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Choosing the reference population for census statistics on language of work

by Louis Cornelissen

Since 2001, the Census of Population long-form questionnaire has contained a question about [languages used at work](#). This question is included in a section containing several questions about employment status and labour, asked to people aged 15 and older.

As is the case for other labour-related questions, the question about languages used at work can refer to a job held by the respondent during two separate periods. Respondents are first asked to answer the question in reference to the job they spent the most hours at during the census reference week—for the 2021 Census, this was the week of May 2 to 8, 2021. If respondents did not hold a job during that week, they were asked to answer in reference to the job they held the longest since January 1 of the previous year (which for the 2021 Census was January 1, 2020), if applicable.

There are therefore two distinct populations for which we have information on languages of work: people employed during the census reference week (17,321,700 people in Canada in the 2021 Census) and people with recent work experience (between January 1 of the previous year and the census reference week) but who did not hold a job during the reference week (3,308,820 people). Among the latter, the majority (55%) were no longer part of the active labour force during the census reference week,¹ and the others were unemployed.

This technical note aims to discuss the choice of the reference population for census statistics on language of work, and to present the approach on the matter adopted by Statistics Canada when disseminating data from the 2021 Census.

Choosing a reference population to facilitate the use and interpretation of data on languages of work

In Statistics Canada's products from census cycles from 2001 to 2016, data on languages of work were usually presented by including both people employed during the census reference week and those with recent work experience but who were no longer employed during the census reference week.

For the dissemination of 2021 Census data, there was a change of approach. For most analytical and data visualization products, the default reference population includes only those who held a job during the census reference week. That said, most census data tables allow users to select a reference population based on labour force status by themselves, according to their preference.

This change in the default reference population is driven by considerations related to the availability of complementary information about labour, as well as ease of data interpretation.

First, considering only employed workers for language-of-work products ensures consistency with other census information about labour (occupation, industrial sector, etc.) and the analytical and data products on these topics. In those products, the reference population usually only includes persons employed during the census reference week. In fact, some key information about labour, including place of work, is available only for people who were employed during the census reference week.

1. In 2016, this proportion was 62%.

Using this narrower reference population also facilitates the interpretation of data. Interpreting information about people who are not employed, but who have had recent work experience, can be complex. This is in part due to the heterogeneity of this population, which includes unemployed people, retirees, students who had a summer job the previous year, recent immigrants whose last job was outside Canada, etc. In all cases, the information pertains to a job that is no longer being held by the person at the time of the census. The position that was held by that person may have been assigned to someone else (in which case it is a form of double counting), or may simply no longer exist.

In some cases, there are also measurement differences depending on people's work activity, for instance in cases where people are holding more than one job at once.² If the job of interest for the employed population is the one at which the worker spent the most hours during the census reference week, the job of interest for the non-employed population is that held the longest by the person during the 16-month period prior to the census. These two definitions can refer to different jobs.

Finally, for people who were not employed but had recent work experience, the exact period during which a job was held since January 1 of the previous year is unknown. In all cases, there is a lag between the time that job was held and the time of the census. Therefore, using this population to analyze language dynamics at work can lead to inconsistencies and erroneous conclusions, especially when cross-tabulating these data with other census data that have the time of the census as a reference period (place of residence, languages known or spoken at home, etc.). Furthermore, if the census does provide a complete portrait of people employed at the time of the census, the same cannot be said for non-employed people who had held a job since January 1 of the previous year, as some of these people will in the meantime have left Canada (a frequent occurrence for certain sub-populations such as non-permanent residents), joined a collective household,³ or died.

In short, interpreting data regarding people who are not employed but who have recent work experience is complex, and above all it is different from interpreting data about people who were employed during the census reference week.

