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Census of Population Reference Guide

Education 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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Definitions and concepts

The 2016 Census of Population collects information on the Canadian population in private households. Education information is collected in the census because education plays a major role in Canadian society. Education affects Canadians' quality of life (in areas such as income, work, health and participation in the community), and the knowledge and skills of the Canadian labour force affect Canada's overall economic performance.

The 2016 Census measured four main concepts through its education questions (collected only for the population aged 15 years and over):

- completed education qualifications: certificates, diplomas and degrees (Questions 25 and 26a), 26b) and 26c))
- major field of study (Question 27)
- location of study (Question 28)
- school attendance (Question 29).

Within these concepts, data for several analytical variables have been released:

- [Highest certificate, diploma or degree](http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop038-eng.cfm) (<http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop038-eng.cfm>)
- [Secondary \(high\) school diploma or equivalency certificate](http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop121-eng.cfm) (<http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop121-eng.cfm>)
- [Major field of study \(based on the Classification of Instructional Programs \(CIP\) Canada 2016\)](http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop156-eng.cfm) (<http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop156-eng.cfm>)
- [Location of study](http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop061-eng.cfm) (<http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop061-eng.cfm>)
- [Location of study compared with province or territory of residence](http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop151-eng.cfm) (<http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop151-eng.cfm>)
- [School attendance](http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop007-eng.cfm) (<http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop007-eng.cfm>).¹

For definitions of these variables, see the [Dictionary, Census of Population, 2016](http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/index-eng.cfm) (<http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/index-eng.cfm>), Catalogue no. 98-301-X.

Respondents were asked to respond to the education questions according to their status on or up to May 10, 2016, even if they completed the questionnaire after this date. This is the same as the reference date used for the 2011 National Household Survey (NHS).

Early enumeration – collection of the 2016 Census questionnaire prior to May 10, 2016 – was conducted in remote, isolated parts of the provinces and territories during February, March, and April 2016. When enumeration took place before May 10, 2016, the reference date used was the date on which the household was enumerated.

For general information on the overall content, collection, design, processing, and data quality for the Census of Population, 2016, 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) (<http://www12.statcan.gc.ca/census-recensement/2016/ref/98-304/index-eng.cfm>), Catalogue no. 98-304-X.

1. This variable was titled "attendance at school" in the 2006 Census and 2011 NHS. While there were no conceptual changes made and the concepts are directly comparable over time, the name was changed to conform to Statistics Canada's standard definitions in the 2016 Census.

Questions

The Census of Population, 2016, [2A-L questionnaire](http://www23.statcan.gc.ca/imdb/p3Instr.pl?Function=getInstrumentList&Item_Id=295122&UL=1V&) (http://www23.statcan.gc.ca/imdb/p3Instr.pl?Function=getInstrumentList&Item_Id=295122&UL=1V&) (long-form) contains five questions related to education that were asked only for the population aged 15 years and over.

Questions 25 and 26 collected information on all **certificates, diplomas, or degrees** that the person had completed through high school (Question 25); apprenticeship and other trades programs (Question 26a)); college, CEGEP, or other non-university institutions (Question 26b)); or university (Question 26c)).

Question 27 collected information on the **major field of study** of the person's highest certificate, diploma, or degree above the high school level.

Question 28 asked about the province, territory or country where the person's highest certificate, diploma, or degree above the high school level was completed (**location of study**).

Question 29 collected information on whether the person attended school in the previous nine months (at any time between September 2015 and May 10, 2016), and the type of school they attended (**school attendance**).

The Census of Population, 2016, [2A-R questionnaire](http://www23.statcan.gc.ca/imdb/p3Instr.pl?Function=getInstrumentList&Item_Id=295299&UL=1V&) (http://www23.statcan.gc.ca/imdb/p3Instr.pl?Function=getInstrumentList&Item_Id=295299&UL=1V&) was used to collect information from persons living in private households on Indian reserves, Indian settlements, and in remote areas. The 2A-R Education questions were the same as those in the 2A-L (long-form); however, some of the examples were adapted to reflect education programs that are more common in those areas.

