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Immigration and low-income situation in Canada from a family perspective: The case of Quebec

Par :
Thu Duong

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Résumé

Le Canada est depuis longtemps une destination bien connue des immigrants du monde entier. Depuis les années 1980, la performance économique des immigrants suite à leur arrivée a été un sujet de recherche intéressant. Plusieurs chercheurs se sont concentrés particulièrement sur l'écart significatif dans la proportion d'individus à faibles revenus entre les personnes nées à l'étranger et celles nées au Canada aux 20e siècle. Même si le taux de faible revenu a été considérablement réduit depuis, l'écart relatif entre les immigrants et les individus nés au Canada a augmenté depuis 1996[1]. J'examine dans cette étude l'incidence des structures familiales sur la situation de faible revenu au Québec en utilisant les données du Recensement de 2016 de Statistiques Canada. Cette base de données contient des informations sur le revenu, les caractéristiques démographiques et sur le profil de l'immigration. En utilisant le modèle de régression logistique, j'évalue la relation entre différents facteurs, tels que le nombre de membres de la famille, la structure familiale, l'ethnicité, la langue, et le faible revenu. Je compare également la situation du Québec avec celle des autres provinces du Canada à l'aide de la nouvelle mesure officielle du faible revenu, la Mesure du Panier de Consommation (MPC). Les résultats économétriques indiquent une forte corrélation entre des facteurs d'assimilation, la composition familiale, le travail, l'accès à la propriété du logement, et l'incidence du faible revenu des immigrants. Ils démontrent que la situation de faible revenu des immigrants au Québec se situe dans la moyenne, relativement au reste du Canada. Considérant que les familles monoparentales ont les plus fortes chances d'être en situation de faible revenu, et que c'est au Québec que nous retrouvons le pourcentage le plus élevé de ce type de famille par rapport au reste du Canada, le Québec serait en meilleure situation que les autres provinces s'il augmentait la proportion de familles biparentales et réduisait le nombre élevé de famille monoparentales dans la province. Un autre constat est qu'une famille élargie joue un rôle important dans la réduction de la pauvreté dans la

[1] Selon les données du recensement de 2016 de Statistique Canada, environ 8% de la population née au Canada et les immigrants qui vivaient au Canada depuis plus de 15 ans souffraient d'incidence de faible revenu, alors qu'il y avait 27% de nouveaux arrivants (immigrants qui vivait au Canada de 0 à 5 ans en 2016) était dans la même situation.

famille immigrante. Les résultats démontrent aussi le faible relation de l'éducation sur la santé financière des immigrants.

Mots clés: Immigrants, faible revenu, famille d'immigrant, Québec

Abstract

Canada has long been a well-known destination for immigrants worldwide. Immigrants' economic performance after landing has become an interesting research topic since the 80s. Many researchers focused especially on the significant gap in low-income incidence between foreign-born and Canada-born individuals in the 20th century. Even though the low-income rate has since been reduced significantly, the relative gap between immigrants and natives has continued to increase since 1996[2]. I examine the low-income incidence of immigrants in Quebec in different family structures by using the 2016 Census data from Statistic Canada. This database contains information about income, demographic characteristics, and immigration profile. Using the logistic regression model, I assess the relationship between various factors, such as the number of family members, family structures, ethnicity, languages, and low-income situation. I also compare this situation to other provinces across Canada thanks to the new official low-income line – Market Basket Measure (MBM). The econometric models' results indicate strong relationships between assimilation factors, family composition, labour, housing ownership factors, and low-income incidence of immigrants. They show that the low-income situation of immigrant family in Quebec is at the average, compared to the rest of Canada. Since lone-parent families have the highest odds to be in low-income situation, while Quebec has the highest percentage of this family type compared to the rest of Canada, the low-income situation could be better than other provinces if the portion of two-parent families increased in the province. Another main finding is that extended family plays an important role in reducing poverty in immigrant family. The results demonstrate the weak relationship between education qualification and financial health of immigrants.

Keywords: Immigrants, low-income, immigrant family, Quebec

[2] According to 2016 Census data from Statistics Canada, there was around 8% of Canadian-born population and the immigrants who had been living in Canada for more than 15 years suffering from low-income incidence, whereas there was 27% of newcomers (immigrants who had been living in Canada from 0 to 5 years by 2016) was in the same situation.

