population in Canada, Census Program data uses and users, and assessment of possible methodological approaches within the Canadian context for 2016. The paper concludes with lessons learned from this project that may be valuable to other statistical agencies undertaking such a review.

II. Legislative requirements with respect to the conduct of a census of population in Canada

5. Statistics Canada sought legal advice, within and outside the organization, as part of the 2016 Census Strategy Project. The main findings are below with more details available in Statistics Canada (Section 5, 2012a).

6. In Canada, the constitutional requirement for a decennial Census of Population (years ending in '1') dates back to the proclamation of The British North America Act, 1867 (now known as the Constitution Act, 1867). The constitutional requirement for a quinquennial census (years ending in '6') still stems today from the Constitution Act, 1907 and the Constitution Act, 1930 as the population counts for Manitoba and Saskatchewan are still below the limits set by these enactments. The requirement for a nationwide quinquennial census has also been part of the Statistics Act since 1970.

7. The Statistics Act does not specifically define the word "census" and does not specify which questions are to be included in the census. It describes it as a census of the population that is to be taken in a manner that ensures that counts of the population are provided for each federal electoral district of Canada. Section 21 of the Act provides the power to the Governor in Council to establish the census questions and, as per Section 8 of the Act, these questions can only be collected on a mandatory basis.

² For the purpose of this paper, the term "Census Program" will be used to refer in a general way to the Canadian Census of Population, either the short and long forms from 1971 to 2006 or the 2011 Census of Population and NHS.

8. Although the Statistics Act does not define the term “population”, the term is used in Section 22 of the Act, which provides a list of matters in relation to which the Chief Statistician shall compile statistics. The term “population” is listed as the first topic, followed by others such as health and welfare, immigration and emigration, education, labour and employment, prices and the cost of living. It could be argued that the wording used in the Statistics Act limits the census of population questions to those that relate only to the topic of population. The Statistics Act does not preclude asking questions other than those related to population with the census, as long as these questions are authorized by the Minister pursuant to Section 7 and, for voluntary questions, to Section 8, an authority which is normally delegated to the Chief Statistician.

9. It appears that the Statistics Act does not prohibit the census from using either sampling methods or administrative data. The Statistics Act stipulates in Section 9(2) that the Minister may authorize the use of sampling methods for the collection of statistics. Section 13 gives Statistics Canada the authority to access administrative data for statistical purposes.

10. During the review, examples of several other countries with more explicit and detailed census legislation than the Canadian one were found. In addition to the frequency of the census, it is common to see provisions in the legislation that defines the census as a census of population, housing and matters relating to population and housing. Countries that are using a non-traditional census approach tend to have legislation that is more prescriptive in terms of methods (e.g., *Loi relative à la démocratie de proximité* for the rolling census in France) or in terms of the acquisition, use, provision and safeguard of administrative data when the census relies on a register-based approach.

III. Census Program data users and uses

11. It was not possible as part of this review to conduct a consultation with data users that is as extensive and exhaustive as the one normally held four years before the census. Consequently, the goal was not to determine the content of the 2016 Census Program, but rather to understand better data user needs and determine how these could be prioritized. One of the outputs of this process was to be a framework to guide the determination of content in a more structured and transparent way for the 2016 Census Program, including criteria to prioritize the content, and to establish which high-level design characteristics might be needed for the 2016 methodology.

12. Representatives from all levels of government³ were contacted in the summer of 2011. Others in the private and non-profit sectors were also contacted later in 2011, including National Aboriginal organizations, organizations representing official language minority communities, selected secondary data distributors, and associations representing the business and non-profit sectors, as well as direct end-users in these sectors.

13. Over 800 external uses of Census Program data were reported to Statistics Canada. A web-based questionnaire tool was used for the first time to gather feedback on aspects such as the context in which the Census Program data are used, the topics (but not the variables), the level at which the data are needed (geographic and sub-populations), the importance of comparability across time and geographies, the existence of suitable

³ Contacts were made with all funding federal partners. Provincial and territorial focal points were asked to represent provinces and territories. Some organizations representing municipalities were contacted, since it was not possible, given the timeframe, to enter into discussion with all municipalities in Canada.

alternative data sources and the impact if the information was not available anymore. Discussions were also held internally at Statistics Canada to gather information on how the Census Program data are used in support to other statistical programs. A summary of the findings are reported below. More on the process and its findings can be found in Statistics Canada (2012b).

