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Census of Population Reference Guide

Journey to Work Reference Guide

Census of Population, 2016

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. not available for any reference period
.. not available for a specific reference period
... not applicable
0 true zero or a value rounded to zero
0^s value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
^{p} preliminary
^{r} revised
x suppressed to meet the confidentiality requirements of the *Statistics Act*
^{E} use with caution
F too unreliable to be published
* significantly different from reference category ($p < 0.05$)

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Journey to Work Reference Guide

Definitions and concepts

The Census of Population collects information on journey to work data including concepts such as place of work status (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop110-eng.cfm), workplace location (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop132-eng.cfm), commuting destination (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop176-eng.cfm), main mode of commuting (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop177-eng.cfm), commuting vehicle occupancy (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop178-eng.cfm), distance from home to work (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop179-eng.cfm), commuting duration (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop152-eng.cfm), time leaving for work (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop159-eng.cfm), time arriving at work (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop158-eng.cfm) and commuting flows between the residence and workplace. These data are often used in conjunction with age, sex, labour and income variables to paint a picture of workers and those who commute to their place of work.

The characteristics and concepts related to journey to work appear in the population universe. For more information on the population universe please refer to Appendix 1.5 (http://www12.statcan.gc.ca/census-recensement/2016/ref/98-304/app-ann1-5-eng.cfm) of the *Guide to the Census of Population, 2016*, Catalogue no. 98-304-X. These data are collected for persons aged 15 years and over in occupied private dwellings who worked at some time between January 1, 2015, and May 10, 2016. Journey to work data are generally published for a subset of this group, the employed person (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop028-eng.cfm). However the data can be tabulated for many different labour force status (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop057-eng.cfm) components.

Please refer to the *Guide to the Census of Population, 2016* (http://www12.statcan.gc.ca/census-recensement/2016/ref/98-304/index-eng.cfm), Catalogue no. 98-304-X and the *Dictionary, Census of Population, 2016* (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/index-eng.cfm), Catalogue no. 98-301-X for more detailed information on the definition of these variables.

Users should be careful when comparing these data with other sources as there may be differences in the definitions used and how the data are collected. Please see the section Comparability with other data sources for additional information.

Users should also be careful when interpreting results from the commuting vehicle occupancy question, as only the main mode of commuting is accepted. As a result, estimates of passengers in a private vehicle, as reported by drivers, and estimates of passengers, as reported by the passengers themselves, can be different. For example, some drivers might report driving a passenger a short distance to a location where the passenger will then take public transit for the majority of their commuting distance. That same passenger, however, could report using public transit as their main mode of commuting rather than being a passenger in a car, van or truck. Therefore, in some instances, the commuting vehicle occupancy question might not necessarily measure the number of workers sharing the ride to work.

Classifications

Data for workplace location (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop132-eng.cfm) are available for the entire country by a number of standard geographic areas, including provinces and territories (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/geo038-eng.cfm), census divisions (CDs) (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/geo008-eng.cfm), and census subdivisions (CSDs) (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/geo012-eng.cfm). Details for these geographic areas may be found under the Introduction to the geography universe (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/geoint-eng.cfm), in the *Dictionary, Census of Population, 2016*, Catalogue no. 98-301-X.

Workplace locations that fall within a census metropolitan area (CMA) and census agglomeration (CA) (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/geo009-eng.cfm) are also available for more detailed

geographies including census tracts (CTs) (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/geo013-eng.cfm), dissemination areas (DAs) (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/geo021-eng.cfm), and dissemination blocks (DBs) (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/geo014-eng.cfm) through custom requests.

Workplace locations can also be provided for most other units in the Hierarchy of standard geographic areas for dissemination (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/figures/f1_1-eng.cfm), also found in the *Dictionary, Census of Population, 2016* (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/index-eng.cfm), Catalogue no. 98-301-X.

Questions

Journey to work data are obtained from the information collected through questions 42 (place of work status), 43(a) (main mode of commuting), 43(b) (commuting vehicle occupancy), 44(a) (time leaving for work) and 44(b) (commuting duration) along with place of residence information. These questions are collected as part of the 2016 Census long-form questionnaire (2A-L questionnaire (http://www23.statcan.gc.ca/imdb/p3Instr.pl?Function=getInstrumentList&Item_Id=295122&UL=1V&) and 2A-R questionnaire (http://www23.statcan.gc.ca/imdb/p3Instr.pl?Function=getInstrumentList&Item_Id=295299&UL=1V&)).