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List of acronyms

MBM	Market Based Measure
LIM	Low-Income Measure
LICO	Low-Income Cut Offs
OECD	Organization for Economic Cooperation and Development
CSQ	Certificat de selection du Québec (Quebec selection certificate)
OLS	Ordinary Least Squares

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"With love and patience, nothing is impossible "

- Daisaku Ikeda -

Introduction

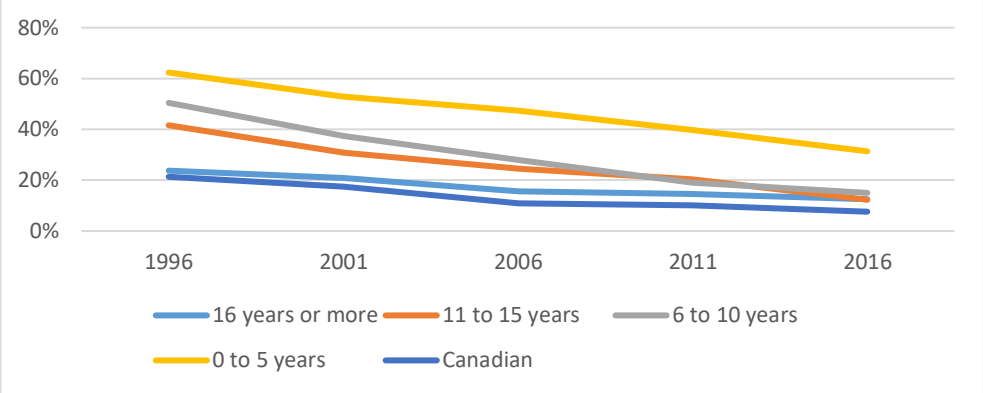
Being one of the top five countries that receive the most immigrants in the world[3], Canada has an urgent need of foreign-born labor force to counter the fact that its own population is aging quickly[4]. By 2030, the number of seniors in the country will exceed 9.5 million people, representing 23% of the Canadian population compared to 17.5%[7] in 2020. Among various obstacles and challenges pertinent to immigration, immigrant's low-income situation is a long-lasting issue that have not been solved thoroughly. In Canada, 13.06% of the total population was living in poverty in 2016[8]: 3.6% from the immigrant population, and 8.71% from the native population. In fact, for a Canadian-born person, the odds of being in low-income is much lower than that of an immigrant (11% and 17%, respectively). The gap of poverty between immigrants and natives has been increasing steadily from 1996 (see Figure 2), regardless of the downward trend in the poverty rate of the whole country (see Figure 1).

Figure 1 shows the estimated absolute low-income incidence, applying the Low-income Cut-offs After-tax rate[9] (LICO) for different groups of immigrants and non-immigrants. Immigrants are divided into three groups by the number of years in Canada: 0-5 years, 6-10 years, and 11-15 years. The immigrants living in Canada for more than 15 years are combined into the same group as the Canadian-born population. In 1996, the low-income rate for the four groups were 49%, 34%, 25%, and 18%, respectively. After 20 years, the low-income incidences of all groups have been reduced remarkably to half in 2016. While the estimated absolute low-income incidences have decreased during the period, the gaps between the low-income rates of immigrants and that of natives have been increasing,

[3] OECD (2019), "International Migration Outlook 2019," *OECD Publishing*, Paris, table 1.1, page 21. https://doi.org/10.1787/c3e35eec-en.
[4] "Action for Seniors report," *Government of Canada*, https://www.canada.ca/en/employment-social-development/programs/seniors-action-report.html
[7] "Population and demography statistics," *Statistics Canada*, https://www.statcan.gc.ca/eng/subjects-start/population_and_demography
[8] The 2016 Census data, using market basket measure.
[9] "The Low-income Cut-offs (LICO) are income thresholds below which a family will likely devote a larger share of its income on the necessities of food, shelter and clothing than the average" (definition of Statistic Canada). See more in Chapter 2.