How the choice of a reference population affects language of work statistics

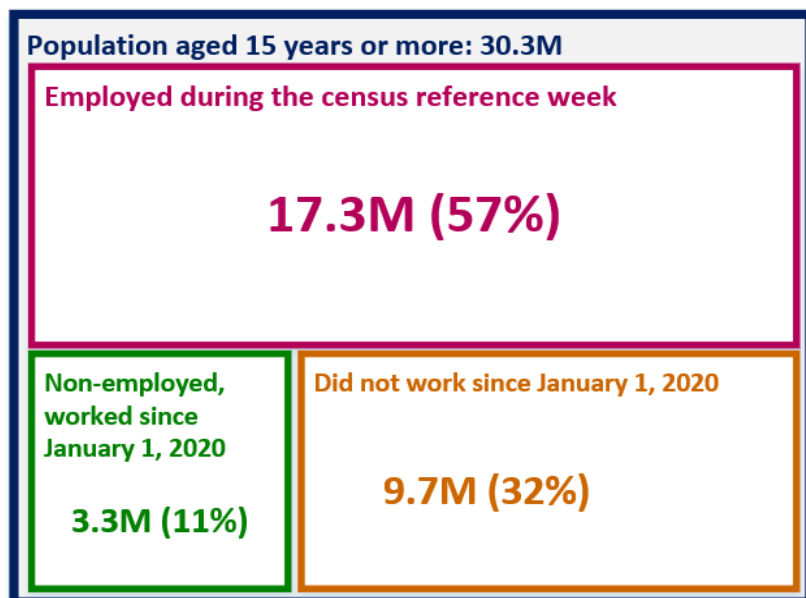
Choosing a reference population, that is, excluding or including people who were not employed during the census reference week but who had recent work experience, has a significant impact on the number of people in the population, but a limited impact on the proportions of people with a given language-use profile. However, this impact can vary based on the sub-population of interest.

Here, we examine the effect of the choice of reference population on counts of workers, rates of use of languages at work, characteristics of workers and trends over time. Data are presented for Canada as a whole, as well as for Quebec and New Brunswick, as these provinces stand out when it comes to languages of work.

2. According to the Labour Force Survey, nearly one million people held more than one job in May 2021 in Canada.

3. For instance: nursing homes, residential care facilities, correctional facilities, etc. Only people in private households answer the long-form census questionnaire.

Figure 1
Population aged 15 or more by employment situation, Canada, 2021 Census



Source: Statistics Canada, 2021 Census.

Impact on worker counts

The main impact of this choice involves the total number of workers in the reference population (Table 1). Considering only people who were employed during the census reference week reduces the total size of the reference population by 16.0% in Canada (from 20.6 million people employed or having held a job since January 1, 2020, to 17.3 million employed people).

This proportion can vary from one region to another. For example, the reduction in the number of workers was less pronounced in Quebec (-13.6%) and more pronounced in New Brunswick (-17.5%). These differences can be explained by a set of factors, including variations in the labour market conditions or in the characteristics of the working population (age structure, for instance).

Table 1
Number of workers by languages used at work, reference population and place of residence, 2021

	Canada			Quebec		
	Persons employed or with recent work experience	Employed persons only	Non-employed persons with recent work experience	Persons employed or with recent work experience	Employed persons only	Non-employed persons with recent work experience
	number					
Language used most often at work						
Total	20,630,525	17,321,700	3,308,820	4,747,110	4,100,445	646,660
English	15,879,855	13,260,375	2,619,475	668,485	570,385	98,100
French	3,986,330	3,446,695	539,630	3,773,015	3,270,095	502,920
Indigenous language	19,435	15,105	4,335	10,215	8,160	2,060
Other non-official language	291,020	211,030	79,985	26,030	18,480	7,550
English and French	321,975	280,000	41,975	249,940	217,520	32,420
English and non-official language(s)	115,955	95,500	20,450	7,155	5,725	1,430
French and non-official language(s)	6,285	5,065	1,215	6,010	4,855	1,155
English, French and non-official language(s)	7,400	6,205	1,195	6,170	5,165	1,000
Multiple non-official languages	2,270	1,715	555	90	60	30
Languages used at least regularly at work						
Total	20,630,525	17,321,700	3,308,820	4,747,110	4,100,445	646,660
English	14,942,170	12,452,045	2,490,120	350,525	290,920	59,605
French	3,164,890	2,724,635	440,255	3,032,285	2,617,765	414,520
Indigenous language	6,935	5,245	1,685	4,170	3,275	900
Other non-official language	162,265	109,865	52,405	14,650	9,835	4,810
English and French	1,682,510	1,475,875	206,630	1,245,530	1,096,060	149,475
English and non-official language(s)	570,220	470,660	99,560	25,880	20,245	5,630
French and non-official language(s)	20,935	17,235	3,700	20,370	16,835	3,535
English, French and non-official language(s)	69,335	58,300	11,040	52,965	45,050	7,910
Multiple non-official languages	11,260	7,835	3,430	730	455	270

