

**DEMOGRAPHIC PROFILES
OF QUÉBEC'S ENGLISH-SPEAKING COMMUNITIES
REGION OF MONTÉRÉGIE AND
MRC MARGUERITE-D'YOUVILLE**

BASED ON THE 2021 CENSUS OF CANADA

BASELINE DATA REPORT SERIES 2022-2023

**PRODUCED BY DR. JOANNE POCOCK FOR THE
COMMUNITY HEALTH AND SOCIAL SERVICES NETWORK**



Contents

Contents.....	2
Introduction	3
About the 2022-2023 Report Series.....	3
Baseline Data Report Series.....	3
Methodological Notes.....	4
Data Source	4
Linguistic definitions.....	5
Geographic Regions.....	5
Demographic and Socio-economic Characteristics	5
Statistics Canada Definitions.....	6
Map of the Territory	7
Series of Tables – Demographic Characteristics.....	8
Demographic Size.....	9
Table 1 - Population Size	9
Age Structure.....	11
Table 2 - Age Structure of the Population.....	11
Income	14
Table 3 - Income	14
Household Living Arrangements.....	17
Table 4 - Population by Household Living Arrangements.....	17
Low-Income Cut-off	21
Table 5 - Population Living Below LICO, Within Age Groups.....	21
Table 6 - Population Living Below LICO, by Household Living Arrangements	23
Highest Educational Attainment.....	24
Table 7 - Highest Educational Certification, for Selected Age Groups.....	25
Labour Force Activity	32
Table 8 - Labour Force Activity	32
Appendix A – English speakers and French speakers by region and MRC or equivalent territories, 2021.....	35
Appendix B – Baseline Data Report Series.....	36
Sources and References	37

Introduction

About the 2022-2023 Report Series

This volume of the Baseline Data Report (BDR) series presents demographic characteristics of the English-speaking population residing in the areas covered by the organizations participating in the *Networking and Partnership Initiative* (NPI)¹. The information presented is drawn from the 2021 Census of Canada and organized by province, region and MRC or their equivalent territories (see section below for regional definitions). The selection of characteristics is guided by their importance as determinants of the health status and vitality of Québec's official language minority community.

Baseline Data Report Series

The Baseline Data Report Series is intended to serve as a resource for NPI sponsor organizations and their health and social service partners (e.g. CISSS/CIUSSS) to better understand the demographic factors, health determinants and language barriers affecting the English-speaking population in their region.

A listing of the full series of BDRs from 2003 along with the data source for each volume is presented in Appendix "B".

Determinants of Health

National governments and health organizations around the world have identified a broad range of social, economic and environmental factors that have been demonstrated to have a strong influence on the health of populations and individuals. The Public Health Agency of Canada outlines various determinants of health – some of which are social determinants – such as income and social status, social support networks, education, employment and working conditions, health services, physical and social environments, biology and genetic endowment, personal health practices and coping skills, healthy child development, gender and culture.²

Language Barriers

Significant research has been conducted on the impact of language barriers on health, quality of healthcare and safety in recent years. In this approach, the study of linguistic differences between social actors in a health-related setting, such as language discordant encounters between patient and clinician who do not speak the same language, is prevalent. Studies include a focus upon the use of language production as a cue for social categorization and

¹ For further information on the CHSSN *Networking and Partnership Initiative* go to <https://chssn.org/projects/npi/>

² Public Health Agency of Canada. "What Determines Health?" www.phac-aspc.gc.ca/ph-sp/determinants/index-eng.php accessed February 2023.

impression formation which impacts the evaluation and treatment of individuals seeking health and social services.

Suggested Readings

Access Alliance Multicultural Health and Community. (2021). *Investing in Language Access to Optimize Health System Performance. A Review of the Literature.*

https://accessalliance.ca/wp-content/uploads/2021/06/Access_Alliance_Investing_in_Language_Access_to_Optimize_Health_System_Performance.pdf

Bowen, S. (2015) for Société Santé en Français (SSF). *Impact of Language Barriers on Quality and Safety of Healthcare.* <http://santefrancais.ca/wp-content/uploads/SSF-Bowen-S.-Language-Barriers-Study-1.pdf>

Denis, J.L., Potvin, L., Rochon, J. et al. (2020) "On redesigning public health in Québec: lessons learned from the pandemic". *Canadian Journal of Public Health* 111, 912–920. <https://doi.org/10.17269/s41997-020-00419-x>

Meuter, R., Gallois, C., Segalowitz, N., Ryder, A., & Hocking, J. (2015) "Overcoming language barriers in healthcare: A protocol for investigating safe and effective communication when patients and clinicians use a second language." *BMC Health Services Research*. 15:371 published online 2015 Sept 10 doi:10.1186/s12913-015-1024-8

Raphael, D., Bryant, T., Mikkonen, J. and Raphael, A. (2020). *Social Determinants of Health: The Canadian Facts. (2nd edition) / Déterminants sociaux de la santé : les réalités canadiennes, (2e édition).* Oshawa: Ontario Tech University Faculty of Health Sciences and Toronto: York University School of Health Policy and Management. <https://thecanadianfacts.org/>

Reaume, M., Batista, R., Talarico, R. ...et Tanuseputro, P. (2020) "The impact of hospital language on the rate of in-hospital harm. A retrospective cohort study of home care recipients in Ontario, Canada". *BMC Health Services Research* 20, 340 <https://doi.org/10.1186/s12913-020-05213-6>

Methodological Notes

Data Source

The information in this report is based on a series of tables developed by the Community Health and Social Services Network (CHSSN) based on data from the 2021 Census of Canada. The statistics are drawn from two different Statistics Canada data sources which vary according (1) to the definition of the population surveyed and (2) by the questionnaire that was administered.

The statistics for table 1 (Population Size) and table 2 (Age Structure) and the accompanying graphs are based on a 100% sample of Canadians including people in non-institutional collective dwellings. These individuals answered Statistics Canada's 2021 short form census questionnaire.

The statistics for all other tables and accompanying graphs are based on a 25% sample of Canadians living in private households. This sample excludes individuals in institutions and non-institutional collective dwellings. These individuals answered Statistics Canada's 2021 long form questionnaire.

The short form census questionnaire reaches a larger population, but the long form census is the primary source of exhaustive demographic data in Canada. Without the long form, the socio-demographic characteristics provided by tables 3 through 8 of this BDR report would not be attainable.

Linguistic definitions

There are numerous linguistic definitions that are used to identify the English-speaking population in Québec. The choice of linguistic indicator depends largely on the issue being examined. This report uses the [First Official Language Spoken](#) (FOLS) definition with multiple responses proportionally distributed among declared languages since it best reflects the total English-speaking health service users in the province. First Official Language Spoken is derived from three Census questions: knowledge of official languages, mother tongue and home language. Dual responses are divided equally among English-speaking and French-speaking groups.

Other definitions include [Mother tongue](#) which refers to the first language learned at home in childhood and still understood. The [language most often spoken at home](#) is used to designate the home language. [Knowledge of official languages](#) indicates the official language in which a person can carry on a conversation. The [language used most often at work](#) indicates the language spoken most frequently at work.

Geographic Regions

The 2022-2023 Baseline Data Report consists of a series of stand-alone documents which present key data for the MRC or equivalent territories in Québec in which there are at least 250 English-speaking residents.

Demographic and Socio-economic Characteristics

The demographic and socio-economic variables addressed in the 2022-2023 BDR are:

- Population size
- Age structure
- Household living arrangements
- Income
- Low-income cut-off (LICO)

- Educational attainment
- Labour force activity

Statistics Canada Definitions

While for the most part the meaning of demographic and administrative terms are clarified as they arise in the report, the online Statistics Canada dictionary for the 2021 Census may also be consulted.³

³ <https://www12.statcan.gc.ca/census-recensement/2021/ref/dict/index-eng.cfm>

Map of the Territory



Series of Tables – Demographic Characteristics

Table 1 - Population Size.....	9
Table 2 - Age Structure of the Population	11
Table 3 - Income	14
Table 4 - Population by Household Living Arrangements.....	17
Table 5 - Population Living Below LICO, Within Age Groups.....	21
Table 6 - Population Living Below LICO, by Household Living Arrangements.....	23
Table 7 - Highest Educational Certification, for Selected Age Groups	25
Table 8 - Labour Force Activity.....	32

Demographic Size

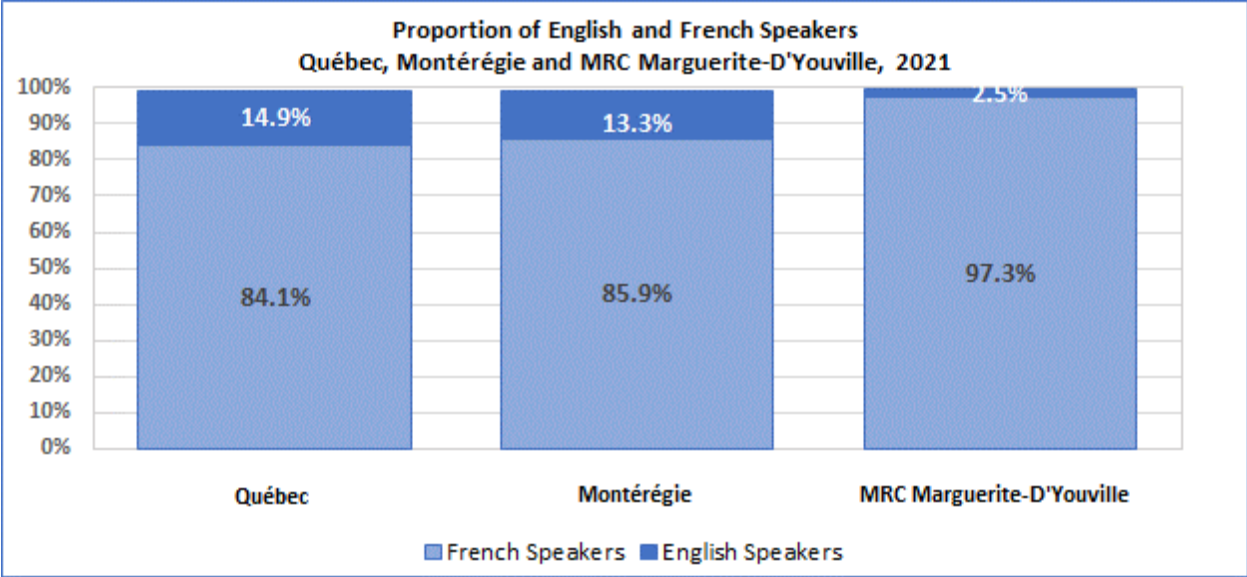
Québec’s English speakers form one of Canada’s official language minority groups. Studies have confirmed that language barriers affect access and quality of care for linguistic minority communities. Obstacles to communication can reduce recourse to preventative services; increase consultation time including the number of tests and the possibility of diagnostic and treatment errors; affect the quality of services requiring effective communication such as social services; reduce the probability of treatment compliance and reduce users’ satisfaction with the services received.⁴ In the complex context of a medical situation, where the communication between care provider and patient is a key factor in the achievement of a positive health outcome, it is not surprising that the language spoken most often is considered the most effective. The treatment by health professionals of sensitive issues such as cancer, addiction, or depression, requires ease of communication as a feature of building trust and offering comfort to patients.