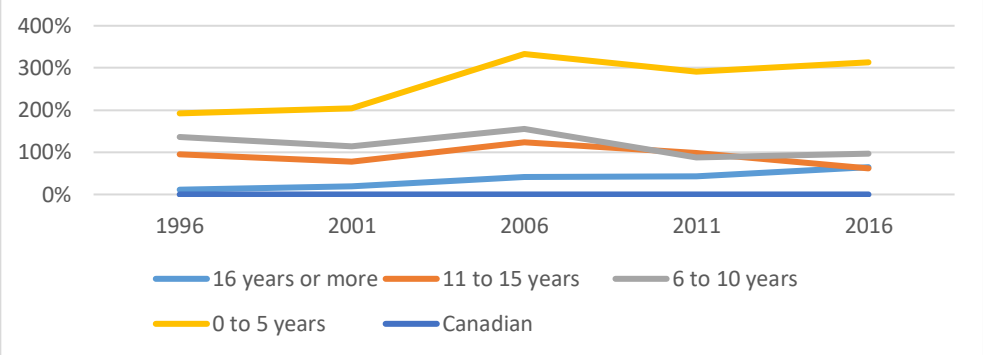
indicating that the low-income rate of natives decreases at a faster rate than that of immigrants. Figures 2 shows the relative rate of poverty of immigrants, relative to that of natives during the period 1996 – 2016, using LICO. As observed, the gap between immigrants, especially the newcomers (immigrants who arrive during the last five years) and the Canadian-born population are widening over time.

Figure 1. Low-income incidence of natives and immigrants classified by number of years settling in Canada, 1996-2016



Source: Census data, 1996, 2001, 2006, 2011 and 2016. Data combined and calculated by author.

Figure 2. The gap of low-income incidence between immigrants classified by number of years settling in Canada, and Canadian-born, 1996-2016



Source: Census data, 1996, 2001, 2006, 2011 and 2016. Data combined and calculated by author.[10]

[10] I calculated the percentage of the difference by dividing the difference of one category's poverty rate (i.e., the poverty rate of immigrants settling in Canada for 16 years or more) to Canadian's poverty rate of the same year by the

To understand this situation, I seek at studying the poverty situation of immigrants in Canada. I will focus on the province of Quebec given especially that the gap within the province is the highest among the densely populated Canadian provinces. Indeed, Quebec has the lowest poverty rate for Canadian-born population (9%) in 2016 compared to other populous provinces such as Alberta (10%) or Ontario (12%)[12]. However, the poverty rate of the foreign-born population is similar to that of other provinces (around 17%)[13].

Firstly, I will provide an overview of the poverty situation of immigrants in the province of Quebec, compared to the rest of Canada in 2016. Secondly, I will analyze the relationship between family composition and the economic performance of immigrants. Specifically, the goal of my study is to answer the following questions:

i. What types of individuals, families, and communities are experiencing low-income among immigrants in the province of Quebec?

ii. How does the situation compare across provinces?

iii. From a family composition perspective, how is the incidence of low-income among immigrants influenced by the prevalence of extended families, and the structure of a family?

To pursue my objectives, I adapted the econometric model of Kazemipur and Halli (2000) and other studies, using a cross-sectional data of the 2016 Canadian Census, to study the poverty situation of immigrants in Quebec. Detailed statistics of the relevant factors affecting the economic performance of immigrants, including assimilation factors, human capital factors and others is presented and analyzed to give an overall picture of poverty incidence in this province, compared to other provinces. I apply the same logistic regression with the same dependent variable and sets of control variables as Kazemipur and Halli (200), but with different main explanatory variables: economic family size and

native's poverty rate of that year. This reflects the gaps in poverty between immigrants from each category and Canadian-born population.

[12] The 2016 Census data, Statistics Canada.

[13] The 2016 Census data, Statistics Canada.

status, to verify the association of family composition on poverty rate. Diagnostic tests and robustness tests are performed to verify the consistency of the results.

The results show that living in an extended family does, in fact, have a significantly positive impact on the odds of being in poverty of immigrants, especially for those living in metropolitan cities in the province of Quebec. Among the factors that influence economic performance of immigrants, family structures play the most important role, with the highest coefficients. According to the results, lone parent and unattached individual negatively affect the economic well-being of an immigrant family.