	New Brunswick		
	Persons employed or with recent work experience	Employed persons only	Non-employed persons with recent work experience
	number		
Language used most often at work			
Total	423,255	349,210	74,040
English	317,535	264,635	52,900
French	88,705	70,110	18,600
Indigenous language	150	100	50
Other non-official language	615	400	220
English and French	15,610	13,465	2,145
English and non-official language(s)	595	480	115
French and non-official language(s)	10	0	0
English, French and non-official language(s)	40	25	10
Multiple non-official languages	0	0	0
Languages used at least regularly at work			
Total	423,255	349,210	74,040
English	284,045	235,385	48,660
French	63,250	48,735	14,515
Indigenous language	50	35	20
Other non-official language	340	225	120
English and French	72,790	62,660	10,130
English and non-official language(s)	2,330	1,860	470
French and non-official language(s)	20	0	20
English, French and non-official language(s)	415	320	100
Multiple non-official languages	15	0	15

Source: Statistics Canada, 2021 Census.

Impact on the rates of language use at work

The choice of the reference population also has an impact, though relatively minor, on the rates of language use at work (Table 2). Nationally, when people who were not employed during the census reference week are excluded, we see slightly lower rates of use of English, slightly higher rates of use of French, and lower rates of use of other, non-official languages, particularly non-Indigenous languages.

Some of these differences at the national level, particularly regarding English and French, are caused by a compositional effect. As mentioned above, retaining only employed people has a smaller impact on the total number of workers in the reference population in Quebec than in Canada as a whole. Because the majority of workers using French are located in this province, this has the effect of increasing the relative share of French at work in Canada.

For Quebec, the impact of the reference population choice is similar to that for Canada as a whole (namely, higher rates of use of French when considering only employed people), but this impact is much more limited. For New Brunswick, the impact is the opposite: retaining only employed people leads to slightly lower rates of use of French and higher rates of use of English.

Proportionally, the most significant impact of changing the reference population involves the exclusive use of non-official languages other than Indigenous languages. Considering only employed people results in a 32% decrease in the number of workers who reported using neither English nor French on a regular basis at work. This is partly because the population without a job but with recent work experience more often includes people whose last job was outside Canada. In 2016,⁴ 1.8% of people with recent work experience answered the census questions about labour by referring to a job held outside Canada, compared with 0.5% of those employed during the census reference week. Jobs held outside Canada more often involved the main or exclusive use of languages other than English or French.

4. For 2021, data on place of work are available only for people employed during the census reference week. For 2016, data were also available for other people with recent work experience.

Table 2
Distribution of workers by languages used at work, reference population and place of residence, 2021

	Canada			Quebec		
	Persons employed or with recent work experience	Employed persons only	Non-employed persons with recent work experience	Persons employed or with recent work experience	Employed persons only	Non-employed persons with recent work experience
	percent					
Language used most often at work						
Total	100.0	100.0	100.0	100.0	100.0	100.0
English	77.0	76.6	79.2	14.1	13.9	15.2
French	19.3	19.9	16.3	79.5	79.7	77.8
Indigenous language	0.1	0.1	0.1	0.2	0.2	0.3
Other non-official language	1.4	1.2	2.4	0.5	0.5	1.2
English and French	1.6	1.6	1.3	5.3	5.3	5.0
English and non-official language(s)	0.6	0.6	0.6	0.2	0.1	0.2
French and non-official language(s)	0.0	0.0	0.0	0.1	0.1	0.2
English, French and non-official language(s)	0.0	0.0	0.0	0.1	0.1	0.2
Multiple non-official languages	0.0	0.0	0.0	0.0	0.0	0.0
Languages used at least regularly at work						
Total	100.0	100.0	100.0	100.0	100.0	100.0
English	72.4	71.9	75.3	7.4	7.1	9.2
French	15.3	15.7	13.3	63.9	63.8	64.1
Indigenous language	0.0	0.0	0.1	0.1	0.1	0.1
Other non-official language	0.8	0.6	1.6	0.3	0.2	0.7
English and French	8.2	8.5	6.2	26.2	26.7	23.1
English and non-official language(s)	2.8	2.7	3.0	0.5	0.5	0.9
French and non-official language(s)	0.1	0.1	0.1	0.4	0.4	0.5
English, French and non-official language(s)	0.3	0.3	0.3	1.1	1.1	1.2
Multiple non-official languages	0.1	0.0	0.1	0.0	0.0	0.0