While the education concepts contained in the 2016 Census are the same as those in the 2011 National Household Survey (NHS) and the 2006 Census, some notable changes were made to the wording and presentation of the education questions in order to improve the accuracy of reporting and/or reduce respondent burden. For information on these changes, please refer to the [Comparability with other data sources](#) section in this reference guide.

For more information on the 2016 Census questionnaire, including the reasons why each question is asked, please see the [2016 Census of population long-form summary guide](http://www23.statcan.gc.ca/imdb/p3Instr.pl?Function=getInstrumentList&Item_Id=295122&UL=1V&) (http://www23.statcan.gc.ca/imdb/p3Instr.pl?Function=getInstrumentList&Item_Id=295122&UL=1V&).

Classifications

Classification of major field of study write-in responses

In the 2016 Census, the major field of study of the highest postsecondary certificate, diploma or degree of the respondent was classified using the updated [Classification of Instructional Programs \(CIP\) Canada 2016](http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=299355) (http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=299355). The updated classification is directly comparable to the previous classification, CIP Canada 2011, as updates include only new examples and minor changes to existing examples.

Write-in responses for major field of study were assigned a six-digit code. These could be grouped into four-digit codes (subseries) and two-digit codes (series). The two-digit codes could also be further combined into primary groupings. For example, code 14.0803 is "Structural Engineering," 14.08 is "Civil Engineering," 14 is "Engineering," and the primary grouping for Engineering is "Architecture, Engineering, and Related Technologies."

There is also a variant that can be used to examine or compare the STEM fields of study (science, technology, engineering, and mathematics and computer sciences). This variant is different from the STEM groupings variant used in the 2011 National Household Survey.

There are two noteworthy changes to take into account when comparing the variants:

The first major change for 2016 is the elimination of a specific “Technology” category in the STEM section of the variant. For the new variant, “Technology” programs of study identified as STEM have been distributed among the three STEM categories: ‘Science and science technology,’ ‘Engineering and engineering technology’ and ‘Mathematics and computer and information science.’ The four STEM categories presented in 2011 converted to three STEM categories for 2016 as noted above.

The second major change for 2016 is the breakdown of the BHASE² (non-STEM) grouping into sub-categories. In the previous STEM variant, there was only one single category for BHASE fields of study. The addition of BHASE categories allows data users to compare education or labour market outcomes (in a cross-tabulation) for persons within the STEM fields of study, and between STEM and BHASE fields of study.

Persons without a certificate, diploma or degree above the high school level were not asked to provide a major field of study.

Note that major field of study responses were classified at the six-digit level only to the degree that the respondents provided precision in their responses. For example, it is likely that some people who studied civil engineering provided a response of only “Engineering” to the major field of study question. Some general categories also include those people who took general programs without further specialization.

Series 21, 32 to 37 and 53 and their sub-components are not used in the census major field of study concept. These series consist of high school equivalency programs and courses typically taken for personal enrichment.

Coding of the written field of study responses is done using a combination of automated and manual coding. Both processes use a reference file that contains the most common responses from the 2011 National Household Survey, the 2006 Census, and older censuses, each with an associated CIP Canada 2016 six-digit code.

For more information on the CIP, see the [Classification of Instructional Programs \(CIP\) Canada 2016](http://www.statcan.gc.ca/eng/subjects/standard/cip/2016/index) (<http://www.statcan.gc.ca/eng/subjects/standard/cip/2016/index>), Catalogue no. 12-590-X.

Classification of location of study responses

The location of the institution from which the person received his/her highest certificate, diploma or degree above the high school level was reported as a province or a territory (inside Canada) or a country (outside Canada). Countries outside Canada were classified according to the Standard Classification of [Countries and Areas of Interest for Social Statistics \(SCCAI\) 2016](http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=367512) (<http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=367512>).

A variant of the (SCCAI) 2016 classification allows the countries to be aggregated into geographical sub-regions (for example, ‘Southeast Asia,’ ‘Western Africa,’ ‘South America’) and geographical macro-regions (for example, ‘Asia,’ ‘Africa,’ ‘Americas’).