In addition to the variables obtained from each question, a ‘Distance from home to work’ variable and a ‘Time arriving at work’ variable are derived from the journey to work questions.

Journey to work questions are asked of respondents aged 15 years and over in occupied private dwellings who worked at some time since January 1, 2015. However, most tables are created for a sub-universe which includes respondents who held a job (including self-employed individuals) during the week of Sunday, May 1 to Saturday, May 7, 2016, labelled the employed labour force.

For persons living in private households on Indian reserves, Indian settlements and in remote areas, data were collected using the 2016 Census of Population 2A-R questionnaire (http://www23.statcan.gc.ca/imdb/p3Instr.pl?Function=getInstrumentList&Item_Id=295299&UL=1V&). The questions asked on the Form 2A-R questionnaire were the same as on the 2A-L questionnaire (http://www23.statcan.gc.ca/imdb/p3Instr.pl?Function=getInstrumentList&Item_Id=295122&UL=1V&), but the examples, where provided for place of work, were more relevant to these areas.

For more information on all the questions included in the 2016 Census questionnaire, please refer to the “Why we ask the long-form questions” section in the *2016 Census of Population Long-Form Summary Guide* (http://www23.statcan.gc.ca/imdb/p3Instr.pl?Function=getInstrumentList&Item_Id=295122&UL=1V&).

The journey to work data available for each individual depend on his or her response provided to Question 42 on place of work status.

Refer to Table 6.1 (http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/tab/t6_1-eng.cfm) of the *Dictionary, Census of Population, 2016*, Catalogue no. 98-301-X for ‘journey to work’ data available for each place of work status.

Data quality

The 2016 long-form census questionnaire underwent a thorough data quality assessment, similar to what was done for the 2011 National Household Survey (NHS) and past censuses. A number of data quality indicators (briefly described below) were produced and used to evaluate the quality of the data.

The data quality assessment was done in addition to the regular quality checks completed at key stages of the survey. For example, during data collection and processing, the consistency of the responses provided was

checked and the non-response rates for each question were analyzed. As well, the quality of imputed responses was examined as part of the data editing and imputation steps. Finally, long-form census questionnaire estimates were compared with other data sources, and certified for final release.

For information about data quality for the census subdivision of Wood Buffalo, the data collection methodology and the use of administrative data sources, please refer to Appendix 1.4 (http://www12.statcan.gc.ca/census-recensement/2016/ref/98-304/app-ann1-4-eng.cfm) of the *Guide to the Census of Population, 2016*, Catalogue no. 98-304-X.

The main highlights of this assessment for the Journey to Work data are presented below.

The evaluation of the journey to work variables was carried out at various levels of geography including the Canada, province and territory, and census metropolitan area. Workplace locations were investigated at more detailed levels (for example, census subdivision and census tract). Evaluations carried out include the examination of total imputation rates, the comparison of the distribution of unedited and edited data (to determine whether data bias is introduced by imputation), and a comparison with the 2011 NHS data.

Coding of workplace location

The responses to the place of work and name of firm questions were used to code the workplace location. The proportion of responses done using automated coding was 84.1%. If special codes such as invalid responses or out-of-scope responses are excluded, 80.1% of the responses that were assigned a geographic code were done using automated coding. Coding of the remaining responses was done by coders using software designed specifically for workplace location coding. The systems included several reference files such as a postal code file, street address file and place name file, as well as a computerized mapping application.

Cross-classification of journey to work variables

Journey to work variables are often cross-classified with other variables in a table to provide a more detailed analysis of certain subjects. Data users should be aware that when small populations are examined either by selecting small geographical areas or by cross-classifying multiple variables, the estimates tend to be more variable due to sampling errors.

