Guide to the Census of Population, 2021

Census of Population, 2021

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Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued co-operation and goodwill.

Guide to the Census of Population, 2021

This reference document provides an overview of the Census of Population content determination, collection, processing, data quality assessment and data dissemination. It may be useful to both new and experienced users who wish to familiarize themselves with and find specific information about the 2021 Census.

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Chapter 1 – Introduction

General information

Once every five years, the Census of Population provides a detailed and comprehensive statistical portrait of Canada that is vital to our country. The census is the only data source that consistently provides high-quality statistical information for both small geographic areas and small population groups across Canada.

The Census of Population is an essential tool for understanding how Canada is changing over time. Census information is central to planning at all levels. Whether starting a business, monitoring a government program, planning transportation needs or choosing the location for a school, Canadians use census data every day to inform their decisions.

Why does Statistics Canada conduct the Census of Population?

Statistics Canada is required by law to conduct a Census of Population every five years (see Appendix 1.1, Legislation) and to provide population and dwelling counts for communities of all sizes across Canada. These counts are essential for maintaining Canada's equitable representation. They are used to set electoral boundaries; estimate the demand for services in the minority official language; and calculate federal, provincial and territorial transfer payments.

Additionally, the Census of Population is the primary source of sociodemographic data for specific population groups such as lone-parent families, Indigenous peoples, immigrants and seniors.

Census information has many other important uses in the day-to-day lives of Canadians. Local governments use the census to develop programs and services such as planning for schools and health services. Businesses analyze census data to make critical investment decisions, and social services agencies depend on the census to understand the evolving needs of members of their communities.

Why is the census in May?

The spring timing of the Census of Population is driven by the need to maximize the number of Canadians who are at home during enumeration and allows sufficient time to conduct follow-up activities before the summer holiday period. This permits collection procedures to run smoothly, which reduces costs. Census Day provides a specific point of reference for the respondent to base their answers on. For the 2021 Census, the reference date was set to May 11.

Privacy and confidentiality

Statistics Canada is bound by law to protect the identity of individuals at every step of the statistical process, including in all published data. Statistics Canada will never release identifiers such as names, addresses or email addresses, either alone or in combination with any other information from the census questionnaire. These identifiers will never be given or sold to any individual or organization, or added to any mailing list.

In Canada, great care is taken to ensure that the information collected in the census is in the public interest, cannot be obtained effectively from other sources and can be collected efficiently enough to meet information requirements.

All information provided is securely held and used for statistical purposes only.

Statistics Canada places the highest priority on maintaining the confidentiality of information on individual questionnaires. The following stringent procedures have been implemented to ensure that confidentiality is maintained at all times:

- All Statistics Canada employees are sworn to secrecy when they are hired, and this continues even after their employment ends. Employees remain under oath whether they are working from Statistics Canada buildings or other secure locations such as their private residences.

- Only Statistics Canada employees with a need to know have access to personal and confidential information. All of these employees go through a justification and approval process. These employees are able to collect, process and analyze completed questionnaires, but can access only the data they are working on.

- Private contractors never have access to confidential data.

- Access to Statistics Canada buildings is controlled through a combination of physical measures and access procedures.

- Census data are processed and stored on a highly restricted internal network and cannot be accessed by anyone who has not taken the oath of secrecy.

- All work-related information and documents are secured according to Statistics Canada Security Classification Standards, whether employees are working from Statistics Canada buildings or other secure locations such as their private residences.

- Data releases are screened to ensure anonymity.

- Names, addresses and telephone numbers are not stored in the census database used for dissemination.

Consent to release personal information

Access to historical census records has been a matter of public discussion for decades and has generated considerable interest from genealogists, historians and archivists.

In 2005, following extensive engagement with Canadians, the Government of Canada amended the *Statistics Act* to eliminate ambiguities relating to the confidentiality of past census records, while also providing for the release of future census records.

The Government of Canada amended the *Statistics Act* to allow for the release of historical census records from 1911 to 2001. In addition, information obtained from each census after and including 2021 is to be released to Library and Archives Canada (LAC) 92 years after it was collected (e.g., census records from 2001 will be released in 2093).

For the 2006, 2011 and 2016 censuses, Canadians could choose whether their census records would be released publicly after 92 years. The person who completed the census questionnaire was asked to consult with all household members who were included in the questionnaire before answering the consent question. Due to an amendment to the *Statistics Act* (2017), for the 2021 Census, the consent of respondents is no longer required to release census information to LAC 92 years after the census is taken.

LAC is responsible for making census records available. This is consistent with Statistics Canada's commitment to providing open and accessible data. Researchers, historians and genealogists require this information to conduct research and help Canadians better understand their past.

Census records up to and including the 1926 Census are available either online or as microfilm copies through LAC.

Retention of census information

Statistics Canada works with Library and Archives Canada (LAC) to determine the best way to preserve census records so that the information can be released in 92 years.

LAC holds an extensive collection of census records from 1666 to 1926.

According to the *Statistics Act*, census data collected from 1910 to 2005, and those collected in or after 2021, will be transferred to LAC to be released to the public 92 years after the censuses were taken.

The 1926 Census of the Prairie Provinces was transferred from Statistics Canada to LAC on June 1, 2018.

While not all census records can be searched through the LAC website, records from the 1926 Census and previous censuses can be browsed free of charge on the [Ancestry](#) website. Users can also conduct searches based on various fields, including surname and given name.

Statistics Canada has microfilm copies of the census questionnaires from 1931 to 2001. The original paper questionnaires were shredded and destroyed.

The 2006, 2011 and 2016 censuses, and the 2011 National Household Survey (which replaced the long-form census in 2011) were not microfilmed. Instead, Statistics Canada retained an archival data file containing all responses, including those submitted online. The original paper questionnaires were shredded and destroyed.

Official languages

As early as 1871, census questionnaires were produced in English and French. This tradition became law in 1988 under the *Official Languages Act*. This act states that English and French are the official languages of Canada and that service to the public must be provided in both languages.

As in previous censuses, procedures were in place for the 2021 Census to ensure that members of the public received all services in the official language of their choice.

Other languages and alternative formats

For the 2021 Census of Population, the questionnaires were available in English and French. However, reference material—including the questions and explanations of the reasons why they were asked—was available in a number of other languages, including immigrant and Indigenous languages. Respondents could obtain a copy of these materials by visiting the census website or calling the Census Help Line. The materials were available in the languages listed below.

Indigenous languages:

- Atikamekw
- Northern Quebec Cree
- Denesuline (Chipewyan)
- Oji-Cree
- Tlicho
- Ojibway
- Inuktitut (Nunavik)
- Plains Cree

- Inuktitut (Nunavut)
- Swampy Cree
- Montagnais
- Naskapi
- Mohawk

Immigrant languages:

- Chinese (simplified)
- Chinese (traditional)
- Arabic
- Punjabi
- Spanish
- Vietnamese
- Persian
- Italian
- Portuguese
- Russian
- Korean
- Urdu

The census questionnaire was available in large print, and reference material (including the census questions and explanations) was available in braille, audio and American and Quebec sign language video formats.

The large-print version of the short-form and long-form questionnaires was printed on legal-sized paper in a large font size and had space to enumerate two individuals rather than five (for the long-form questionnaire).

Respondents who needed help completing the questionnaire—such as people who are blind, have vision loss, have reading difficulties, are deaf or have hearing loss—could contact the Census Help Line by phone or teletypewriter.

Chapter 2 – Census history

The Census of Population has provided valuable information to Canadians and decision makers for hundreds of years. The first census was conducted in New France under Jean Talon in 1666. The results showed a large population difference between the number of men and the number of women, highlighting the need for more women to immigrate to New France.

The proclamation of the *British North America Act, 1867* (now the *Constitution Act, 1867*) made it a constitutional requirement to take a census every 10 years. The next census, conducted in 1871, determined the appropriate representation in the new parliament. The census continues to play this key role under the *Fair Representation Act*.

After 1867, the *Constitution Act, 1907* and the *Constitution Act, 1930* were passed to further regulate certain transfers from the federal government to the Prairie provinces based on population counts from a census taken every five years.

Because of Canada's rapid growth after the Second World War and large population movements between provinces and into urban areas, it became necessary to obtain population information more frequently. In 1956, the Dominion Bureau of Statistics (now Statistics Canada) carried out the first nationwide quinquennial census.

Since 1971, the *Statistics Act* has made it a legal requirement for Statistics Canada to hold the Census of Population (and Census of Agriculture) every five years, in the years ending in 1 and 6. The act also outlines the mandatory requirements for completing and returning census questionnaires.

In 2017, amendments to the *Statistics Act* strengthened the agency's independence and reinforced Statistics Canada's role as the national statistical agency. Formalizing Statistics Canada's independence was an important milestone in ensuring that the statistics it produces are neutral, objective, accurate and reliable. For the outputs of a national statistical office to be credible, its national statisticians must operate—and be seen to operate— with a high level of professional independence from external authorities. The amendments to the act are in line with the United Nations Statistics Division and the Organisation for Economic Co-operation and Development's Recommendation on Good Statistical Practice.

Below is a comprehensive list of historical highlights and changes made, throughout the census journey.

1666—The first Canadian census was taken in New France by Intendant Jean Talon. The recorded population (excluding Aboriginal persons and royal troops) was 3,215. Information was obtained on age, sex, marital status and locality. In addition, the census identified professions and trades for 763 persons.

1666 to 1867—Numerous censuses were taken at irregular intervals in the colonies of France and Britain that became parts of Canada.

1867—The *Constitution Act, 1867* (formerly the *British North America Act*) included the requirement that a census be taken every 10 years (decennially) to determine representation by population in the new Parliament.

1871—The first decennial census was taken in this year. The census enumerated the population of the four original provinces (Nova Scotia, New Brunswick, Quebec and Ontario). Manitoba and British Columbia, which had also joined Confederation, were surveyed separately.

The 1871 Census was the first to use the *de jure* method of enumeration rather than the *de facto* method used in Europe both then and now. The *de facto* method enumerates people where they are found on Census Day. The *de jure* method enumerates people according to their usual place of residence.

1881—All census enumerators were required to take an oath of secrecy, a pledge still required today. The census was extended to include British Columbia, Manitoba and Prince Edward Island.

1891—The population was prepared for the census enumerator's visit through announcements in newspapers and from pulpits.

1896—A mid-decade census was held in Manitoba beginning in 1896 and then in Saskatchewan and Alberta beginning in 1906. These censuses were needed to measure the rapid growth taking place in the West.

1901—The census content was expanded to include religion, birthplace, citizenship and period of immigration.

1905—The census office became a permanent bureau of the federal government.

1906—Beginning in 1906, the Prairie provinces of Manitoba, Alberta and Saskatchewan began to take a separate census of population and agriculture every five years to monitor the growth of the West.

1912—Responsibility for conducting the census was transferred from the Department of Agriculture to the Department of Trade and Commerce.

1918—The Dominion Bureau of Statistics was created.

1931—Though compilation and tabulation for the 1931 Census were still carried out with mechanical equipment, a new sorter-tabulator developed by an employee of the Dominion Bureau of Statistics made production 50 times faster by allowing a whole data card to be read at once rather than one column at a time.

1941—Sample information was collected for the first time. One in 10 households were asked additional content about their dwelling (type, number of rooms, cooking fuel used, etc.).

1951—Canada's first census as a nation of 10 provinces and two territories used 'mark-sense.' This technology allowed for a generation of punch cards, greatly reducing processing time and costs.

1956—A quinquennial (every five years) Census of Population and Agriculture was held in all provinces across the country, replacing the mid-decade censuses of the Prairie provinces.

The 1956 Census included questions on radios, colour televisions, home freezers and vacation homes. These kinds of questions were dropped after the 1966 Census, as they were incorporated into various household surveys.

1971—Under the *Statistics Act* of 1971, the Dominion Bureau of Statistics was renamed Statistics Canada. The act also confirmed that a Census of Population and a Census of Agriculture would be taken every five years.

Self-enumeration was first introduced in 1971. With the exception of reserves and remote areas, census questionnaires and completion instructions were dropped off at private homes and respondents were asked to complete their own questionnaires. In population centres of 10,000 persons or more, respondents were asked to mail their completed questionnaires back in a pre-addressed envelope. In other areas, questionnaires were picked up by census enumerators.

1991—All respondents in self-enumeration areas (over 98% of the population) were asked to return their completed census questionnaires by mail. The return rate was 85%, with more than 27 million people in over 10 million households counted.

Information on common-law partners was also collected for the first time.

2001—For the first time, data were collected on same-sex couples.

2006—The questionnaires were delivered by Canada Post to about 70% of households. The remaining 30% received the questionnaire from an enumerator as in previous censuses.

For the first time, Canadians could answer the census questionnaire online.

This was also the first time people were asked if they agreed to have their personal information released in 92 years for the purpose of research and education.

Respondents were also asked whether they would give Statistics Canada permission to access their tax files. This permission was sought in an effort to reduce response burden.

The definition of spouse was expanded to include same-sex married couples.

2011—The positive response to the online option (18.5%) in 2006 prompted a major change in methodology for the 2011 Census. In May, a letter was delivered to 60% of Canadian dwellings. This letter replaced the traditional paper questionnaire and explained how respondents could complete the questionnaire online.

About 20% of dwellings received a questionnaire package by mail. For the remaining 20%, questionnaires were dropped off by enumerators.

Information previously collected by the mandatory long-form census questionnaire was collected as part of the new voluntary National Household Survey.

The 2011 Census of Population questionnaire (short form) consisted of the same content as the 2006 Census short-form questionnaire, with the addition of two questions on language.

2016—In November 2015, the government reinstated the long-form census questionnaire, replacing the National Household Survey. Most households (75%) received the short-form census questionnaire while one in four households (25%) received the long-form questionnaire.

To reduce the burden on Canadians, manage collection costs and get the most accurate information on income, Statistics Canada accessed income information retrieved from personal income tax and benefits files, replacing income-related questions previously asked on the 2011 National Household Survey and on previous censuses. Statistics Canada also collected, for the first time, admission category and applicant type information from administrative files provided by Immigration, Refugees and Citizenship Canada (IRCC).

2021—For the first time, the census collected information on instruction in the minority official language. The census questionnaire also featured the following: a new question on Canadian military experience; a modified question on sex at birth and a new question on gender; updates to ethnic or cultural origins; new labour questions addressing underemployment; updated terminology related to Indigenous peoples; and new questions on membership within a Métis organization or Settlement, and enrollment under an Inuit land claims agreement.

To reduce the response burden on Canadians, income data were once again retrieved from personal income tax and benefits files. Also, records from IRCC were again used to obtain admission category and applicant type information and for the first time used for immigrant status and year of immigration.

Impact of COVID-19 on the 2021 Census of Population

Additionally, Statistics Canada was faced with the unprecedented challenge of conducting the census during a global pandemic. COVID-19 emerged in Canada in early 2020, and the pandemic required the agency to make significant adjustments to its census activities. Collection procedures—especially in collective dwellings and First Nations communities, Métis settlements, Inuit regions and other remote areas—were redesigned to ensure the census was conducted in the best possible way, using a safe and secure approach. To minimize contact between respondents and census employees, completion of the census questionnaire online was emphasized more than ever before, with a target set at 80%.

Because COVID-19 affected several processes of the 2021 Census of Population, its impact is discussed throughout the document. The details pertaining to a given task are discussed in the relevant chapter. Nevertheless, a summary of the impacts on content determination, data quality and dissemination is presented in Appendix 1.4.

Chapter 3 – Communications

Key activities

The Census Communications Team provided communications activities that were targeted, agile, creative and cost-effective, while maintaining a positive, non-partisan, corporate image of Statistics Canada.

For the 2021 Census, census communications materials focused on:

- increasing awareness of the 2021 Census
- promoting self-response through online collection
- increasing self-response rates by encouraging households to complete and return their census questionnaire within the first two weeks of May 2021
- increasing participation among hard-to-enumerate groups
- promoting Statistics Canada's commitment to protecting the personal information of all Canadians.

Communications activities for the 2021 Census of Population took place leading up to and throughout the entire collection process: building awareness of when and how to complete the census; informing Canadians about the benefits of completing the 2021 Census questionnaire; and encouraging them to complete their questionnaire online.

For each census cycle, the agency assesses its communication activities to ensure that it is using the best tools available to engage with Canadians. The lessons learned from this assessment are then applied to the next census cycle.

Communicating with the public and key stakeholders is an ongoing priority for the agency. For the census, the agency uses specific tools to promote awareness and understanding of the census.

The main activities of the 2021 Census Communications Program included advertising, outreach, public and media relations, social media, respondent relations, and census website management.

Census website

The census website is used to provide a centralized platform for respondents to complete their questionnaires online and for the agency to communicate important information about the census, including information on data privacy and security.

Social media

Statistics Canada continued to leverage its official social media accounts to increase access to its high-quality statistical information. Social media (e.g., Facebook, LinkedIn, Twitter, Instagram, blogs) was used to foster engagement, cooperation and information-sharing with the public during all phases of the census, including recruitment and collection.

Respondent relations

The Respondent Relations Team was responsible for answering public, corporate and ministerial enquiries related to the 2021 Census. During collection for the 2021 Census, the team received nearly 70,000 requests, the majority of which were submitted through the online form available on the agency and census websites. In addition to responding to written requests received by mail and email, Respondent Relations also supported internal stakeholders—Infostats, regional outreach teams, field operations, social media, media relations, the Office of the Chief Statistician and the Census Help Line—with their census-related questions and operational needs.

Additionally, Respondent Relations assisted respondents by sending secure access codes, submitting requests for paper questionnaires and updating respondent status, on behalf of the Census Help Line.

Media relations

Media relations maintained and monitored media coverage across the country during the census collection period (May to July 2021). Traditional and new media were used to report on key aspects and operational milestones of the census.

A media strategy was implemented to:

- maximize media coverage and generate public awareness of the census
- generate interest among traditional and new media
- generate media interviews with designated spokespersons
- respond to concerns in a timely manner.

Traditional and new media coverage helped promote the census among Canadians. Furthermore, statistical announcements and other releases were scheduled to keep the media and general public informed of census activities. A media relations team responded to media inquiries throughout the census as well.

Advertising

Advertising activities were conducted to promote census jobs and encourage census completion across the country. Recruitment advertising focused on creating awareness of census jobs on a national scale and promoting census positions in hard-to-recruit areas. The collection advertising campaign was designed to inform Canadians of the importance, relevance and security of the information collected during the 2021 Census. Television, radio, print and out-of-home advertising, as well as digital and social media were used before and during census collection to encourage households to complete their questionnaire, with a focus on online response. Targeted messages and visuals were also used to encourage specific, harder-to-enumerate groups to complete their census questionnaire.

Outreach, public relations and events

Outreach activities engaged key stakeholders at the community level and supported partnerships to promote census job opportunities and reach populations that were harder to enumerate.

Public relations activities involved engagement with federal departments and agencies. All departments and agencies were asked to include census banners on their websites, follow Statistics Canada on social media and send internal messages to their employees. Selected resources and programs of federal partners were leveraged for both recruitment and collection awareness. Partners who have physical offices in Canada were provided with print or digital communications products to display to the public and reference materials for their staff. Statistics Canada distributed census messages through program platforms run by other departments and provided other departments with digital materials for showcasing at any events they attended. Events primarily included virtual meetings, presentations and roundtables, given the unique circumstances surrounding 2020-2021, in terms of COVID-19.

Strategy for Indigenous and northern communities

To improve engagement levels among Indigenous communities, Statistics Canada developed strategic plans, used internal and external partnerships, and created customized support materials. The purpose of this strategy was to increase awareness among Indigenous peoples about job opportunities within their communities; increase the number of Indigenous applicants for census jobs; support the collection of data in First Nations, Métis and Inuit communities; and provide support materials that encouraged participation while respecting cultural diversity.