This study is structured as follows. Chapter 1 gives an overview of immigration and poverty in Canada and its populous provinces. Chapter 2 reviews the literature of the economic performance of immigrants and its influencing factors. Chapter 3 provides the descriptive evidence and my hypotheses. Chapter 4 describes the data used in this paper and the econometric model. Chapter 5 analyzes the results. Chapter 6 conducts a sensitivity analysis to assess the robustness of the model. Chapter 7 concludes and discusses future directions of research.

Chapter 1: Overview of immigration and the low-income situation

This chapter reviews the immigration policies and low-income situation between the 17th and 21st century in Canada and Quebec. It focuses on the changes of immigration policy and the depth of history of immigration in the country. The first part is a brief history of the immigration system in Canada. Next, I summarize the evolution of immigration in Quebec during the period and show its recent trends and statistics of immigration. The goal of this chapter is to provide an overview of the history and current situation of immigration and poverty to lay the foundation for the whole research.

1. History of the immigration system in Canada

1.1. Overview

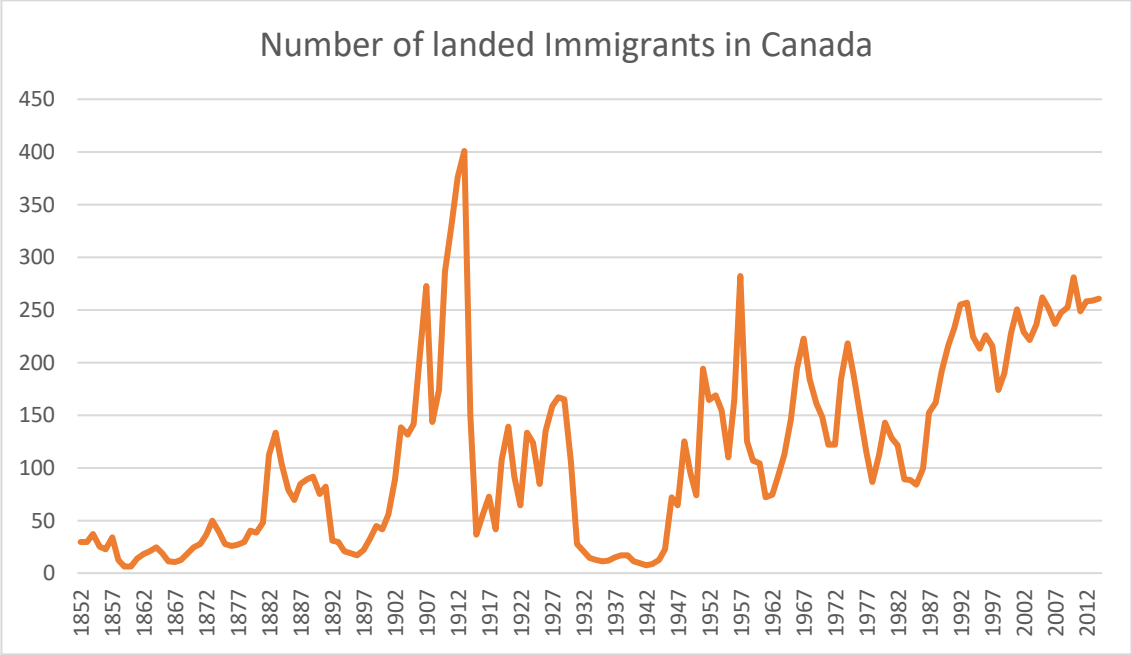
Canada has been known as the land of immigrants thanks to millions of newcomers who have come and settled here[14]. The history of immigration in Canada started around the 17th century, under the European colonial administrations. There were two official colonial eras in Canada: New France (from 1604 to 1763) and British North America (from 1760 to 1873)[15]. At the beginning, the colonial administrators did not focus on encouraging the immigration to Canada. Gradually, they set up immigration policies to attract more Europeans to the country. They expected that the settlers would help maintaining their power and control of the colonies and their claims over natural resources – on behalf of European investors[16]. The French and British colonials had brought the first immigrants to Eastern Canada. In the 18th century, British colonials brought merchants and farmers to settle and fill the agricultural land. Following the end of the American Revolutionary War in 1783, around 42 000 immigrants, the United Empire Loyalists, came to Canada from the United States. They were largely the Protestants running away from the American Revolution, who were also considered as the first contingent of refugees in Canada.