Variability due to sampling and total non-response

The objective of the long-form census questionnaire is to produce estimates on various topics for a wide variety of geographies, ranging from very large areas (such as provinces and census metropolitan areas) to very small areas (such as neighbourhoods and municipalities), and for various subpopulations (such as Aboriginal peoples and immigrants) that are generally referred to as ‘domains of interest’. In order to reduce response burden, the long-form census questionnaire is administered to a random sample of households.

This sampling approach and the total non-response introduce variability in the estimates that needs to be accounted for. This variability also depends on the population size and the variability of the characteristics being measured. Furthermore, the precision of estimates may vary appreciably depending on the domain or geography of interest, in particular because of the variation in response rates. For more information on the variability due to sampling and total non-response in long-form census questionnaire estimates, please refer to the *Guide to the Census of Population, 2016* (http://www12.statcan.gc.ca/census-recensement/2016/ref/98-304/index-eng.cfm), Catalogue no. 98-304-X.

Non-response bias

Non-response bias is a potential source of error for all surveys, including the long-form census questionnaire. Non-response bias arises when the characteristics of those who participate in a survey are different from those who do not.

In general, the risk of non-response bias increases as the response rate declines. For the 2016 long-form census questionnaire, Statistics Canada adapted its collection and estimation procedures in order to mitigate, to the extent possible, the effect of non-response bias. For more information on these mitigation strategies, please refer to the *Guide to the Census of Population, 2016* (http://www12.statcan.gc.ca/census-recensement/2016/ref/98-304/index-eng.cfm), Catalogue no. 98-304-X.

Data quality indicators

A number of quality indicators were produced and analyzed during the data quality assessment of the long-form census questionnaire. Three of these are presented to users: the global non-response rate (GNR), the standard error, and the imputation rate by question.

The GNR combines non-response at the household level (or total non-response) and non-response at the question level (partial non-response). It is calculated and presented for each geographic area. The GNR is the key criterion that determines whether or not the long-form census questionnaire results are released for a given geographic area – data are suppressed for geographic areas with a GNR equal to or greater than 50%. More information on the GNR is available in the *Guide to the Census of Population, 2016* (http://www12.statcan.gc.ca/census-recensement/2016/ref/98-304/index-eng.cfm), Catalogue no. 98-304-X.

The standard error is a measure of the precision of an estimate with respect to sampling and total non-response variability. A small standard error corresponds to a precise estimate. Standard errors are made available to users for certain long-form census questionnaire estimate, except in cases where confidentiality would be compromised. The standard error can be used to derive other indicators of precision such as the coefficient of variation. It can also be used for most types of population parameters of interest (e.g. a count, a proportion or an average) and, using an adequate methodology, to derive margins of errors or confidence intervals for a given confidence level or to perform statistical inference (hypothesis testing). For more information on the long-form census questionnaire standard error and its interpretability and use, please refer to the *Guide to the Census of Population, 2016* (http://www12.statcan.gc.ca/census-recensement/2016/ref/98-304/index-eng.cfm), Catalogue no. 98-304-X.

The imputation rate by question, excluding global non-response, is a measurement of quality specific to each question in the long-form census questionnaire. It measures the proportion of respondents (‘respondents’ being defined as those for whom a fully- or partially-completed questionnaire was returned) who did not answer the question, or whose response was invalid and for which a valid value was assigned. Imputation eliminates gaps in the data and, when done appropriately, reduces bias introduced by non-response. This is done by identifying persons who have characteristics similar to the incomplete record and by copying their values to fill in the missing or erroneous responses. The imputation rates by question are presented below.

Table 1
Imputation rates, Canada, provinces and territories, 2016 Census Program, employed labour force