Statistics Canada recognizes the importance of building and maintaining strong relationships with First Nations, Métis and Inuit communities. A key part of this effort is the Indigenous Liaison Program. The Indigenous Liaison Advisors work to build partnerships with First Nations, Métis and Inuit communities and organizations based on respect and trust. The program was founded in the 1980s and, today, has evolved to be a national program with 11 advisors located across Canada.

In light of the COVID-19 pandemic, Statistics Canada hired an additional 15 Indigenous Liaison Advisors for an Indigenous Engagement Task Force to bolster engagement efforts with Indigenous and northern communities for the 2021 Census.

Toolkits

The **Teacher's Kit** and **Adult Education Kit** were used in schools and adult literacy programs to promote and increase awareness of the census.

The **Community Supporter Toolkit** was used by community-based organizations, associations and municipalities across Canada to increase awareness of census job opportunities and the benefits of completing the census questionnaire.

The **Small Business Hub** was used by entrepreneurs and small business owners to understand how online census data products can help them make informed business decisions.

The **Community Snapshot Toolkit** was used to build community portraits using census data. The portraits tell the story of a particular geographic area in Canada through a statistical lens by providing a customized infographic for a given community.

The **Influencer's Kit** comprised products and resources that various types of influencers can use to spread the word about the benefits and positive impacts of the census to online communities across Canada.

Chapter 4 – Content determination

How are the census questions determined?

As part of each census cycle, Statistics Canada leads comprehensive consultations and discussions on census content requirements.

This adaptive and collaborative approach enables Statistics Canada to stay on top of trends and new demands, reflecting a changing society.

Preparation for each census cycle requires several stages of engagement, testing and data evaluation before questionnaire content for the upcoming census can be recommended to the Cabinet of Canada for approval. These steps include content consultations and discussions with stakeholders and census data users, content testing that includes the qualitative testing of proposed changes and new content, a quantitative test to evaluate content and respondent behaviour on a larger scale, and an evaluation of the test results guided by a content determination framework.

When proposing content for the 2021 Census of Population questionnaire, Statistics Canada followed the Census Program's content determination framework, which balances information needs with other factors such as data quality, response burden and costs.

Because of the variety of ways census data are used and the importance of census data in decision making, any changes made to census content are carefully analyzed and discussed with stakeholders to preserve data relevance, overall quality, coverage and comparability over time, as well as to ensure that legislative and policy requirements continue to be met.

After research, consultations and testing, the agency develops content for the census and submits the proposed questions to the federal cabinet. According to the *Statistics Act*, census questions must be prescribed by the Governor in Council through an Order in Council, and the approved questions must be published in the *Canada Gazette*. Typically, this approval occurs in the year preceding the census. For the 2021 Census, the official date of publication of census questions in the *Canada Gazette* was July 18, 2020.

Below is a description of how content consultation, content testing and content approval were done for the 2021 Census.

Content consultations

A formal content consultation is planned at the start of each census cycle. During this time, Statistics Canada invites data users, stakeholders and members of the public to provide feedback on what information they use and for what purpose, as well as what—if any—data gaps Statistics Canada should consider addressing in the next census cycle.

In preparation for the 2021 Census of Population, Statistics Canada consulted with census data users to:

- assess their needs and identify data gaps
- understand how census data are used
- identify other data sources that could supplement or replace current census content.

Engagements were held from September 2017 to May 2018 and involved an online questionnaire available to all Canadians to gather feedback, as well as face-to-face discussions with federal departments; other research and analysis organizations; and First Nations, Métis and Inuit stakeholders.

Over 10,000 census data users were invited by email to participate in online consultations and were encouraged to share the invitation with others in their network. Statistics Canada also reached out to the general public through its website, social media accounts and regional offices.

Over 2,800 respondents participated in the consultation using the online questionnaire—an unprecedented number that reflects a high level of interest in helping to shape the census as an important source of demographic and social information.

During these engagements, Statistics Canada heard from individuals and organizations in many sectors of Canadian society, including:

- federal departments
- provincial and territorial ministries and organizations
- municipal governments
- First Nations, Métis and Inuit governments, organizations and communities
- non-governmental organizations
- researchers and academics
- businesses
- the general public.

Given the large volume of engagements carried out during the intercensal period, it is not possible to provide an exhaustive list of partners consulted. However, some of the partners that Statistics Canada has worked alongside include the following: the House of Commons Standing Committee on Official Languages for instruction in the minority official language; Veterans Affairs Canada and Department of National Defence for Canadian military experience; the Canada Mortgage and Housing Corporation for housing; the Statistical Division of the United Nations Economic Commission for Europe for matters pertaining to gender; and various academic institutions and organizations representing different ethnic and cultural groups, for matters pertaining to ethnic or cultural origins. All of these efforts build towards an improved census.

Statistics Canada also worked with First Nations, Métis and Inuit partners to better understand the needs of Indigenous organizations and communities. The agency visited 30 locations across the country, held approximately 60 discussions and listened to over 400 people. Contributors to the discussions included leadership and data users from local, provincial, territorial and national Indigenous organizations and representatives of provincial and territorial governments, federal departments, academics and researchers.

For more information on content consultation for the 2021 Census of Population, please consult the report *2021 Census of Population Consultation Results: What we heard from Canadians*.

Questionnaire content qualitative test

The process of reviewing and testing questionnaires is instrumental to data quality, particularly response accuracy.

Statistics Canada's policy on the development of questionnaires requires that all new and revised questionnaires be tested before they are used to collect data from the public. From April to November 2018, following the findings of content consultations and discussions, qualitative tests were conducted to provide insight into how respondents reacted to proposed changes to questionnaire content. In-depth one-on-one interviews were conducted to test and evaluate participants' understanding of the concepts, terminology, question sequencing and questionnaire format. They were also used to assess alternate wording. Interviewers also examined participants' thought processes as they answered questions to assess whether the questions were clear. Potential sources of response error were corrected.

In preparation for the 2021 Census of Population, over 550 interviews were conducted across the country to test both the electronic and paper formats of the short-form and long-form questionnaires in both official languages, including approximately 100 interviews with First Nations people, Métis and Inuit. New questions were introduced; existing questions were reworded; some questions were removed; and answer categories, instructions and question flows were adjusted. All topics included in the 2016 Census were modified in some way, and multiple versions of changes were tested.

2019 Census Test

The 2019 Census Test evaluated changes in questionnaires and collection and operating processes in preparation for the 2021 Census of Population.

In May and June 2019, census invitation letters and questionnaires were delivered to a sample of approximately 250,000 dwellings across the country. To ensure accurate results, participation in this test was mandatory under the *Statistics Act*.

The test consisted of two components: a content test and a field operations test.

Content test

The content component of the 2019 Census Test involved a sample of 135,000 households. The purpose of this component was to evaluate the new and modified questions that were based on the results of the content consultations and discussions, the questionnaire content qualitative test, and the needs of policy makers and data users. It aimed to validate respondent behaviour with regard to question and instruction changes and ensure that the questionnaire yields high-quality data.

After analyzing the results of the test and considering factors such as cost, operations, respondent relations and safeguards against data quality loss, Statistics Canada submitted the final content of the 2021 Census of Population questionnaire to Cabinet for approval.

Field operations test

The field operations component of the 2019 Census Test involved a sample of 115,000 households. The purpose of this component was to assess new and modified procedures and technologies for use in data collection. It aimed to validate the behaviour of field staff and respondents with regard to new procedures, systems and tools. This test also evaluated changes to the recruitment and training process for field staff; the delivery of invitation letters and census packages to households; the enumeration of collective dwellings (e.g., hospitals and seniors' residences); and the follow-up activities for other field operations, such as non-response follow-up.

Changes to the questionnaire for the 2021 Census

For the 2021 Census, income information will once again be obtained from personal income tax and benefit data files provided by the Canada Revenue Agency, and admission category and applicant type information will be obtained from administrative files provided by Immigration, Refugees and Citizenship Canada (IRCC). In 2021, for the first time, immigrant status and year of immigration will also be obtained from administrative files provided by IRCC.

Statistics Canada will continue to use existing administrative data sources to reduce response burden and increase data quality.

New content

The 2021 Census includes new content to address emerging trends and issues. The new question topics are listed below:

- gender
- instruction in the minority official language
- Canadian military experience
- membership in a Métis organization or Settlement
- enrolment under, or beneficiary of, an Inuit land claims agreement
- multiple modes of commuting
- main reason for not working the full year
- main reason for working mostly part time
- shelter costs—band housing (Form 2A-R only).

Other changes

In addition to new content, revisions were made to some returning content from 2016 (and 2011, in the case of religion) to improve relevance and data quality, as well as to address content issues that surfaced during the 2016 Census.

Some 2016 Census content was no longer required for the 2021 Census. In 2017, the federal government amended the *Statistics Act* (Bill C-36) to render census records public 92 years after collection. This eliminated a 2016 question that asked respondents for permission to send their census data to Library and Archives Canada. The 2016 Census also included content on farm operators that is no longer required by the Census of Agriculture.

Statistics Canada is aware that the COVID-19 pandemic may have had an impact on answers to some census questions, including those on employment, education, commuting and expenditures. When providing answers to census questions, respondents were instructed to choose the responses that best reflected their situation or the situation of members of the household for the date or time period in question. Additional instructional text was also provided in 'help' features in the online questionnaires and on the census website.

Overview of how Gender-based Analysis Plus considerations were made for the content/questionnaire

Statistics Canada is committed to looking at its products through a Gender-based Analysis Plus lens, with the establishment of a Centre for Gender, Diversity and Inclusion Statistics.

Census data were collected and presented in a way that allows for gender-based analysis. In particular, data are presented separately for males and females and by other identity characteristics. In the past, the census collected information on sex using the binary options of male or female. For the 2016 Census, respondents who could not respond using the binary options were asked to leave their answer blank and provide a comment at the end of the questionnaire.

In developing a new standard for gender and in preparation for the 2021 Census, Statistics Canada conducted numerous focus groups and one-on-one interviews with transgender, non-binary and cisgender individuals to explore the concepts of sex and gender. During content consultations for the 2021 Census, Statistics Canada consulted with LGBTQ2 organizations and others. Statistics Canada also quantitatively tested changes to sex and gender questions during the 2019 Census Content Test. Statistics Canada analyzed respondent comments and other feedback from the 2019 Census Test. The results of these discussions and testing contributed to content determination for the 2021 Census.

Additional references

For more information on changes to census content for the 2021 Census, and the 2019 Census Test and its results, please consult the following resources found on *The road to the 2021 Census* web page:

- five fact sheets on new and modified content and one fact sheet on the 2019 Census Content Test: Design and methodology
- three in-depth technical reports (Sex at birth and gender; Ethnic or cultural origins; Minority language educational rights)
- a comprehensive document outlining Statistics Canada's approach to the 2021 Census of Population, *Painting a Portrait of Canada: The 2021 Census of Population*.

Chapter 5 – Census of Population questionnaires

The majority of Canada's population resides in private dwellings. For residents of private dwellings, census data are collected primarily by having one adult member of the household respond on behalf of the entire household through self-enumeration using an online questionnaire.

The census is the primary source of exhaustive demographic data in Canada. In 2021, the census questionnaire collected the following information:

- address
- names of usual residents
- date of birth, age
- sex at birth, gender
- relationships of household members (including marital or common-law status)
- knowledge of official languages
- languages spoken regularly at home and language spoken most often at home
- first language learned at home in childhood
- instruction in the minority official language
- Canadian military experience
- activities of daily living
- place of birth of person/parents
- citizenship
- knowledge of non-official languages
- ethnic or cultural origins
- First Nations, Métis or Inuk (Inuit) identity
- population groups
- Registered or Treaty Indian status
- membership in a First Nation or Indian band
- membership in a Métis organization or Settlement
- enrolment under, or beneficiary of, an Inuit land claims agreement
- religion
- mobility (one year and five years)
- education
- labour market activities
- language of work
- place of work and commuting
- expenditures (child care, child and spousal support)
- housing.

Most census data were collected using either the short-form or long-form questionnaires. In 2021, a sample of 25% of Canadian households received a long-form questionnaire.

Short-form questionnaire (forms 2A, 3A and 2C)

Form 2A:
This is the short-form questionnaire that is used to enumerate all usual residents of all private dwellings.

Form 3A:
This is the short-form questionnaire for individuals (similar to Form 2A), which is used to enumerate one person. It is delivered to usual residents in private dwellings who wish to be enumerated separately from other members of the household (e.g., roommates, boarders). It is also used to enumerate residents in some collective dwellings such as lodging and rooming houses for example.

Form 2C:
This is the short-form questionnaire for people living abroad (similar to Form 2A), which is used to enumerate residents who are temporarily overseas at the time of the census. For 2021, this includes Canadian government employees (federal and provincial) and their families, and members of the Canadian Armed Forces and their families.

Long-form questionnaire (forms 2A-L and 2A-R)

The long-form questionnaire complements the short-form questionnaire and is designed to provide more detailed information on people in Canada according to their demographic, social and economic characteristics.

Form 2A-L:
This is the most commonly used long-form questionnaire.

Form 2A-R:
This questionnaire is similar to Form 2A-L but is used in remote, northern and Indigenous communities only. It contains the questions from the long-form questionnaire with examples adapted for First Nations communities, Métis settlements, Inuit regions and other remote areas, as well as two additional questions on band housing. For 2021, there is a new question on band housing fees.

Forms used to enumerate usual residents of collective dwellings

A collective dwelling refers to a dwelling of a commercial, institutional or communal nature. Most of the population in Canada reside in private dwellings, but a small portion lives in facilities such as nursing or senior homes, jails, lodging or rooming houses, or even hotels or motels.

People may live in a collective dwelling either temporarily or permanently. For instance, guests of hotels and motels typically stay for a short time and are considered temporary residents, or they may be considered foreign residents if their main home is outside Canada. Guests or the hotel's owners or managers could live there permanently as their main (or only) residence. Such persons are considered 'usual residents' at that address and need to be counted at that address for census purposes.

For the usual residents of institutional collective dwellings, census short-form information was collected in 2021. For non-institutional collective dwellings, administrators had to provide only the count of usual residents. (For more information on collective dwellings, see Chapter 7.)

Accessibility

Special efforts are made during each census cycle to enumerate all Canadians, including those who are less likely or able to complete a census questionnaire, and those who are difficult to contact. For the 2021 Census, some of the support mechanisms to help respondents included:

- Questionnaires 2A, 2A-L and 2A-R were available online and in paper. All other questionnaires were available only in paper.

- Help features for most questions in the online questionnaires provided further context and clarification.

- Online questionnaires were designed to comply with the Web Content Accessibility Guidelines to ensure accessibility for respondents using assistive technologies.

- 2021 Census questions were available in a number of languages other than English and French (12 immigrant and 13 Indigenous languages) and in alternate formats, including Braille, large print, audio, American and Quebec sign language video formats.
  - Respondents could obtain a copy of the census questions in any of these languages by visiting the census website or by calling the Census Help Line.

- A toll-free Census Help Line was available for respondents who had questions or required more information about the census.

- Access to staff who provided assistance to people who speak a language other than English or French was offered.

- A teletypewriter Census Help Line was available for respondents using a telecommunications device for deaf people and the hard of hearing to access help when completing their census questionnaire.

- Reference materials were available through the census website.

Chapter 6 – Online questionnaire

The use of online questionnaires for the census has continued to increase since its introduction in 2006.[1] In 2021, the census form was submitted online by 84.1% of private dwellings, compared to 68.3% in 2016. This increase is partially due to online questionnaires being used for the first time in 2021 for private dwellings in canvasser and reserve areas.

Online versus paper questionnaires

In 2016, only forms 2A and 2A-L were available online. For the 2021 Census, the 2A, 2A-L, 2A-R and Collective Dwellings questionnaires were available online.

The content of the online questionnaire was nearly identical to that of the paper questionnaire, but the online questionnaires had additional features that improved data quality and reduced response burden. The online census questionnaire prefilled fields using information provided by the respondent (e.g., names of household members). This reduced the likelihood of one member's answers being recorded for another person. Automated skip patterns alleviated response burden by skipping questions that were not applicable (more skips were added for 2021). The long-form questionnaire also had a stop and finish later feature that allowed respondents to save their questionnaire and return to complete it later. A password was used to retrieve the saved questionnaire.

Online questionnaires also have better response rates for individual questions and higher data quality, because respondents are prompted when invalid data are entered or if data are missing. The online forms also provided help information for respondents who wanted additional information on a census question.

Completing the census questionnaire online was an easy, secure and convenient option that could be used anywhere, at any time. Statistics Canada applied the latest technologies to ensure that the agency's strict security and confidentiality requirements were met. Furthermore, in the context of the COVID-19 pandemic, responding online was the best way to stay safe while fulfilling one's census obligation.

Mobile-friendly responsive design

The online census questionnaire was tested to comply with the Web Content Accessibility Guidelines used by the Government of Canada. This ensured that the questionnaire was accessible to respondents, including those using mobile devices and assistive technologies. In 2021, 70.5% of households used a personal computer, 7.2% used a tablet and 22.3% used a smartphone to respond to the census questionnaire.

Security

Statistics Canada takes the protection of confidential information provided online seriously. A secure login process and strong encryption are key elements in helping to prevent anyone from eavesdropping on or tampering with census information.

To protect the security of personal information on the Internet, Statistics Canada incorporated the following safeguards:

*   Strong encryption technologies were used to ensure security of data passing between respondents' computers and the web server.

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1. The online questionnaire was tested and made available for limited collection in 2001. It was made available to the vast majority of Canadians, on a country-wide scale, for the first time in 2006.

- Data submitted to the web servers were encrypted before being stored and remained encrypted until they were transferred to the high-security internal network.

- Census data were processed and stored on a high-security internal network.

- Powerful firewalls, intrusion detection and stringent access control procedures limited access to back-end systems and databases.

- Only census employees who have proper authorization and who have affirmed an oath of secrecy can access census data and only from secure Statistics Canada locations.

Chapter 7 – Field operations

Introduction

During the data collection phase, the objective was to ensure that responses were obtained from all households in Canada. Field operations included: listing dwellings, delivering invitation letters, determining the occupancy status of a dwelling and conducting interviews with non-respondents.

Census delivery methods

For most private dwellings, respondents were asked to complete the questionnaire for themselves and all members of the household.

On May 3, 2021, all private dwellings in the mail-out (MO) areas (approximately 86% of private dwellings in Canada) received by mail a bilingual invitation letter to complete the questionnaire online. As in 2016, this letter contained a secure access code (SAC), the web address of the 2021 Census website, and a telephone number to allow the respondent to request a paper questionnaire if they preferred.

In list/leave (L/L) areas, which represent 7% of dwellings, census employees dropped off an invitation letter. L/L door-to-door delivery took place from May 3 to May 10, 2021. During the L/L operation, census employees listed all private dwellings in specific areas in their Visitation Record. The invitation letter had a SAC so that respondents could fill out the questionnaire online. Paper questionnaires were available upon request, using a toll-free number. In the L/L areas, it was necessary for the respondent to provide a mailing address to an operator in order for the paper questionnaire to be mailed.

In 2021, the mail-out with drop-off (MODO) methodology was introduced. MODO areas are those where all dwellings have addresses, the majority of which are mailable. In these mixed areas, those dwellings with a valid mailing address were mailed the regular MO material (just like the MO areas), while those that did not have a valid mailing address (that correspond to the civic address) received an invitation letter dropped at their door by a census employee. The MODO areas were introduced to maximize the number of census MO dwellings. MODO areas represent more than 6% of the dwellings, and allowed an increase in the use of the MO methodology to extend to about 90% of dwellings (82% in 2016).