Figure 3 presents the history of immigration in Canada, from 1852 to 2014. The first spike of the graph was during the period 1897 – 1917, thanks to the immigration policy of the Liberal party in 1896. At the time, the Minister of the Interior, Clifford Sifton, launched a vast immigration policy to increase the population of the country, specifically aimed at the western provinces. During that time, around three million immigrants from the United States, Britain and other European countries arrived in Canada, half of whom settled in the Prairies (including Alberta, Saskatchewan, and Manitoba provinces)[17]. At the end of the 19th century, Canada admitted from 6 300 to 133 000 immigrants each year. This number since then has grown year by year, with exceptions during the two World Wars

[14] "Backgrounder – Facts in Canada's Immigration History", https://www.canada.ca/en/immigration-refugees-citizenship/news/archives/backgrounders-2011/facts-canada-immigration-history.html
[15] "Historical Overview of Immigration to Canada," *Canadian Museum of History,* https://www.historymuseum.ca/cmc/exhibitions/tresors/immigration/imf0300e.html
[16] "Immigration to Canada," *Canadian encyclopedia,* https://www.thecanadianencyclopedia.ca/en/article/immigration
[17] "Immigration to Canada," *Canadian encyclopedia,* https://www.thecanadianencyclopedia.ca/en/article/immigration

and the Great Depression in the 1930s, when the number of incoming migrants dropped significantly (see Figure 3). The manufacturing and service sectors grew at a fast pace in Canada in the 1920s, which attracted a large number of high skilled workers and engineers. The Great Depression in 1932 not only caused the migration from Canada to other countries, but also led to the movement of the population across provinces, notably from the Prairies to British Columbia and Ontario.

Figure 3. Immigration over time in Canada (1852 – 2014)



Source: From 1852-1979 – Employment and Immigration Canada. For 1980-Immigration Statistics, Immigration and Demographic Policy Group, Catalogue no. MP22-1/1980. From 1980 to 2014 – Immigration Refugees Citizenship Canada[18]

At the time, discrimination towards the immigrants was prevalent, whether it was class, ethnic or race-based discrimination. However, even white immigrants had to deal with discrimination from the immigration policy. French, British, and American immigrants were preferred to other immigrants by the Canadian government, as they spoke English or French, and were highly educated, they would prove to have an easier time assimilating

[18] "150 years of Immigration in Canada", *Statistics Canada*, https://www150.statcan.gc.ca/n1/pub/11-630-x/11-630-x2016006-eng.htm

to the mainstream of Canadian life. These factors would also make them highly employable in Canada. Those coming from the Eastern Europe, the Caribbean the Middle East or East Asia were less preferred due to language and culture barriers. A summary of the evolution in immigration policy of the government of Canada will be discussed in the next subsection.

1.2. Evolution of immigration policy in Canada

The government of Canada controls immigration by law and regulation, whose main objectives are population and labour force growth. Immigration policy has been tightly bound with the economic expansion or recession. It also reflects the discriminatory perception of the government towards certain ethnicities or migrant groups. The policy was initially set up by the Ministry of Mines and Resources (1936-1949), then by the Department of Citizenship and Immigration (1955-1966; 1992 – 2016); by the Department of Manpower and Immigration (1966-1977); by the Canada Employment and Immigration Commission (1977-1992) and by Immigration, Refugee and Citizenship Canada (IRCC) since 2016[19]. Both the federal and provincial government are responsible for immigration, even though more power has always been centered at the former level. By 2017, every province and territory in Canada had a bilateral agreement with the federal government guiding the recruitment and selection process of immigrants based on their particular social and economic demands (see Table 1). Among the provinces, Quebec has always been the one with the most autonomy in establishing its own rules concerning immigration.