Table 1 - Population Size

Size of Population		Québec	Montréal	MRC Marguerite-D'Youville
English speakers	number	1,253,580	188,595	2,020
	percentage	14.9%	13.3%	2.5%
French speakers	number	7,074,330	1,220,080	77,450
	percentage	84.1%	85.9%	97.3%
Total population	number	8,406,905	1,419,885	79,570
	percentage	100.0%	100.0%	100.0%

Source: JPocock Research Consulting, 2021 Census, Statistics Canada. Total population excluding institutional residents - 100% sample.

⁴ See Bowen, S. (2001). *Language Barriers in Access to Health Care*, Ottawa: Health Canada. Also, Bowen, S. et al. (2010). "From 'multicultural health' to 'knowledge translation' – rethinking strategies to promote language access within a risk management framework". *The Journal of Specialized Translation (Jostrans)*, Issue 14, http://www.jostrans.org/issue14/art_bowen.php.



- Across Québec, there were 1,253,580 English speakers, representing 14.9% of the provincial population.
- In 2021, there were 188,595 English speakers living in the Montérégie region where they represented 13.3% of the population. This share is lower than the overall provincial share for English speakers.
- In MRC Marguerite-D'Youville, we find 2,020 English speakers where they represented 2.5% of the population. This proportion is much lower than that represented by English speakers across the Montérégie territory.

Age Structure

The distribution of the English-speaking population across age categories, and the extent to which language majority and minority communities differ in accordance to age, is important in understanding their distinct health needs and resources. Each stage of life tends to be associated with specific health and social service needs. The strategy for meeting these needs by public agencies must also take the age and age-related competencies of the client group into consideration. From Sanderson's study we learn that the types of issues experienced by Quebec's English-speaking seniors and their caregivers in accessing services differ from those of English speakers younger in age.⁵

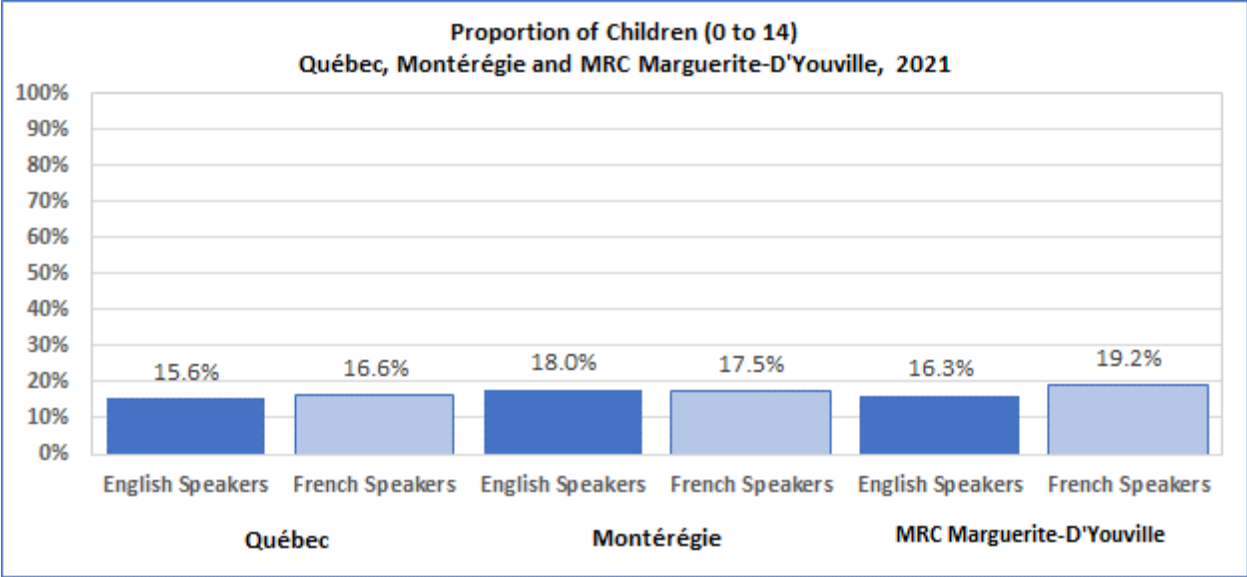
Typically, the age structure of the majority is important in shaping the scope and design of available health services and programs. Improving the health and the vitality of all citizens residing in a given territory requires attention to the problems that are pressing for the minority and may be overlooked by focusing on the majority, and awareness of problems that are shared by both language groups but are being met with system solutions that are not equally accessible for both.

Table 2 - Age Structure of the Population

Age Structure of the Population	Québec		Montréal		MRC Marguerite-D'Youville	
	English	French	English	French	English	French
Total - Age groups	1,253,580	7,074,330	188,595	1,220,080	2,020	77,450
0-14 years	195,065	1,174,295	33,965	213,965	330	14,860
15-24 years	160,090	726,400	20,895	125,310	205	8,525
25-44 years	376,685	1,792,825	54,680	302,890	620	19,745
45-64 years	328,055	1,924,990	50,620	338,040	605	22,125
65+ years	193,685	1,455,820	28,440	239,880	255	12,195
Total - Age groups	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
0-14 years	15.6%	16.6%	18.0%	17.5%	16.3%	19.2%
15-24 years	12.8%	10.3%	11.1%	10.3%	10.1%	11.0%
25-44 years	30.0%	25.3%	29.0%	24.8%	30.7%	25.5%
45-64 years	26.2%	27.2%	26.8%	27.7%	30.0%	28.6%
65+ years	15.5%	20.6%	15.1%	19.7%	12.6%	15.7%

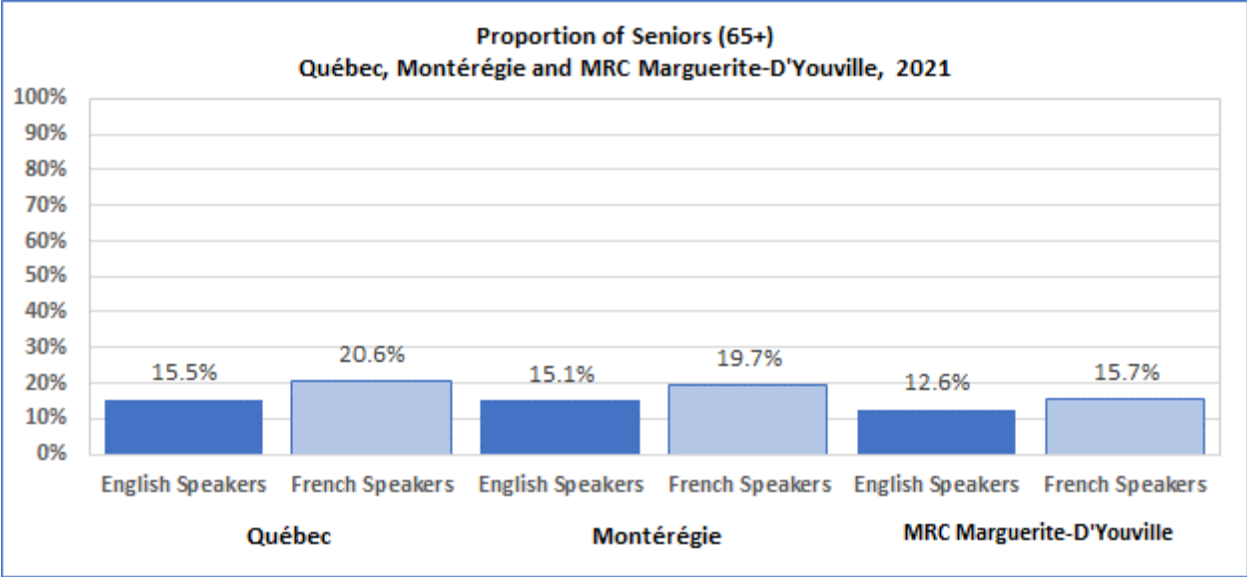
Source: JPocock Research Consulting, 2021 Census, Statistics Canada. Total population excluding institutional residents - 100% sample.

⁵ Sanderson, D. (2020). Language Related Difficulties Experienced by Caregivers of English-Speaking Seniors in Quebec. *SAGE Open*, 10(3). <https://doi.org/10.1177/2158244020951261>



Children (aged 0-14)

- Across Québec, there were 195,065 English-speaking children aged 0-14, representing 15.6% of the English-speaking population. The proportion of children in the English-speaking population is lower than the level in the French-speaking majority population in Quebec.
- In 2021, there were 33,965 English-speaking children aged 0-14 living in Montérégie where they account for 18.0% of the population. The proportion of children in the regional English-speaking population is similar to their proportion in the regional French-speaking majority population. This proportion is higher than the level for English-speaking children across the province.
- In MRC Marguerite-D'Youville, we find 330 English-speaking children aged 0-14 where they represent 16.3% of the population. This share is lower than that exhibited by English-speaking children across the Montérégie region. The proportion of children in the territory's English-speaking population is lower than the share in the rest of Québec's French-speaking majority population.



Seniors (aged 65 and over)

- Across Québec, there were 193,685 English-speaking seniors aged 65+ representing 15.5% of the English-speaking population. The proportion of seniors in the English-speaking population is much lower than that found in the French-speaking majority population in Quebec.
- In 2021, there were 28,440 English-speaking seniors aged 65+ living in the Montérégie region where they accounted for 15.1% of the population. This share is similar to that of English-speaking seniors across the province. The proportion of seniors in the regional English-speaking population is much lower than the proportion in the French-speaking majority population.
- In MRC Marguerite-D'Youville, we find 255 English-speaking seniors aged 65+ where they account for 12.6% of the population. This share is lower than that of English-speaking seniors across the Montérégie region. The proportion of seniors in the English-speaking population is lower than the proportion in the French-speaking majority population in MRC Marguerite-D'Youville.