Traditionally, the remaining dwellings, located in First Nations communities, Métis settlements, Inuit regions and other remote areas, are enumerated in-person using canvasser methods. However, for the first time in 2021, all First Nations communities, Métis settlements, Inuit regions and other remote areas were offered the opportunity to self-respond, provided it was operationally feasible (i.e., Internet was accessible in the community). Depending on the situation, the invitation letter of the MO, L/L or MODO methodology was used (with minor changes, e.g., the paper questionnaire option was not offered), followed by non-response follow-up. Households in areas where it was not operationally feasible to offer self-response completed their census questionnaire with a census employee (in person or over the phone). In 2021, dwellings in remote, northern and Indigenous communities represent about 1% of dwellings in Canada.

Census wave approach

Statistics Canada implemented a wave approach for the 2021 Census, which consisted of reminding Canadians to fill out their questionnaire by various contact methods at specific times throughout the collection period. It also encouraged respondents to complete their questionnaire online, while mitigating the risk of a decline in overall response by also offering other response options such as ordering a paper questionnaire. The following table outlines the key dates for the different waves.

Table 7.1
Census collection phases and schedule

Collection phase	Main activity	Coverage	Start date
Wave 1—Invitation letter	Dwellings in MO areas received an invitation letter with a SAC.	All MO dwellings, including those in MODO areas (90% of all dwellings)	May 3, 2021
	Dwellings in L/L areas and drop-off dwellings in MODO areas received an invitation letter with a SAC.	All L/L dwellings and drop-off dwellings in MODO areas (9% of all dwellings)	May 3, 2021
Wave 2—Reminder letter or card	Dwellings in MO areas received a reminder letter with a SAC.	All non-responding MO dwellings, including those in MODO areas	May 12, 2021
	Dwellings in L/L areas received a reminder card.	All L/L dwellings	May 12, 2021
Wave 3—Second reminder letter	Dwellings in MO areas received a second reminder letter with a SAC.	All non-responding MO dwellings, including those in MODO areas	May 21, 2021
Reminder message	Dwellings in MO areas received either a text reminder (when a cellphone number was available), a voice broadcast message (if a landline phone number was available), or an email reminder (if an email address was available).	All non-responding MO dwellings, including those in MODO areas	May 30, 2021
Non-response follow-up	NRFU began in L/L areas with telephone calls or in-person visits.	All non-responding L/L dwellings	May 21, 2021
	NRFU began in MO and MODO areas with telephone calls or in-person visits.	All non-responding MO and MODO dwellings	June 2, 2021
Final notice letter	Dwellings in MO areas received a final notice reminder letter with a SAC.	All non-responding MO dwellings, including those in MODO areas	July 13, 2021

L/L = List/leave
MO = Mail-out
MODO = Mail-out with drop-off
NRFU = Non-response follow-up
SAC = Secure access code
Source: Statistics Canada, Census of Population, 2021.

In First Nations communities, Métis settlements, Inuit regions and other remote areas, depending on the situation, an invitation letter was delivered, by mail or in person, followed by non-response follow-up, which started on May 14, 2021. Starting on August 3rd, a reminder letter was also delivered to non-responding households in mail-out (MO) areas. If Internet was not available, questionnaires were completed in-person with a census employee from Statistics Canada starting on May 3, 2021.

Enumeration of collective dwellings

A collective dwelling refers to a dwelling of a commercial, institutional or communal nature in which a person or group of persons reside or could reside. It must provide care or services or have certain common facilities, such as a kitchen or bathroom, which are shared by the occupants. Examples include lodging or rooming houses, hotels, motels, tourist establishments, nursing homes, residences for senior citizens, hospitals, staff residences, military bases, work camps, correctional facilities and group homes.

Collection procedures for the 2021 Census were redesigned to ensure respondents and census employees were safe by limiting the amount of contact needed to participate in the census. No census employee from Statistics Canada was permitted to visit or enter institutional collective dwellings, especially the dwellings housing residents who are vulnerable to COVID-19, such as residences for senior citizens and hospitals. For more information about the impact of COVID-19 on the 2021 Census of Population, refer to Appendix 1.4 Impact of the COVID-19 pandemic.

For the 2021 Census, collective dwellings were enumerated using one of the following methods:

- self-response via electronic questionnaire
- canvasser
- usual resident head count
- administrative data.

Electronic questionnaire

For most collective dwellings, the 2021 Census: Collective Dwellings electronic questionnaire was used to collect information on the facility and its usual residents. In April 2021, invitation letters or emails containing a SAC were sent to the administrators of the collective dwellings for online response. Shortly after the invitation letters or emails were sent, non-response follow-up started. Administrators could therefore either self-respond through online collection or they would receive telephone follow-up calls to complete the questionnaire with an interviewer.

For institutional collective dwellings, administrators were required to complete a series of questions about their facility and complete the census about residents of the facility. If the facility maintained electronic records containing information required to answer the census questions (e.g., age, sex at birth, gender, languages), then they attached their records electronically in any format, even if some of the information was not available. Alternatively, they downloaded a standard electronic template and answered the census questions for each usual resident according to their knowledge. In addition to providing information on the usual residents of their facility, administrators were also required to provide sociodemographic information on the residents of private dwellings attached to the collective dwelling (see box below). A standard electronic template was used to collect this information as well.

> **Private dwelling attached to collective dwelling**
>
> A collective dwelling may sometimes have one or more attached private dwelling(s).
>
> A private dwelling that is located within the collective grounds or attached to the collective dwelling structure is considered a private dwelling attached to a collective dwelling.
>
> This includes only dwellings:
>
> - with the same civic address as the collective dwelling, but with a different apartment or unit number
> - that are not part of the commercial, institutional or communal purpose of the collective dwelling (i.e., persons in these dwellings do not receive any care or services from the facility)
> - that are not occupied by live-in employees, owners or managers.

Canvasser

Alternative arrangements were made for some types of dwellings in which there is no administrator present or where there were no available electronic records. In these cases, when census employees made in-person visits, a new no-contact protocol was followed. Under this protocol, census employees remained physically distanced, and they were required to wear personal safety equipment, in accordance with guidelines from public health authorities.

For lodging or rooming houses and Hutterite colonies (types 60 and 80), field visits were conducted. Census employees contacted the administrators of rooming or lodging houses and representatives of Hutterite colonies starting on May 3, 2021. For lodging and rooming houses, data were collected via personal interviews, using 3A questionnaires. For Hutterite colonies, census employees dropped off 2A questionnaires to be completed by the households living in the colony, and they returned to collect the questionnaires at a later date.

Usual resident head count

For establishments with temporary accommodation services (e.g., hostels, hotels, campgrounds, YMCA/YWCA) and other establishments—including school residences, military bases and work camps— administrators were required to provide only the count of usual residents. When the administrator could not provide this information online, a census employee followed up with them by phone. If the number of usual residents still could not be provided, census cards were dropped off for respondents to self-identify as usual residents of the establishment. Administrators were also required to provide the full address (including unit number) of the private dwellings attached to the collective dwelling. These private dwellings were then mailed an invitation letter containing a SAC to complete their own census questionnaire online.

Administrative data

Statistics Canada replaced traditional enumeration for some correctional or custodial facilities with administrative data from the Canadian Correctional Services Survey (CCSS). The CCSS collects and validates a variety of information on persons supervised by a correctional services program. If an institution was not reporting their data, Statistics Canada attempted to obtain the data via an electronic transfer. When both methods were not available, a letter or email with a secure access code was sent to the administrator of the institution for online response.

The table below provides a summary of the collection methods used for collective dwellings.

Table 7.2
Collection method by collective dwelling type

Collection method	Collective dwelling type
Electronic questionnaire or administrative data through the CCSS for some of the collective dwellings of type 50	10 – Hospital
	20 – Nursing home or residence for senior citizens
	30 – Residential care facility such as a group home for persons with disabilities or addictions
	40 – Shelter
	50 – Correctional or custodial facility
	70 – Religious establishment such as a convent, monastery or seminary
Field collection (3A questionnaire)	60 – Lodging or rooming house
Field collection (2A questionnaire)	80 – Hutterite colony
Electronic questionnaire or field collection (telephone calls or in-person visits using 7B cards[1])	90 – Establishment with temporary accommodation services such as a hotel, campground, YMCA/YWCA, Ronald McDonald House or hostel
	91 – Other establishment such as a school residence, military base, work camp or vessel

CCSS = Canadian Correctional Services Survey
YMCA/YWCA = Young Men's Christian Association / Young Women's Christian Association
1. 7B cards can be distributed to persons residing in collective dwelling type 90 or 91, in order to self-identify as usual residents and be counted in the census.
Source: Statistics Canada, Census of Population, 2021.

Census Help Line

The Census Help Line, a free, nationwide, multilingual service, was available to all respondents. The toll-free number was advertised in all census communications materials.

Occupancy verification and follow-up activities for the 2021 Census

Apartment occupancy verification—The purpose of apartment occupancy verification (AOV) was to verify the occupancy status of all units in an apartment building through one management contact. The information was collected through a telephone interview with the contact person. This contact person could be the owner of the building, or the superintendent or the building manager, for instance. AOV is an important activity, because it helped produce a more accurate status of occupancy for these types of dwellings, and it reduced the workload of the census non-response follow-up (NRFU) activity. AOV was conducted by Collection Support Unit operators from May 10 to 18, 2021.

Dwelling occupancy verification—For a sample of dwellings in mail-out (MO) areas, the status of occupancy was verified immediately before NRFU. Dwelling occupancy verification was conducted from May 21 to 28, 2021, to identify as many unoccupied or cancelled dwellings as possible close to Census Day to remove these dwellings from the NRFU workload. The accuracy of the occupancy status is higher if identified closer to Census Day. This operation is independent from the AOV described above.

Non-response follow-up—The purpose of NRFU was to obtain a completed questionnaire from all households that did not return a questionnaire. Follow-up was done via telephone or in-person visits. In list/leave areas, follow-up was conducted from May 21 to August 13, 2021, and in the MO and mail-out with drop-off areas from June 2 to August 13, 2021. In canvasser and reserve areas, NRFU was conducted from May 14 to September 24, 2021. If Internet was not available, questionnaires were completed in-person with a census employee starting on May 3, 2021.

The failed edit follow-up (FEFU) operation is the process of contacting, by telephone, respondents that have filled out their questionnaire in order to clarify inconsistent or invalid answers or to resolve missing and incomplete responses. FEFU was conducted from Statistics Canada regional offices from May 10 to August 14, 2021. It was primarily focused on cases with potential household composition issues.

Chapter 8 – Processing

Introduction

The step after collection, known as the processing phase, began on April 26, 2021, with the process of editing and coding responses for approximately 17 million private and collective dwellings.

Receipt and registration

For the 2021 Census, electronic responses from online questionnaires were received from the Collection Management Portal (CMP) and registered in the Census Processing System (CPS) hourly before entering the edit and coding workflow. The CPS also registered interviewer responses received through the Census Help Line, non-response follow-up (NRFU) and failed edit follow-up (FEFU) on a regular basis during collection and follow-up.

Paper questionnaires that were returned by mail were registered in Canada Post sorting plants by scanning the barcode on the front of the questionnaire visible through the return envelope window before delivery to the Data Operations Centre (DOC). To confirm receipt by Statistics Canada, the questionnaires were removed from the envelopes and registered again at the DOC using the manual Check-in Station(s). Whenever Canada Post was unable to read the barcodes (for instance, when questionnaires were inserted into envelopes backwards), the questionnaires were removed from the envelopes and the barcode scanned when the envelopes were delivered to Statistics Canada.

Registrations of all questionnaires from Canada Post were transmitted to the CMP on an hourly basis. Census employees were notified (via the CMP) of which questionnaires had been received so that they could stop contact for these respondents during NRFU procedures.

Paper questionnaires that were completed by census employees during NRFU were shipped by their supervisors (crew leaders) directly to the DOC where they were registered. All such questionnaires were then data captured similar to other paper responses.

Imaging and data capture

Once paper questionnaires were registered, the next step was document preparation and scanning for data capture of responses.

Steps

1. **Document preparation—**Mailed-back questionnaires were removed from envelopes. In order to ensure that questionnaires were ready to be scanned, operators removed foreign objects such as clips and staples from the documents. Questionnaires were also cut into single sheets using guillotines (large paper cutters).
2. **Scanning—**Scanning, using high-speed scanners, created digital images from the paper questionnaires.
3. **Automated image quality assurance—**An automated system verified the quality of the scanning for capture purposes. Images failing this process were flagged at Document Analyst, and an operator made a determination on best action for the capture of the form.
4. **Automated data capture—**Optical mark recognition and optical character recognition were used to extract respondent data. When the system could not recognize the handwriting (known as the write-ins), keying was done by an operator from the scanner images. Paper questionnaires that could not be scanned (e.g., too damaged) or were filled out with a pen or pencil that could not be read by the automated capture systems, were sent for transcription (i.e., the data were transcribed to a new form).
5. **Check-out—**This quality assurance process ensured that the questionnaire images and captured data were of sufficient quality and that the paper questionnaires were no longer required.

Edits

As the paper questionnaires were captured and the online questionnaires received, an interactive process of manual and automated edits was performed to ensure that problems and inconsistencies were identified and resolved.

1. **Blank and minimum content—**This automated edit identified questionnaires with no information or insufficient information to continue processing. These cases were returned to the field for non-response follow-up by census employees.

2. **Multiple responses—**A household may have multiple questionnaires (e.g., large households require more than one paper questionnaire to complete the census). This automated edit identified households with one or more missing questionnaires. These cases were held in a queue until all questionnaires were received.

3. **Coverage edits—**These edits were conducted for both private and collective dwellings and ensured that the reported number of members of a household was consistent with the responses provided, including the number of names listed. Errors were resolved by an automated process or through interactive verification by Data Operations Centre (DOC) employees by manually examining the captured data and scanned images (where available) to help determine the appropriate solution.

4. **Failed edit follow-up—**Short-form questions that needed further coverage or content clarification were transmitted to the Statistics Canada regional offices for failed edit follow-up collection and transmitted back to the Census Processing System for subsequent DOC processing.

Coding

Written responses to census questions were converted to numerical codes before they could be tabulated for analysis and release purposes. For the 2021 Census, all written responses on the questionnaires underwent automated and interactive coding to assign each one a numerical code using reference files, code sets and standard classifications.

The automated coding was completed using Statistics Canada's Generalized Coding Tool (G-Code). A preprocessing step was first completed to prepare raw write-in text strings for autocoding. These text strings were then matched against reference files built by subject matter experts using actual responses from past censuses. Write-ins with an exact match on the reference file were assigned that code.

Remaining write-ins were then presented to a machine learning (ML) model that was trained using high-quality coded data and reference files agreed upon by subject matter experts and methodologists. The ML algorithm assigned each record a code and confidence score. Matches with confidence above identified thresholds were assigned that code.

Write-ins still without a code were sent to interactive coding applications where they were assigned codes by specially trained coding operators and subject matter experts.

Subject matter experts then reviewed all coded records and certified these codes before delivery to edit and imputation.

Response database

Once data have successfully passed through each processing step at the Data Operations Centre, they were loaded into the response database (RDB).

The RDB is the microdata holding of all captured responses (paper and electronic questionnaires) during processing. The database has three categories of files:

- respondent data tables, which provide a snapshot of person- and household-level information after data capture and after coverage editing

- coding data tables, which log all of the actions carried out during the coding process, including the final codes assigned to all write-ins
- processing quality assurance paradata tables, which assist in data processing and quality analysis of many processes such as capture, coverage and content scoring processes.

The RDB is hosted in an Oracle environment that provides security features to ensure confidentiality and control accessibility and usage. Every user needs to be granted access through the Corporate Access Request System to be able to work with these data.

The RDB is a data repository whose primary purpose is to serve as an input to the edit and imputation database, and it is also used for archival purposes where a copy is stored at Library and Archives Canada.

Edit and imputation

Data collected in any survey or census will contain invalid, inconsistent or missing responses. These errors can be the result of respondents missing or misunderstanding a question, or they can be generated during processing.

Edit and imputation activities begin once data capture, coverage edits and FEFU operations have ended, and the RDB is deemed as complete, consistent, and as free of processing errors as possible. Edit and imputation represents the last processing step before the census data are delivered for dissemination purposes.

In its first phase, the census data from private households is run through the Whole Household Imputation (WHI), which resolves census total non-response before edit and imputation begins. Each of these dwellings either gets imputed as occupied or unoccupied based on the Dwelling Classification Survey results, leading to the provision of population and dwelling counts to Statistics Canada's Statistical Geomatics Centre. Besides the occupancy status, the WHI also imputes a household size, as well as a few demographic characteristics from administrative data if available, and searches for a donor household to donate its data for the remaining missing variables.

The second phase sees all data processed through a series of deterministic and donor modules for each topic, all run in a specific sequence using the Canadian Census Edit and Imputation System (CANCEIS). Modules detect and adjust for invalid, inconsistent or partial non-responses.

Deterministic imputation corrects systematic errors or errors that have only one solution based on subject matter experience. When many solutions are possible to solve an error, donor imputation is used. The latter method, also called nearest neighbour, is widely used in the treatment of non-response. It replaces missing, invalid or inconsistent information about one respondent with values from another, "similar" respondent. The rules for identifying the respondent most similar to the non-respondent may vary with the variables to be imputed. Donor imputation methods have good properties and generally will not alter the distribution of the data, a drawback of many other imputation techniques. Nearest neighbour imputation makes sure that any imputed value is consistent with the values of other variables.

A few Structured Query Languages (SQL) and statistical analysis system (SAS) modules are also part of the census edit and imputation processing flow.

Modules also generate a number of data quality flags, such as a non-response flag and imputation flag. These flags will be used at the estimation stage to derive various quality indicators for their corresponding census question.

For more information relating to the imputation rates, refer to the Data quality evaluation and Dissemination chapters.

Chapter 9 – Data quality evaluation

Introduction

This chapter focuses on evaluating the quality of data from the Census of Population. The first section explains why these evaluations are done and how the results are used. The second section lists and describes the main types of possible errors. The third presents the evaluations of coverage of the Census of Population. The fourth section describes data certification.

For the 2021 Census of Population, significant changes were made to the quality indicator dissemination strategy to enable users to do a detailed evaluation of the quality of the data based on their particular needs. These changes, as well as the available quality indicators, are described in Section 5. Section 6 deals with sampling error.

The last sections present information on and measures of the quality of 2021 Census of Population data.

Why evaluate the quality of census data

Census data provide statistical information on housing and on the Canadian population at fine geographic levels and for small subpopulations. These data support planning, administration, development and evaluation of policies by all levels of government. Canadian communities use census data to plan employment, education and health care services. The Census of Population also collects the data needed to update the official population estimates used to determine federal transfer payments to the provinces and territories. Data from the 2021 Census of Population will also be used to determine the number of federal electoral districts and their geographic boundaries, as provided for in the *Electoral Boundaries Readjustment Act*.

It is essential to ensure the quality of census data. One way to do this is by conducting a variety of evaluations. Quality evaluation activities take place throughout the census process, beginning before data collection and ending after dissemination. These evaluations are based on the six dimensions of data quality presented in the *Statistics Canada Quality Guidelines* Catalogue no. 12-539-X: relevance, accuracy, timeliness, accessibility, interpretability and coherence. The purpose is to ensure that census data are reliable and that they meet user needs.

Many census data quality evaluations focus on their accuracy; i.e., the extent to which the statistical information describes precisely what it should be measuring. The findings of the activities to evaluate data accuracy are used to validate and certify the data prior to publication, to inform users of the reliability and accuracy of the data, to improve the next census, to adjust census counts for non-response and, following coverage studies, to produce official population estimates.

Main types of errors

However well a census is designed, the data collected will inevitably contain errors. These errors can occur at virtually any stage of the process, from preparing materials and creating the list of dwellings to collecting and processing the data. Census data users need to be aware of the different types of errors that can occur and of the steps taken to minimize these errors, so that they can evaluate the relevance and accuracy of the data and determine whether they meet their needs.