For the 2016 Census, locations of study outside Canada were categorized and released at the most detailed level, whereas in the 2011 National Household Survey (NHS), countries that had a small number of responses were aggregated at the macro-region level into a ‘not included elsewhere (n.i.e.)’ category.

Persons without a certificate, diploma or degree above the high school level were not asked to provide a location of study.

2. The term ‘Business, humanities, health, arts, social science, and education fields’ (BHASE) includes all of the non-STEM fields from the STEM and BHASE (non-STEM) groupings variant, an alternative presentation of the Classification of Instructional Programs, 2016. This includes ‘Business and administration,’ ‘Arts and humanities,’ ‘Social and behavioural sciences,’ ‘Legal professions and studies,’ ‘Health care,’ ‘Education and teaching’ and ‘Trades, services, natural resources and conservation.’

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 analysed. As well, the quality of imputation 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) (<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 Education data are presented below.

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 in this document 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) (<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) (<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 analysed during the data quality assessment of the long-form census questionnaire. Three of these are presented to data users: the global non-response rate (GNR), the standard error, and the imputation rate by question.

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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) (<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 data users for certain long-form census questionnaire estimates, 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) (<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 or households that 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 by question for Canada, Provinces and Territories, Census of Population, 2016

Regions	Q. 25	Q. 26a	Q. 26b	Q. 26c
	High school (secondary school diploma or equivalent)	Certificate of Apprenticeship or Certificate of Qualification or other trades certificate or diploma	College, CEGEP or other non-university certificate or diploma	University certificate, diploma or degree
	percentage			
Canada	1.2	1.8	1.8	1.4
Newfoundland and Labrador	1.7	2.5	2.5	1.9
Prince Edward Island	1.5	2.8	2.5	1.9
Nova Scotia	1.2	2.1	2.1	1.5
New Brunswick	1.2	1.8	1.8	1.4
Quebec	1.2	1.8	1.7	1.4
Ontario	1.1	1.7	1.6	1.3
Manitoba	1.2	1.7	1.7	1.3
Saskatchewan	1.3	2.0	2.0	1.5
Alberta	1.5	1.9	2.0	1.6
British Columbia	1.5	2.0	2.0	1.6
Yukon	1.5	2.5	2.4	1.7
Northwest Territories	2.1	2.7	2.6	2.1
Nunavut	2.5	2.4	2.1	1.7

Source: Statistics Canada, Census of Population, 2016.

Table 2
Imputation rates by question for Canada, Provinces and Territories, Census of Population, 2016

Regions	Q. 27	Q. 28	Q. 29
	Major field of study	Location of study	School attendance
	percentage		
Canada	4.4	3.1	4.3
Newfoundland and Labrador	6.1	5.3	4.8
Prince Edward Island	6.6	5.4	4.5
Nova Scotia	5.3	4.1	4.4
New Brunswick	4.8	3.5	4.4
Quebec	4.6	3.1	3.7
Ontario	4.0	2.7	4.3
Manitoba	5.0	3.6	4.1
Saskatchewan	5.2	4.2	4.3
Alberta	4.6	3.3	4.7
British Columbia	4.4	3.1	4.8
Yukon	4.9	3.3	4.0
Northwest Territories	6.8	5.9	3.9
Nunavut	9.6	6.0	3.3

Source: Statistics Canada, Census of Population, 2016.

The 2016 education imputation rates are considerably lower than the corresponding 2011 imputation rates at the national level. Data users comparing 2016 Census estimates to 2011 National Household Survey (NHS) estimates should take into account the higher level of imputation of the education data in 2011. More information on the 2011 National Household Survey imputation rates is available in the [Education Reference Guide, National Household Survey, 2011](http://www12.statcan.gc.ca/nhs-enm/2011/ref/guides/99-012-x/99-012-x2011006-eng.cfm) (<http://www12.statcan.gc.ca/nhs-enm/2011/ref/guides/99-012-x/99-012-x2011006-eng.cfm>), Catalogue no. 99-012-XWE2011006.

