

## **The Long-Form Census – Fast forward to the past**

Statistics Canada will resume the long-form sub-census in 2016. Most welcome this reversal as a restoration of critical data for policy development and as a harbinger of a new era of evidence-based decision-making.

However, change is sweeping across the world of official statistics. The census methodology of monitoring the Canadian population is set for a fundamental revision, introduced by big data, the “internet of things,” and an evolving sensibility of privacy within the Canadian population.

Big data will be the most important force changing census data in Canada. Self-report census surveys such as used in Canada, the United States, and Australia, still rely on an enumeration of occupied residences before they can count people. Central statistical agencies maintain a list of residences, typically carrying forward the list from the previous census, and updating it with structures built or abandoned since the last census. Maintaining a current list of occupied residences can prove troublesome. For example, Alberta disputed the results of the 2001 census in rapidly growing areas such as Wood Buffalo (the general area of the oil sands) because the source list of occupied homes lagged in accuracy. The reverse may occur as this area depopulates. The list of occupied homes is key to the census exercise, and is prosaic municipal water and sewer records that are the accurate information on home occupancy. Increasingly Statistics Canada will rely on municipal records to maintain the list of occupied house. In a confederation such as Canada, this will require extensive intergovernmental cooperation.

Big data will also change data collection. Traditionally, census enumerators would trudge from house to house, interviewing an adult representative who provided the requisite information on the entire household. Increasingly, the “occupant” receives a letter containing a PIN to unlock an on-line census form. Households that do not receive the letter can go on-line, secure the PIN for their address, and complete the form. On-line completion of the census form may appear modern, but it still relies on the willingness and accuracy of that single respondent to self-report on themselves and the rest of the household.

Contrast this with population counts in Sweden and other Scandinavian countries, some of which have never used a census survey to count population. Instead, population registers, the modern manifestation of parish record, form the backbone of the system of official statistics. In 1990, Finland joined Denmark as the second country that enumerated its population using population registers, official lists of people, businesses and other organizations. Sweden has since become a third country using this system.

Population registers comprise lists of persons (very roughly the list of social insurance numbers), taxation registers, and a register of dwellings. Further information may be derived from student, motor vehicle, and pension registers. Combining information from administrative databases supports the creation of highly accurate population counts. Big data is coming to the census. Think about it a moment. In Canada, we have a good start on such a register in the form of income tax records that identify individuals, his/her address, a link to the spouse or common-law partner, and a good indicator of children in the home through the universal childcare benefit.

Of course, Statistics Canada does much more than count people, which is why the long form has value. It presents a picture of Canada's social, economic, and cultural mosaic. Countries using a register base for their official statistics develop the same, if not superior information using the registers as sample frames to target subsets of the population for specialized surveys on culture and social issues. Since these surveys are much smaller in scope than a census (and do not forget the long form census only covers 20% of the population), increased effort can go into the follow-up needed to obtain high response rates that boost accuracy. A key benefit of this approach to population counts is the absence of reporting lag. Information flows continuously to users in real time.

The internet poses important possibilities for collecting information directly from households. Government and crown agencies are as active as the private sector in recording the activity of clients aka citizens. In the same way that VISA records all my transactions, quickly interceding when it detects an anomalous purchase, so too does my water utility enquire when it detects a meter reading appears out of the ordinary. It knows how much water two seniors should consume. When the "internet of things" supports a "smart water meter" for my home, water utilities will be able accurately, quickly and continuously, estimate the numbers of people residing at an address every day. Who knows AFD (average flushes per day) could become an official statistic. Administrative data, collected to manage daily life, reported by the internet of things will create a new basis for official statistics.

Finally, our sense of privacy is evolving. The 2016 Census will introduce that new world. Statistics Canada will not ask respondents to provide information on income. Instead, it will access income tax records to compile the income of all tax filers in the home. Obviously, both the Canada Revenue Agency (CRA) and the public must trust that Statistics Canada will maintain confidentiality. In fact, data sharing between CRA and Statistics Canada has existed for some time to support special studies. Evidence exists that citizens are prepared to accept such data sharing. The ubiquitous surveillance cameras in public places and private spaces, testifies that the public willingly trades privacy for security. Citizens also seem willing to accept that government routinely merges administrative data.

Big data, the "internet of things", and changing sensibilities on privacy are transforming the census. In ten or fifteen years, we will look back on the long-form controversy as a quaint footnote in the history of official statistics. The benefit will be a wider range of official statistics that are more detailed and timelier.

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