There are two main types of errors: sampling errors and non-sampling errors. Non-sampling error is likely to bias estimates. Efforts to minimize these errors are made at each stage of collection and processing to reduce their impact; e.g., correcting non-response and coverage errors by imputing and adjusting the weighting of the data from the long-form questionnaire. However, a residual error remains following this process. Four types of non-sampling errors can occur.

Coverage errors occur when people or dwellings are omitted, counted more than once, or incorrectly counted (i.e., they should not have been counted in the census). Coverage studies are conducted to measure the misclassification of dwellings and the undercoverage or overcoverage of people (see the section entitled Evaluating data coverage, in this chapter).

Non-response errors occur when some or all information about individuals, households or dwellings is not provided. A distinction is made between partial non-response (no response to one or some questions) and total non-response (no response to the survey because the household could not be reached or refused to participate).

Response errors occur when a question is misunderstood or a characteristic is misreported by the respondent, the census enumerator, or the Census Help Line operator. They may also occur when data from sources other than traditional collection are used and when the concepts being measured are not exactly the same as those of the survey, or when these data contain errors.

Processing errors can occur at any stage of processing. Responses may be entered incorrectly during data capture, or the coding of responses may be incorrect. Processing errors can also occur during imputation, when a valid response (which is not necessarily accurate) is inserted into a record to replace a missing or invalid response. File manipulation errors are another example of processing errors.

Sampling errors apply only when answers to questions are obtained from a sample. Therefore, this type of error applies only to the Census of Population long-form questionnaire. A sampling error is the difference that would be observed between the estimate from the long-form questionnaire and the true value of the population if there were no non-sampling errors, i.e., all the types of errors mentioned above. It is inevitable when conducting a sample survey, such as the one that uses the census long-form questionnaire (see the section entitled Measuring sampling errors in this chapter).

Evaluating data coverage

Many coverage error studies have been done for recent censuses to help users to assess the impact of coverage errors and to better understand how these errors occur. As part of the 2021 Census, several reviews are designed to improve or evaluate census coverage.

Three studies are conducted to measure coverage errors:

(1) Dwelling Classification Survey

One of the sources of coverage errors in the census is the misclassification of dwellings. This error can occur when an occupied dwelling is classified as unoccupied, or when an unoccupied dwelling is classified as occupied. The purpose of the Dwelling Classification Survey (DCS) is to study these types of classification errors and to adjust counts, if necessary. A sample of dwellings classified as unoccupied or non-respondent is selected, the occupied ones are determined, and information is collected on the number of usual residents for dwellings that are occupied.

This information is used to adjust census data for dwellings, households, and persons. This is done by correcting classification errors and by controlling, using the DCS results, the distribution of the size of households that will be imputed for dwellings that did not return their questionnaire. It is done in time for the initial population count release.

(2) Census Undercoverage Study

The Census Undercoverage Study (CUS) provides an estimate of the number of persons omitted from the census (after taking into account the adjustments described in the DCS above). Estimates are developed for each province and territory and for various population subgroups (e.g., by age, sex and marital status).

- For provinces, the CUS is done in two stages:
    - Step 1: Selection of a sample from various sources that encompasses all persons who should have been counted in the census. These sources are the previous census, birth records, immigration and non-permanent resident records, and the sample of persons omitted from CUS of the last census.
    - Step 2: Linking persons selected in Step 1 to the Census Response Database (RDB) to determine whether these persons were enumerated. The survey is then used to trace and interview persons who could not be linked with certainty to the RDB to collect additional information. People who died or emigrated before Census Day are identified using administrative data sources, such as death files from vital statistics, during screening or through interviews.

- For the territories, Step 1 involves linking individuals whose names appear in health insurance files with the RDB to identify the ones who were counted during the census. The CUS sample is then selected from the individuals who are not linked, and the remainder of the methodology is similar to the one used for the provinces.

- The CUS results are the major source of information about persons missed by the census. However, unlike the DCS, these estimates are not used to adjust census data before the initial population count release.

(3) Census Overcoverage Study

Double-counting of persons is determined by searching for linked records that have a high degree of matching by sex, date of birth and name. Linked records are sampled and checked manually; the results are used to estimate census overcoverage (or the number of people enumerated more than once). It should be noted that overcoverage caused by the enumeration of persons who were not part of the census target population is not estimated because this component is considered small compared with multiple enumerations.

The combination of the CUS results and the Census Overcoverage Study (COS) results provides an estimate of the net coverage error in the census data. This net error is used to calculate the official population estimates for the Canadian population for each province and territory.

Additional information on the methodology of the DCS, the CUS, and the COS, as well as the detailed results on the coverage of the previous census, can be found in the *Coverage Technical Report, Census of Population, 2016*, Statistics Canada Catalogue no. 98-303-X. It should be noted that the CUS was referred to as the Reverse Record Check until the 2016 Census.

Certification

Certification consists of several activities to rigorously evaluate the quality of census data at specific levels of geography to ensure that the quality standards for release are met. This evaluation includes the certification of population and dwelling counts, as well as variables related to dwelling and population characteristics.

During certification, a large number of quality measures and indicators are analyzed, such as non-response rates, invalid responses, edit failure rates, coding accuracy rates, imputation rates and the comparison of data before and after imputation.

The tabulations of the 2021 Census of Population and the estimates from the long-form questionnaire are produced and compared with the corresponding data from previous censuses, other surveys, and various administrative sources. Detailed cross-tabulations are also checked to ensure consistency and accuracy.

An analysis of estimates with outliers is carried out to identify geographic regions with extreme characteristics compared with others and to validate the reasons for these differences with internal and external experts.

Additional checks are also made to minimize the risk that file manipulation errors may have slipped in during data processing.

Various mapping and data visualization tools are used throughout the certification process to make data exploration easier.

Depending on the certification results, census data can be released in various ways:

- The data may be released unconditionally because they are of suitable quality.
- Otherwise, the data may be released conditionally or with restrictions. In this case, they are disseminated and accompanied by a special note warning users of possible limitations. Data can also be processed in a particular way, for example, by combining reporting categories to address quality or confidentiality concerns.
- On rare occasions, data can be deleted for quality reasons. This is the case for incompletely enumerated reserves and settlements (see Appendix 1.5).

For more information on quality indicators and certification results, view the reference guides for each domain of interest on Statistics Canada's Reference materials, 2021 Census webpage.

Quality indicators

The accuracy of census estimates can be affected by the majority of the aforementioned potential sources of errors. To enable users to conduct a detailed evaluation of the data quality and to determine the relevance of the data to their needs, new quality indicators accompany the 2021 Census of Population data outputs. These include the total non-response rate and, for each question, the non-response rates and imputation rates. For long-form questionnaire estimates, which are derived from a sample survey—and therefore subject to sampling error— quality indicators based on variance are also available.

The purpose of the data quality indicators provided is to paint a detailed picture of the risk of known and measurable potential errors at the time of dissemination, such as non-response errors, processing errors, data source errors and sampling errors. These are data accuracy indicators that determine whether the statistical information accurately describes what it should measure.

Users should consult all available quality indicators to ensure that the 2021 Census data meet their needs. More information on quality indicators are provided in the *2021 Census Data Quality Guidelines*, Statistics Canada Catalogue no. 98-26-0006.

Total non-response rate

Total non-response occurs when all questions are unanswered for a dwelling that received a questionnaire or when a returned questionnaire does not meet the minimum content (i.e., information is not sufficient to continue processing). It is measured by the total non-response (TNR) rate, which is the primary quality indicator that accompanies each disseminated output from the 2021 Census of Population. In this sense, it replaces the global non-response rate (GNR), which was used for the 2016 Census of Population and for previous cycles. The GNR combined total and partial non-response, while the TNR rate considers only total non-response. Partial non-response is considered separately (see quality indicators by question below). This new approach provides detailed information on data quality.

The TNR rate is a measure of non-response that reflects the estimation step. This means that it is calculated by considering corrections to the classification of non-respondent households using the results of the Dwelling Classification Survey. Since all households are enumerated in the census, the TNR rate calculated for data from the short-form questionnaire is not weighted. For long-form data, the TNR rate is weighted to take sampling into account. Therefore, it is an estimate of the proportion of households that would be non-respondent, if all households in the population were interviewed.

Non-response is a potential source of bias in census counts and in long-form estimates. Bias occurs when the characteristics of respondents differ from those of non-respondents. **The TNR rate may indicate the risk that**

a significant bias has been introduced by non-response and, where applicable, its potential magnitude. For a given profile of non-respondents, a lower TNR rate indicates a lower risk of non-response bias and, therefore, more reliable figures and estimates.

To maximize the amount of information disseminated, no data suppression based on non-response was done for the 2021 Census. However, data for regions with a high TNR rate must be used with caution. A warning about this accompanies data products for which the TNR rate is above 50%.

Comparison between the total non-response rate in 2021 and the global non-response rate of previous censuses

The 2021 TNR rate and the GNR of previous censuses meet the same objective: to measure the scope of non-response in a given region. Conceptually, the difference observed between the GNR of a previous census and the 2021 TNR rate for a given region can be broken down into two parts: the difference due to the change in definition and the actual difference in non-response rates between the two cycles. The GNR includes partial non-response and is generally higher than the TNR rate (though it is possible, by definition, for it to be lower). In addition, the GNR is influenced by household size, which is not the case for the TNR rate.

A comparative study of the two indicators conducted on the same dataset showed that their difference is generally less than 5%. Greater differences were observed more often for the indicators on the long-form questionnaire than for those on the short-form questionnaire. When the GNR and the TNR rate are compared, differences of less than 5% can be considered as being solely attributable to the change in definition.

Quality indicators by question

New quality indicators per question were developed for the 2021 Census of Population. They include non-response rates and imputation rates per question.

The **non-response rate per question** is a measure of missing information due to non-response to a question. The types of non-response (i.e., total or partial) taken into account by the non-response rate per question differ for short-form and long-form questions because total non-response is treated differently for the two types of questionnaires. More specifically, the non-response rate per question captures only the non-response that gets resolved through imputation (not reweighting). It can thus be compared to the imputation rate per question described further down. Like the TNR rate, the non-response rate per question is weighted for long-form data. For the same non-respondent profile, a lower non-response rate per question indicates a lower risk of non-response bias for estimates derived from a particular question.

The **imputation rate per question** is used to measure the extent of data processing for each question. Imputation is used to replace missing data in the event of non-response or when a response is found to be invalid. For this reason, the imputation rate is linked to the non-response rate, but it also takes into account corrections made to data considered incorrect at the edit stage.

More information on quality indicators per question is provided in the reference guides for each domain of interest on Statistics Canada's Reference materials, 2021 Census webpage.

Quality indicators based on variance

Since long-form estimates are derived from a sample survey, they are subject to an additional error: sampling error. Variance reflects the variability in estimates due to the use of a sample, not the total population. Sampling variance is therefore estimated using a statistically appropriate method, i.e., one that takes into account the sampling plan and the estimation strategy. The following quality indicators are derived from this estimate of variance.

Standard error

The standard error associated with an estimate is the square root of its estimated variance. A lower standard error indicates a more accurate estimate. Standard error is a key factor in deriving other measures of variability, such as the coefficient of variation, in constructing confidence intervals and in making statistical inferences (e.g., determining whether an estimate is significantly different from a given value or from another estimate).

Confidence interval

The confidence interval was selected as variance-based quality indicator to support the 2021 Census of Population long-form estimates because it helps users easily make a statistical inference.

A confidence interval is associated with a confidence level, generally set at 95%. A 95% confidence interval is an interval constructed around the estimate so that, if the process that generated the sample were repeated many times, the value of the interest parameter in the population would be contained in 95% of these intervals. The usual confidence interval assumes that the sampling distribution of the estimator is a normal distribution. In this case, the lower bound of the 95% confidence interval is estimated by subtracting approximately twice the standard error from the estimate. The upper bound is estimated by adding approximately twice the standard error to the estimate. When the sample size is small, and for certain statistics such as proportions, the assumption that the estimator distribution is normal is violated. Therefore, a confidence interval constructed like this is not appropriate, i.e., its coverage is not 95%.

Consequently, the confidence intervals presented with the 2021 Census of Population long-form estimates are produced using more elaborate methods, which offer coverage closer to the nominal rate. That said, all confidence intervals are based on assumptions that could not be confirmed for some estimates. Further details on the different methods used to construct confidence intervals and their assumptions are provided in the *Sampling and Weighting Technical Report, Census of Population, 2021*, Statistics Canada Catalogue no. 98-306-X.

Measuring sampling errors

Several factors influence sampling error. Sampling error is smaller when both the sampling fraction and the sample size are large. Ultimately, if the sampling fraction is 100%, as for the census short-form questionnaire, the sampling error will be nil. It will also be small if the variability of the variable of interest in the population is low. This error also depends on the effectiveness of the sample design. For example, it will be smaller if the populations in the strata of the sample design are fairly homogenous or, for a characteristic measured at the person level, if the individuals in the households are rather heterogeneous.

Finally, sampling error depends on the estimation methods used, such as the weighting methods, since some are more effective than others. For example, when the survey weight is adjusted so that a weighted total is equal to the census total, the sampling error for that weighted total is nil. However, it is impossible to adopt a weighting method that would eliminate sampling errors from all possible estimates that could be drawn from the long form.

Sampling error cannot be measured directly. Instead, the actual value of the variable of interest in the population would need to be known to subtract it from the estimate drawn from the long-form questionnaire. This estimate should not include any non-sampling errors. However, variability measures such as standard error, coefficient of variation, and confidence interval are indicative of the magnitude of this error (see Appendix 1.8).

2021 Census of Population response rate

The response rate is one of the key quality measures used for the Census of Population. Table 9.1 presents the 2021 Census of Population response rates nationally and for each province and territory. Rates are presented for three distinct groups:

- all occupied private and collective dwellings for which a questionnaire was to be received (i.e., response to the short form)
- the subset of occupied private dwellings for which a questionnaire was to be received (i.e., response to the short form)
- occupied private dwellings for which a long form was to be received. For the long form, unweighted response rates and weighted response rates are provided.

Table 9.1 shows the response rates obtained through data processing and data quality assessment. They are calculated as the number of dwellings for which a questionnaire was filled out divided by the number of dwellings classified as occupied according to the census database. The final classification of dwelling occupancy status is based on the analysis of data collected by field staff, data provided by respondents, results of a quality study on the occupancy status of a sample of dwellings (the Dwelling Classification Survey), and administrative data used to impute data on non-responding households in geographic areas with low response rates (see Appendix 1.7).

The response rates in Table 9.1 differ from the 2021 Census of Population collection response rates previously published for occupied private dwellings because they take into account data processing and verification of dwelling occupancy status. These response rates are therefore considered final. Weighted response rates are based on the long form's sampling weights. Weighted response rates are calculated as the weighted number of sampled private dwellings for which a questionnaire was completed divided by the weighted number of sampled private dwellings classified as occupied.

The response rates shown in the first column of Table 9.1 include collective dwellings. These rates are consistent with the total non-response (TNR) rates for the short-form questionnaire that accompany released products. The weighted response rates for the long-form questionnaire shown in the last column of Table 9.1 are consistent with the TNR rates for the long-form questionnaire that accompany released products (also weighted).

Table 9.2 presents the TNR rates for the short- and long-form questionnaires nationally and for each province and territory; these rates accompany released products for the 2021 Census of Population.[2] Nationally, the TNR rate is 3.1% for the short-form questionnaire and 4.3% for the long-form questionnaire.

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2. With the first release of population characteristics, scheduled for April 27, 2022, the TNR rate for the short-form questionnaire will be included in released products at all geographic levels. The TNR rate for the long-form questionnaire will be included in all released products providing data from the long-form questionnaire (first release scheduled for September 21, 2022).

Table 9.1
2021 Census of Population response rate

Region	Short-form questionnaire – Occupied private and collective dwellings	Short-form questionnaire – Occupied private dwellings	Long-form questionnaire – Occupied private dwellings (unweighted)	Long-form questionnaire – Occupied private dwellings (weighted)
	Response rate (%)			
Canada	**96.9**	**96.9**	**94.9**	**95.7**
Newfoundland and Labrador	96.9	97.0	95.0	95.6
Prince Edward Island	97.6	97.6	96.5	96.8
Nova Scotia	97.1	97.1	95.6	96.1
New Brunswick	96.8	96.8	94.8	95.7
Quebec	97.1	97.1	95.7	96.3
Ontario	97.2	97.2	95.8	96.2
Manitoba	96.5	96.5	93.1	94.4
Saskatchewan	95.5	95.5	91.8	93.5
Alberta	96.4	96.5	93.4	94.4
British Columbia	96.5	96.5	94.0	95.1
Yukon	95.7	95.7	85.5	89.5
Northwest Territories	91.8	91.8	86.2	89.2
Nunavut	79.8	79.7	78.1	78.1

Source: Statistics Canada, Census of Population, 2021.

Table 9.2
Total non-response rate in the 2021 Census of Population disseminated products

Region	Short-form questionnaire – Occupied private and collective dwellings	Long-form questionnaire – Occupied private dwellings (weighted)
	Total non-response rate (%)	
Canada	**3.1**	**4.3**
Newfoundland and Labrador	3.1	4.4
Prince Edward Island	2.4	3.2
Nova Scotia	2.9	3.9
New Brunswick	3.2	4.3
Quebec	2.9	3.7
Ontario	2.8	3.8
Manitoba	3.5	5.6
Saskatchewan	4.5	6.5
Alberta	3.6	5.6
British Columbia	3.5	4.9
Yukon	4.3	10.5
Northwest Territories	8.2	10.8
Nunavut	20.2	21.9

Source: Statistics Canada, Census of Population, 2021.

Comparability of estimates from the 2021 Census and the 2016 Census programs

Users must be careful when comparing estimates from two censuses or surveys, as they can differ significantly in methodology, quality and target population.

The target population of the 2021 Census short-form and long-form questionnaires was the same as for the 2016 Census. The estimates from the 2021 Census and 2016 Census programs were both derived from mandatory surveys with very high response rates. The response rate for the 2021 Census is 96.9% and for the long-form questionnaire it is 95.7%. These rates are slightly lower than the 2016 response rates of 97.4% and 96.9%, respectively.

Due to slightly lower response rates for the 2021 Census, the non-response error may be greater for some estimates from the 2021 Census program than for estimates from the 2016 Census program. This is particularly true for smaller domains of interest where non-response may have been greater in 2021 due to the unique collection challenges encountered in Northern or remote regions of the country, and Indigenous communities (see Appendix 1.4). The quality of the estimates and the risk of bias vary slightly more between different communities for the 2021 Census, compared to the 2016 Census.

The quality of the estimates for a given geographic area varies across census cycles based on response rates and incompletely enumerated reserves and settlements (see Appendix 1.5 for information on the increase in incompletely enumerate reserves and settlements in 2021 compared to 2016). When comparing estimates from the 2021 Census and 2016 Census for a given geographic area, users should be mindful of large differences in response rates as well as significant changes in the list of incompletely enumerated reserves and settlements.

Comparisons of estimates from the 2021 Census and the 2016 Census programs for a particular variable can also take into account differences in imputation rates (see previous section on quality indicators by question for more details on this indicator available in both cycles). Table 9.3 presents national-level imputation rates for variables from the 2021 Census and the 2016 Census program, as presented in the 2021 and 2016 topic reference guides.[3] Overall, the imputation rates are slightly higher for the 2021 Census short-form questions compared to the 2016 short-form questions, reflecting the lower national response rate in 2021 compared to 2016. For questions asked only on long-form questionnaires, roughly half of the questions have a higher imputation rate in 2021 compared to 2016, while the other half have a lower imputation rate in 2021. Two main factors pulling in opposite directions contribute to this:

- higher total non-response in 2021 compared to 2016 for Northern or remote areas of the country and Indigenous communities (see Appendix 1.4);
- lower rates of missing or invalid information for long-form questionnaires received. This is related to the increased usage of the online questionnaire for the 2021 Census compared to the 2016 Census. Online respondents are prompted when invalid data are entered or if data are missing, which helps reduce the amount of missing or invalid information for each question and improve data quality (see Chapter 6).