The 2016 imputation rates for the Education questions are compared in detail below with the imputation rates from the 2006 Census which employed a similar methodology.

The 2016 imputation rates for questions 25 (High school diploma or equivalent), 26a (Certificate of Apprenticeship or Certificate of Qualification or other trades certificate or diploma), 26b (College, CEGEP or other non-university certificate or diploma) and 26c (University certificate, diploma or degree) were approximately half a percentage point lower than the corresponding 2006 imputation rates at the national level.

Questions 27 (Major field of study) and 28 (Location of study) had higher rates of imputation than the other questions. They were open-ended, written response questions which generally have higher rates of non-response than checklist questions.

The 2016 imputation rates for questions 27 and 28 were approximately 6 percentage points lower than the corresponding 2006 imputation rates at the national level. The lower rates of imputation for these questions were in part a result of increased electronic response and improvements made to the design of the electronic questionnaire. Response data indicated that provinces and territories with lower imputation rates had more electronic response while provinces and territories with higher imputation rates had less electronic response.

The 2016 imputation rate for Question 29 (School attendance) was 1 percentage point higher than the corresponding 2006 imputation rate at the national level. In 2016, the school attendance question was 'At any time since September 2015, has this person attended a school, college, CEGEP or university?' Analysis has shown that a proportion of respondents interpreted the school attendance question as 'Has this person **ever** attended a school, college, CEGEP or university?' and responded by providing all past school attendance rather

than their attendance during the reference period. These types of responses were identified and processed as non-response which contributed to the higher rate of imputation. More information on school attendance is available in the [Response error](#) section below.

Coding processes for major field of study and location of study

The written responses for major field of study were coded with the Classification of Instructional Programs (CIP) Canada 2016. Most of the write-in responses were coded automatically (82.2%) from a reference file that contained the most common responses in previous Census Program cycles and the associated CIP Canada 2016 codes. The remaining write-ins (17.8%) were processed by subject-matter coders who assigned a CIP Canada 2016 code by associating each write-in with its nearest match from the reference file.

A study was carried out to measure the overall coding quality for major field of study. A sample of approximately 3,000 entries was recoded using the CIP Canada 2016, and the overall accuracy rate was found to be 97.3%.

For the question on location of study, 98.9% of the write-in responses were coded automatically from a reference file. The remaining write-ins (1.1%) were processed by subject-matter coders.

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.

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) (<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) (<http://www12.statcan.gc.ca/census-recensement/2016/ref/98-306/index-eng.cfm>), Catalogue no. 98-306-X.

Response error

Response error occurs when a respondent misunderstands a question and reports an incorrect response. Comparison of the data between the individual questions and associated write-in responses from the 2016 Census indicated some response error in certain education question categories.

Apprenticeship and other trades versus college certificates and diplomas

Similar to the 2006 Census and 2011 NHS, comparisons with other data sources indicated that some respondents reported their apprenticeship or other trades certificates as college diplomas, or reported them in both the trades and college questions. This occurs because many trades and apprenticeship programs include an in-class portion at a college. To minimize the occurrence of this type of response, the college question instructs the respondent to exclude any trades certificates or diplomas previously reported in the trades question.

University certificate or diploma below the bachelor's level

In the 2006 Census and 2011 National Household Survey, the category 'university certificate or diploma below bachelor's level' was over reported. This category included some responses that were actually college diplomas, bachelor's degrees or other types of education. The over reporting of this category was substantially reduced for the 2016 Census and data users are advised to refer to the [Comparability with other data sources](#) section of this guide for more information.

Location of study

Location of study indicates the province or territory (in Canada) or country (outside Canada) of the institution from which the highest postsecondary certificate, diploma or degree was obtained.