14. Population counts correspond to the highest priority data needs produced by the Census Program. They are required explicitly by numerous pieces of legislation. They are at the heart of Statistics Canada's Population Estimates Program, along with other Census Program data and administrative data provided by other federal, provincial and territorial government departments. These estimates are used to determine the distribution of major federal transfers to the provinces and territories, which equate to \$57.7 billion in 2011-12 and were estimated to account for about 19% of provincial and territorial revenues in that year⁴. These estimates serve also as a source of benchmarks for many other social and household surveys at Statistics Canada and contribute as such to the integrity of the broader social statistics system. Given their importance, population counts produced by the Census Program should be based on a full and mandatory enumeration of the population.

15. Other data produced by the Census Program also respond to key legislation. The official languages content is an example where there is an explicit legislative requirement for the use of decennial data from specific language variables. Moreover, for all topics covered by the 2011 Census Program, there continue to be requirements for information on small populations or small areas where there are no alternative sources, and for which the information serves a purpose with high importance.

16. The feedback received in 2011 also demonstrated that the multivariate nature of the Census Program is key to users. For example, more than half of the uses reported to Statistics Canada need information from the Aboriginal topic. Close to 80% of them reported a need for additional Census Program information derived from the education, labour market, housing and income topics. The same is observed for the topics on visible minority/population group, and citizenship and immigration. This provides clear indication that counting specific sub-populations is of importance, but characterizing the conditions of these subpopulations is even more critical to users.

IV. International census-taking approaches assessed in the Canadian context

17. Census-taking methodologies used internationally were grouped into three main approaches. They were studied and assessed in relation to the "Canadian context": the census approach employing existing administrative registers (the "register-based" approach), the census approach employing continuous measurement (like the rolling census in France or the American Community Survey, which supplements the decennial census in the United States) and the traditional census approach.

18. Drawing on existing literature (United Nations 2008, UNECE 2006), necessary conditions for using each approach were identified. A first independent review conducted by Royce (2011) assessed whether these conditions are likely to be present in time in Canada for 2016, relying on experiences at Statistics Canada and in other countries. Information was further gathered by Statistics Canada from partners within the organization and from other external governmental entities specialized in specific matters such as the Office of the Privacy Commissioner.

⁴ Available on <http://www.fin.gc.ca/fedprov/mtp-eng.asp> as of January 4, 2012.

19. Two external entities were put in place for the specific purpose of validating the assessment: 1) an international Expert Panel Review Committee, composed of six international experts with recognized expertise in official statistics and census-taking methodology; and 2) a seven member subcommittee of the National Statistics Council, which is the most senior external advisory committee at Statistics Canada. Both entities were asked at different stages of the project to review the work performed by Statistics Canada.

20. The census approach employing existing administrative registers relies at a minimum on a population register and a building/dwelling register to produce basic characteristics on all individuals and housing units at a specific reference point in time. More detailed characteristics can be obtained by linking to other existing administrative registers or administrative data sources (e.g., on education and employment) or by conducting surveys, either by complete enumeration or by sample. This approach is used in Scandinavian countries and increasingly in other European countries⁵.

21. Canada does not meet the necessary conditions to conduct a census employing existing administrative registers. Population and dwelling registers do not exist in Canada. The Privacy Commissioner of Canada and the provincial and territorial privacy commissioners have clearly indicated, in a note sent to Statistics Canada in October 2011, that they will not support the creation of a population register in Canada. Statistics Canada's Address Register (AR), although used successfully in the 2011 Census and NHS to mail to close to 80% of the private dwellings, is not complete. Further improvement of the AR coverage is limited by the fact that standard and civic-style addressing does not exist nationwide in Canada. To achieve such a nationwide civic-style addressing, it would require discussion, and eventual action, outside of Statistics Canada, with Canada Post Corporation for example.