Income

Long-standing and substantial research provides evidence that income and social status are key determinants of the level of health and well-being experienced by communities and their members. Low-income Canadians are more likely to die earlier and to suffer more illnesses than Canadians with higher incomes, regardless of age, sex, race and place of residence.⁶ For vulnerable low-income households, language barriers in access to public health services loom large as they cannot afford private care services nor are they likely to have access to work-related benefits or private insurance coverage. Studies also suggest that the distribution of income in a given society may be a more important determinant of health than the total amount of income earned by society members. Large gaps in income distribution are linked to increases in social problems and poorer health status among the population as a whole.⁷

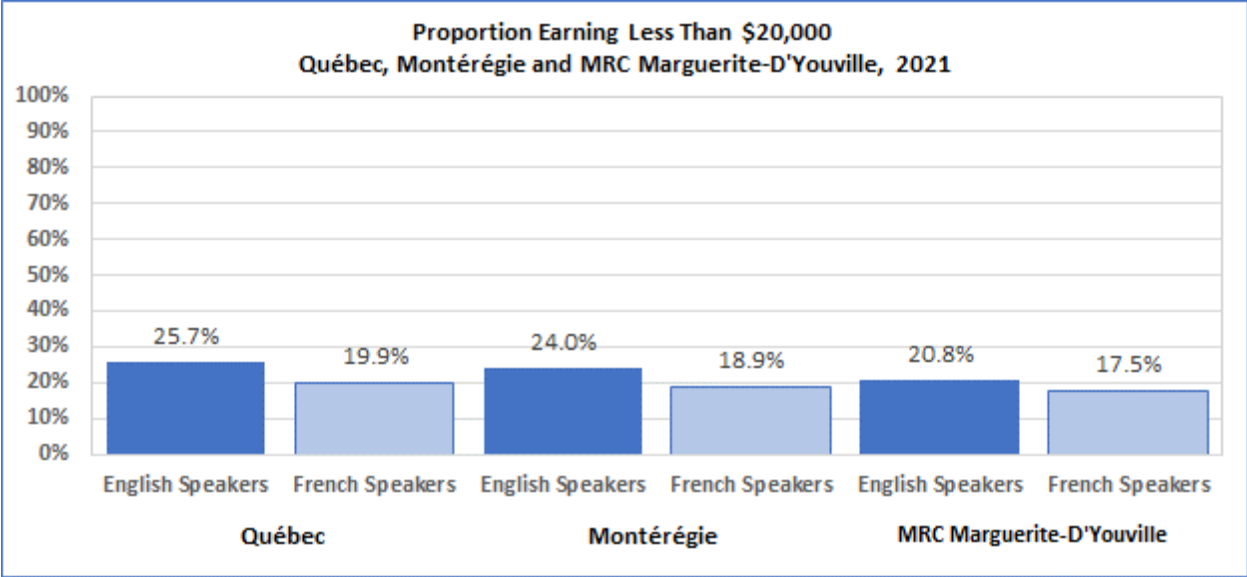
Table 3 - Income

Population by Income Group	Québec		Montréal		MRC Marguerite-D'Youville	
	English	French	English	French	English	French
Total Population 15+	1,049,640	5,811,880	153,130	993,990	1,680	62,115
Less than \$20,000	269,805	1,154,945	36,705	187,740	350	10,870
\$20,000 - \$49,999	422,205	2,420,025	58,595	391,730	595	21,310
\$50,000 +	357,635	2,236,925	57,835	414,515	735	29,945
Total Population 15+	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Less than \$20,000	25.7%	19.9%	24.0%	18.9%	20.8%	17.5%
\$20,000 - \$49,999	40.2%	41.6%	38.3%	39.4%	35.4%	34.3%
\$50,000 +	34.1%	38.5%	37.8%	41.7%	43.8%	48.2%

Source: JPocock Research Consulting, 2021 Census, Statistics Canada. Population in private households - 25% sample.

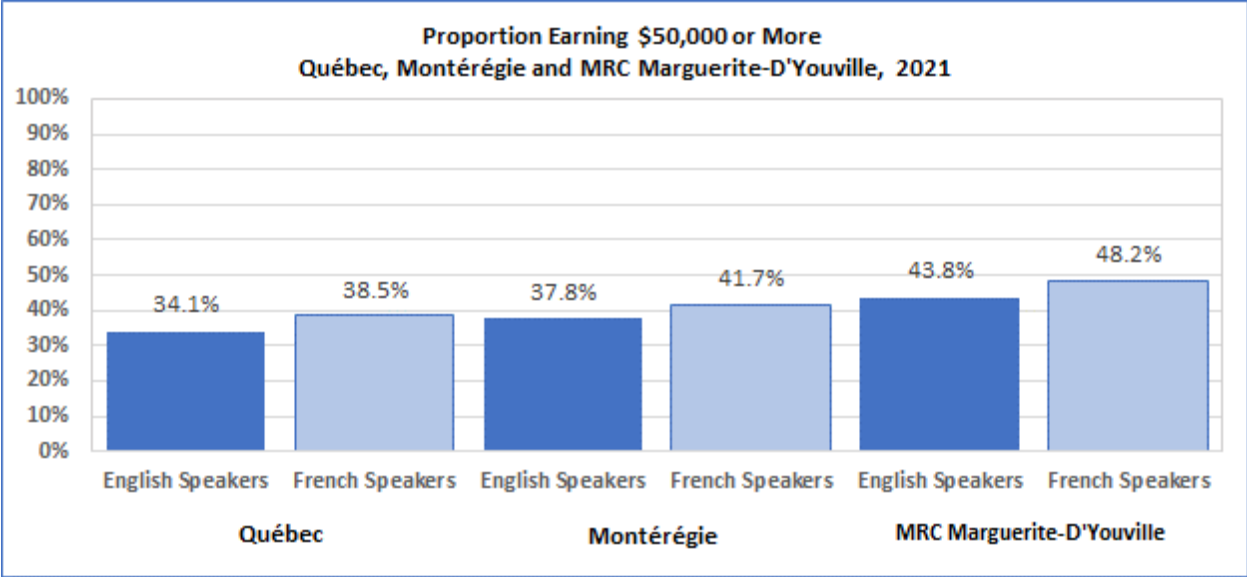
⁶ Public Health Agency of Canada, <http://www.phac-aspc.gc.ca/ph-sp/determinants/determinants-eng.php#evidence> accessed February 2023.

⁷ Ibid.



Income under \$20k

- Across Québec in 2021, there were 269,805 English speakers aged 15+ with income under \$20k. This group represents 25.7% of the English-speaking population aged 15+. The proportion of English speakers with income under \$20k is much higher than that found in the French-speaking majority population in Quebec.
- In 2021, there were 36,705 English speakers aged 15+ with income under \$20k in the Montérégie region where they represent 24.0% of the English-speaking population aged 15 and over. This share is lower than that displayed by the provincial English-speaking population. The proportion of those with income under \$20k in the region's English-speaking population is much higher than the proportion in the French-speaking majority population.
- In MRC Marguerite-D'Youville, we find 350 English speakers aged 15+ with income under \$20k where they account for 20.8% of the population. This share is lower than that experienced by English speakers across Montérégie. The proportion of those with income under \$20k in the territory's English-speaking population is higher than the proportion for the French-speaking majority population in MRC Marguerite-D'Youville.



Earning \$50k and over

- Across Québec, there were 357,635 English speakers aged 15+ with a total income of \$50k or more, who represented 34.1% of the English-speaking population in that age group. The proportion of high earners in the English-speaking population is lower than that found in the French-speaking majority population in Quebec.
- In 2021, there were 57,835 English speakers aged 15+ with a total income of \$50k or more living in the Montérégie region, where they represented 37.8% of the population. This proportion was higher than the proportion of English-speaking high earners across the province. The proportion of high earners in the regional English-speaking population is lower than the share of high earners in the French-speaking majority population in the region.
- In MRC Marguerite-D'Youville, we find 735 English-speaking high earners aged 15+, where they represent 43.8% of the population. This share is higher than that experienced by English-speaking high earners across the Montérégie region. The proportion of high earners in the territory's English-speaking population is lower than the proportion of high earners in the territory's French-speaking majority population.

Household Living Arrangements

Household living arrangements may be used as an indicator of groups within a population who are vulnerable to a poor health status. Parents of minors living in lone-parent households were more likely to report food insecurity, high levels of psychological distress and having more than one health problem compared to parents with other household arrangements.⁸ Individuals living alone may lack the important health benefits of a strong support network in the event of activity limitations due to disability, illness or aging. COVID-19 pandemic uncovered the vulnerability of individuals living in low-income multi-generational households. The recent health crisis turned single households consisting of three or more generations into a high-risk factor for contagious infection.⁹

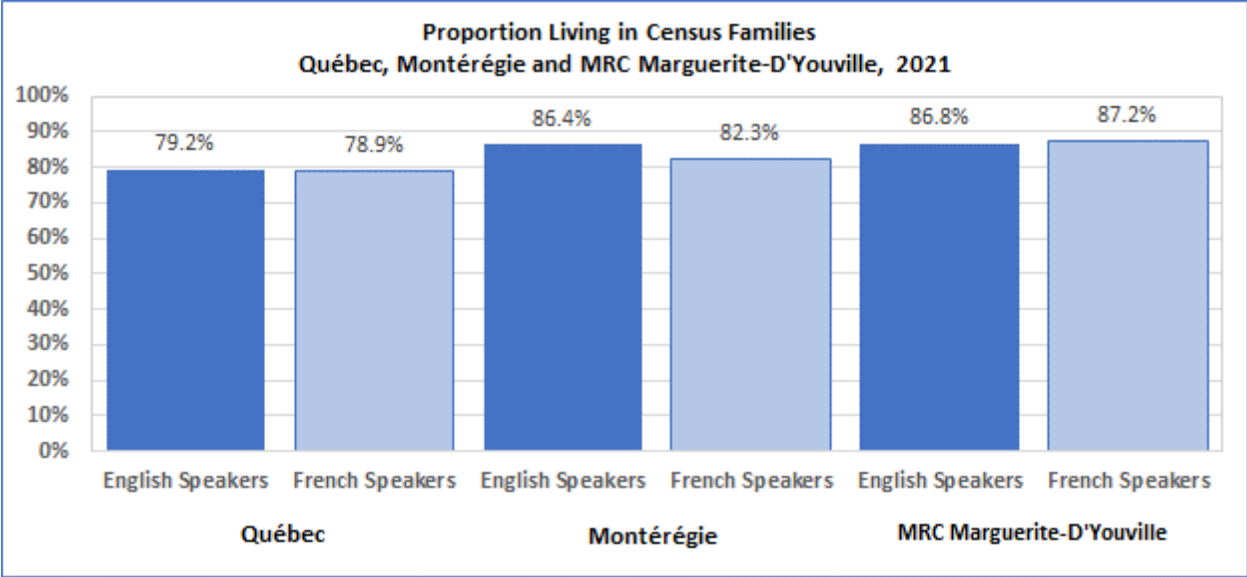
Table 4 - Population by Household Living Arrangements

Population by Household Living Arrangements	Québec		Montérégie		MRC Marguerite- D'Youville	
	English	French	English	French	English	French
Total - Household living arrangements	1,244,440	6,985,640	186,905	1,207,920	2,005	76,990
Total persons in census family households	985,995	5,512,205	161,430	994,545	1,740	67,150
Persons in two-parent households	835,415	4,706,995	139,600	853,045	1,610	58,425
Persons in single-parent households	150,580	805,215	21,830	141,490	135	8,720
Total persons in non-census family households	258,445	1,473,435	25,470	213,375	255	9,835
Living with relatives	28,935	127,905	3,985	20,775	25	1,065
Living with non-relatives only	55,820	209,445	3,735	27,980	40	1,190
Living alone	173,695	1,136,085	17,755	164,615	185	7,575
Total - Household living arrangements	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Total persons in census family households	79.2%	78.9%	86.4%	82.3%	86.8%	87.2%
Persons in two-parent households	67.1%	67.4%	74.7%	70.6%	80.3%	75.9%
Persons in single-parent households	12.1%	11.5%	11.7%	11.7%	6.7%	11.3%
Total persons in non-census family households	20.8%	21.1%	13.6%	17.7%	12.7%	12.8%
Living with relatives	2.3%	1.8%	2.1%	1.7%	1.2%	1.4%
Living with non-relatives only	4.5%	3.0%	2.0%	2.3%	2.0%	1.5%
Living alone	14.0%	16.3%	9.5%	13.6%	9.2%	9.8%

Source: JPocock Research Consulting, 2021 Census, Statistics Canada. Population in private households - 25% sample.

