



Effects of the COVID-19 Pandemic on Data Analysis and Comparability Over Time

Considerations for Canada and Census 2021



Delivering insight through data for a better Canada

The Importance of the Census

The Census is one of the foundational data sources for understanding Canadian society:

- It is a key resource for disaggregated data on different populations
- It is a key resource for measuring trends over time, including the impact of the COVID-19 pandemic
- Extensive engagement with data users enables the Census to be responsive to changing data needs
- It is rigorously tested to ensure data is of the highest possible quality

COVID-19 and Analytical Considerations for Census 2021

The COVID-19 pandemic and the measures used to address it present challenges ...

- Will introduce complexities in data assessment
- May affect data quality
- Will increase the risk of errors

We have extensive measures in place to mitigate these challenges.

We expect Census 2021 data to reveal some extraordinary patterns, but what is currently unclear is to what extent those patterns are attributable to the pandemic.

Factors Potentially Affecting Census 2021

Four sources of potential impact

- **COVID-19** : Major changes in trends are expected, but it will be difficult to predict how much of a role the COVID-19 pandemic plays as both the pandemic and government measures are evolving and will continue to do so, before, during and after collection
- **Content and processing changes from previous Census** : Changes to some returning questions (i.e. ethnic origin); introduction of machine learning for coding; increase in online response rate. All these changes will improve data quality but can potentially cause some breaks in the time series
- **Non-response effects** : Risk of non-response bias in some areas due to COVID
- **Other events** : No one can say with certainty what may occur during collection



Data Certification will be Key

Given uncertainties surrounding Census 2021 and the potential impact of those uncertainties on analysis and comparability over time, full data certification will be important

Prior to the COVID-19 pandemic, we had already introduced numerous improvements to our certification process for Census 2021, including but not limited to:

- Outlier identification and verification
- Checks to ensure that no systematic error has been introduced
- Consulting with internal and external experts when necessary
- New steering committee on Census certification

In addition, each census subject matter area is required to include a section on the COVID-19 pandemic in their own certification strategy. The process of finalizing certification strategies is ongoing until March 31 this year

Census Subject Matter Areas Potentially Impacted by the COVID-19 Pandemic

- Income
- Labour
- Education
- Commuting
- Immigration
- Demographics
- Housing
- Indigenous population

Statistics Canada is preparing guidelines to assist respondents in answering Census questions on employment, education, commuting and expenditures to ensure that the census accurately captures the impact of the COVID-19 pandemic, where applicable. Those guidelines will give the following instruction:

‘Statistics Canada is aware that COVID-19 may have an impact on your answers to some census questions, including those on employment, education, commuting and expenditures. When providing answers to census questions, please choose the responses that best reflect your situation or the situation of members of your household for the date or time period in question’

Labour, Commuting to Work, Income

- Labour
 - Number employed/unemployed by sector by population groups
 - Hours worked
 - Part-year/part-time
- Commuting to Work
 - Work from home orders
 - Concern about using public transportation
- Income
 - Significant job loss, reduction in hours
 - New government emergency relief (possibility of overpayment)
 - Possible delay in tax filing

Education

- Move to on-line learning in schools and potential impacts
 - Understanding “attendance” as a concept with on-line learning
 - School attendance
 - Some want full post-secondary experience – graduating secondary students delaying start of post-secondary
 - Post-secondary students not return because loss of summer employment and ability to pay for education
 - Loss of employment opportunities, therefore take post-secondary classes
- Reduction in the number of international students and Canadian students studying abroad

Immigration

- Border closures and restrictions
 - At different times and for various countries throughout 2020 and 2021
 - What might be the notable changes in the socio-demographic characteristics of immigrants and recent immigrants living in Canada?

Demographics and housing

- Changing characteristics of couples in Canada, including trends in marital status of the adult population
- Multigenerational households: persons in multigenerational and multiple-family households were more susceptible to catching the virus. Some families may have created new multigenerational or multiple family households out of necessity to help manage the consequences of the pandemic
- Temporary changes in living arrangements made as a result of the pandemic: living at a summer house because they can work remotely; grandparents have temporarily moved into their child's home to help take care of grandchildren
 - these temporary shifts in living arrangements will be hidden if individuals record themselves as living at their usual place of residence
- Students who return to their parental home periodically throughout the year are instructed to record themselves as living in their parental home – some students did not return home because of the pandemic, others were more likely to return
 - Will be difficult to capture the major shifts in living arrangements among post-secondary students that have occurred as a result of the pandemic

Indigenous

The COVID-19 pandemic and changes in collection strategies could have an impact on response rates and the number of incompletely enumerated reserves

- These impacts are mitigated by increased community engagement, outreach and communications to support collection, as well as ongoing monitoring to address issues and ensure quality
- Increased analytical resources to monitor and certify population and dwelling counts in communities, including leveraging administrative data sources whenever possible
- Proactive approach to identify potential issues while collection is ongoing and partnering with field operations so they can investigate and take action

Increased proportion of dwellings enumerated by EQ (as opposed to Paper Questionnaire) may lead to changes in response patterns in some cases

- These changes will be identified and reported on during certification
- Transparency to inform end users of any potential impacts on analysis

Communications will be key

The uncertain impacts of the COVID-19 pandemic on Census 2021 make reference products and specific communications extremely important –

Users will need to know exactly what they can and cannot expect from Census 2021 data

The Guide to the Census of Population and the topic-specific Reference Guides will address the impacts of the COVID-19 pandemic on the data. Just as with certification, each subject matter area will address the impact of the COVID pandemic on the data relevant to them (both collection and quality)

There will be communications related to the COVID-19 pandemic in all release materials, including footnotes in all data tables and releases

In conclusion

The full impacts of the COVID-19 pandemic on analysis and comparability over time are still unclear

We knew already that our content changes and use of machine learning in processing for Census 2021 would have an impact on data comparability over time.

We expect that our collection changes and data certification approaches will mitigate the potential negative effects of the COVID-19 pandemic.

Importantly, the Census will play a key role in helping illuminate the impacts of the pandemic on Canadian society.