Data users should be aware that some respondents appear to have reported the physical location of study rather than the location of the certificate, diploma or degree-granting institution. This appears to occur in the responses of individuals who obtained a certificate, diploma or degree through a joint program or by distance learning with credentials granted by an institution in another province or country. The issue was noted first in the territories where a number of persons reported a location of study for a university credential in one of the territories (Yukon, Northwest Territories and Nunavut), even though there were no educational institutions in the territories with the authority to grant university degrees. These locations of study were generally kept as reported, because there are joint programs at the university level offered at colleges in the territories and the question did not specify that the location of the granting institution was to be used.

In the 2016 Census electronic questionnaire, responses for locations of study inside Canada were reported using a drop down menu. Analysis of these data indicated that some respondents had inadvertently changed their response by using the scroll wheel on the mouse. The probability of this occurring was very low, making it unnoticeable when examining location of study categories inside Canada with large populations. However, the impact was more noticeable for location of study categories 'Yukon,' 'Northwest Territories,' and 'Nunavut' which have smaller populations.

School attendance

Data users are advised that analysis of results from the 2016 Census 'school attendance' question showed variations with the Labour Force Survey. A proportion of respondents interpreted the Census question as 'Has this person **ever** attended a school, college, CEGEP or university?' rather than the actual question 'At any time since September 2015, has this person attended a school, college, CEGEP or university?' These types of responses were identified and processed as non-response, although some overestimation of school attendance remains. Overestimation is most prominent for populations with small proportions of school attendance, such as older age groups and/or where the respondent selected attendance at more than one type of institution. Since these categories already have small estimates, the impact of any reporting error would be proportionally more important. Data users should interpret the data on school attendance with caution.

Comparability with other data sources

Statistics Canada produces a range of education data from various sources for different uses. Comparability of education data with other data sources is affected by differences in survey target populations or administrative sources, survey sampling and collection methodologies; survey objectives, question wording, reference periods, format, examples and instructions; the social, economic and political climate at the time of data collection; and other factors.

As is done with every statistical program, the quality of the 2016 Census education information released was evaluated internally prior to publication. The data were compared, as much as possible, with alternative data sources. The two main sources of comparison include previous cycles of the Census Program and the Labour Force Survey (LFS).

Census Program

Education data were collected in previous Census Program cycles, reflecting a long-standing, continuing and widespread demand for information about education characteristics of the Canadian population. Over time, there have been differences in the question wording, reference periods, format, examples and instructions of the education questions used. The historical comparability of education data may have been affected by these factors, as well as by changes in education systems. Data users should be prudent as variables may not have retained comparability over time.

The 2011 National Household Survey (NHS) employed a different methodology than was used for the 2016 Census, the 2006 Census and prior censuses. These differences can affect comparability between the 2016 Census estimates and the 2011 NHS estimates for education data. For more information on the comparability between the 2016 Census and the 2011 NHS, 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) (<http://www12.statcan.gc.ca/census-recensement/2016/ref/98-304/index-eng.cfm>), Catalogue no. 98-304-X.

Given that the 2016 education imputation rates were considerably lower than the corresponding 2011 imputation rates at the national level, data users comparing estimates from the 2016 Census to the 2011 National Household Survey (NHS) should take into account the higher level of imputation of the education data in 2011. More information on the 2011 National Household Survey imputation rates is available in the [Education Reference Guide, National Household Survey, 2011](http://www12.statcan.gc.ca/nhs-enm/2011/ref/guides/99-012-x/99-012-x2011006-eng.cfm) (<http://www12.statcan.gc.ca/nhs-enm/2011/ref/guides/99-012-x/99-012-x2011006-eng.cfm>), Catalogue no. 99-012-XWE2011006.

Education question changes and impact on comparability

While the education concepts contained in the 2016 Census are the same as those in the 2011 National Household Survey (NHS) and 2006 Census, notable changes were made in 2016 to the wording and presentation of the education questions in order to improve the accuracy of reporting and/or reduce respondent burden. These questionnaire changes resulted in many data quality improvements. These results are noted below, as well as their impact on historical comparability, where measurable.

In Question 25 on the English questionnaire, the term “high school (secondary school)” replaced the term “secondary (high) school” used in 2011. This change was based on conclusions drawn from questionnaire testing, which indicated that respondents were generally more familiar with the term “high school” than “secondary school,” and that the term “secondary” was occasionally misinterpreted as referring to “postsecondary,” or qualifications completed above the high school level.