⁸ For discussion of the survey, see Pocock, J. (2008) "Baseline Data Report 2007-2008. Quebec's Social and Health Survey Information." Community Health and Social Services Network (CHSSN). www.chssn.org

⁹ Yang, F. and Aitken, N. (2021). People living in apartments and larger households were at higher risk of dying from COVID-19 during the first wave of the pandemic. Statistics Canada. <https://www150.statcan.gc.ca/n1/pub/45-28-0001/2021001/article/00004-eng.htm> accessed February 2023.

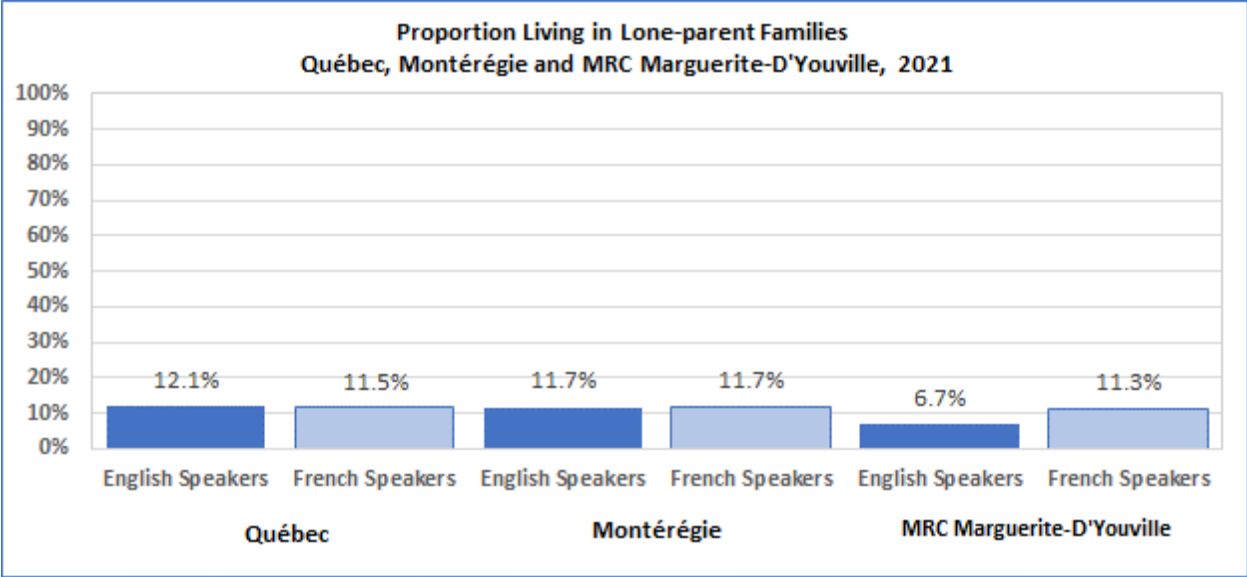


Living in census families¹⁰

- Across Québec, there were 985,995 English speakers living in census family households. This group represents 79.2% of the 15+ English-speaking population. The proportion of English speakers living in census family households is similar to that found in the French-speaking majority population in Quebec.
- In 2021, there were 161,430 English speakers living in census family households in the Montérégie region where they comprise 86.4% of the population. This share is higher than that displayed by the provincial English-speaking population. The proportion of those living in census family households in the regional English-speaking population is similar to the proportion in the regional French-speaking majority population.
- In MRC Marguerite-D'Youville, we find 1,740 English speakers living in census family households where they account for 86.8% of the population. This share is similar to that accounted for by English speakers across the Montérégie region. The proportion of persons living in census family households in the English-speaking population is similar to the proportion represented by the French-speaking majority population in MRC Marguerite-D'Youville.

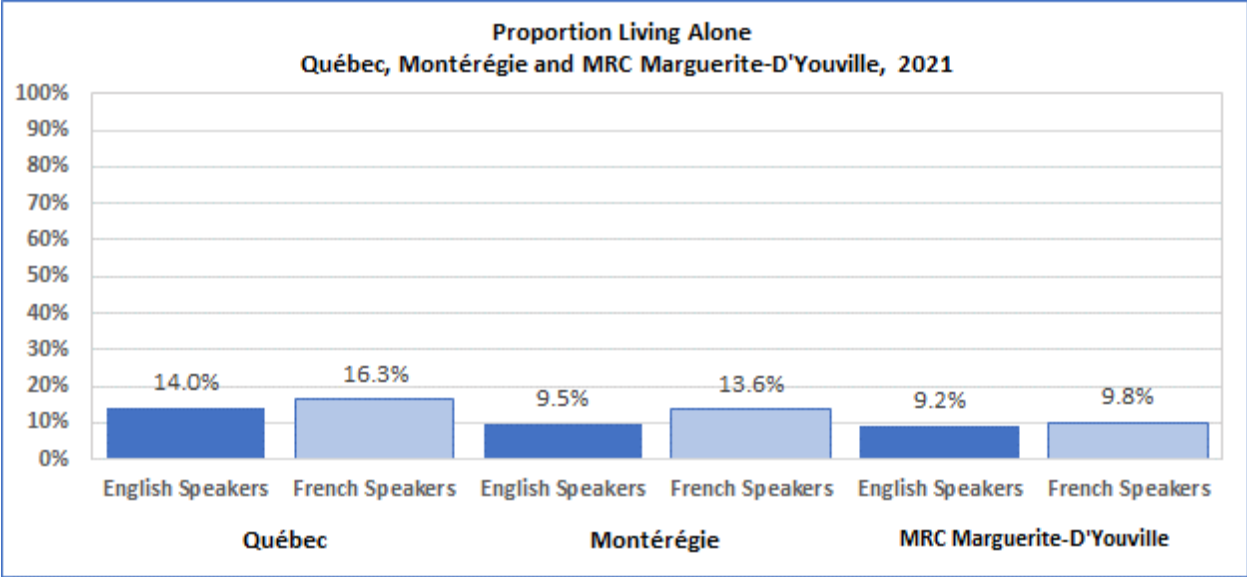
¹⁰According to Statistics Canada, a "Census family is defined as a married couple and the children, if any, of either and/or both spouses; a couple living common law and the children, if any, of either and/or both partners; or a parent of any marital status in a one-parent family with at least one child living in the same dwelling and that child or those children. All members of a particular census family live in the same dwelling. Children may be biological or adopted children regardless of their age or marital status as long as they live in the dwelling and do not have their own married spouse, common-law partner or child living in the dwelling. Grandchildren living with their grandparent(s) but with no parents present also constitute a census family."

<https://www23.statcan.gc.ca/imdb/p3Var.pl?Function=Unit&Id=32746> accessed February 2023.



Living in lone-parent families

- Across Québec, there were 150,580 English speakers living in lone-parent families. This group represents 12.1% of the English-speaking population. The proportion of English speakers living in lone-parent families is similar to the proportion found in the French-speaking majority population in Quebec.
- In 2021, there were 21,830 English speakers living in lone-parent families in the Montérégie region where they account for 11.7% of the population. The proportion of those living in lone-parent families in the regional English-speaking population is similar to the proportion found in the regional French-speaking majority population. The proportion is similar to that found in the provincial English-speaking population.
- In MRC Marguerite-D'Youville, we find 135 English speakers living in lone-parent families where they represent 6.7% of the population. This is much lower than the proportion represented by the French-speaking majority population in MRC Marguerite-D'Youville. The proportion of English speakers living in lone-parent families in MRC Marguerite-D'Youville is much lower than the proportion we find for English speakers across the Montérégie region.



Living alone

- Across Québec, there were 173,695 English speakers living alone. This group represents 14.0% of the English-speaking population. The proportion of English speakers living alone is lower than the level in the French-speaking majority population in Quebec.
- In 2021, there were 17,755 English speakers living alone in the Montérégie region, where they account for 9.5% of the population. This level is much lower than that displayed by the provincial English-speaking population. The proportion of those living alone in the regional English-speaking population is much lower than the proportion found in the regional French-speaking majority population.
- In MRC Marguerite-D'Youville we find 185 English speakers living alone, where they represent 9.2% of the population. This share is similar to that exhibited by English speakers across the Montérégie region. The proportion of those living alone in the territory's English-speaking population is lower than the proportion exhibited by the French-speaking majority population in MRC Marguerite-D'Youville.

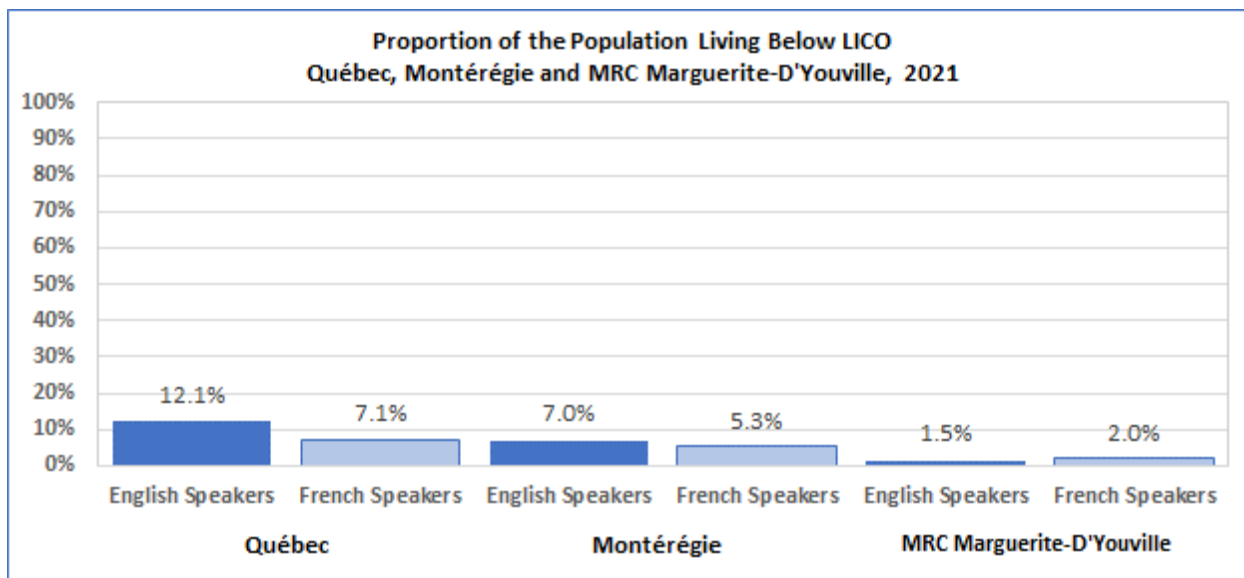
Low-Income Cut-off

Although there is no official measure of poverty in Canada, the Statistics Canada measure of Low-income cut-offs (LICO) is probably the best known. Commonly known as the “poverty line”, LICO uses the income levels of a given family and considers how large a share of its income is spent on necessities such as food, shelter and clothing. If the amount a family spends is 20% higher than an average family in a year, it falls into the low-income cut-off category. People who live below-income cut-offs may be said to live in “straitened circumstances.”¹¹ The following tables consider the population living below LICO by language, administrative territory and age group.