	New Brunswick		
	Persons employed or with recent work experience	Employed persons only	Non-employed persons with recent work experience
	percent		
Language used most often at work			
Total	100.0	100.0	100.0
English	75.0	75.8	71.4
French	21.0	20.1	25.1
Indigenous language	0.0	0.0	0.1
Other non-official language	0.1	0.1	0.3
English and French	3.7	3.9	2.9
English and non-official language(s)	0.1	0.1	0.2
French and non-official language(s)	0.0	0.0	0.0
English, French and non-official language(s)	0.0	0.0	0.0
Multiple non-official languages	0.0	0.0	0.0
Languages used at least regularly at work			
Total	100.0	100.0	100.0
English	67.1	67.4	65.7
French	14.9	14.0	19.6
Indigenous language	0.0	0.0	0.0
Other non-official language	0.1	0.1	0.2
English and French	17.2	17.9	13.7
English and non-official language(s)	0.6	0.5	0.6
French and non-official language(s)	0.0	0.0	0.0
English, French and non-official language(s)	0.1	0.1	0.1
Multiple non-official languages	0.0	0.0	0.0

Source: Statistics Canada, 2021 Census.

Impact on worker characteristics

In addition to place of work, the characteristics of people employed during the census reference week and those of people not employed but who had recent work experience differ on a number of other points (Table 3).

First, among those not employed but with recent work experience, there is significant overrepresentation of people aged 15 to 24 (an age group that includes many students working only part of the year) and of those aged 60 and older (an age group that includes many people who are retiring).

People not employed at the time of the census were also overrepresented in some industrial sectors, particularly those affected by strong seasonality (agriculture, forestry, fishing and hunting), as well as those most disrupted by the COVID-19 pandemic (arts, entertainment and recreation; accommodation and food services).

In parallel to differences pertaining to languages of work, there are also differences in languages spoken at home. In Quebec, those not employed but with recent work experience were slightly more likely to speak English most often at home, and slightly less likely to speak French most often. In New Brunswick, the opposite was seen.

Table 3
Characteristics of workers by reference population and place of residence, 2021¹