Table 1. Federal-Provincial/Territorial Agreements Currently in Force

Agreement	**Date Signed**	**Expiry Date**
Canada-Newfoundland and Labrador Immigration Agreement	31-Jul-16	31-Jul-21
Agreement for Canada-Prince Edward Island Co-operation on Immigration	13-Jun-08	Indefinite
Canada-Nova Scotia Co-operation on Immigration	19-Sep-07	Indefinite

[19] "Immigration Policy in Canada," *The Canadian Encyclopedia*, https://thecanadianencyclopedia.ca/en/article/immigration-policy

Canada-New Brunswick Immigration Agreement	30-Mar-17	30-Mar-22
Canada-Québec Accord relating to Immigration and Temporary Admission of Aliens	05-Feb-91	Indefinite
Canada-Ontario Agreement on Foreign Workers	17-Jun-15	16-Jun-20
Canada-Ontario Agreement on Provincial Nominees	27-May-15	26-May-20
Canada-Manitoba Immigration Agreement	06-Jun-03	Indefinite
Canada-Saskatchewan Immigration Agreement	07-May-05	Indefinite
Agreement for Canada-Alberta Cooperation on Immigration	11-May-07	Indefinite
Canada-British Columbia Immigration Agreement	07-Apr-15	06-Apr-20
Agreement for Canada-Yukon Co-operation on Immigration	12-Feb-08	Indefinite
Canada-Northwest Territories Agreement on Territorial Nominees	26-Sep-13	25-Sep-18

Source: 2017 Annual Report to Parliament on Immigration[20]

At the beginning of the immigration history (the 17th century), it was largely unrestricted and welcoming to all newcomers. It encouraged white immigrants such as French and British to settle in the West of Canada. One of the most important regulation is the Immigration Act, which was firstly passed in 1869, presented the discriminatory perception of immigrants based on class, race, and disability[21]. During the 19th and early 20th century, many infamous discriminatory cases towards immigrants occurred on the ground of their origins and race. For example, the government, under the pressure of the province of British Columbia, imposed the *Head Tax Policy* (1885)[22] on the Chinese immigrants after they were no longer needed to build the Canadian Pacific Railway, to restrict the immigration of Chinese, who were later completely banned by the Chinese *Immigration Act* in 1923.

[20] "2017 Annual report to Parliament on Immigration," *Immigration, Refugees and Citizenship*, https://www.canada.ca/en/immigration-refugees-citizenship/corporate/publications-manuals/annual-report-parliament-immigration-2017.html#section3
[21] "Immigration Policy in Canada," *The Canadian Encyclopedia*, https://thecanadianencyclopedia.ca/en/article/immigration-policy
[22] "Canadian Immigration Acts and Legislation," *Canadian Museum of Immigration at Pier 21*, https://pier21.ca/research/immigration-history/canadian-immigration-acts-and-legislation

The immigration of many European immigrants was hindered by the immigration policy in the early 20th century, due to many political upheavals[23] and the stagnant economic consequences of the First World War. Different ethnicities or nationalities were banned from entering the country, including the Communists, Mennotes, Doukhobors (1919 revised *Immigration Act*). Not until late 1940s that the formal ban on Chinese Immigration was ended. In 1962, the federal government put a halt to the discriminatory policies against non-European and non-American immigrants in Canada (1962 *Immigration Regulation*). Since then, the main criteria of immigration policy have been skills instead of race or national origin. However, the system did not eliminate the favouritism towards some preferred countries in Europe, America, and selected countries in the Middle East. Only the immigrants from these selected countries can "sponsor their children over the age of 21, married children and other members of their extended family"[24].