Table 5 - Population Living Below LICO, Within Age Groups

Population Living Below the Low-Income Cut-off (LICO), Across Age Groups	Québec		Montréal		MRC Marguerite- D'Youville	
	English	French	English	French	English	French
Total - Age groups	148,545	491,540	13,130	63,815	30	1,505
0-14 years	16,915	56,870	2,165	8,115	-	155
15-24 years	30,265	65,630	1,385	5,715	-	130
25-44 years	44,260	105,500	3,475	12,860	-	270
45-64 years	32,270	136,215	3,525	18,705	-	510
65+ years	24,845	127,330	2,585	18,425	-	430
Proportion of those below LICO across age groups						
Total - Age groups	12.1%	7.1%	7.0%	5.3%	1.5%	2.0%
0-14 years	8.9%	4.9%	6.4%	3.8%	-	1.0%
15-24 years	19.4%	9.1%	6.6%	4.6%	-	1.5%
25-44 years	11.9%	5.9%	6.3%	4.3%	-	1.4%
45-64 years	10.0%	7.1%	7.0%	5.5%	-	2.3%
65+ years	13.5%	9.2%	9.4%	8.0%	-	3.7%
<i>Source: JPocock Research Consulting, 2021 Census, Statistics Canada. Population in private households - 25% sample. The percentages given here compare the number below LICO in a given age group with the total number in that age group as presented in 'Table 2 - Age Structure of the Population' of this document.</i>						

¹¹ For an explanation of how Statistics Canada calculates low income cut-off (LICO) <https://www150.statcan.gc.ca/n1/pub/75f0002m/2012002/lico-sfr-eng.htm> accessed February 2023.



Population living below the low-income cut-off (LICO)

- Across Québec, there were 148,545 English speakers living below LICO. This group accounts for 12.1% of the English-speaking population. The proportion of English speakers living below LICO is much higher than the proportion in the French-speaking majority population in Quebec.
- In 2021, there were 13,130 English speakers living below LICO in the Montérégie region, where they represent 7.0% of the regional English-speaking population. The proportion of those living below LICO in the regional English-speaking population is much higher than the proportion found in the regional French-speaking majority population. This English-speaking regional proportion in Montérégie is much lower than the proportion for Quebec's English speakers in general.
- In MRC Marguerite-D'Youville, we find 30 English speakers living below LICO, where they represent 1.5% of the English-speaking population. This level is much lower than the proportion for the French-speaking majority population in the same territory. The proportion of those living below LICO in the territory's English-speaking population is much lower than the proportion for English speakers across Montérégie.

Table 6 - Population Living Below LICO, by Household Living Arrangements

The number of English speakers for this measure was too low to report.

Highest Educational Attainment

In many ways, education is an important determinant of the health status of a community. In Canada, the level of education achieved by an individual tends to be an indicator of social status, and ideally, a predictor of economic opportunity. The overall level of health literacy and preventative health practice enjoyed by a community also tends to be associated with the years of schooling by those included among its members¹². A case in point, Genereux's study of the psychosocial impact of the COVID-19 pandemic upon Québec communities demonstrates that key protective factors such as a sense of coherence are linked to levels of education.¹³

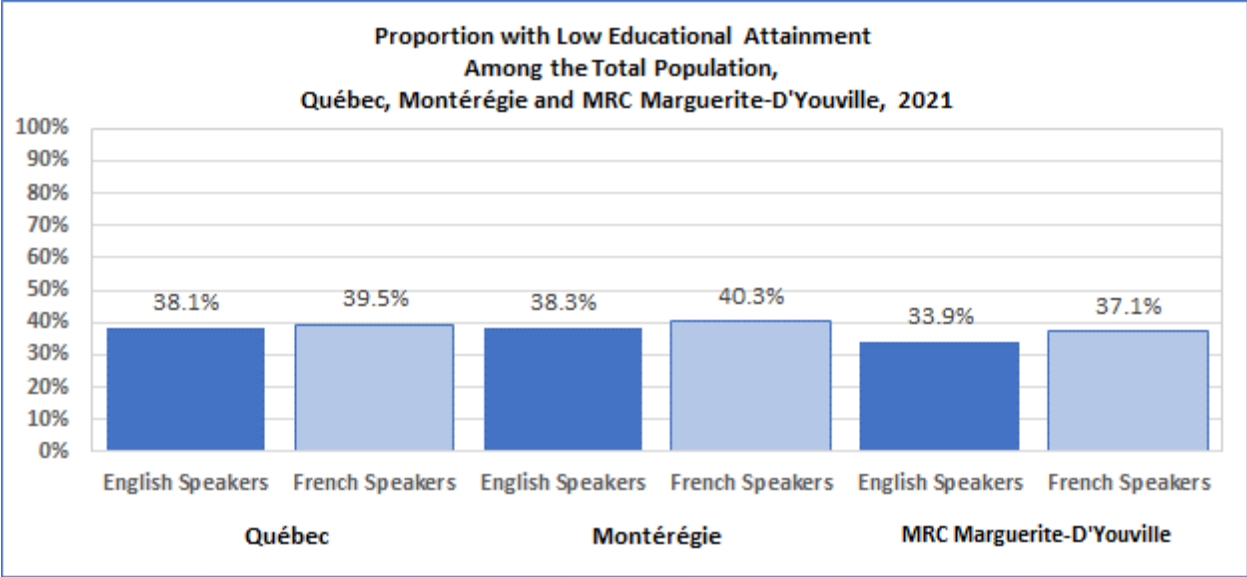
¹²For further discussion of education as a health determinant see Raphael, D., Bryant, T., Mikkonen, J. and Raphael, A. (2020). *Social Determinants of Health: The Canadian Facts*. (2nd edition) / *Déterminants sociaux de la santé : les réalités canadiennes*, (2e édition). Oshawa: Ontario Tech University Faculty of Health Sciences and Toronto: York University School of Health Policy and Management. <https://thecanadianfacts.org/>

¹³Genereux, M., Roy, M., Pare, C., and Levesque, J. (2020). Strengthening the Adaptive Capacities of Individuals and Communities in Times of Pandemic: The Key Role of the Sense of Coherence. https://refips.org/wp-content/uploads/2020/12/COVID19_SOC_UIPES_REFIPS_final.pdf

Table 7 - Highest Educational Certification, for Selected Age Groups

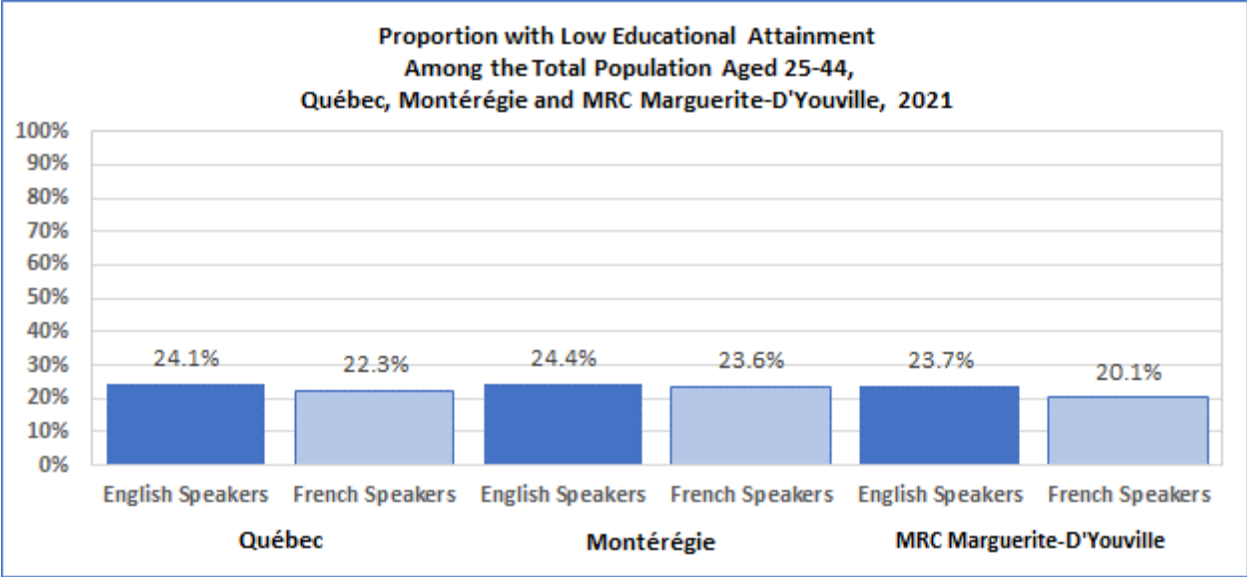
Total Population by Highest Educational Certification		Québec		Montérégie		MRC Marguerite- D'Youville	
		English	French	English	French	English	French
Total	Total	1,049,640	5,811,880	153,130	993,990	1,680	62,115
	25-44 years	377,080	1,787,550	54,755	301,780	655	19,710
	45-64 years	327,965	1,915,975	50,020	337,095	550	22,180
High school diploma or less	Total	399,730	2,293,515	58,720	400,360	570	23,035
	25-44 years	90,820	398,185	13,335	71,180	155	3,965
	45-64 years	112,980	657,060	17,175	115,920	170	6,955
Apprenticeship or trades certificate or diploma	Total	86,445	1,007,585	15,280	169,455	235	11,395
	25-44 years	33,445	393,840	6,225	68,910	95	5,005
	45-64 years	31,405	376,435	5,385	61,780	75	4,125
College, CEGEP or other non-university certificate or diploma	Total	178,355	1,020,485	28,735	177,930	345	12,460
	25-44 years	61,330	344,935	10,075	59,745	135	4,345
	45-64 years	62,200	367,785	10,460	66,405	115	4,855
University certificate or diploma below bachelor level	Total	31,300	220,170	4,775	39,495	60	2,495
	25-44 years	11,810	67,990	1,740	12,370	10	795
	45-64 years	12,100	81,910	2,030	15,380	30	1,100
University certificate, diploma or degree at bachelor level or above	Total	353,815	1,270,135	45,605	206,755	480	12,715
	25-44 years	179,675	582,605	23,365	89,580	255	5,600
	45-64 years	109,275	432,785	14,975	77,610	150	5,125
High school diploma or less	Total	38.1%	39.5%	38.3%	40.3%	33.9%	37.1%
	25-44 years	24.1%	22.3%	24.4%	23.6%	23.7%	20.1%
	45-64 years	34.4%	34.3%	34.3%	34.4%	30.9%	31.4%
Apprenticeship or trades certificate or diploma	Total	8.2%	17.3%	10.0%	17.0%	14.0%	18.3%
	25-44 years	8.9%	22.0%	11.4%	22.8%	14.5%	25.4%
	45-64 years	9.6%	19.6%	10.8%	18.3%	13.6%	18.6%
College, CEGEP or other non-university certificate or diploma	Total	17.0%	17.6%	18.8%	17.9%	20.5%	20.1%
	25-44 years	16.3%	19.3%	18.4%	19.8%	20.6%	22.0%
	45-64 years	19.0%	19.2%	20.9%	19.7%	20.9%	21.9%
University certificate or diploma below bachelor level	Total	3.0%	3.8%	3.1%	4.0%	3.6%	4.0%
	25-44 years	3.1%	3.8%	3.2%	4.1%	-	4.0%
	45-64 years	3.7%	4.3%	4.1%	4.6%	5.5%	5.0%
University certificate, diploma or degree at bachelor level or above	Total	33.7%	21.9%	29.8%	20.8%	28.6%	20.5%
	25-44 years	47.6%	32.6%	42.7%	29.7%	38.9%	28.4%
	45-64 years	33.3%	22.6%	29.9%	23.0%	27.3%	23.1%

Source: JPocock Research Consulting, 2021 Census, Statistics Canada. Population in private households - 25% sample.