In summary, users are encouraged to use all data quality indicators available to judge the quality of estimates from the 2021 Census and the 2016 Census programs when assessing the reliability of comparisons (see the *2021 Census Data Quality Guidelines* for more information on data quality indicators). Users are also encouraged to read any quality notes that may be included with dissemination products.

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3. The calculation method for the imputation rate can differ slightly between 2021 and 2016 for some variables.

Table 9.3
Imputation rates by question or concept, for the 2021 Census and the 2016 Census, Canada

2021 Census question or concept	2021 Census	2016 Census
	percent	
Question 2—Sex at birth	3.5	2.8
Question 3—Gender	3.9	...
Question 4—Date of birth	3.7	3.1
Question 5—Marital status	4.7	4.3
Question 6—Common-law status	5.0	5.1
Question 7—Relationship to Person 1	3.6	3.2
Question 8—Knowledge of languages	4.5	4.0
Question 9a—All languages spoken at home	4.3	...
Question 9b—Language spoken most often at home	4.4	3.9
Question 10—Mother tongue	4.8	4.3
Question 11—Canadian military experience	3.2	...
Question 13—Primary or secondary schooling in French in Canada, for residents of Canada outside of Quebec	5.0	...
Question 14—Type of program of schooling in French in Canada, for residents of Canada outside of Quebec	7.0	...
Question 15—Number of years of primary and secondary schooling in a regular French program in a French-language school in Canada, for residents of Canada outside of Quebec	9.4	...
Question 16—Primary or secondary schooling in an English-language school in Canada, for residents of Quebec	5.4	...
Question 17—Number of years of primary and secondary schooling in an English-language school in Canada, for residents of Quebec	9.4	...
Total income derived from the Canada Revenue Agency's tax and benefits records	5.3	4.4
Question 19—Place of birth	0.9	1.0
Question 20—Place of birth of parent 1	1.7	1.8
Question 20—Place of birth of parent 2	2.6	1.6
Question 21—Citizenship	0.8	1.3
Immigrant status from Immigration, Refugees and Citizenship Canada's administrative data[1]	2.2	0.7
Year of immigration from Immigration, Refugees and Citizenship Canada's administrative data[1]	10.6	9.4
Question 23—Ethnic or cultural origin	8.0	4.5
Question 24—Indigenous group	1.1	1.1
Question 25—Population group	1.6	2.0
Question 26—Registered or Treaty Indian status	1.3	1.4
Question 27—Membership in a First Nation or Indian band	2.1	1.8
Question 28—Membership in a Métis organization or Settlement	7.7	...
Question 29—Enrollment under an Inuit land claims agreement	7.8	...
Question 30—Religion	1.8	...
Question 31—Mobility one year ago	1.5	1.8
Question 32—Mobility five years ago	2.1	2.4
Question 33—High school diploma or equivalency certificate	1.4	1.2

Table 9.3
Imputation rates by question or concept, for the 2021 Census and the 2016 Census, Canada

2021 Census question or concept	2021 Census	2016 Census
	percent	
Question 34a—Registered apprenticeship or other trades certificate or diploma	1.7	1.8
Question 34b—College, CEGEP or other non-university certificate or diploma	1.8	1.8
Question 34c—University certificate, diploma or degree	1.6	1.4
Question 35—Major field of study	4.1	4.4
Question 36—Location of study	2.1	3.1
Question 37—School attendance	2.0	4.3
Question 38—Hours worked	1.8	1.6
Question 39—On lay-off or absent	5.7	4.5
Question 40—Future start of new job	3.1	4.2
Question 41—Job search	2.9	3.6
Question 42—Availability to work	2.8	3.1
Question 43—Date last worked	3.5	6.2
Questions 44 and 45—Industry	6.1	6.2
Questions 46 and 47—Occupation	6.7	5.3
Question 48—Class of worker	5.1	3.7
Question 49—Incorporation status	4.1	5.1
Question 50a—All languages used at work	2.8	...
Question 50b—Language used most often at work	2.9	3.1
Question 51—Place of work status	2.9	3.7
Question 51—Location of workplace	3.8	5.4
Question 52b—Main mode of commuting	3.3	4.3
Question 52c—Commuting vehicle occupancy	3.7	3.8
Question 53b—Commuting duration	6.3	5.3
Question 54a—Weeks worked during reference year	4.9	2.9
Question 54b—Main reason not working full year	6.0	...
Question 55a—Mostly full-time or part-time work during reference year	3.3	5.4
Question 55b—Main reason working mostly part time	4.8	2.8
Question 56—Amount paid for child care	3.9	4.0
Question 57—Amount paid in support	3.5	4.3
Question 58—Household maintainer	2.5	2.0
Question E1—Tenure	2.8	1.8
Question E2—Condominium status	2.4	1.3
Question E3a—Rooms	5.0	3.6
Question E3b—Bedrooms	3.2	1.8
Question E4—Period of construction	3.7	2.9
Question E5—Condition of dwelling	2.9	1.7
Question E7a—Electricity payment	6.8	6.8
Question E7b—Fuel payment	6.5	7.0
Question E7c—Water and other service payment	6.7	7.0
Question E8a—Rent	5.4	5.4
Question E8b—Subsidy status	5.5	5.1
Question E9a—Mortgage payment	5.0	5.1

Table 9.3
Imputation rates by question or concept, for the 2021 Census and the 2016 Census, Canada

2021 Census question or concept	2021 Census	2016 Census
	percent	
Question E9b—Property taxes included in mortgage	4.5	4.1
Question E9c—Property taxes	7.4	7.4
Question E9d—Value of dwelling	7.1	7.1
Question E9e—Condominium fee	15.3	14.4
Question E10—Monthly use or occupancy payment for dwelling	44.8	...

… not applicable
1. In 2021, data on immigration were obtained from Immigration, Refugees and Citizenship Canada's administrative records. Before 2021, data on immigrant status and year of immigration were obtained from the census long-form questionnaires.
Sources: Statistics Canada, Census of Population, 2021 and 2016.

Comparability of the variability of estimates from the 2021 and 2016 Census long-form questionnaires

As mentioned in the previous sections, estimates produced using data from a sample survey, such as those from the 2021 Census long-form questionnaire, include sampling error, i.e., the error stemming from the fact that only a sample of the population was observed. Sampling error is determined using variability measures such as standard error or the coefficient of variation (CV). In Appendix 1.8, CVs are used to compare the variability of estimates from the 2021 and 2016 Census long-form questionnaires.

Moreover, the purpose of the 2021 and 2016 Census long-form questionnaires was to produce estimates for a series of questions for a variety of geographic areas, ranging from very large areas (such as provinces and census metropolitan areas) to very small areas (such as neighbourhoods and municipalities), and for various population groups, such as Indigenous peoples and immigrants. These groups also vary in size, especially when cross-classified by geographic area. Such groupings are generally referred to as "domains of interest." The purpose of this section and of Appendix 1.8 is to compare the variability of estimates from 2021 and 2016, not to compare the estimates. However, sampling variability should be taken into account when comparing estimates from these surveys, particularly for small "domains of interest," since the observed differences can be the result of sampling variability rather than an actual difference in the population.

Chapter 10 – Dissemination

Introduction

The main goal of the Census of Population dissemination process is to ensure that census and geography products and services meet the primary needs of the majority of data users. Similar to previous Census of Population releases, Statistics Canada strives to provide more data free of charge to the public, while at the same time seeking ways of publishing census results in a timely and user-friendly manner. The first results from the 2021 Census of Population will be made available to data users on February 9, 2022. All major releases of standard products are scheduled to take place in 2022, with value-added features integrated into existing data products. As well, additional analysis and other products will continue being released beyond 2022. These include the public use microdata files (PUMFs), additional reference materials and data tables.

How census data are used

Governments, businesses, associations, community organizations and many others use census data extensively. The following are some examples:

- The federal government uses population counts from the decennial census (held in years ending in the number 1, for example, 2011, 2021) to realign the boundaries of federal electoral districts. These data are required under the *Constitution Act, 1867*, and ensure equal representation of the population in the House of Commons.
- Data from the decennial and quinquennial censuses are used to produce population estimates.
    - These estimates are used in the calculation of transfer payments from the federal government to the provinces and territories, and from the provincial and territorial governments to municipalities.
    - In 2021/2022, the Government of Canada projects allocating roughly 84 billion dollars to provincial and territorial governments through its major transfers (Canada Health Transfer, Canada Social Transfer, Equalization and Territorial Formula Financing) and direct targeted support. Even a small error in the estimates could lead to the misallocation of billions of dollars.
- Government departments need to know the age trends of the population to estimate future demands for child tax benefits and old age pensions.
- In 2020, the Public Health Agency of Canada and Natural Resources Canada collaborated with Statistics Canada to present selected census data from the 2016 Census to help inform Canadians of the public health risks of the COVID-19 pandemic and to use for modelling analysis.
- Communities use census information on population growth and movement for planning services such as schools, daycare, police services and fire protection.
- Town planners, social welfare workers and other government agencies use census information on families.
- Transportation planners for provincial, territorial, regional and municipal governments use census information to analyze traffic flows, assess existing transportation services and plan for changes to these services and to road networks.
- Life insurance companies base their premium tables on census age data.
- Businesses determine new factory, store and office locations based largely on the size and distribution of the population in different areas.
- Manufacturers of household and farm equipment are guided by census data in determining the best market locations for their products. They can also assess the benefits of developing specific products by knowing the characteristics of the population in particular areas.

Overview of 2021 Census of Population products and services

Products and services from the 2016 Census Program were evaluated through consultation with data users in the *2021 Census Dissemination Consultation Results: What we heard from Canadians* and through the analysis of web metrics for their continued usefulness and relevance in 2021.

The 2021 Census of Population products and services are meant to:

- satisfy policy and market analysis data needs
- be easy to use and understand
- contain information giving users both a historical and geographical perspective
- present data by topic
- offer levels of geography with the potential to better meet users' needs
- provide users with new product options
- help to identify linkages between various census topics.

The 2021 Census of Population products and services line consists of five main types of products and services:

(1) Data products

These products and services have been designed to present a wide range of census information, including population and dwelling counts, and data by variable and topic. These products are released for standard geographic areas and include:

- Data tables
- Census Profile
- Age pyramids
- Focus on Geography Series
- Census Program Data Viewer
- Data visualizations (including interactive graphs)
- Indigenous Population Profile
- Profile of Official Language Communities
- Public use microdata files.

Indicators are also available on Statistics Canada's Census Program module, highlighting some key facts and figures at the national and provincial/territorial level.

To enrich the user experience with census data, new functionalities will be built into selected products, which will make it easier to work with the data.

(2) Analytical products

These products, specifically designed for the electronic medium, provide data and interpretation for selected characteristics on key findings from 2021 Census topics. Analysis products include:

- *The Daily*
- *Census in Brief*
- *Insights on Canadian Society*
- Infographics

- Videos
- Thematic maps.

(3) Reference products

These products are designed to help users make the most of census data. They cover various aspects of the census and are intended to support the use of the data by giving users a better understanding of the methods and concepts used. The list of reference products includes:

- *Guide to the Census of Population*
- *Census Dictionary*, including a new product with classifications that will provide expanded information on the full range of variables, including concepts and definitions available from the census dissemination database
- Reference guides
- Technical reports
- Concept videos.

(4) Geography products

Geography products for the 2021 Census reflect both the changes to geography concepts and the more precise geometry and more detailed base map visible features (such as water, roads and road names).

The list of geography products includes:

Reference documents:

- Illustrated Glossary
- Geography Catalogue
- Reference guides
- Working papers
- Interim List of Changes to Municipal Boundaries, Status, and Names

Maps:

- Reference maps
- Thematic maps
- GeoSearch

Spatial information products:

- Cartographic boundary files
- Digital boundary files
- Road network files (available annually)
- Dissemination Geographies Relationship File

Attribute information products:

- Geographic Attribute File
- GeoSuite
- Correspondence Files.

(5) Custom services

These services allow for products and services to be tailored to more specific and complex requests that cannot otherwise be accommodated by the standard products. User-defined tabulation services are made available upon the release of each variable.

Custom data services include the following:

- Census custom tabulations
    - Custom tabulations are produced to meet the needs of individual users according to their exact requirements in terms of content, geography, format and output medium. This includes the derivation of new variables and the creation of custom geographies.
- Semi-custom services
    - Semi-custom profiles
        - Semi-custom profiles replicate a fixed profile for custom geographies. This format allows for easy comparison of characteristics of geographies. The semi-custom profile content pertains to individuals, families, households and dwellings.
    - Target group profiles
        - Target group profiles replicate a fixed profile for a custom target group (such as a specific linguistic group). This format allows for easier analysis of the characteristics of a target group on its own. The content of a target group profile pertains to the universe of individuals only (no family, household, or dwelling data are available).
    - Semi-custom cross-tabulations
        - Semi-custom cross-tabulations enable users to replicate the content of published tabulations for the geographic area(s) and output medium of their choice. Some tabulations provide a simple overview of the country, while others consist of three or four cross-tabulated variables, and still, others are of particular or analytic interest.
- Census microdata data files at the Research Data Centres (RDCs)
    - Census microdata files in RDCs are master files in flat file format. These files provide authorized researchers access to comprehensive social, demographic and economic data about Canada and its people, and they contain a wealth of characteristics on the population.

Custom geography services include the following:

- Custom area creation
    - The geography custom area creation allows users to define their own geographic areas for census data tabulations. Custom geographic areas are produced from the aggregation of standard geographic areas or block faces, where available. Confidentiality constraints apply.
- Custom product creation
    - The custom product creation service is available to produce non-standard geographic products that satisfy clients' individual requirements. Clients may require various custom geographic files, special data retrievals, manipulations of geographic data or combinations of data from a variety of sources.
- Custom map creation
- Print-on-demand
    - A print-on-demand service is available for maps.

Connecting with Canadians

Statistics Canada continues to use traditional and new media to provide access to relevant, accurate and timely statistical information, and to foster engagement, cooperation and information-sharing among people who use statistical information. For 2021, the Census of Population is engaging with Canadians to ensure the general public and key stakeholders are aware of information and resources such as data, infographics, videos and analytical products, available from census releases. Various channels will be used to communicate updates to Canadians including social media platforms, blogs, newsletters and virtual sessions with subject matter experts. A list of different resources to use to stay up to date on Statistics Canada information can be found on the "Stay connected" web page. Statistics Canada will also continue to engage with stakeholders such as media and key data users regarding census releases through tailored tactics and activities to maximize the reach of census data, strengthen partnerships and reinforce the value of statistical information.

Availability of products and services

For 2021, census data will continue to be disseminated primarily via the Internet through Statistics Canada's website. Each data release will be summarized and published in *The Daily*, Statistics Canada's official release bulletin.

Seven official 2021 Census of Population data releases are scheduled between February 9 and November 30, 2022.

Table 10.1
2021 Census of Population major release dates by release theme

Release theme	Release date
Canada's growing population and where they are living	February 9, 2022
Canada's shifting demographic profile	April 27, 2022
Portrait of Canada's families and households	July 13, 2022
Canadian military experience	
Income profile of Canadians	
Linguistic diversity and use of English and French in Canada	August 17, 2022
First Nations people, Métis and Inuit in Canada	September 21, 2022
Canada's housing portrait	
Portrait of citizenship and immigration in Canada	October 26, 2022
Ethnocultural and religious composition of the population	
Mobility and migration	
Education in Canada	November 30, 2022
The changing dynamics of the Canadian labour force and how people get to work	
Instruction in the minority official language	

Source: Statistics Canada, Census of Population, 2021.

Table 10.2
2021 Census of Population major release dates by release topic

Release topic	Release date
Population and dwelling counts	February 9, 2022
Age	April 27, 2022
Sex at birth and gender	
Type of dwelling	
Families, households and marital status	July 13, 2022
Canadian military experience	
Income	
Language	August 17, 2022
Indigenous peoples	September 21, 2022
Housing	
Immigration, place of birth and citizenship	October 26, 2022
Ethnocultural and religious diversity	
Mobility and migration	
Education	November 30, 2022
Labour	
Language of work	
Commuting	
Instruction in the minority official language	

Source: Statistics Canada, Census of Population, 2021.

In addition, there are two 2021 Census geography product releases scheduled for November 17, 2021 and February 9, 2022. A Census of Agriculture release is also scheduled for May 11, 2022.

For a complete list of release dates, refer to the 2021 Census Program release schedule.

Protecting privacy

Published census data go through a variety of automated and manual processes to determine whether the data need to be suppressed. This is done primarily to ensure that the identity and characteristics of respondents are not disclosed, a concept that will be referred to as **confidentiality**.

Overview of suppression for confidentiality reasons

Confidentiality refers to the assurance that Statistics Canada will not disclose any information that could identify respondents. Various confidentiality rules are applied to all data that are released or published to prevent the publication or disclosure of any information deemed confidential. If necessary, data are suppressed to prevent direct or residual disclosure of identifiable data. Consequently, data for geographic areas with a population below a certain threshold are not published.

Random rounding

All counts in census tabulations undergo random rounding, a process that transforms all raw counts into randomly rounded counts. This reduces the possibility of identifying individuals in the tabulations.

Preventing disclosure

The risk of direct or residual disclosure must also be addressed when determining product content. A number of factors must be considered when assessing the risk of disclosure. The detail of individual variables, cross-classification of variables and geographic level of the data will all contribute to the level of risk. For example, there may be no risk in producing tables with the number of persons in the dwelling and detailed groupings of age by various characteristics of the household members for large geographic areas. However, the risk of disclosure would increase for lower levels of geography.

Area suppression for standard and non-standard geographic areas

Area suppression is used to remove all characteristic data for geographic areas whose population size is below a certain threshold. The population size threshold for all standard areas or aggregations of standard areas is 40, except for blocks, blockfaces and postal code[OM] defined areas. Consequently, no characteristics or tabulated data are released if the total population of the area is less than 40. However, for six-character postal code[OM] areas, and areas built from the block or blockface, the population size threshold is 100. These population size thresholds are applied to 2021 Census data as well as to all previous census data.

Additional area suppression is applied for confidentiality reasons when using income data in census tabulations. Estimates of income data are suppressed for areas where the population in private households is less than 250 or where the number of private households is less than 40.

Coverage of data published from the 2021 Census short-form questionnaire

Canada has a total of 152 census metropolitan areas and census agglomerations, and 2021 Census data are available for all of these areas in the standard products. In addition, the 2021 Census short-form questionnaire standard products are available for all 293 census divisions and 338 federal electoral districts.

For census subdivisions (CSDs) or municipalities, 2021 Census data can be published for the vast majority. As a result, short-form questionnaire counts are published in the standard products for 4,554 CSDs, representing 88.2% of the 5,161 CSDs (counts for those with a population of less than 40 are not published for confidentiality reasons, and counts for 63 CSDs are not available because of incomplete or partial enumeration). Table 10.3 shows the distribution of the total number of CSDs and the number of CSDs for which data have been published, by province and territory. Table 10.4 shows the distribution of the total number of CSDs and the number of CSDs for which income data have been published, by province and territory.