Characteristic	Canada		Quebec		New Brunswick	
	Employed persons only	Non-employed persons with recent work experience	Employed persons only	Non-employed persons with recent work experience	Employed persons only	Non-employed persons with recent work experience
	percent					
Labour force activity (census reference week)						
Employed	100.0	...	100.0	...	100.0	...
Unemployed	...	45.4	...	37.8	...	43.6
Inactive	...	54.6	...	62.2	...	56.4
Age						
15 to 24 years	11.7	25.2	12.4	26.9	12.3	24.0
25 to 59 years	75.7	51.1	75.7	46.1	74.4	47.3
60 years and over	12.6	23.7	11.9	26.9	13.3	28.7
Immigration status						
Non-immigrants	71.3	71.7	80.4	78.9	91.3	93.5
Immigrants	25.5	25.3	16.6	17.5	6.6	5.1
Non-permanent residents	3.2	3.1	3.0	3.6	2.1	1.4
Industrial sector						
Agriculture, forestry, fishing and hunting	2.3	2.6	1.8	2.4	3.4	8.0
Mining, quarrying, and oil and gas extraction	1.3	1.2	0.6	0.5	0.8	1.1
Utilities	0.8	0.4	0.7	0.3	1.1	0.5
Construction	7.7	8.0	6.8	6.6	6.5	11.7
Manufacturing	8.3	6.5	10.5	8.1	7.9	8.8
Wholesale trade	3.3	2.2	3.4	2.5	2.5	1.6
Retail trade	11.2	13.9	11.7	14.4	12.1	12.7
Transportation and warehousing	5.2	5.2	4.8	4.9	4.8	4.6
Information and cultural industries	2.1	1.7	2.2	1.5	1.8	1.2
Finance and insurance	4.6	2.0	4.1	1.8	3.7	1.4
Real estate and rental and leasing	1.9	1.6	1.5	1.4	1.1	1.1
Professional, scientific and technical services	8.6	6.1	8.1	5.9	5.2	3.7
Management of companies and enterprises	0.3	0.1	0.1	0.1	0.2	0.1
Administrative and support, waste management and remediation services	4.0	5.9	3.8	5.8	4.2	5.7
Educational services	7.7	7.1	8.1	6.5	7.9	5.1
Health care and social assistance	13.6	8.6	14.7	9.3	15.5	10.1
Arts, entertainment and recreation	1.5	5.4	1.4	5.8	1.4	3.3
Accommodation and food services	5.0	12.4	4.6	13.4	5.8	9.2
Other services (except public administration)	4.0	5.9	4.3	5.1	4.5	4.4
Public administration	6.7	3.5	6.9	3.7	9.7	5.7
Language spoken most often at home						
English	63.6	66.6	10.7	12.6	69.2	67.2
French	19.8	15.8	77.7	73.6	25.7	29.0
Indigenous language	0.1	0.2	0.3	0.4	0.0	0.1
Other non-official language	12.1	13.0	7.0	8.6	2.8	1.9
English and French	0.6	0.6	1.7	1.9	1.3	1.2
English and non-official language(s)	3.2	3.3	0.7	1.0	0.8	0.6
French and non-official language(s)	0.4	0.3	1.4	1.4	0.1	0.0
English, French and non-official language(s)	0.1	0.1	0.5	0.5	0.0	0.0
Multiple non-official languages	0.1	0.1	0.0	0.0	0.0	0.0
Usual place of work (2016¹)						
In the province of residence	87.1	76.0	89.2	79.0	86.8	69.3
In another province	0.9	2.1	1.7	1.8	1.6	4.5
Outside Canada	0.5	1.8	0.3	1.8	0.4	1.0
No usual place of work	11.5	20.0	8.9	1.9	11.2	25.2

...not applicable

1. Statistics on the usual place of work are for 2016. All other statistics are for 2021.

Sources: Statistics Canada, 2016 and 2021 Censuses.