In the 2006 Census and 2011 NHS, information on postsecondary qualifications was collected in three separate questions on completed trades, college and university qualifications. In the 2016 Census, these were parts a), b) and c) of a single question (Question 26). In addition, on the electronic version of the questionnaire, the detailed response categories for these questions were presented only if the respondent selected “Yes” as a response to the initial filter question. For example, for part c), a respondent would initially see the question, “Has this person ever: c) completed a university certificate, diploma or degree (e.g., bachelor’s degree)?” If the respondent answered “No,” no additional text was displayed. If the respondent answered “Yes,” the question expanded to show response options for which university qualification(s) were obtained (e.g., bachelor’s degree, master’s degree, etc.).

This change was made to reduce the frequency of respondents erroneously reporting for a single credential in more than one of the trades, college and university questions. This error was shown in questionnaire testing to be caused by respondents scanning their computer screen looking at response categories rather than reading the questions. Most noticeably, this change contributed to the decrease in the ‘University certificate or diploma below the bachelor level’ category of the university question, a qualification over reported in previous Census Program cycles. The change also contributed to reducing burden for respondents as the question only expanded as needed.

Also, analyses of previous survey results indicated that some respondents would report their apprenticeship or other trades certificates as college diplomas, or report them in both the trades and college questions. For the 2016 electronic questionnaire, the instruction to respondents to report only college diplomas in Question 26b), excluding ones previously reported as trades, was situated more prominently than in 2011.

In the English questionnaire, a minor wording change was made in Question 26a) to use the term “Certificate of Apprenticeship” rather than “Registered Apprenticeship certificate.” This term more closely aligns with terms in common use.

Other changes to Question 26 on postsecondary qualifications included the addition of instructions to all three parts of the question emphasizing that only **completed** credentials were to be reported. As expected, respondents were less likely to have reported incomplete education credentials at the postsecondary level. With respect to educational attainment, the levels of education below the postsecondary level were also affected by this change, particularly ‘secondary (high) school diploma or equivalency certificate’ and, to a lesser extent, ‘no certificate, diploma or degree.’ Data users can expect an impact on comparability of educational attainment with previous Census Program cycles.

A change was made to Question 26, to include examples of different university qualifications (e.g., B.A., B.Sc., B.Ed., and LL.B. for “bachelor’s degree”; M.A., M.Sc., M.Ed. for “master’s degree”). B.A. (Hons.) was included in the list of examples for a bachelor’s degree in the English questionnaire. These changes were made to improve the reporting of university degrees in their respective categories. Specifically, these examples improved response precision and resulted in decreased reporting of ‘university certificates or diplomas below bachelor level’ and ‘university certificates or diplomas above bachelor level’ and increased reporting of bachelor’s degrees and master’s degrees. Data users can expect an impact on comparability of the ‘university certificates or diplomas below bachelor level’ and ‘university certificates or diplomas above bachelor level’ levels of education with previous Census Program cycles.

The ordering of “Master’s degree” and “Degree in medicine, veterinary medicine, dentistry or optometry” was reversed in the list of response categories available in Question 26c) in 2016 to more closely align with the hierarchy assigned in the educational attainment variable ([Highest certificate, diploma or degree](http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop038-eng.cfm) (<http://www12.statcan.gc.ca/census-recensement/2016/ref/dict/pop038-eng.cfm>)) derived from Question 26.

For Question 27 on major field of study and Question 28 on location of study in the electronic questionnaire, respondents who provided certain common general responses (e.g., ‘trades,’ ‘counselling,’ ‘college diploma,’ ‘Yugoslavia,’ ‘Africa,’ ‘Korea’) were prompted to provide more specific answers. These prompts improved the precision of the coding of these responses that would otherwise have been subjected to further processing.