[OM] Official mark

Table 10.3
Number of census subdivisions with 2021 Census short-form questionnaire data, Canada, provinces and territories

Region	Total number of census subdivisions	Census subdivisions for which data have been published		
		number	percent	population covered (%)
Canada	**5,161**	**4,554**	**88.2**	**99.99**
Newfoundland and Labrador	372	356	95.7	99.96
Prince Edward Island	98	97	99.0	99.98
Nova Scotia	95	84	88.4	99.99
New Brunswick	266	258	97.0	99.98
Quebec	1,282	1,168	91.1	100.00
Ontario	577	539	93.4	100.00
Manitoba	239	214	89.5	99.99
Saskatchewan	951	833	87.6	99.87
Alberta	423	387	91.5	99.99
British Columbia	751	537	71.5	99.97
Yukon	35	23	65.7	99.63
Northwest Territories	41	33	80.5	99.73
Nunavut	31	25	80.6	99.95

Source: Statistics Canada, Census of Population, 2021.

Table 10.4
Number of census subdivisions with 2021 Census short-form questionnaire income data, Canada, provinces and territories

Region	Total number of census subdivisions	Census subdivisions for which income data have been published	
		number	percent
Canada	**5,161**	**3,660**	**70.9**
Newfoundland and Labrador	372	242	65.1
Prince Edward Island	98	72	73.5
Nova Scotia	95	78	82.1
New Brunswick	266	249	93.6
Quebec	1,282	1,089	84.9
Ontario	577	478	82.8
Manitoba	239	189	79.1
Saskatchewan	951	532	55.9
Alberta	423	290	68.6
British Columbia	751	379	50.5
Yukon	35	16	45.7
Northwest Territories	41	23	56.1
Nunavut	31	23	74.2

Source: Statistics Canada, Census of Population, 2021.

Coverage of data published for the 2021 Census long-form questionnaire

For the 2021 Census, the primary quality indicator that accompanies each disseminated output is the total non-response (TNR) rate—which replaced the global non-response (GNR) rate that was used for the 2016 Census of Population and for previous cycles. In previous census cycles, areas with a GNR rate above a certain threshold were suppressed from disseminated products (the threshold used in 2016 was 50%). Suppression of data based on quality was discontinued in 2021. However, it is recommended that data from areas with a TNR rate above 50% be used with caution. For additional information about the quality indicators, users are encouraged to consult the *2021 Census Data Quality Guidelines*, Statistics Canada Catalogue no. 98-26-0006. Standard products for the 2021 Census long-form questionnaire are available for all 293 census divisions (CDs) and all 338 federal electoral districts (FEDs).

Long-form questionnaire estimates are published in the standard products for 4,517 CSDs, representing 87.5% of the 5,161 CSDs. These 4,517 CSDs have a population of more than 40 inhabitants (data on those with a population of fewer than 40 inhabitants are not published for confidentiality reasons, and counts for 63 CSDs are not available because of incomplete or partial enumeration). Table 10.5 shows the distribution of the total number of CSDs and the number of CSDs for which data have been published, by province and territory. Table 10.6 shows the distribution of the total number of CSDs for which income data have been published, by province and territory.

Table 10.5
Number of census subdivisions with 2021 Census long-form questionnaire data, Canada, provinces and territories

Region	Total number of census subdivisions	Census subdivisions for which data have been published		
		number	percent	population covered (%)
Canada	**5,161**	**4,517**	**87.5**	**98.2**
Newfoundland and Labrador	372	350	94.1	98.3
Prince Edward Island	98	97	99.0	97.5
Nova Scotia	95	84	88.4	98.6
New Brunswick	266	258	97.0	97.9
Quebec	1,282	1,162	90.6	97.7
Ontario	577	539	93.4	98.6
Manitoba	239	213	89.1	97.4
Saskatchewan	951	814	85.6	97.4
Alberta	423	384	98.0	98.0
British Columbia	751	536	98.3	98.3
Yukon	35	22	98.4	98.4
Northwest Territories	41	33	98.3	98.3
Nunavut	31	25	99.3	99.3

Note: Census subdivisions (CSDs) for which data have not been published for confidentiality reasons are excluded from this table. These are CSDs with a population of fewer than 40.
Source: Statistics Canada, Census of Population, 2021.

Table 10.6
Number of census subdivisions with 2021 Census long-form questionnaire income data, Canada, provinces and territories

Region	Total number of census subdivisions	Census subdivisions for which income data have been published	
		number	percent
Canada	**5,161**	**3,610**	**69.9**
Newfoundland and Labrador	372	233	62.6
Prince Edward Island	98	72	73.5
Nova Scotia	95	78	82.1
New Brunswick	266	246	92.5
Quebec	1,282	1,083	84.5
Ontario	577	473	82.0
Manitoba	239	189	79.1
Saskatchewan	951	511	53.7
Alberta	423	287	67.8
British Columbia	751	376	50.1
Yukon	35	16	45.7
Northwest Territories	41	23	56.1
Nunavut	31	23	74.2

Note: Census subdivisions (CSDs) for which data have not been published for confidentiality reasons are excluded from this table. These are CSDs for which income data has not been published due to these geographies having a population of fewer than 250 or less than 40 private households.
Source: Statistics Canada, Census of Population, 2021.

Chapter 11 – Census geography

Introduction

There is a geographic component in every stage of the census cycle, from consultation, through collection, processing and dissemination. Users are consulted about the geographic concepts used by Statistics Canada and about various options for disseminating standard geographic information. Geographic areas are defined and mapped in detail so that every dwelling can be located during the collection phase. During the processing phase, the collected data are coded to the appropriate geographic areas within the geographic hierarchy of standard geographic areas for dissemination. Finally, census data are disseminated by a variety of geographic areas designed specifically for dissemination, along with supporting reference maps and other geographic data products.

National Geographic Database

The standard geographic areas that Statistics Canada uses for census and survey collection and dissemination activities are constructed, maintained and supported by detailed geographic information which are stored in a precise geographic database called the National Geographic Database (NGD).

The NGD is a joint Statistics Canada-Elections Canada initiative which develops and maintains a geospatial database that serves the needs of both organizations. The focus of the NGD is the continual improvement of quality and currency of geographic coverage using updated geospatial data provided by provinces, territories and local sources.

The NGD includes a digital representation of the boundaries of standard geographic areas and their attributes, such as names, types and codes, which are necessary for uniquely identifying each individual geographic area.

The NGD also contains additional geographic features, including a detailed road network, various hydrographic features such as lakes, rivers and coastal waters, and other selected visible features, for example, railroads.

The road network also has associated attribute data, such as street names, types, directions and address ranges.

To take full advantage of census data, users are encouraged to develop a basic understanding of the geographic dimensions.

Hierarchical model of geographic areas for collection

The geographic areas used for census data collection are illustrated below in Figure 11.1, Hierarchy of geographic areas for collection, 2021 Census, and are different than geographic areas used for dissemination.

The geographic areas used for census data collection are designed to serve two purposes: the organization of the materials and workforce required to conduct census collection and the assignment of each dwelling to the lowest possible level of geography that can be linked to the dissemination geography used for publishing census data.

The geographic areas used for collecting census data range in size from Canada, groupings of provinces and territories, all the way down to collection blocks, and are organized in a hierarchical model to illustrate the nature of their relationships to one another.

Figure 11.1

Hierarchy of geographic areas for collection, 2021 Census
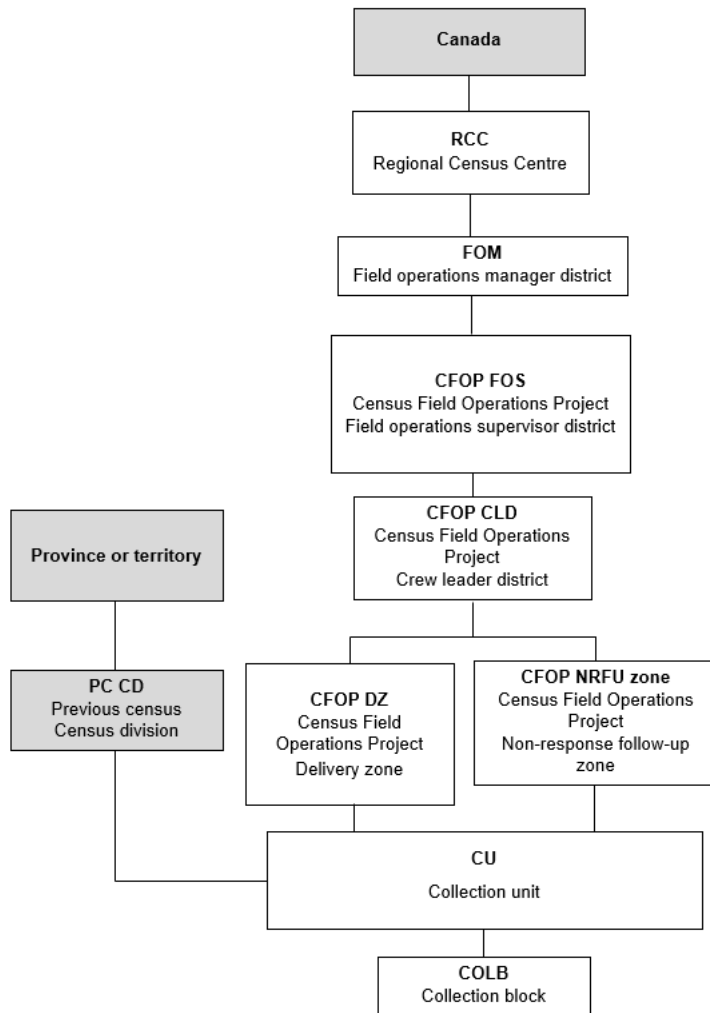
Source: Statistics Canada, Census of Population, 2021.

Data are not published for collection geographic areas and therefore are not represented in Figure 1.1, Hierarchy of standard geographic areas for dissemination, found in the *Dictionary, Census of Population, 2021*, Statistics Canada Catalogue no. 98-301-X.

Administrative areas

- Province or territory
- Previous census – Census division (PC CD): The Census division (CD) of the previous census; for the 2021 Census, therefore, the PC CD is the 2016 CD.

Collection areas

- Regional Census Centre (RCC): A senior management office within a region. For census collection purposes, Canada is divided into three regions, which are groupings of provinces and/or territories.

The Montreal region comprises the provinces of Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick and Quebec. The Toronto region comprises only the province of Ontario and the Vancouver region comprises the provinces of Manitoba, Saskatchewan, Alberta and British Columbia and all three territories: Yukon, Northwest Territories and Nunavut.

- Field operations manager district (FOM): A geographic area defined by a group of field operations supervisory districts for which a field operations manager is responsible.

- Field operations supervisor district (FOS): An area comprised of a group of crew leader districts and is the geographic area for which a FOS is responsible.

- Crew leader district (CLD): A geographic area defined by a group of zones. They are the geographic area for which a crew leader (CL) is responsible.

- Non-response follow-up zone: A grouping of collection units (CUs) that create an assignment area for one enumerator.

- Delivery zone (DZ): An area comprised of a group of CUs to which an enumerator is assigned for dropping off census materials to dwellings that Canada Post cannot send mail to. It contains a combination of mailable and non-mailable dwellings. Non-mailable dwellings are those that contain insufficient address information for Canada Post to use to deliver mail directly to the dwelling. As such, these dwellings will receive their census materials from a census enumerator.

- Collection unit (CU): The primary collection geographic area used to assign and monitor work in the various collection activities. Approximately 73% of CUs in Canada received their census materials in the mail during the 2021 Census, 18% received their materials in person from a census enumerator, and 9% of CUs used a combination of mail and enumerator delivery.

- Collection block (COLB): Like a dissemination block (DB), a COLB is an area bounded on all sides by roads and/or non-visible boundaries of standard geographic areas. Unlike a DB, a COLB must respect the boundaries of both dissemination and collection geographic areas, not only the boundaries of dissemination geographic areas.

Hierarchical model of geographic areas for dissemination

Just as one can subdivide a population by sex, or into age and language groups, one can subdivide a population by different geographic areas. The geographic areas used for disseminating census data range in size from Canada, provinces and territories, all the way down to dissemination blocks, and are organized in a hierarchical model to illustrate the nature of their relationships to one another.

Standard geographic areas used for data dissemination and their relationships to one another are depicted in Figure 1.1 Hierarchy of standard geographic areas for dissemination, and can be found in the *Dictionary, Census of Population, 2021*, Statistics Canada Catalogue no. 98-301-X.

- Each box in the hierarchy chart represents an individual geographic level, which is composed of one or more geographic areas.

- The relative position of each geographic level in the chart shows how it can be subdivided or aggregated to form other geographic levels. For example, the national level can be subdivided into 6 regions which comprise 13 provinces and territories, which, in turn, are subdivided into 338 federal electoral districts, which comprise more than 400,000 dissemination blocks, the lowest level of standard geographic areas.

- The lines that join the boxes in the geographic hierarchy chart illustrate the relationship between the geographic areas that comprise each geographic level. In general, this is a 'one-to-many' relationship when moving from one geographic level down to a lower geographic level, for example, moving from 13 provinces and territories down to 338 federal electoral districts. From bottom to top, the relationship is 'many-to-one.'

- Each branch of the geographic hierarchy illustrates how different geographic levels relate to the geographic areas of lower geographic levels. For example, the geographic hierarchy chart shows that dissemination areas (DAs) group together to form census subdivisions (CSDs); they also group together to form census tracts (CTs). However, there is no exact fit relationship between CSDs and CTs, and therefore, there is no line joining the CSD and CT boxes of these geographic levels within the geographic hierarchy chart.

The hierarchy of geographic areas: Understanding the hierarchy, how geographies are related and data analysis

The geographic hierarchy illustrates how one can carry out geographic analysis starting with higher-level geographic areas and moving to the lower-level geographic areas (a top-down approach). For example, one can start with Canada, and then look at each of the 13 provinces and territories, and continue by looking at individual or groupings of census divisions (CDs) and census subdivisions (CSDs). Conversely, using a bottom-up approach, one can start by examining specific individual lower-level geographic areas, CSDs for example, by comparing them with each CSD within a particular CD, and then comparing CDs within the same province or territory, and eventually within or among regions and Canada as a whole.

Geographic areas for dissemination

In Figure 1.1, Hierarchy of standard geographic areas for dissemination, found in the *Dictionary, Census of Population, 2021*, geographic areas used for disseminating data are depicted as being either administrative areas or statistical areas.

Administrative areas are defined, with a few exceptions, by federal, provincial or territorial statutes, and are adopted for the purposes of the census. Statistical areas, on the other hand, are defined by Statistics Canada in cooperation with stakeholders for the purpose of disseminating census data and complementing the structure of administrative areas.

The number of geographic areas by province and territory for the 2021 Census is presented in Table 1.1, Geographic areas by province and territory, of the *Dictionary, Census of Population, 2021*, Statistics Canada Catalogue no. 98-301-X.

Refer to the Introduction to the geography universe section of the *Dictionary, Census of Population, 2021*, Statistics Canada Catalogue no. 98-301-X, for definitions and more detailed information on each of the following administrative and statistical areas.

Administrative areas

- Canada
- Province or territory
- Federal electoral district (FED)
- Census division (CD)
- Census subdivision (CSD)
- Designated place (DPL)
- Forward sortation area (FSA)©
- Postal Code[OM]

[OM]: Postal code is an official mark of Canada Post Corporation.

Statistical areas

- Region
- [Census agricultural region (CAR)](#)
- [Economic region (ER)](#)
- [Census consolidated subdivision (CCS)](#)
- [Aggregated dissemination area (ADA)](#)
- [Dissemination area (DA)](#)
- [Dissemination block (DB)](#)
- [Statistical Area Classification (SAC)](#)
- [Census metropolitan area (CMA) and census agglomeration (CA)](#)
- [Census tract (CT)](#)
- [Census metropolitan influenced zone (MIZ)](#)
- [Population centre (POPCTR)](#)

Other

- [Place name (PN)](#)
- [Blockface](#)
- [Census subdivision—previous census](#)

Non-standard or user-defined geographic areas for dissemination

In most cases, the standard geographic areas for dissemination satisfy data user requirements for census data tabulations. However, there are also data users who require that data be tabulated for specific geographic areas that are not available for any of the standard geographic hierarchy depicted in [Figure 1.1](#), Hierarchy of standard geographic areas for dissemination, *Dictionary, Census of Population, 2021*.

There are two basic types of non-standard or 'user-defined' geographic areas: areas that are customized aggregations of individual standard geographic areas, and areas that do not match the standard geographic areas at all. An example of the first type could be user-created sales regions within a metropolitan area, where the sales regions are created by combining one or more specific census subdivisions. An example of areas that do not match standard geographic areas could be user-defined market areas, school districts, or transportation and utility corridors. When data users require that census data be tabulated for non-standard geographic areas, they may turn to the Custom Area Creation Service provided by Statistics Canada (see [Chapter 10](#) – Dissemination).

Chapter 12 – Sampling and weighting for the long form

For the 2021 Census Program, Canadian households are enumerated using two main types of questionnaires: the short-form questionnaire and the long-form questionnaire. The long-form questionnaire includes the same questions as the short form, as well as a set of additional questions aimed at providing a more comprehensive portrait of the Canadian population and Canadian households. The long-form questionnaire is distributed to a sample of the population.

The estimates produced from the responses to questions found on both questionnaires are obtained from a **census of the population**. As a result, all households contribute to a given figure, such as for the population count of a given age group.

The estimates produced from the responses to one or more questions on the long-form questionnaire are obtained from a **sample survey**. The respondent households from the long-form sample and the imputed non-respondent households in collection units in First Nations communities, Métis settlements, Inuit regions and other remote areas contribute to the estimate (e.g., the unemployment rate estimate or the estimate of the population by highest education level).

Selecting the sample for the census long-form questionnaire

The long-form questionnaire sample is selected from small geographic areas that cover the entire country, called collection units (CUs). CUs determine the strata for the sample plan. There are four types of CUs: list/leave, mail-out, mail-out with drop-off, and First Nations communities, Métis settlements, Inuit regions and other remote areas. In each CU (or stratum), the list of dwellings is drawn up, and a systematic sample of private dwellings is chosen. Collective dwellings are excluded from this draw. Households in the private dwellings selected from the sample receive the census long-form questionnaire. Other households, i.e., those in the private dwellings that are not in the long-form sample and those in collective dwellings, which are excluded from the sample, receive the short-form questionnaire.

The sample for the long-form questionnaire is distributed uniformly among geographic areas to ensure that reliable estimates are produced for all regions across the country and to give the same relative importance to all geographic units of a given population size. As in 2016, one in four dwellings was selected to form the sample of the 2021 Census long-form questionnaire. There is one exception for the sampling fraction: All dwellings in CUs of First Nations communities, Métis settlements, Inuit regions and other remote areas were selected in the long-form questionnaire sample.

Weighting the sample of the census long-form questionnaire

The estimates produced from the final responses to the long-form questionnaire are weighted to represent the Canadian population living in private dwellings. Weighting is the process involving calculating the sample weight and various adjustments leading to the final weight. These include a weighting adjustment for the coverage of occupied dwellings based on the results of the Dwelling Classification Survey (DCS), an adjustment to correct total non-response of sampled households, and a calibration of the weights of respondent households to the totals derived from the census.

First, each household in the sample is given a sample weight. A household's sample weight is the inverse of its probability of being selected for the sample. In CUs in First Nations communities, Métis settlements, Inuit regions and other remote areas, this weight is equal to 1, and in other types of CUs, it is equal to 4.

The first two weight adjustments are related to the concept of total non-response. Households that responded to at least one question specific to the long-form questionnaire are "respondent households" for the long-form questionnaire. Selected households that responded only to questions common to both types of questionnaires and households that did not respond to any questions are defined as "non-respondent households" for the long-form questionnaire.

In the CUs of First Nations communities, Métis settlements, Inuit regions and other remote areas, total non-response to the long-form questionnaire is compensated for through imputation. Data for households that did not respond to any questions are imputed using data from a respondent household. All private households in these CUs kept their sampling weight of 1 for estimation purposes.