22. Canada does not have a universal personal identification number (PIN) that would facilitate the linking of different administrative sources. The Privacy Commissioner of Canada and the provincial and territorial privacy commissioners, in the same October 2011 note, have expressed great concerns around the adoption of a PIN, as it represents a real risk to privacy, and have confirmed again their long-standing position against the use of the Social Insurance Number as a common identifier (it is not universal and its usage is limited by legislation at the moment) and have warned of the dangers of establishing any system of universal identification. The Information and Privacy Policy Division of Treasury Board Secretariat added that the creation of a unique identifier would require an Act of Parliament and would constitute a large endeavour, as it may raise issues related to the Canadian Charter of Rights and Freedom.

23. The Privacy Commissioner of Canada and the provincial and territorial privacy commissioners added that any form of census approach that would involve massive linkage of administrative sources, even without the existence of a population register and a PIN, would be subject to great privacy scrutiny. They would likely recommend more formal regulations around such a data-linking initiative. They confirmed that public understanding of the advantages of using data already collected for administrative purposes compared to collecting the data again, but also public understanding of the risks, was a necessary condition for this approach.

⁵ Twenty of the fifty UNECE member countries that responded to the UNSD survey in June 2009 reported relying either partially or completely on administrative registers in the 2010 round of censuses (UNECE 2010). The United Nations Economic Commission for Europe (UNECE) currently has 56 member countries, including Canada, the United States and some countries in Asia.

24. As a result, a census employing existing administrative registers is not possible for 2016 and unlikely to be in the long term unless the state of the necessary conditions rapidly changes.

25. In the census approach employing continuous measurement part or all of the collection of characteristics from individuals and housing units is performed on a continuous basis. It involves a form of rotating sample. Collection modes may vary. Some data might be replaced by administrative data to ease respondent burden and/or improve quality. The data collected on a continuous basis must be pooled to produce estimates at the different levels of geographies, over several years for small area estimates in particular. As such the estimates are not traditional point-in-time estimates; rather, they represent rolling averages over a period of time.

26. The United States and France are the two notable examples of this approach. The United States continues to conduct its traditional decennial census for collecting basic characteristics of population and housing units, but the more detailed characteristics are collected by the American Community Survey through a monthly sample of addresses (U. S. Census Bureau 2009). France has not kept any form of traditional census and conducts what is called a rolling census.⁶ The United States and France, unlike Canada, did not have quinquennial censuses.

27. Canada does not meet the necessary conditions for the conduct of a census employing continuous measurement for 2016. Based on the American and French experiences, it is estimated that between 5 to 10 years would be needed in Canada to properly plan, develop and test a large-scale continuous survey aims to replace partially or totally the traditional Census Program. No such work has been done yet in Canada. It would require a significant level of resources up front, in addition to the funding needed in the interim to conduct a traditional Census Program. It could take an additional five years to collect and release the data for small geographic areas in particular.

28. France and the United States have confirmed to Statistics Canada the importance of extensive discussions with census stakeholders and policy makers. The discussion undertaken in 2011 asked data users how important it was that the Census Program data represent a point-in-time estimate and if a rolling estimate (a definition was provided) would be appropriate. Results are very preliminary and limited, but they indicate that users are not ready at the moment to move away from point-in-time estimates.

29. As a result, a census employing continuous measurement is not possible for 2016. It could be considered for the longer term, assuming necessary conditions are reassessed and met.

30. The traditional census approach collects basic characteristics from all individuals and housing units (full enumeration) at a specific point in time. More detailed characteristics can be collected either from the whole population or on a sample basis. Collection modes may include personal interviews (canvasser approach), self-completed paper questionnaires, telephone (computer-assisted or not) and Internet. Some data might be replaced by administrative data to ease respondent burden and/or improve quality. The

⁶ For small communes (municipalities with less than 10,000 residents), a complete census is conducted once every five years on a rotating basis. For large communes (10,000 residents or more), an 8% sample of addresses is surveyed each year (Godinot 2005).

traditional census approach is still the main approach used for census-taking in the world⁷ and is the one used by the Canadian Census Program.

31. The necessary conditions for the conduct of a traditional census approach are expected to continue to exist for 2016 in Canada. The degree of public cooperation with the census (mandatory) is still at high levels (98.1% response rate in the 2011 Census). The voluntary NHS, with a preliminary response rate of 69.3%, did not achieve the same level of cooperation as with the 2006 Census mandatory long-form (final response rate of 93.5%). Further study will be required once the assessment of the quality of the NHS results is completed to determine the extent to which the NHS was able to deliver the required quality estimates, in particular for lower geographic areas and small population groups.