In addition, the electronic questionnaire included dynamic text in the major field of study (Question 27) and location of study (Question 28) questions that referred back to the highest educational qualification reported in Question 26. For example, if in Question 26 the highest qualification reported was a bachelor’s degree, Question 27 would ask the “major field of study of bachelor’s degree,” rather than using the default text “major field of study of the highest certificate, diploma or degree.” The addition of dynamic text in Question 27 on major field of study greatly influenced respondents to provide more specific write-in responses. In previous Census Program cycles, respondents were more likely to provide general responses such as “bachelor of arts,” “arts,” “bachelor of science” or “sciences” in lieu of a more specific field of study. In 2016, this phenomenon was reduced to a large extent, resulting in a substantial decrease in the associated Classification of Instructional Programs (CIP) categories (specifically the instructional program class which comprises any undifferentiated program in the general arts ‘24.0102 – General studies’ and the multi-disciplinary field of ‘30.0101 – Biological and physical sciences’).

Less specific responses coded to the instructional program class ‘24.0102 – General studies’ in previous Census Program cycles were mainly distributed among the following CIP 2 digit categories in 2016 as illustrated by the figure below:

Figure 1.1

Variation of write-in responses for major field of study - general (24.0102) to more specific

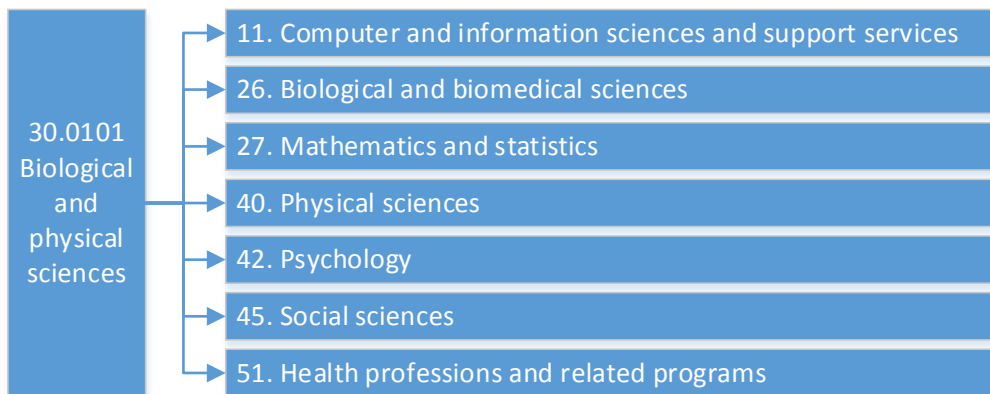


The CIP 2 digit categories noted above are principally concentrated in the 'Humanities' and 'Social and behavioural sciences and law' broader domains as defined by the [Variant of CIP 2016 - Primary groupings](http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=394056) (<http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=394056>).

Similarly, less specific responses coded to instructional program class '30.0101 – Biological and physical sciences' in previous Census Program cycles were primarily distributed among the following CIP 2 digit categories in 2016 as illustrated by the following figure:

Figure 1.2

Variation of write-in responses for major field of study - general (30.0101) to more specific



The CIP 2 digit categories noted above are mostly clustered in the 'Physical and life sciences and technologies' and 'Mathematics, computer and information sciences' primary groupings.

While the responses in 2016 are now more specific and precise, data users can expect some impact on comparability with previous Census Program cycles at all levels of the CIP classification, such as the CIP 2 digit and primary groupings levels, as a result of the changes noted above. Data users of the CIP Canada 2016 STEM

and BHASE³ (non-STEM) groupings variant should be aware of minor effects on the variant (both within the STEM categories and between STEM and BHASE categories) due to decreases to instructional program class '30.0101 – Biological and physical sciences' as well as more specific responses in 2016 due to dynamic text.

Certain areas of study were impacted by the higher degree of specificity provided in the major field of study question. These were 'education' (CIP series 13) and 'dental, medical and veterinary residency programs' (CIP series 60). The dynamic text exclusively asked for the major field of study pertaining to a respondent's highest level of education.