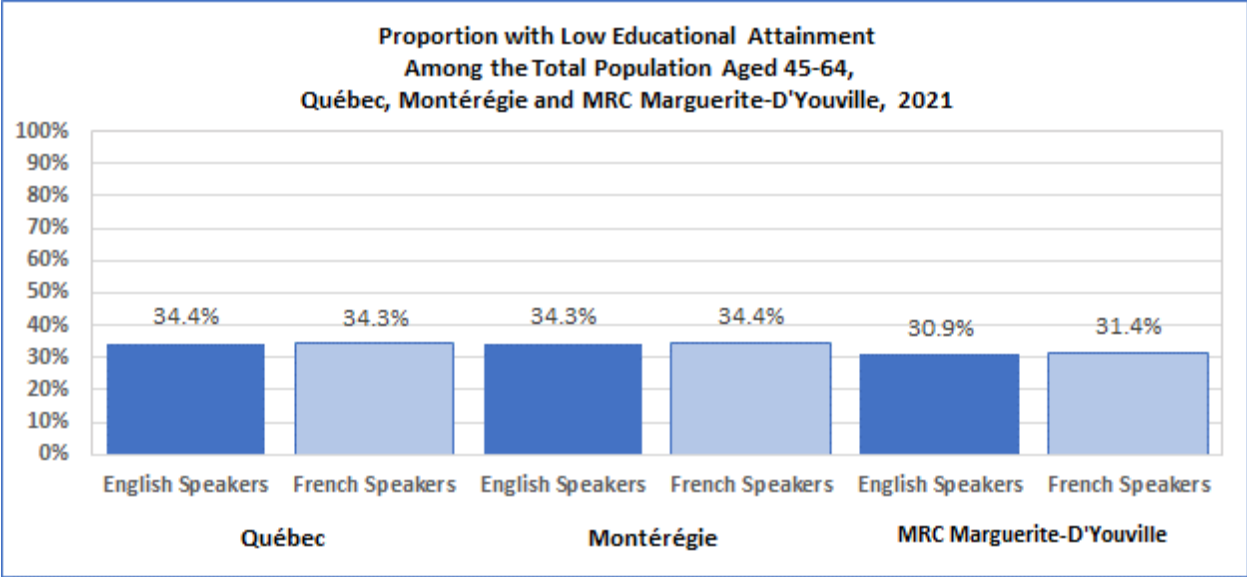
Population aged 15+, high school diploma or less

- Across Québec, there were 399,730 English speakers aged 15 and over with a high school diploma or less. This group accounts for 38.1% of the English-speaking population aged 15 and over. The proportion of English speakers aged 15 and over with a high school diploma or less is similar to the level found in the French-speaking majority population aged 15 and over in Quebec.
- In 2021, there were 58,720 English speakers aged 15 and over with a high school diploma or less in the Montérégie region where they account for 38.3% of the regional English-speaking population aged 15 and over. The proportion of those aged 15 and over with a high school diploma or less in the regional English-speaking population is similar to the proportion in the regional French-speaking majority population. The level for the English-speaking regional proportion is similar to that exhibited by English speakers across the province.
- In MRC Marguerite-D'Youville, we find 570 English speakers aged 15 and over with a high school diploma or less where they represent 33.9% of the English-speaking population aged 15 and over. This level is lower than the proportion exhibited by the French-speaking majority population aged 15 and over in the same territory. The proportion of those aged 15 and over with a high school diploma or less in the English-speaking population is lower than the proportion exhibited by the English speakers across the Montérégie region.



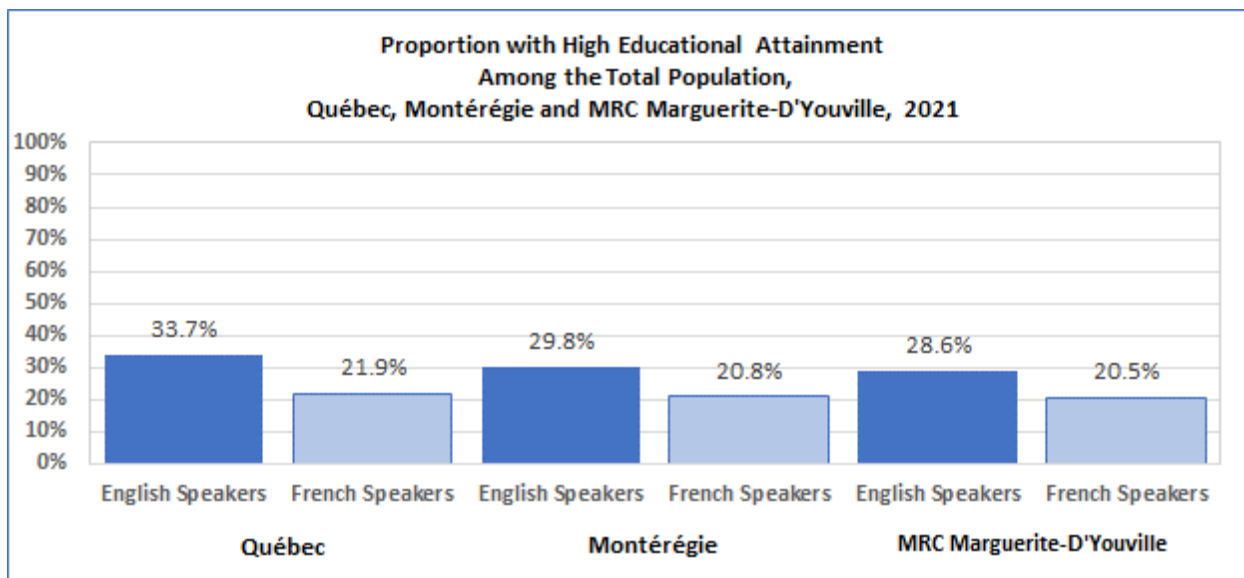
Population 25-44, high school diploma or less

- Across Québec, there were 90,820 English speakers aged 25-44 with a high school diploma or less. This group represents 24.1% of the English-speaking population aged 25 to 44. The proportion of English speakers aged 25-44 with a high school diploma or less is higher than that found in the French-speaking majority population in Quebec in the same age cohort.
- In 2021, there were 13,335 English speakers aged 25-44 with a high school diploma or less in the Montérégie region where they account for 24.4% of the regional English-speaking population. The proportion of those aged 25-44 with a high school diploma or less in the regional English-speaking population is similar to the proportion in the regional French-speaking majority population in that age group. This proportion is similar to that exhibited by English speakers across the province in the same age cohort.
- In MRC Marguerite-D'Youville, we find 155 English speakers aged 25-44 with a high school diploma or less where they comprise 23.7% of the English-speaking 25-44 cohort. This is higher than the proportion in the French-speaking majority 25-44 cohort in the same territory. The proportion of those aged 25-44 with a high school diploma or less in the territory's English-speaking population is similar to the proportion exhibited by English speakers across the Montérégie region.



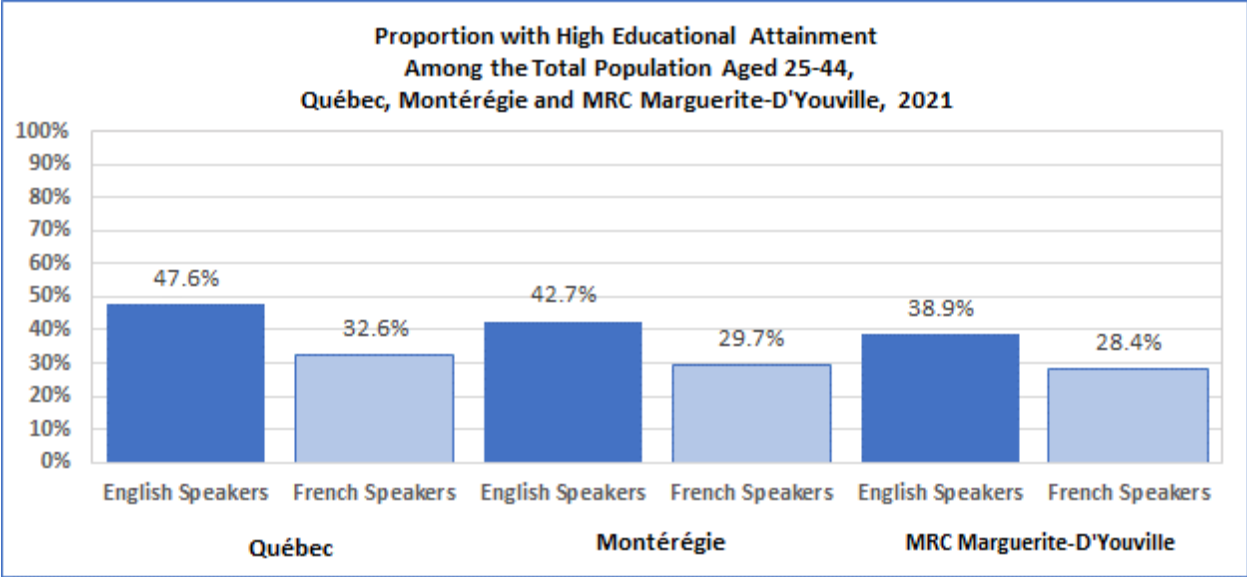
Population 45-64, high school diploma or less

- In Québec in 2021, there were 112,980 English-speaking aged 45-64 with a high school diploma or less. This group represents 34.4% of the English-speaking population. The proportion of English speakers aged 45-64 with a high school diploma or less is similar to that found in the same age cohort in the French-speaking majority population in Quebec.
- In 2021, there were 17,175 English speakers aged 45-64 with a high school diploma or less in the Montérégie region where they account for 34.3% of the regional English-speaking population. The proportion of those aged 45-64 with a high school diploma or less in the regional English-speaking population is similar to the proportion in the regional French-speaking majority population. This English-speaking regional proportion is similar to that exhibited by the province's English speakers.
- In MRC Marguerite-D'Youville, we find 170 English speakers aged 45-64 with a high school diploma or less where they comprise 30.9% of the English-speaking population. This is similar to the proportion exhibited by the French-speaking majority population in the same territory. The proportion of those aged 45-64 with a high school diploma or less in the territory's English-speaking population is lower than the proportion exhibited by English speakers across the region.