32. As a result, the traditional census approach remains a viable one for 2016, but the presence of a voluntary component remains an open question for now until more analysis is done on the 2011 NHS.

33. An analysis of the feedback received as part of the discussions held in 2011 revealed that relative priorities of different topics could be identified. This analysis, along with a review of international practices (United Nations 2008, Office for National Statistics 2006), provided the quantity and quality of information needed to sketch a more structured and transparent framework for determining content in the future. Such a framework would balance the relevance and quality requirements against respondent burden, privacy issues and other considerations, such as costs, that Statistics Canada must take into account.

34. At this point, Statistics Canada cannot say what content will be collected in the future and how. As long as there are constitutional and legislative requirements to conduct a census, some content asked on a mandatory and full enumeration basis will be required.

35. Finally, irrespective of the option chosen for 2016, Statistics Canada plans to enhance the use of technology (building on a successful 2011 Census Internet response rate of 54%), increase the use of administrative data, improve the overall timeliness of data releases and conduct a Census Program at the same costs or less than the 2011 Census Program.

V. Lessons learned

36. This paper concludes with a few lessons learned during the 2016 Census Strategy Project.

37. The 2016 Census Strategy Project was completed over a short period, one year from its initiation to the delivery of the main report.⁸ Key to the completion of the project in this short timeframe was a decision by Statistics Canada's senior management to assign two full-time co-managers, one with wide census management and subject matter experience, and one with equivalently wide experience in survey methodology. This delegated team approach echoed the experience of the United States and France at the early stages of the ACS and rolling census respectively.

⁷ The United Nations Statistics Division (UNSD) conducted a survey in June 2009 (United Nations 2011). Of the 138 countries that responded (out of 233), 115 said that the traditional census was their main source of data to produce their population count.

⁸ A similar exercise was begun in April 2011 in the United Kingdom, under the umbrella of the ONS Beyond 2011 Programme, with expectations to complete work on 2021 options development in 2014.

38. Despite the short timeframe, the co-managers invested one month in planning the project and recording it in a project charter. Mandate, scope, milestones and governance were clearly defined, reducing the chance for misunderstanding. In particular, it was made clear that the short timelines associated with the project would hinder the use of the evaluation of the 2011 Census and NHS as inputs, and thus could not provide anything else than high-level directions for 2016.

39. Additional knowledgeable resources were also limited as the 2011 Census and NHS operations were still in progress. The co-managers built a team, small but of highly experienced staff. Retired senior managers with experience in census methodology and subject matter were brought in, as well as other experts in demography and legal and privacy policy matters. The team ranged from three to eight individuals at any point in time. As with the co-managers, the rest of the team was not involved in any other regular census or Statistics Canada operations. This brought together key expertise at low costs and functioned in a very efficient way with few distractions.

40. The normal governance structure at Statistics Canada was strengthened for this high profile project. Guidance was received internally from a Senior Management Advisory Panel consisting of Directors General from four relevant branches. Direction was also obtained from a Steering Committee of four Assistant Chief Statisticians. This structure ensured that both technical expertise and management experience from different areas were brought at the table and that a common understanding of what was being done and decided was reached. Externally, the project got advice through the existing structure of external advisory committees, including the National Statistics Council (NSC), the most senior of these committees. A subcommittee of the NSC and an Expert Panel Review Committee of six international experts, struck specifically to review and advise on Statistics Canada's work, ensured that Statistics Canada's review of the international census-taking experience and reading of the Canadian context was accurate and validated by individuals external to the organization.

41. Such a project could not have been done in isolation. Discussions with international colleagues were extremely valuable. More could have been done on that front but given the limited timeframe, exchanges mainly occurred with the United States, the United Kingdom, France, Switzerland, Australia and New Zealand. Although the list is short, the national statistical organizations in these countries shared a wide range of experiences, on the characteristics of each census-taking approach but also on their experience in reviewing and/or actually moving to an approach other than the traditional one. Statistics Canada is grateful for the frank and open discussions with colleagues in the national statistical organizations in these countries.

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