Respondents were less likely to have indicated their teaching qualification in their major field of study response than in previous Census Program cycles which contributed to fewer responses in the domain of 'education.' For example, if a respondent indicated 'bachelor's degree' as the highest level of education in Question 26, then the major field of study dynamic text in Question 27 would read: "Major field of study of bachelor's degree". In these cases, fields of study provided by respondents appear to correspond to specific subjects (i.e., English, psychology, mathematics, biology or history). Data users can expect an impact on comparability with previous Census Program cycles for CIP series '13. Education.'

Responses for medicine, dentistry and veterinary medicine programs were distributed differently in 2016 as a result of the dynamic text. Respondents who reported their highest level of education as 'degree in medicine, dentistry, veterinary medicine or optometry' in Question 26 were asked to provide the "major field of study of degree in medicine, dentistry, veterinary medicine or optometry" in Question 27 which may have influenced respondents with these credentials to report their specialty or sub-specialty. This resulted in a decrease in the 'general' medicine, dentistry and veterinary medicine CIP categories in series 51 and an increase in the corresponding 'specific' specialties and sub-specialties found in series 60. Data users can expect an impact on comparability with previous Census Program cycles for these fields of study at the CIP 2 digit level.

Question 27 on major field of study includes examples that reflect typical programs at the trades, college and university levels of education and indicate that detailed fields of study should be reported. The examples "early childhood education" and "natural resources conservation" were removed from the list of existing examples in the 2016 Census questionnaire. This change was made in order to reduce respondent burden and length of text on the questionnaire.

For Question 28 on location of study, the format of the response categories in the electronic questionnaire was changed compared with 2011. The list of province and territory checkboxes was replaced with an "Inside Canada" checkbox which, when selected, expanded to show a dropdown list of provinces and territories. This functionality is consistent with the place of birth question (Question 12).

New text was added to Question 29, on school attendance, instructing respondents to include attendance at school through distance learning. In the past, instructions on distance learning had been in the 2011 NHS Guide, however, due to the increasing popularity of distance learning, this instruction was added directly in the 2016 question.

Labour Force Survey

The Labour Force Survey (LFS) includes questions on educational attainment, location of study (for immigrants born outside Canada who have postsecondary credentials) and school attendance.

3. The term 'Business, humanities, health, arts, social science, and education fields' (BHASE) includes all of the non-STEM fields from the STEM and BHASE (non-STEM) groupings variant, an alternative presentation of the Classification of Instructional Programs, 2016. This includes 'Business and administration,' 'Arts and humanities,' 'Social and behavioural sciences,' 'Legal professions and studies,' 'Health care,' 'Education and teaching' and 'Trades, services, natural resources and conservation.'

At the same time, differences in question wording, question order, methodology and coverage between the two surveys mean that results will vary.

The LFS question on school attendance refers to attendance at school in the week prior to the LFS, while the Census question on attendance refers to attendance at any time during the entire period from September 2015 to the Census reference day (May 10, 2016). These periods are not comparable. As a result, the LFS school attendance estimates are expected to be lower than those from the Census.

Table 3
Compares educational attainment (Highest certificate, diploma or degree) between the Labour Force Survey (LFS) and the Census for the population aged 15 years and over, 2016

Variable and distribution by category	LFS ¹	Census ²	Census ² - LFS Percentage difference
	Percentage distribution		
Highest certificate, diploma or degree	100.0	100.0	0.0
No certificate, diploma or degree	18.0	18.0	0.0
Secondary (high) school diploma or equivalency certificate	25.9	26.5	0.6
Apprenticeship or trades certificate or diploma	9.5	9.8	0.3
College, CEGEP or other non-university certificate or diploma	19.4	19.5	0.1
University certificate or diploma below bachelor level	2.6	2.8	0.2
Bachelor's degree	16.7	15.6	-1.1
University certificate, diploma or degree above bachelor level	7.8	7.8	0.0

1. LFS data are averaged over the 3 months March, April and May 2016.

2. To align with the LFS survey population, Census data excludes territories, reserves, Aboriginal settlements and extremely remote areas.

Source: Statistics Canada, Census of Population, 2016.