Regions	Place of work status	Workplace location		Main mode of commuting	Commuting vehicle occupancy	Time leaving for work	Commuting duration
		All geographies	Partial imputation (below CSD)				
	percentage						
Canada	3.7	5.4	1.1	4.3	3.8	5.0	5.3
Newfoundland and Labrador	7.2	8.5	1.2	7.4	7.2	9.6	10.1
Prince Edward Island	6.2	8.1	1.4	6.0	6.1	7.1	7.7
Nova Scotia	4.4	5.7	0.7	4.8	4.6	5.9	6.2
New Brunswick	4.3	5.7	0.7	4.5	4.1	5.3	5.8
Quebec	3.5	4.9	0.8	4.0	3.5	4.6	4.7
Ontario	3.5	5.0	1.1	4.1	3.6	4.7	4.8
Manitoba	3.6	4.6	0.7	4.1	4.0	5.2	5.3
Saskatchewan	4.2	5.7	1.0	4.6	4.4	5.8	6.3
Alberta	4.2	6.8	1.9	4.5	4.1	5.7	6.3
British Columbia	3.6	5.9	1.5	4.4	3.9	5.1	5.6
Yukon	3.7	6.2	2.0	4.8	4.3	5.8	5.7
Northwest Territories	4.8	5.9	0.8	5.7	6.8	7.4	7.2
Nunavut	2.7	2.9	0.1	4.0	9.8	6.9	5.9

Source: Statistics Canada, Census of Population, 2016.

Finally, the 2016 journey to work imputation rates were considerably lower than the corresponding 2011 imputation rates at the national level. Data users who are comparing 2016 Census estimates to 2011 National Household Survey (NHS) estimates should therefore take the higher level of imputation for the 2011 journey to work data into account. More information on the 2011 NHS imputation rates is available in the *Journey to Work Reference Guide: National Household Survey, 2011* (http://www12.statcan.gc.ca/nhs-enm/2011/ref/guides/99-012-x/99-012-x2011008-eng.cfm), Catalogue no. 99-012-XWE2011008.

Global non-response rates

Global non-response rates (GNRs) are determined for each NHS geographic area. Place of work (POW) geographic areas therefore have their own global non-response rates. POW GNRs are based on the population aged 15 years and over who worked at any given time between January 2015 and May 2016 at a usual place of work or at home located in the specific place of work geographic area, whereas place of residence (POR) geographic areas have global non-response rates based on the population residing in the area. Consequently, place of work geographic areas might have different global non-response rate values than their equivalent place of residence geographic area. For example, the global non-response rate for the place of work census subdivision of Toronto might not be the same as the global non-response rate for the place of residence census subdivision of Toronto.

POW GNRs like POR GNRs are an estimate, not an absolute metric, and both GNR values are variable.

However, POW GNRs are more variable than POR GNRs in precisely the same way that POW population estimates (which are not calibrated to a known POW population enumerated through the census) are more variable than POR population estimates (which are calibrated to a known population enumerated through the census).

As is the case for place of residence geographic areas, data for place of work geographic areas with a global non-response rate of 50% or above are suppressed in standard products, but available as a custom request. However, it is important to note that, in standard products, data might be available for some place of residence geographic areas (if their global non-response rate is below 50%), but not for the equivalent place of work geographic area if the equivalent place of work geographic area has a global non-response rate of 50% or above, and vice versa.

Certification of final estimates

Once data processing, editing and imputation were completed, the data were weighted in order for estimates to represent the total Canadian population living in private dwellings. Certification of the final weighted estimates was the last step in the validation process leading to recommendation for release of the data for each geography and domain of interest. Based on the analysis of data quality indicators and the comparison of the long-form census questionnaire estimates with other data sources, the recommendation is for unconditional release, conditional release or non-release for quality reasons. In the case of conditional release or non-release, appropriate notes and warnings are included in this guide. Several data sources were used to evaluate the long-form census questionnaire estimates. However, since the risk of error often increases for lower levels of geography and for smaller populations, and the data sources used to evaluate these results are less reliable (or not available) at these lower levels, it can be difficult to certify the estimates at these levels.

Long-form census questionnaire estimates are also subject to confidentiality rules that ensure non-disclosure of individual respondent identity and characteristics. For more information on confidentiality rules, please refer to the *Guide to the Census of Population, 2016* (http://www12.statcan.gc.ca/census-recensement/2016/ref/98-304/index-eng.cfm), Catalogue no. 98-304-X.

For more information on data processing and the calculation of the estimates and their level of precision, please refer to the *Sampling and Weighting Technical Report, Census of Population, 2016* (http://www12.statcan.gc.ca/census-recensement/2016/ref/98-306/index-eng.cfm), Catalogue no. 98-306-X.