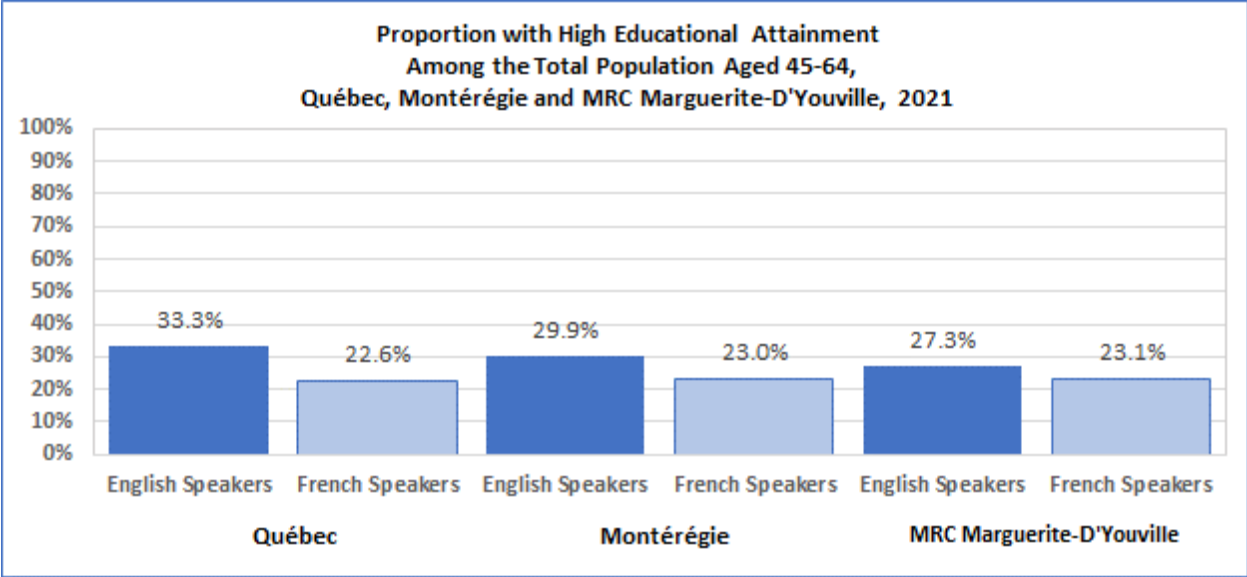
Population aged 15+, university degree or higher

- In Québec in 2021, there were 353,815 English-speaking aged 15 and over with a university degree or higher. This group represents 33.7% of the English-speaking population. The proportion of English speakers aged 15 and over with a university degree or higher is much higher than that found in the same age cohort in the French-speaking majority population in Québec.
- In 2021, there were 45,605 English speakers aged 15 and over with a university degree or higher in the Montérégie region where they account for 29.8% of the regional English-speaking population. The proportion of those aged 15 and over with a university degree or higher in the regional English-speaking population is much higher than the proportion in the regional French-speaking majority population. This English-speaking regional proportion is lower than that exhibited by the province's English speakers.
- In MRC Marguerite-D'Youville, we find 480 English speakers aged 15 and over with a university degree or higher where they represent 28.6% of the English-speaking population. This is much higher than the proportion exhibited by the French-speaking majority population in the same territory. The proportion of those aged 15 and over with a university degree or higher in the territory's English-speaking population is similar to the proportion exhibited by English speakers across the region.



Population 25-44, university degree or higher

- In Québec in 2021, there were 179,675 English speakers aged 25-44 with a university degree or higher. This group accounts for 47.6% of the English-speaking population. The proportion of English speakers aged 25-44 with a university degree or higher is much higher than that found in the same age cohort in the French-speaking majority population in Quebec.
- In 2021, there were 23,365 English speakers aged 25-44 with a university degree or higher in the Montérégie where they represent 42.7% of the regional English-speaking population. The proportion of those aged 25-44 with a university degree or higher in the regional English-speaking population is much higher than the proportion in the regional French-speaking majority population. This regional English-speaking proportion is lower than that exhibited by the province's English speakers.
- In MRC Marguerite-D'Youville, we find 255 English speakers aged 25-44 with a university degree or higher where they comprise 38.9% of the English-speaking population. This is much higher than the proportion exhibited by the French-speaking majority population in the same territory. The proportion of those aged 25-44 with a university degree or higher in the territory's English-speaking population is lower than the proportion exhibited by English speakers across the region.



Population 45-64, university degree or higher

- In Québec in 2021, there were 109,275 English speakers aged 45-64 with a university degree or higher. This group represents 33.3% of the English-speaking population. The proportion of English speakers aged 45-64 with a university degree or higher is much higher than that found in the same age cohort in the French-speaking majority population in Quebec.
- In 2021, there were 14,975 English speakers aged 45-64 with a university degree or higher in the Montérégie region where they represent 29.9% of the regional English-speaking population. The proportion of those aged 45-64 with a university degree or higher in the regional English-speaking population is much higher than the proportion in the regional French-speaking majority population. This regional English-speaking proportion is lower than that exhibited by the province's English speakers.
- In MRC Marguerite-D'Youville, we find 150 English speakers aged 45-64 with a university degree or higher where they comprise 27.3% of the English-speaking population. This level is higher than the proportion exhibited by the French-speaking majority population in the same territory. The proportion of those aged 45-64 with a university degree or higher in the territory's English-speaking population is lower than the proportion exhibited by English speakers across the region.

Labour Force Activity

The rate and type of labour force participation experienced by a community and its members is strongly associated with health status. In industrial nations like Canada, labour force activity is linked with level of income as well as the level of social integration enjoyed by a group.

Employment is an important source of social identity and a key context for the establishment of a social support network that extends beyond the workplace. For an individual, work is an important source of the self-esteem and sense of control typically associated with good mental health.¹⁴

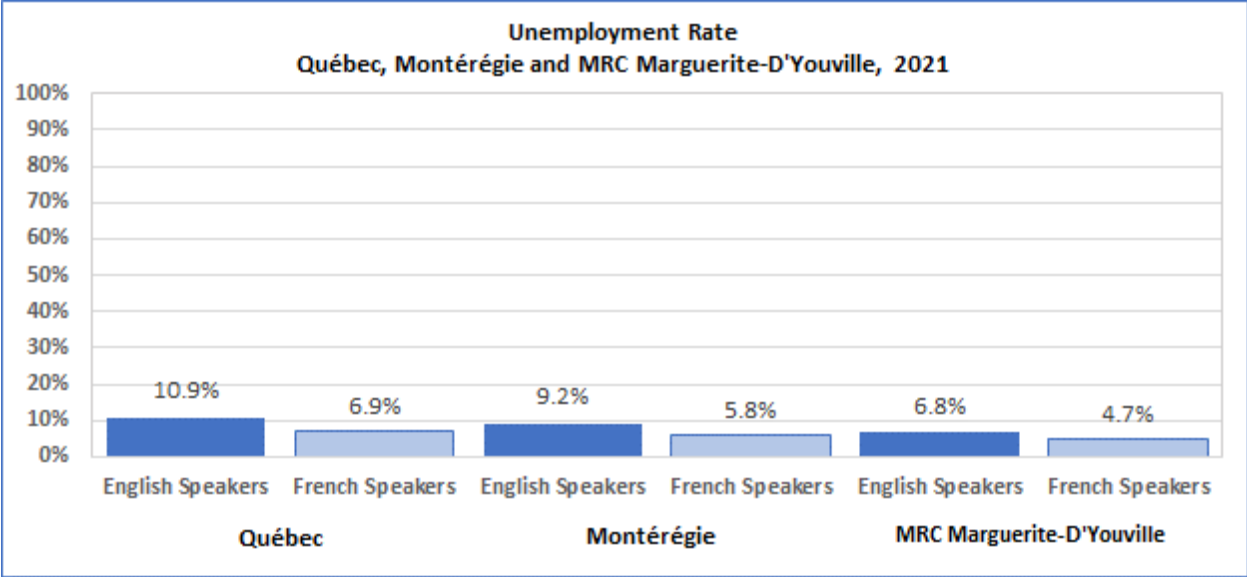
Table 8 - Labour Force Activity

Total Population by Labour Force Activity	Québec		Montérégie		MRC Marguerite- D'Youville	
	English	French	English	French	English	French
Total - Labour force activity	1,049,640	5,811,880	153,130	993,990	1,680	62,115
In the labour force	699,015	3,721,255	103,930	655,980	1,245	44,120
Employed	623,105	3,465,265	94,355	617,885	1,155	42,030
Unemployed	75,910	255,990	9,565	38,090	85	2,090
Out of the labour force	350,625	2,090,630	49,205	338,015	430	17,990
Total - Labour force activity	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
In the labour force	66.6%	64.0%	67.9%	66.0%	74.1%	71.0%
Employed	89.1%	93.1%	90.8%	94.2%	92.8%	95.3%
Unemployed	10.9%	6.9%	9.2%	5.8%	6.8%	4.7%
Out of the labour force	33.4%	36.0%	32.1%	34.0%	25.6%	29.0%

Source: JPocock Research Consulting, 2021 Census, Statistics Canada. Population in private households - 25% sample.

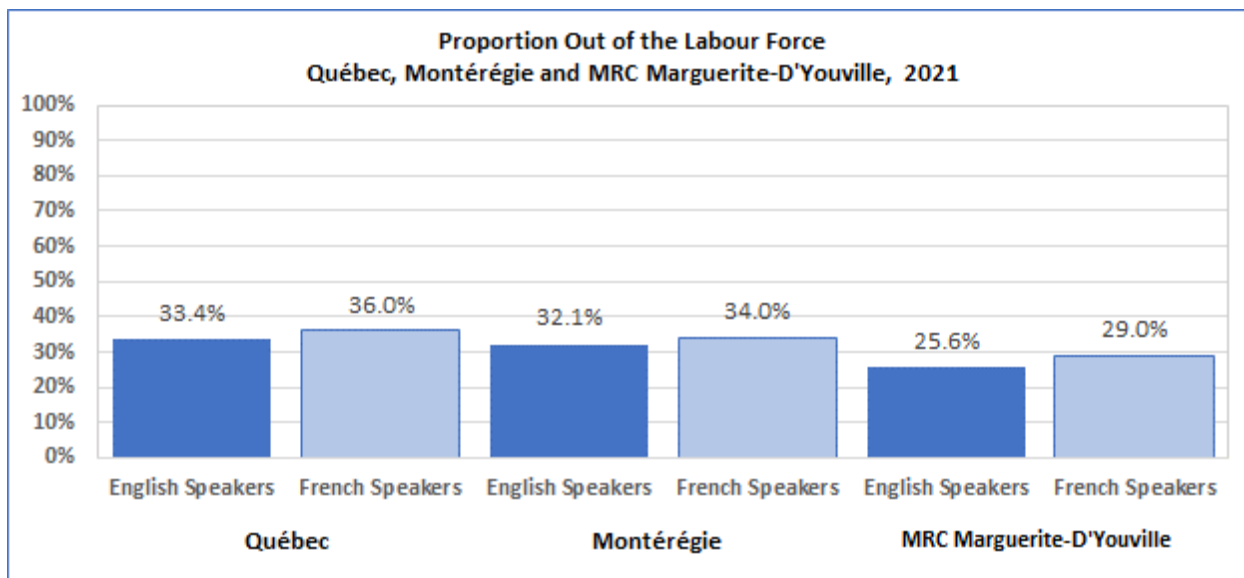
¹⁴For further discussion of employment and working conditions as health determinants see Raphael, D., Bryant, T., Mikkonen, J. and Raphael, A. (2020). *Social Determinants of Health: The Canadian Facts*. (2nd edition) / *Déterminants sociaux de la santé : les réalités canadiennes*, (2e édition). Oshawa: Ontario Tech University Faculty of Health Sciences and Toronto: York University School of Health Policy and Management.