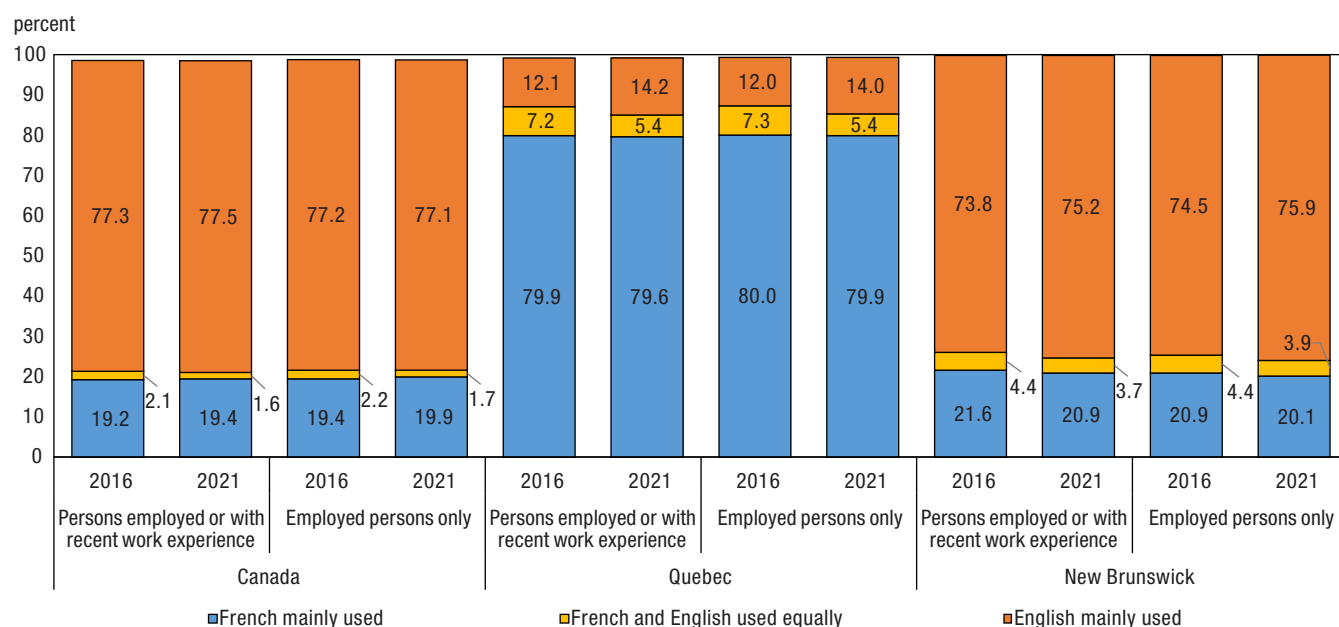
Impact on trends over time

Regarding comparisons over time, the choice of the reference population has little effect on trends, particularly for specific geographic areas (Chart 1).⁵

Nationally, excluding people not employed during the census reference week transforms a slight increase in the percentage of workers using mainly English at work between 2016 and 2021 into a slight decrease, and slightly inflates an upward trend for French. However, this essentially reflects a compositional effect, due to the fact, discussed above, that the change in the reference population does not have the same impact on the counts of workers in all provinces. More specifically, only keeping employed people has a smaller impact on the counts of workers in Quebec—where the large majority (95% in 2021) of workers using mainly French are concentrated—than in the rest of Canada. The proportion of people residing in Quebec among employed people rose from 22.9% in 2016 to 23.7% in 2021, while it only rose from 22.7% to 23.0% when including people with recent work experience.

When only Quebec or New Brunswick is considered, excluding people not employed during the census reference week does not significantly affect the trends observed between 2016 and 2021.⁶

Chart 1
Use of English and French most often at work, by reference population, 2016 and 2021



Note: “French mainly used” and “English mainly used” include people who declared using only one of these languages most often at work, including those who used one of these languages equally with a non-official language.

Sources: Statistics Canada, 2016 and 2021 Censuses.

5. It should be noted that, because of a change made to the language of work question in 2021, the results pertaining to the language used most often at work are not directly comparable with those of previous cycles. The change made to the question led to a decrease in the frequency of multiple responses (i.e., in this case, the equal use of English and French most often) and, conversely, an increase in the frequency of single responses. When interpreting differences across cycles, these changes in the distribution of single and multiple responses must be taken into consideration. On this topic, please refer to the [Languages Reference Guide, Census of Population, 2021](#).

6. We see an increase in the rate of main use of French at work at the national level, despite the fact that we instead see decreases at the provincial level (this was true for New Brunswick and Quebec, but also for most other provinces and territories). This is an example of “Simpson’s paradox”: trends observed at a local level are inverted at an aggregate level. In this case, this is due to a compositional change in the population between 2016 and 2021, more specifically an increase in the share of those residing in Quebec among the working population. Since it is in this province that most people working in French are found, the evolution of its relative weight has a significant impact on trends at the national level.

Conclusion

When disseminating 2021 Census data on languages of work, the reference population used by default by Statistics Canada in analytical and data visualization products is that of people who were employed during the census reference week. The rationale for this choice was a desire to harmonize the release of these data with that of other labour-related census data and to make it easier for users to interpret the data. Although this way of presenting the data has relatively minor impacts on language of work statistics, it presents several advantages in terms of coherence and interpretation of data.

Compared with people employed during the census reference week, non-employed people with recent work experience have a particular set of characteristics (overrepresentation among certain age groups and sectors, etc.). Depending on their needs, some users may find it appropriate to focus on these non-employed people, or to include them in their population of interest along with people employed during the census reference week. Several 2021 Census data tables allow users to select the population of reference they prefer, providing them with more flexibility. However, those users must bear in mind that there are differences in the interpretation of data on languages of work depending on the reference population.