Comparability

Comparability with other data sources

Many factors affect comparisons of journey to work data across these data sources. Comparability, among other factors, is affected by differences in survey target population, reference period, sampling and collection methods; question wording, questionnaire format, examples and instructions; approaches to data processing; and the social and political climate at the time of data collection.

Users should compare data from the 2016 Census of Population with other sources carefully as there may be differences in the definitions used and how the data are collected. Some common issues include the following:

- The estimated number of workers from the 2016 Census of Population in a given geographic area may differ from the estimates derived from other sources (e.g., business and establishment surveys) since companies with more than one location often report that all of their workers are working at one location (e.g., head office). In addition, the 2016 Census of Population only collects detailed information for a person's main job. Persons with more than one job are only counted at their main job.
- In the 2016 Census of Population, work at home estimates are based on a person's main job and where they work most of the time, whereas many surveys ask respondents if they work some of their hours at home. As a result, these surveys report a much higher estimate of the work at home population than the 2016 Census of Population.
- Commuting distance is calculated as the straight-line distance between the residential block representative point and the workplace location representative point. In most cases inside census metropolitan areas and census agglomerations, this underestimates the distance travelled to work because workers seldom have a route that minimizes the distance they travel (such as a straight line) between their home and workplace.

The commuting distance may be inflated for persons working outside census metropolitan areas and census agglomerations since the workplace location is usually coded to a single representative point for the census subdivision of work. This can affect the calculated commuting distance, particularly when the census subdivision of work has a large area.

- The 2016 Census of Population assumes that the commute to work originates from the usual place of residence where the census was completed, but this may not always be the case. In some cases, respondents may have only worked earlier in the year or the previous year and lived somewhere else at that time rather than their usual residence at the time of the census. In other cases, respondents may have been on an extended work trip (e.g., working on a special project in a different part of the province or country) and a person at their usual place of residence may have filled out that person's census information, even though the commute to work for the person on the work trip originated from a temporary residence that was not part of census collection. Similarly, some persons maintain a residence close to work and commute to their usual place of residence (for census purposes) on weekends. Regardless, no changes are made to the usual residence of employed persons; their usual residence at the time of the census is treated as the starting point of their commute.
- Students often work after school at a location near their school. As a result, the data may show unusual commutes or an unusual mode of transportation relative to their place of residence.

In order to evaluate the data collected from the 2016 Census of population, the journey to work findings were compared to internal data.

The 2011 National Household Survey (http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=5178) was used primarily for internal comparison as there are no other data sources that collect information on place of work. For place of work status and mode of transportation, comparisons were made for Canada, the provinces and territories, census divisions and census metropolitan areas. For workplace location, the comparisons included detailed geographies such as census subdivisions and census tracts.

Mode of transportation was also compared with the 2015 General Social Survey (GSS) on Time Use, cycle 29 (http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4503). The comparison was limited to the geographical areas that were covered in both the 2016 Census and 2015 GSS samples.

For additional information, please refer to the *Guide to the Census of Population, 2016* (http://www12.statcan.gc.ca/census-recensement/2016/ref/98-304/index-eng.cfm), Catalogue no. 98-304-X.

Comparability over time

The 2011 National Household Survey employed a different methodology than the 2016 Census, the 2006 Census and prior censuses. These differences can affect comparability between 2016 Census estimates and 2011 National Household Survey estimates for the journey to work variables. For more information on the comparability between the 2016 Census and the 2011 National Household Survey, please refer to the *Guide to the Census of Population, 2016* (http://www12.statcan.gc.ca/census-recensement/2016/ref/98-304/index-eng.cfm), Catalogue no. 98-304-X.

In previous census cycles, automated and manual coding of rural CSDs located outside CMAs and CAs was done by coding all records of people working in that CSD to a representative point in the largest block within that CSD. In 2016, part of the automated coding system was adjusted to identify the exact blockface or block of a place of work record in a rural CSD, and then it was coded to that blockface or block instead. Other matching processes in the automated coding environment, as well as manual coding, were done at the CSD representative block level, as was the case in previous census cycles.

This change in 2016 means that there is improved geographic coding of place of work in rural areas for 2016, which in turn means that the distance from home to work values for rural areas are, overall, more precise than previous data.