In some CUs of First Nations communities, Métis settlements, Inuit regions and other remote areas, it is sometimes impossible to finish listing dwellings. These CUs are considered to be incompletely enumerated. The extent of non-response is therefore unknown, and the population cannot be adequately represented statistically. Both the counts obtained from the short-form questionnaire and the estimates derived from the long-form questionnaire exclude populations living on incompletely enumerated reserves and settlements.

In other types of CUs, reweighting is used to process total non-response to the long-form questionnaire. To do this, several adjustments are made to the sampling weights. Only respondent households to the long-form questionnaire are assigned a weight that is not zero at the end of the weighting stages, meaning that they are the only ones contributing to the long-form questionnaire estimates.

Before carrying out imputation for total non-response in the census, undercoverage of dwellings that were occupied at the time of the census is estimated using the DCS and corrected by changing the occupancy status of certain dwellings. In fact, one source of coverage error in the census is certain dwellings being incorrectly classified on Census Day. This error can occur when an occupied dwelling is classified as unoccupied or when an unoccupied dwelling is classified as occupied. The purpose of the DCS is to estimate the number of these classification errors. To this end, a sample of private dwellings for which no census questionnaire was returned is contacted, and information is collected on their occupancy status on Census Day and—if the dwelling was occupied—on the number of usual residents. The DCS results guide the imputation for total non-response and census undercoverage.

Sampling weights are then adjusted in three steps. All these weight adjustments are done by calibration. Calibration consists of applying the smallest adjustment possible to the weight so that the weighted estimates correspond to the known counts. These steps are performed independently in each super aggregate dissemination area[4] (SADA). A SADA is a group of aggregate dissemination areas (ADA) created in order to reach a population of between 50,000 and 150,000.

An initial calibration is done to ensure that coverage of the long-form sample is the same as coverage of private dwellings in the census. A second calibration is done, which takes into account a logistic regression model for the propensity to respond, so that the weights of the sampled non-respondent dwellings are redistributed to the respondent dwellings. For these two steps, all the potential calibration constraints are identical. The constraints are selected so that the model in the second step explains the non-response. This is designed to reduce potential bias due to non-response. Finally, a third calibration is performed. This one takes into account a much more detailed set of potential constraints. The purpose of this step is to improve consistency between the estimates from the sample and the known census counts and to reduce the variability of the estimates derived from the long-form questionnaire.

The weighted estimates from the long-form questionnaire may differ from census counts for common characteristics. In particular, this occurs when looking at a geographic area with boundaries that do not correspond to ADAs and SADAs. The smaller the geographic area, the more likely that estimates from the long-form questionnaire will differ from the census counts. When there are differences, users should consider the 2021 Census counts to be of better quality and prioritize them, as they are not affected by the sampling variance or the slightly higher non-response error of the long-form questionnaire. Estimates from the long-form questionnaire for characteristics found in both forms should be used as contextual information when analyzing data specific to this questionnaire.

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4. This geographic unit is not part of the dissemination geographic units. It was created specifically for weighting.

As was the case in 2016, the variability of the long-form questionnaire estimates is estimated using a replication method. All adjustments described in this chapter are also applied to the replicate weights used for variance estimation.

More information on the weighting and estimation process will be provided in the *Sampling and Weighting Technical Report, Census of Population, 2021*, Catalogue no. 98-306-X.

Appendix 1.1 – Legislation

Introduction

The Constitution of Canada (and its amendments) requires that the Census of Population be conducted to determine the population of Canada and the required number of members of the House of Commons.

The *Statistics Act*

According to the *Statistics Act*, Statistics Canada is required to conduct a Census of Population and Census of Agriculture every five years, in the years ending in 1 and 6. The relevant provisions of the *Statistics Act* are as follows:

Subsection 19 (1):

> "A census of population of Canada shall be taken by Statistics Canada in the month of June in the year 1971, and every fifth year thereafter in a month to be fixed by the Governor in Council."

Section 20:

> "A census of agriculture of Canada shall be taken by Statistics Canada
>
> (a) in the year 1971 and in every tenth year thereafter; and
> (b) in the year 1976 and in every tenth year thereafter, unless the Governor in Council otherwise directs in respect of any such year."

Subsection 21 (1):

> "The Governor in Council shall, by order, prescribe the questions to be asked in any census taken by Statistics Canada under section 19 or 20."

Subsection 21 (2):

> "Every order made under subsection (1) shall be published in the *Canada Gazette* not later than thirty days after it is made."

Requirement to respond

Mandatory requirement to respond

Just as Statistics Canada is required by law to conduct a census, respondents are required by law to complete their census questionnaires.

This requirement is set out in subsections 7(1), 8(1), 23(1), 23(2) and section 31 of the *Statistics Act*, which reads as follows:

Rules, instructions and requests for information

Subsection 7 (1):

> "The Chief Statistician may prescribe the rules, instructions and, subject to subsection 21(1), requests for information that he or she considers necessary for conducting the work and business of Statistics Canada, the collecting, compiling and publishing of statistics and other information and the taking of any census authorized by this Act."

Mandatory or voluntary requests for information

Subsection 8 (1):

> The Chief Statistician shall determine whether a request for information is mandatory or voluntary, with the exception of the census of population and census of agriculture, both of which are mandatory.

Request for information by any method

Subsection 23 (1):

> The requests for information prescribed under section 7 may be made by any method authorized by the Chief Statistician.

Duty to provide information

Subsection 23 (2):

> A person to whom a mandatory request for information is made shall provide the information to Statistics Canada, properly certified as accurate, not later than the time prescribed by the Chief Statistician and indicated to the person or not later than the extended time that may be allowed in the discretion of the Chief Statistician.

False or unlawful information

The requirement to complete a census questionnaire is supported by the penalty provisions of Section 31 of the act, which was amended in 2017 to remove imprisonment as a penalty. This section is as follows:

Section 31:

> "Every person is guilty of an offence and liable on summary conviction to a fine of not more than $500 who, without lawful excuse,
>
> (a) refuses or neglects, following a request for information under this Act,
>
>> (i) to provide any requested information to the best of their knowledge and belief, or
>>
>> (ii) to provide any requested information when and as required under this Act; or
>
> (b) knowingly gives false or misleading information or practises any other deception under this Act."

Constitutional law

a. A decennial census (i.e., a census every ten years) in the year 1871 and every tenth year thereafter is required under section 8 of the *Constitution Act, 1867* (formerly named the *British North America Act, 1867*).

b. Conduct of the census is made the responsibility of the federal government under section 91, subsection 6 of the *Constitution Act, 1867*.

c. Representation in the House of Commons is made dependent on decennial census data under section 51 of the *Constitution Act, 1867*, as amended by the *Representation Act, 1974*.

d. The amending formula for the *Constitution Act* is made dependent on population data from the "latest general census" under section 38 of the *Canada Act, 1982*.

e. A number of provisions relating provincial subsidies to population have been legislated and amended over the years. The following is a summary of this legislation:

- ○ The *Constitution Act, 1930*, Schedule, replaced the 1907 legislation with respect to the three Prairie provinces. A subsidy was made payable to these provinces (Alberta, Saskatchewan and Manitoba) based on quinquennial census population counts and a variable with these counts up to a maximum population of 1,200,000. These provisions are still in effect.
  Legal opinions provided to Statistics Canada indicate a constitutional obligation to conduct a quinquennial census of the Prairie provinces exists until such time as their populations exceed 1,200,000. Since 1961, the population of Alberta has exceeded 1,220,000.

  - ○ The *Newfoundland Act*, *1949*, Schedule, part 26, made a federal subsidy to that province dependent on decennial census population counts. This provision is still in effect.

f. Representation of Alberta and Saskatchewan in the House of Commons was made dependent on the mid-decade census of those provinces for the first mid-decade census subsequent to their creation only (i.e., 1906). Thereafter, representation was to be based on the decennial census of Canada (*Alberta Act, 1905*, section 6; *Saskatchewan Act, 1905*, section 6).

Appendix 1.2 – Difference between census counts and population estimates

The Census of Population is designed to conduct a complete count of the population. Inevitably, however, some individuals will not be enumerated (undercoverage), while others, usually less numerous, will be enumerated more than once (overcoverage).

To determine the number of people who were missed or counted more than once, Statistics Canada conducts postcensal studies of the coverage of the census population, using representative samples of the population. Results of these studies are usually available two years after Census Day. They are used, in combination with census figures and other sources, to develop the population estimates produced by Statistics Canada on a regular basis. Population estimates are used for equalization payments, to follow trends in the Canadian population on a quarterly basis and to understand the underlying components of population change (for example, births, deaths, immigrants, emigrants and non-permanent residents). Population estimates differ from census counts and are usually higher, because census counts are not adjusted for undercoverage or overcoverage.

Appendix 1.3 – Information produced from the 2021 Census of Population

Who is included in the population of Canada?

The Census of Population aims to produce counts for the total population of Canada. This 'target population' consists of: Canadian citizens (by birth or by naturalization); landed immigrants (permanent residents); and (since 1991) non-permanent residents. (Non-permanent residents are persons who have claimed refugee status [asylum claimants], or persons who hold a work or study permit and their family members living with them). All such persons are included in the population provided they have a usual place of residence in Canada (see Where are people counted?).

The total population also includes certain Canadian citizens and landed immigrants (permanent residents) living outside the country: government employees working outside Canada; embassy staff posted to other countries; members of the Canadian Armed Forces stationed outside Canada; and Canadian crew members of merchant vessels and their families. Together, they are referred to as 'persons living outside Canada.'

Foreign residents are excluded from census data: for example, residents of another country visiting Canada temporarily, government representatives of another country posted in Canada and members of the armed forces of another country stationed in Canada.

Where are people counted?

The census counts people according to their usual place of residence. The 2021 Census questionnaire included questions and instructions to determine either the person's sole residence or their main residence as of May 11, 2021. This location is then used in all data products by geographic area. It is also used to determine which people reside in the same dwelling together—an important aspect of census data. For more detailed information about usual place of residence, refer to the *Dictionary, Census of Population, 2021*, Statistics Canada, Catalogue no. 98-301-X.

Who is included in the disseminated data for each topic?

Between the different topics released from the census, there are slight differences in what is included in the data. Refer to Table A1.3.1 for an illustration of the different statistical units and population of interest by the topics covered in the Census of Population.

Table A1.3.1
Statistical units and population of interest for the dissemination of the 2021 Census of Population, by topic

Topic	Statistical unit	Maximum population of interest available
Population counts	Persons	Total population
Dwelling counts	Dwellings	Private dwellings[1]
Type of dwelling (collective or private)	Dwellings, persons	Occupied dwellings[1] (or population in occupied dwellings)
Age, sex at birth and gender	Persons	Total population
Marital status	Persons	Total population
Families and households	Persons, families and households	Private households (or population in private households, or families in private households)
Canadian military experience	Persons	Total population aged 17 and over
Languages	Persons	Total population
Instruction in the minority official language	Persons	Total population
Income	Persons, families and households	Private households (or population in private households, or families in private households)
Immigration, place of birth and citizenship	Persons	Population in private households
Ethnocultural and religious diversity	Persons	Population in private households
Housing	Households, persons	Private households (or population in private households)
Indigenous peoples	Persons	Population in private households
Education	Persons	Population aged 15 and over in private households
Labour	Persons	Population aged 15 and over in private households
Commuting	Persons	Employed population aged 15 and over in private households
Language of work	Persons	Population aged 15 and over in private households
Mobility and migration	Persons	Population in private households

1. Dwellings that are either unoccupied or occupied solely by foreign residents or by temporarily present persons are excluded from most data on dwellings. Most data on dwellings are presented for occupied private dwellings (occupied by at least one person for whom this is their usual place of residence). This universe corresponds to that of private households.
Source: Statistics Canada, Census of Population, 2021.

Generally, topics included in the short-form questionnaire directed to the 'target' population are available for the total population. Additional questions are asked on the long-form questionnaire to the population in private households, which is the total population, excluding persons living outside Canada (as described above) and excluding persons living in collective dwellings. Collective dwellings are classified as either institutional, such as hospitals, nursing homes and penitentiaries, or non-institutional, such as work camps, hotels and motels, and student residences.

Depending on the characteristics being portrayed, the data may represent these statistical units:

- Person (or population)
- Dwelling
- Household
- Census family
- Economic family

For more information about the specific statistical units and the population of interest for each variable, refer to the *Dictionary, Census of Population, 2021*, Statistics Canada Catalogue no. 98-301-X.

Appendix 1.4 – Impact of the COVID-19 pandemic

This appendix summarizes the effect of the COVID-19 pandemic on the 2021 Census of Population.

The COVID-19 pandemic emerged in Canada in early 2020 and affected all steps of the 2021 Census process, from data collection to dissemination.

Content determination

No questions were added to the 2021 Census questionnaire to collect information on COVID-19. Traditional, fast-track and new crowdsourcing surveys; modelling techniques; and web panel approaches allowed for timely COVID-19 data to be produced for policy and decision makers across the country. Furthermore, Statistics Canada is using alternative data sources in addition to survey information to provide key information on the impacts of COVID-19 on different segments of Canadian society. The information provided in the census questionnaires should reflect each person's situation on May 11, 2021, unless the questions specify otherwise. This reference date ensures that the information collected in the questionnaire provides an accurate snapshot of Canada's society at this point in history.

Nevertheless, Statistics Canada is aware that COVID-19 may have had an impact on answers to some census questions, including those on employment, education, commuting and expenditures. When providing answers to census questions, respondents were instructed to choose the responses that best reflected their situation or the situation of members of the household for the date or time period in question. Additional instructional text was also provided in 'help' features in the online questionnaires.

Collection

In light of the COVID-19 pandemic, Statistics Canada hired an additional 15 Indigenous Liaison Advisors for an Indigenous Engagement Task Force to bolster engagement efforts with Indigenous and northern communities for the 2021 Census.

The collection strategy for the 2021 Census of Population had to adapt and was turned into a fully contactless process to ensure respondents and census employees were safe. For example, early enumeration was cancelled for First Nations communities, Métis settlements, Inuit regions and other remote areas, and completion of the census questionnaire online was emphasized. Also, more resources were deployed for telephone follow-up to reduce the number of in-person visits, and an additional reminder letter was sent to non-respondents in July.

Furthermore, before the 2021 Census of Population, data pertaining to collective dwellings and their residents were collected through census employees. For the 2021 Census of Population, census employees did not visit any institutional collective dwellings such as hospitals, nursing homes and residences for senior citizens, as well as any long-term care facilities.

For institutional collective dwellings, administrators were required to complete a series of questions about their facility and complete the census for residents of the facility. If the facility maintained electronic records containing information required to answer the census questions (e.g., age, sex at birth, gender, languages), then they attached their records electronically in any format, even if some of the information was not available. Alternatively, they downloaded a standard electronic template and answered the census questions for each usual resident based on their knowledge.

Administrators of institutional collective dwellings answered a series of questions about their facility, and provided census information of their usual residents using the 2021 Census: Collective Dwellings electronic questionnaire.

Data quality

COVID-19 presented some challenges for conducting the 2021 Census of Population but despite these, the collection response rate for the country as a whole was a resounding success at 98.0%, thanks to Canadians who completed the census in the midst of the third wave of the pandemic. Additionally, unique challenges were encountered in Northern or remote regions of the country, such as travel restrictions, border closures, shorter and shifted collection periods, unavailability of local staff, and wildfires. Ensuring the health and safety of Canadians and our employees by adapting our collection operations to ensure high quality, trusted census data was a high priority for Statistics Canada.

Dissemination

The COVID-19 pandemic impacted the content of released products since it added a new layer of analysis. For example, analytical products (e.g., *The Daily*, *Census in Brief* and infographics) pertaining to population counts; collective dwellings; families, households and marital status; income; Indigenous peoples; immigration, place of birth and citizenship; ethnocultural diversity; education; labour; language of work; and commuting have been enriched with analysis depicting the effects of the pandemic. These analyses are available from the census web page as well as on Statistics Canada's COVID-19: A data perspective.

To learn more about the impact of COVID-19 on a census subject matter, please refer to that subject specific reference guide on the 2021 Census of Population reference materials web page.

Appendix 1.5 – Incompletely enumerated reserves and settlements

In 2021, a total of 63 census subdivisions defined as reserves and settlements were incompletely enumerated. For these reserves and settlements, dwelling enumeration was either not permitted or could not be completed because of the various reasons below.

This represents an increase compared with the 14 census subdivisions defined as reserves and settlements that were incompletely enumerated in the 2016 Census. Health and safety restrictions put in place to slow the spread of COVID-19 and natural events (including evacuations because of forest fires) contributed to the incomplete enumeration of many reserves and settlements.

The 2021 Census population and dwelling counts are not available for the 63 incompletely enumerated reserves and settlements, and are not included in 2021 Census tabulations. Data for geographic areas containing one or more of these reserves and settlements are noted accordingly. Because of the missing data, users are cautioned that—for the affected geographic areas—comparisons (e.g., percentage change) between 2016 and 2021 may not be precise. The impact of the missing data for higher-level geographic areas (Canada, provinces and territories, census metropolitan areas and census agglomerations) is usually very small. However, the impact can be significant for lower-level geographic areas (e.g., census divisions), where incompletely enumerated reserves and settlements account for a higher proportion of the population. This is especially true for lower-level geographic areas where a particular reserve or settlement was incompletely enumerated for the 2021 Census but enumerated for the 2016 Census and, vice versa.

Table 1 provides the list of incompletely enumerated reserves and settlements for the 2021 Census, along with population counts from the last two censuses (where available).

Table 2 shows, in alphabetical order, the list of incompletely enumerated reserves and settlements for the 2021 Census by province, census division and, where applicable, census metropolitan area or census agglomeration.