<https://thecanadianfacts.org/>



Unemployed

- Across Québec in 2021, there were 75,910 English speakers who were unemployed resulting in an unemployment rate of 10.9%. The unemployment rate of Quebec's English speakers was much higher than the unemployment rate of the French-speaking majority.
- In 2021, there were 9,565 unemployed English speakers in the Montérégie region where they experienced an unemployment rate of 9.2%. The unemployment rate of the regional English-speaking population was much higher than the unemployment rate in the regional French-speaking majority population. Their unemployment rate was lower than that experienced by the provincial English-speaking population.
- In MRC Marguerite-D'Youville, we find 85 unemployed English speakers resulting in an unemployment rate of 6.8%. This is much higher than the unemployment rate experienced by the French-speaking majority population in the same territory. The unemployment rate of the English-speaking population is much lower than the unemployment rate experienced by English speakers across the Montérégie region.



Out of the labour force¹⁵

- Across Québec in 2021, there were 350,625 English speakers out of the labour force in 2016. This group represents 33.4% of the English-speaking population aged 15+. The proportion of English speakers out of the labour force is lower than that found in the French-speaking majority population in Quebec aged 15 and over.
- In 2021, there were 49,205 English speakers out of the labour force in the Montérégie region where they comprise 32.1% of the regional English-speaking population aged 15+. The proportion of those out of the labour force in the regional English-speaking population is lower than the proportion in the regional French-speaking majority population. This English-speaking regional proportion is similar to that exhibited by the provincial English-speaking population.
- In MRC Marguerite-D'Youville, we find 430 English speakers out of the labour force where they account for 25.6% of the English-speaking population. This is lower than the proportion exhibited by the French-speaking majority population in the same territory. The proportion of those out of the labour force in the territory's English-speaking population is much lower than the proportion exhibited by English speakers across the Montérégie region.

¹⁵The Statistics Canada category “[out of the labour force](http://www12.statcan.gc.ca/nhs-enm/2011/ref/dict/99-000-x2011001-eng.pdf)” refers to persons 15 years and over, excluding institutional residents, who were neither employed nor unemployed during the week of Sunday May 1 to Saturday May 7, 2011. It includes students, homemakers, retired workers, and seasonal workers in an “off” season who were not looking for work because of a long-term illness or disability.
<http://www12.statcan.gc.ca/nhs-enm/2011/ref/dict/99-000-x2011001-eng.pdf>

Appendix A – English speakers and French speakers by region and MRC or equivalent territories, 2021¹⁶

Number and Proportion of English and French Speakers in Montérégie by MRC Territory, 2021				
Geography	Total Population	French Speakers	English Speakers	Proportion of English Speakers
Québec	8,406,905	7,074,330	1,253,580	14.9%
Montérégie	1,419,885	1,220,080	188,595	13.3%
MRC Acton	15,565	15,320	210	1.3%
MRC Pierre-De Saurel	51,190	50,400	725	1.4%
MRC Les Maskoutains	88,270	86,460	1,315	1.5%
MRC Rouville	37,535	36,435	935	2.5%
MRC Le Haut-Richelieu	120,195	114,905	5,120	4.3%
MRC La Vallée-du-Richelieu	131,000	123,905	6,820	5.2%
Longueuil	431,330	352,910	71,300	16.5%
MRC Marguerite-D'Youville	79,570	77,450	2,020	2.5%
MRC Roussillon	184,125	149,610	33,125	18.0%
MRC Les Jardins-de-Napierville	30,190	27,855	2,145	7.1%
MRC Le Haut-Saint-Laurent	21,985	15,260	6,695	30.5%
MRC Beauharnois-Salaberry	67,825	64,285	3,445	5.1%
MRC Vaudreuil-Soulanges	161,095	105,285	54,740	34.0%
<i>Source: JPocock Research Consulting, 2021 Census, Statistics Canada. Total population excluding institutional residents - 100% sample.</i>				

¹⁶Baseline Data Reports are only available for those MRCs or equivalent territories with at least 250 English speakers. This table nonetheless lists all MRCs or equivalent territories in a given region.

Appendix B – Baseline Data Report Series

2003-2004	Regional Profiles of English-speaking Communities	2001 Census
2004-2005	Profiles of English-speaking Communities In Selected CLSC Territories	2001 Census
2005-2006	English-Language Health and Social Services Access in Québec	2005 CHSSN-CROP Survey on Community Vitality
2006-2007	Community Network Building	Case studies (qualitative interviews)
2007-2008	Health and Social Survey Information on Quebec's English-speaking Communities	1998 Québec Health and Social Survey
2008-2009	Regional Profiles of Quebec's English-speaking Communities: Selected 1996-2006 Census Findings	1996 and 2006 Census
2009-2010	Demographic Profiles of Quebec's English-speaking Communities for Selected CSSS Territories	1996 and 2006 Census
2010-2011	English-Language Health and Social Services Access in Québec	2010 CHSSN-CROP Survey on Community Vitality
2010-2011	2010-2011 Companion Report – Comparison of French and English respondents to the 2010 CROP survey	2010 CHSSN-CROP Survey on Community Vitality
2011-2012	Socio-economic Profiles of English-speaking Visible Minority Population by Quebec Health Region	2006 Census of Canada
2012-2013	Quebec's English-speaking Community Networks and their Partners in Public Health and Social Services	Survey of NPI organizations and interviews
2013-2014	Demographic Profiles of Quebec's English-speaking Communities for Selected CSSS Territories	2011 Census of Canada; 2011 National Household Survey
2014-2015	Canadian Community Health Survey (2011-2012) / Findings related to the Mental and Emotional Health of Quebec's English-speaking Communities	Canadian Community Health Survey, 2011-2012
2015-2016	English-Language Health and Social Services Access in Québec	2015 CHSSN-CROP Survey on Community Vitality
2015-2016	2015 CHSSN-CROP Survey on Community Vitality / Findings on English-speaking Community Vitality Across Key Sectors	2015 CHSSN-CROP Survey on Community Vitality
2016-2017	Demographic Summaries for English-speaking Populations Across Quebec's RTS Territories (2011)	2011 Census of Canada; 2011 National Household Survey
2017-2018	Demographic Profiles of Quebec's English-speaking Communities for Selected RLS Territories	2016 Census of Canada
2018-2019	Socio-demographic Profile of Children Aged 0 to 5 and their Parents	2016 Census of Canada
2018-2019	English-language Health and Social Service Access in Quebec	2019 CHSSN-CROP Community Health and Social Survey
2019 -2021	Gender Based Socio-demographic Profiles	2016 Census of Canada
2019 -2021	Time Series Report: CHSSN/CROP Surveys 2005-2019	2005-2019 CHSSN CROP Community Health and Social Surveys
2021-2022	Socio-demographic Characteristics of Visible Minorities in Quebec's English-speaking Communities	2016 Census of Canada
2022-2023	Demographic Profiles of Quebec's English-speaking Communities	2021 Census of Canada

Sources and References

- Access Alliance Multicultural Health and Community. (2021). *Investing in Language Access to Optimize Health System Performance. A Review of the Literature*.
https://accessalliance.ca/wp-content/uploads/2021/06/Access_Alliance_Investing_in_Language_Access_to_Optimize_Health_System_Performance.pdf
- Bowen, S. (2015) for Société Santé en Français (SSF). *Impact of Language Barriers on Quality and Safety of Healthcare*. <http://santefrancais.ca/wp-content/uploads/SSF-Bowen-S.-Language-Barriers-Study-1.pdf>
- Bowen, S. (2001). *Language Barriers in Access to Health Care*, Ottawa: Health Canada.
- Bowen, S., Gibbons, M., Roy, J. and Edwards, J. (2010). From ‘multicultural health’ to ‘knowledge translation’ – rethinking strategies to promote language access within a risk management framework. *The Journal of Specialized Translation (Jostrans)*, Issue 14,
http://www.jostrans.org/issue14/art_bowen.php.
- Bowen, S. (2015) for Société Santé en Français (SSF). *Impact of Language Barriers on Quality and Safety of Healthcare*. <http://santefrancais.ca/wp-content/uploads/SSF-Bowen-S.-Language-Barriers-Study-1.pdf>
- Consultative Committee for English-speaking Minority Communities (CCESMC) 2002, *Report to the Federal Minister of Health*, Ottawa: Health Canada.
- Denis, J.L., Potvin, L., Rochon, J. *et al.* (2020) “On redesigning public health in Québec: lessons learned from the pandemic”. *Canadian Journal of Public Health* **111**, 912–920.
<https://doi.org/10.17269/s41997-020-00419-x>
- Genereux, M., Roy, M., Pare, C., and Levesque, J. (2020). *Strengthening the Adaptive Capacities of Individuals and Communities in Times of Pandemic: The Key Role of the Sense of Coherence*.
https://refips.org/wp-content/uploads/2020/12/COVID19_SOC_UIPES_REFIPS_final.pdf
- Pocock, J. (2008). *Baseline Data Report 2007-2008. Quebec’s Social and Health Survey Information*. Community Health and Social Services Network. (CHSSN). www.chssn.org
- Public Health Agency of Canada. “What Determines Health?” www.phac-aspc.gc.ca/ph-sp/determinants/index-eng.php
- Raphael, D., Bryant, T., Mikkonen, J. and Raphael, A. (2020). *Social Determinants of Health: The Canadian Facts*. (2nd edition) / *Déterminants sociaux de la santé : les réalités canadiennes*, (2^e édition). Oshawa: Ontario Tech University Faculty of Health Sciences and Toronto: York University School of Health Policy and Management. <https://thecanadianfacts.org/>
- Reaume, M., Batista, R., Talarico, R. ...*et* Tanuseputro, P. (2020) “The impact of hospital language on the rate of in-hospital harm. A retrospective cohort study of home care recipients in Ontario, Canada”. *BMC Health Services Research* **20**, 340
<https://doi.org/10.1186/s12913-020-05213-6>

- Sanderson, D. (2020). Language Related Difficulties Experienced by Caregivers of English-Speaking Seniors in Quebec. *SAGE Open*, 10(3). <https://doi.org/10.1177/2158244020951261>
- World Health Organization and Calouste Gulbenkian Foundation. (2014) *Social Determinants of Mental Health*. Geneva, World Health Organization, ISBN 978 92 4 150680 9.
- Yang, F. and Aitken, N. (2021). *People living in apartments and larger households were at higher risk of dying from COVID-19 during the first wave of the pandemic*. Statistics Canada. <https://www150.statcan.gc.ca/n1/pub/45-28-0001/2021001/article/00004-eng.htm> accessed February 2023.