Table 1
Reserves and settlements incompletely enumerated in 2021, showing enumeration status for the 2021 Census, and 2016 and 2011 population counts (where available)

Province	Incompletely enumerated reserves and settlements, 2021	Enumeration status for the 2021 Census (reasons for absence of data)	Population, 2016	Population, 2011
Quebec	Listuguj	Permission not given	1,514[1]	1,865
	Kahnawake	Permission not given	..	..
	Akwesasne	Permission not given	2,378[1]	..
	Kanesatake	Permission not given	..	..
	Doncaster	Permission not given	..	..
	Lac-Rapide	Permission not given	..	..
	Pakuashipi	Dwelling enumeration could not be completed	237	312
	Romaine 2	Dwelling enumeration could not be completed	977	1,016

Table 1
Reserves and settlements incompletely enumerated in 2021, showing enumeration status for the 2021 Census, and 2016 and 2011 population counts (where available)

Province	Incompletely enumerated reserves and settlements, 2021	Enumeration status for the 2021 Census (reasons for absence of data)	Population, 2016	Population, 2011
Ontario	Akwesasne (Part) 59	Permission not given	1,693[1]	..
	Six Nations (Part) 40	Permission not given	..	946
	Six Nations (Part) 40	Permission not given	..	6,213
	Walpole Island 46	Permission not given	1,589	..
	Chippewas of the Thames First Nation 42	Permission not given	..	762
	Oneida 41	Permission not given	..	1,282
	Wahta Mohawk Territory	Permission not given	..	..
	Rankin Location 15D	Permission not given	..	..
	Goulais Bay 15A	Permission not given	..	..
	Obadjiwan 15E	Permission not given	0	…
	Fort Albany (Part) 67	Dwelling enumeration could not be completed	1,404	1,520
	Pikangikum 14	Dwelling enumeration could not be completed	..	..
	Muskrat Dam Lake	Dwelling enumeration could not be completed	281	260

Table 1
Reserves and settlements incompletely enumerated in 2021, showing enumeration status for the 2021 Census, and 2016 and 2011 population counts (where available)

Province	Incompletely enumerated reserves and settlements, 2021	Enumeration status for the 2021 Census (reasons for absence of data)	Population, 2016	Population, 2011
Manitoba	Swan Lake 7	Permission not given	347	371
	Little Grand Rapids 14	Dwelling enumeration could not be completed	810	847
	Poplar River 16	Dwelling enumeration could not be completed	866	848
	Pauingassi First Nation	Dwelling enumeration could not be completed	307[1]	388
	Oxford House 24	Dwelling enumeration could not be completed	1,955	1,864
	Granville Lake	Dwelling enumeration could not be completed	10	16
	Churchill 1	Dwelling enumeration could not be completed	324	321
	Pukatawagan 198	Dwelling enumeration could not be completed	1,844[1]	1,826
	Brochet 197	Dwelling enumeration could not be completed	506	406
	Shamattawa 1	Dwelling enumeration could not be completed	1,019	998
Saskatchewan	Kinoosao-Thomas Clark 204	Dwelling enumeration could not be completed	10	40
Alberta	Eden Valley 216	Permission not given	596	587
	Tsuu T'ina Nation 145	Permission not given	2,271[1]	1,777
	Big Horn 144A	Permission not given	237	134
	Saddle Lake 125	Permission not given	..	..
	Stoney 142, 143, 144	Permission not given	3,713	3,494
	Stoney 142B	Permission not given	10	…
	Thebathi 196	Permission not given	15	30
	Thabacha Náre 196A	Permission not given	28	0

Table 1
Reserves and settlements incompletely enumerated in 2021, showing enumeration status for the 2021 Census, and 2016 and 2011 population counts (where available)

Province	Incompletely enumerated reserves and settlements, 2021	Enumeration status for the 2021 Census (reasons for absence of data)	Population, 2016	Population, 2011
British Columbia	Peters 1	Dwelling enumeration could not be completed	30	27
	Barnston Island 3	Dwelling enumeration could not be completed	49	47
	Hesquiat 1	Dwelling enumeration could not be completed	5	5
	Refuge Cove 6	Dwelling enumeration could not be completed	44	72
	Basque 18	Dwelling enumeration could not be completed	0	5
	Kumcheen 1	Dwelling enumeration could not be completed	41	39
	Kloklowuck 7	Dwelling enumeration could not be completed	5	5
	Spences Bridge	Dwelling enumeration could not be completed	5	0
	Shawniken 4B	Dwelling enumeration could not be completed	16	15
	Salmon River 1	Dwelling enumeration could not be completed	39	45
	Canim Lake 1	Dwelling enumeration could not be completed	228	224
	Lohbiee 3	Dwelling enumeration could not be completed	91	118
	Canim Lake 2	Dwelling enumeration could not be completed	5	5
	Chilco Lake 1	Dwelling enumeration could not be completed	5	43
	Chilco Lake 1A	Dwelling enumeration could not be completed	25	0
	Tanakut 4	Dwelling enumeration could not be completed	15	5
	Lezbye 6	Dwelling enumeration could not be completed	20	0
	Alexandria	Dwelling enumeration could not be completed	40	52
	Garden	Dwelling enumeration could not be completed	5	10

Table 1
Reserves and settlements incompletely enumerated in 2021, showing enumeration status for the 2021 Census, and 2016 and 2011 population counts (where available)

Province	Incompletely enumerated reserves and settlements, 2021	Enumeration status for the 2021 Census (reasons for absence of data)	Population, 2016	Population, 2011
British Columbia	S1/2 Tsimpsean 2	Dwelling enumeration could not be completed	88	83
	Omineca 1	Dwelling enumeration could not be completed	5	10
	Francois Lake 7	Dwelling enumeration could not be completed	10	10
	Uncha Lake 13A	Dwelling enumeration could not be completed	10	5

.. not available for a specific reference period
... not applicable
1. This geographic area underwent a formal review of 2016 Census population and dwelling counts.
Notes: Permission not given: Band council did not give permission to enter its territory.
Dwelling enumeration could not be completed: Dwelling enumeration could not be completed for reasons such as natural events (including evacuations because of forest fires) and health and safety considerations (including access restrictions put in place to slow the spread of COVID-19).
The definition of residence on reserve includes some census subdivisions for which a First Nation has signed a modern treaty or a self-government agreement that provides them land ownership.
Sources: Statistics Canada, Census of Population, 2021, 2016 and 2011.

Table 2
Incompletely enumerated reserves and settlements in alphabetical order, 2021

Name	Type	Province	Census division	CMA/CA
Akwesasne	IRI	Quebec	Le Haut-Saint-Laurent	…
Akwesasne (Part) 59	IRI	Ontario	Stormont, Dundas and Glengarry	…
Alexandria	IRI	British Columbia	Cariboo	Quesnel
Barnston Island 3	IRI	British Columbia	Greater Vancouver	Vancouver
Basque 18	IRI	British Columbia	Thompson-Nicola	…
Big Horn 144A	IRI	Alberta	Division No. 9	…
Brochet 197	IRI	Manitoba	Division No. 23	…
Canim Lake 1	IRI	British Columbia	Cariboo	…
Canim Lake 2	IRI	British Columbia	Cariboo	…
Chilco Lake 1	IRI	British Columbia	Cariboo	…
Chilco Lake 1A	IRI	British Columbia	Cariboo	…
Chippewas of the Thames First Nation 42	IRI	Ontario	Middlesex	…
Churchill 1	IRI	Manitoba	Division No. 23	…
Doncaster	IRI	Quebec	Les Laurentides	…
Eden Valley 216	IRI	Alberta	Division No. 6	…
Fort Albany (Part) 67	IRI	Ontario	Kenora	…
Francois Lake 7	IRI	British Columbia	Bulkley-Nechako	…
Garden	IRI	British Columbia	Cariboo	…
Goulais Bay 15A	IRI	Ontario	Algoma	…
Granville Lake	S-É	Manitoba	Division No. 23	…
Hesquiat 1	IRI	British Columbia	Alberni-Clayoquot	…
Kahnawake	IRI	Quebec	Roussillon	Montréal
Kanesatake	S-É	Quebec	Deux-Montagnes	Montréal
Kinoosao-Thomas Clark 204	IRI	Saskatchewan	Division No. 18	…
Kloklowuck 7	IRI	British Columbia	Thompson-Nicola	…
Kumcheen 1	IRI	British Columbia	Thompson-Nicola	…
Lac-Rapide	IRI	Quebec	La Vallée-de-la-Gatineau	…
Lezbye 6	IRI	British Columbia	Cariboo	…

Table 2
Incompletely enumerated reserves and settlements in alphabetical order, 2021

Name	Type	Province	Census division	CMA/CA
Listuguj	IRI	Quebec	Avignon	Campbellton
Little Grand Rapids 14	IRI	Manitoba	Division No. 19	…
Lohbiee 3	IRI	British Columbia	Cariboo	…
Muskrat Dam Lake	IRI	Ontario	Kenora	…
Obadjiwan 15E	IRI	Ontario	Algoma	…
Omineca 1	IRI	British Columbia	Bulkley-Nechako	…
Oneida 41	IRI	Ontario	Middlesex	…
Oxford House 24	IRI	Manitoba	Division No. 22	…
Pakuashipi	S-É	Quebec	Minganie--Le Golfe-du-Saint-Laurent	…
Pauingassi First Nation	IRI	Manitoba	Division No. 19	…
Peters 1	IRI	British Columbia	Fraser Valley	…
Pikangikum 14	IRI	Ontario	Kenora	…
Poplar River 16	IRI	Manitoba	Division No. 19	…
Pukatawagan 198	IRI	Manitoba	Division No. 23	…
Rankin Location 15D	IRI	Ontario	Algoma	Sault Ste. Marie
Refuge Cove 6	IRI	British Columbia	Alberni-Clayoquot	…
Romaine 2	IRI	Quebec	Minganie--Le Golfe-du-Saint-Laurent	…
S1/2 Tsimpsean 2	IRI	British Columbia	Skeena-Queen Charlotte	Prince Rupert
Saddle Lake 125	IRI	Alberta	Division No. 12	…
Salmon River 1	IRI	British Columbia	Columbia-Shuswap	…
Shamattawa 1	IRI	Manitoba	Division No. 23	…
Shawniken 4B	IRI	British Columbia	Thompson-Nicola	…
Six Nations (Part) 40	IRI	Ontario	Haldimand-Norfolk	…
Six Nations (Part) 40	IRI	Ontario	Brant	Brantford
Spences Bridge	IRI	British Columbia	Thompson-Nicola	…
Stoney 142, 143, 144	IRI	Alberta	Division No. 15	…
Stoney 142B	IRI	Alberta	Division No. 15	…

Table 2
Incompletely enumerated reserves and settlements in alphabetical order, 2021

Name	Type	Province	Census division	CMA/CA
Swan Lake 7	IRI	Manitoba	Division No. 4	…
Tanakut 4	IRI	British Columbia	Cariboo	…
Thabacha Náre 196A	IRI	Alberta	Division No. 16	Wood Buffalo
Thebathi 196	IRI	Alberta	Division No. 16	…
Tsuu T'ina Nation 145	IRI	Alberta	Division No. 6	Calgary
Uncha Lake 13A	IRI	British Columbia	Bulkley-Nechako	…
Wahta Mohawk Territory	IRI	Ontario	Muskoka	…
Walpole Island 46	IRI	Ontario	Lambton	…

... not applicable
IRI = Indian reserve
S-É = Indian settlement
CMA = Census metropolitan area
CA = Census agglomeration
The definition of residence on reserve includes some census subdivisions for which a First Nation has signed a modern treaty or a self-government agreement that provides them land ownership.
Source: Statistics Canada, Census of Population, 2021.

Appendix 1.6 – Percentage change for population and dwelling counts at various levels of geography

The percentage change for the population and dwelling counts is based on a 2016 count that may have been revised since the 2016 population and dwelling counts were published. If the 2016 count has been revised, an "r" will be indicated beside the count. The 2016 population and dwelling counts may be revised due to some of the reasons identified below.

(1) The boundary of the geographic area has changed since the 2016 Census

When the boundary of a geographic area changed, Statistics Canada identified the impact of the change on the population and dwellings enumerated during the 2016 Census, and adjusted these counts to reflect the 2021 boundaries of the geographic areas. Most of the revisions to 2016 population and dwelling counts result from this type of adjustment.

(2) A formal review of the 2016 population and dwelling counts identified an error

When Statistics Canada releases population and dwelling counts from the census, data users sometimes question the validity of the counts for a specific geographic area, such as a municipality (census subdivision) or submunicipal area (designated place). When requested by local authorities, Statistics Canada undertakes a formal review of the population and dwelling counts.

In 2016, 147 census subdivisions (CSDs) and 43 designated places (DPLs) underwent a formal population and dwelling count review and their counts were revised. For the 2021 Census population and dwelling count tables showing 2016 counts, these revised 2016 counts are presented in tables for CSDs and DPLs, and are used to calculate the percent change between 2016 and 2021 at that level of geography.

The revised counts are presented in tables **only** for CSDs and DPLs. The 2016 counts for other levels of geography (e.g., province, territory and census division) are not revised. As a result, aggregating 2016 CSD counts to higher-level geographic areas (e.g., census divisions, provinces, territories and Canada) may not sum to the counts presented on the higher-level geographic areas. Additionally, the percent change for all levels of geography, other than CSDs and DPLs, do not account for these revisions.

Appendix 1.7 – Use of administrative data to impute non-responding households in areas with low response rates

Introduction

Several adaptations were implemented in the 2021 Census collection plan to mitigate the impact of the COVID-19 pandemic and other potential risks. Statistics Canada proactively developed a statistical contingency plan based on the secure, responsible, and appropriate use of administrative data to support the 2021 Census in the event of disruptions to census collection. Because census data are often the only source of information for some sub-populations and small areas, it was important to maximize data quality in locations with low response rates to meet the census goals of producing high-quality data for small levels of geography. Linked administrative data from federal and provincial data sources were used to improve the imputation of non-responding households at the imputation stage after 2021 Census collection ended. This was done in areas where response rates were low and for dwellings where good quality administrative data were available. Despite a successful overall census enumeration in 2021, some areas of the country had lower-than-expected response rates. This imputation plan contributed to a quality improvement in population and dwelling counts.

Objectives for the imputation plan

Imputation is a statistical method aimed at reducing bias introduced by non-response. This is achieved by identifying people or households that have characteristics similar to the incomplete record and substituting their values to fill in the missing or erroneous responses. The imputation plan was designed to use linked administrative data in a secure, responsible, and appropriate way to impute the census data for non-responding households in areas with low response rates, and for dwellings where good quality administrative data were available. The objective was to ensure high-quality population and dwelling counts in areas where census collection was affected by COVID-19, a natural disaster, or low response rates, and to apply the strategy consistently and equitably across the regions of Canada.

Development of the imputation plan

Statistics Canada has many years of experience using administrative data to ensure the high quality that Canadians expect from census data. For example, Statistics Canada has been using administrative data from the Canada Revenue Agency (CRA) since 2006 to improve the accuracy of income data. More recently, Statistics Canada used administrative data to enumerate the Wood Buffalo census subdivision and its municipality of Fort McMurray, Alberta, during the 2016 Census despite residents being evacuated because of a wildfire. In the preparations leading up to the 2021 Census, Statistics Canada conducted a study to simulate a statistical contingency plan using 2016 Census data. The research evaluated using administrative data to impute some non-responding households, compared with using the usual donor imputation method for all non-responding households. For this research, statistical models were developed to derive a "household" from administrative data and to compare the quality of those households with true census households.

Results of the administrative data imputation tests

Results showed that using administrative data to impute some non-responding households improved the quality of the data for key population and demographic indicators, compared with the usual donor imputation method. For example, whole household imputation (WHI) using administrative data improved the quality of the population and dwelling counts by age, by sex at birth, and at various levels of geography compared with traditional WHI, which is based on donor imputation. The gains in data quality from administrative data use were more pronounced in geographic areas with response rates below 90%. Good quality administrative data, measured based on their predicted consistency with census responses, were available for about half of non-responding households in the simulation.

Implementing the administrative data imputation plan

Based on evidence from research and tests of the imputation plan, Statistics Canada determined that linked administrative data should be used to support the traditional WHI method in some circumstances. Linked administrative data were used to maximize data quality for non-responding households and implemented according to the following criteria:

- implemented at the collection unit (CU) geographic level, consistent with traditional imputation approaches
- only in areas where response rates were below 90%
- only for dwellings where good quality administrative data were available
- only to impute date of birth, sex at birth, and number of usual residents.

The calculations used to determine the number of usual residents were also based on distributions by household size from the Dwelling Classification Survey (DCS) in mail-out and list-leave areas. Otherwise, the number of usual residents is determined through donor imputation. Similar to households who responded to the census, imputed households were linked to tax data from the CRA to obtain income characteristics.

Information about the imputation plan and the use of administrative data to support the census was posted on our website. The plan was also included in the [Supplement to Statistics Canada's Generic Privacy Impact Assessment related to the 2021 Census of Population](#) in March 2021.

Administrative Data

The administrative data used to impute non-responding households came from federal and provincial data sources already provided to Statistics Canada, such as data from the CRA; Immigration, Refugees, and Citizenship Canada; provincial vital statistics files (births and deaths); provincial driver's licence files; and the Indian Register.[5] When no direct response was received for a dwelling in an area with low response rates, good quality administrative data were used to impute variables such as date of birth, sex at birth, and the number of usual residents at the dwelling.

Reference date

For the 2021 Census, the reference date for data reporting is May 11, 2021. For non-responding households imputed using administrative data, various administrative data sources were used with a reference date as close as possible to May 11, 2021, to simulate a response on Census Day.

Scope of the imputation plan

The 2021 Census had a successful enumeration, with 98% of Canadians responding to the census. However, because some localized areas of the country showed response rates well below the national rate, administrative data were used to support the imputation of non-responding households in these areas. About 1,045 collection units (out of about 49,000 in Canada) showed a response rate below 90%, had good quality administrative data, and were therefore in-scope for this imputation plan. Approximately 12,000 non-responding households were imputed using administrative data, representing less than 0.1% of occupied private dwellings in Canada. The imputation plan used data already provided to Statistics Canada, and meets the highest standards of privacy, confidentiality and data security.

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5. The Indian Register is the official record identifying people registered as status Indians under the *Indian Act*. Indigenous Services Canada is responsible for maintaining the register.

Data quality

For population and dwelling counts in areas where the administrative data imputation plan was implemented, the data went through the same quality assessments, validation and certification as the overall census data. These additional steps were taken to ensure that the population and dwelling counts in areas where administrative data were used for imputation provided data that meet the same high standards of data quality expected of all census data. All census variables from both the short-form and long-form census were carefully validated. For each census question, the combined imputation rate from both administrative and traditional donor sources will be reported at various levels of geography (see Chapter 9 on data quality evaluation).

Appendix 1.8 – Variability of estimates from the 2021 Census long-form sample

This note provides a broad comparison of the quality of long-form estimates between the 2016 and 2021 Censuses. This comparison is based on an analysis of the precision of estimates of totals and averages for some variables common to the two censuses. The analysis is performed for Canada and the provinces and territories. The variance-based quality indicator provided in most data tables with long-form estimates is the confidence interval. Confidence intervals are ideal for performing statistical inferences. However, the coefficient of variation (CV) was chosen as the variance-based quality indicator for this analysis because it is well suited for comparing the precision of estimates whose sizes differ from one another. The CV of a survey estimate is the ratio of the standard error of the estimate to the estimate itself. It is expressed as a percentage.

The note first presents some highlights of the CVs for the 2016 and 2021 Census long-form estimates for Canada, the provinces and territories. Following these highlights, an analysis of the CVs for 2016 and 2021 is provided. Both the highlights and the analysis are based on the tables, which show 2016 and 2021 estimates together with their CVs and confidence intervals for nine characteristics.

Highlights

The following observations apply only to the variables and geographic areas presented in the tables, i.e., the results do not necessarily extend to other variables and geographic areas.

- The 2021 CVs are very similar to the corresponding 2016 CVs for all of the population characteristics in most of the geographic areas presented in the tables.
- For areas where the CVs in 2021 were relatively large compared with 2016, the increases can be accounted for by lower response rates to the census long-form questionnaire in 2021 than in 2016 in the areas.

Analysis of the 2016 and 2021 Census long-form coefficients of variation

CVs are provided for nine different characteristics of the 2016 and 2021 Census long-form estimates. Confidence intervals are also shown. The levels of geography provided are national, provincial and territorial.

For the characteristics and geographic areas presented in the tables, the differences between the 2016 and 2021 CVs are generally quite small. In 11 out of the 14 geographic areas, the differences are less than 0.1% for the majority of the characteristics. It was expected that the CVs would be generally similar for 2016 and 2021, since there were no significant changes between the two censuses to the sample design or to the methods used to produce survey weights and estimates.

The relatively large increases in CVs for Yukon, the Northwest Territories and Nunavut can be explained by the lower long-form questionnaire response rates in 2021, compared with 2016, for these areas. On average, response rates to the census long-form questionnaire were slightly lower in 2021 than in 2016. For Canada and the provinces and territories, the largest decreases in response rates between the two censuses occurred in Yukon, the Northwest Territories and Nunavut. Non-response contributes to the variability of estimates, and therefore lower response rates generally lead to larger CVs.

Even for those geographic areas in the tables where the increases in CVs between the 2016 and 2021 Censuses are largest, the differences are still quite small. For areas other than those presented in the tables, it is possible for the differences in variability of estimates between the two censuses to be large if the geographic area is small, particularly if there was a large difference in the response rate for the area. To evaluate the quality of estimates in specific use cases, it is recommended that data users examine the entire suite of available data quality indicators. More information on quality indicators is provided in the *2021 Census Data Quality Guidelines*, Statistics Canada Catalogue no. 98-26-0006.