Since 1967, the *Immigration Regulation* has been significantly improved and revised, to establish a strong objective ground in evaluating potential immigrants based on a point system. The immigrants are assessed under several categories relating to their age, skills, level of education, and language proficiency. After the government set their policy as multiculturalism in 1971, they committed to support immigrants to overcome discriminatory and language barriers and better assimilate into Canadian life. Coming after that was the *Immigration Act* of 1976, which represented a significant milestone in the evolution of immigration policy. In this Act, the government, for the first time, clearly declared their objectives in immigration policy, and recognized refugees as an official class of immigrants. Before this, refugees had been assessed on a case-by-case basis, though they were recognized as a special humanitarian class of immigrants in 1969 (according 1951 United Nations Convention Relating to the status of Refugee and its 1967 Protocol)[25]. In 1988, the Canadian Multiculturalism Act was officially launched, providing a legislative framework to enhance the policy and regulation at the time in

[23] Especially the Winnipeg Strike in 1919.
[24] "Canadian Immigration Acts and Legislation," *Canadian Museum of Immigration at Pier 21*, https://pier21.ca/research/immigration-history/canadian-immigration-acts-and-legislation
[25] "Immigration to Canada," *The Canadian Encyclopedia*, https://www.thecanadianencyclopedia.ca/en/article/immigration

practising multiculturalism with the hope of nurturing the cultural heritage of all Canadians and implementing multicultural programs in private and public institutions.

Even though the enhancement of the immigration policy is well-supported throughout the country, it provoked controversy in developing countries, from which the high skilled immigrants would leave for Canada. They believed that the Canadian government should not call for the well-educated and well-trained class of their population to migrate from their home countries. Canada uses the freedom of movement of all persons.[26]

Currently, there are 11 immigration programs that are in effect in Canada[27]. Immigrants are classified into four categories: economic immigrants, immigrants sponsored by family, refugees, and other immigrants. The federal government is not the sole determiner of the immigration schemes. Each province has the power to set up its own programs according to their specific needs and characteristics. Besides the economic and family-sponsored immigrants, refugees have a significant portion in Canadian foreign-born population. There are two separate programs for refugees, one is for those needing protection from outside Canada, and the other is for those within Canada.

In many provinces, there is the Provincial Immigrant Nominee Program, which is the economic immigration program in partnership with the Government of Canada through Immigration, Refugees and Citizenship Canada (IRCC)[28] (see Table 1). To apply under these programs, the principal applicants must meet some specific requirements determined by the province, such as having a job offer, or having been living in the provinces for several years, etc.

Immigration growth rates among the provinces are not equal. Quebec had its population grown almost 155% since 2001, only below Alberta at 193%; the following two highest provinces being British Columbia and Ontario, at 128% and 127% respectively (see Table 2). Despite the high growth rate, the portion of immigrants in the total population in the

[26] "Immigration to Canada," *The Canadian Encyclopedia*, https://www.thecanadianencyclopedia.ca/en/article/immigration
[27] See Appendix
[28] Under section 95 of the *Constitution Act*, 1867, https://www.canada.ca/en/immigration-refugees-citizenship/corporate/publications-manuals/annual-report-parliament-immigration-2017.html

province of Quebec is still modest, only at 13.7%, whereas the other three provinces have between a fifth and almost a third of their population being foreign-born.

Table 2. Immigration growth rate, 2001 – 2016, Selected provinces

	Quebec		Ontario		Alberta		British Columbia	
Year	Person	%	Person	%	Person	%	Person	%
2001	704,895	9.9	3,024,375	26.9	437,150	15	1,007,950	26.1
2006	848,925	11.5	3,389,135	28.3	524,845	16.3	1,115,000	27.5
2011	974,895	12.6	3,611,365	28.5	644,110	18.1	1,191,880	27.6
2016	1,091,310	13.7	3,852,145	29.1	845,220	21.2	1,292,675	28.3

Source: Focus on Geography, 2016 Census, Statistics Canada[29]

2. Evolution of immigration programs in Quebec over time

2.1. History of immigration

Quebec was the first province in Canada to receive immigrants and was also the first one to have a special immigration agreement with the federal government[30]. A provincial immigration ministry was established in 1968 to attract more French-speaking immigrants to join the existing francophone community. Even though the province of Quebec has its own immigration policy thanks to the *Canada-Quebec Accord Relating to Immigration and Temporary Admission of Aliens* of 1991, the province has no total control over immigration. Final decision on the immigration application is made by the federal government, similar to other provinces in Canada. To immigrate to the province of Quebec, at first, a person needs to apply for a Quebec Selection Certificate (Certificat de sélection du Québec – "CSQ"). Once being approved, the applicant needs to apply to Immigration, Refugees and Citizenship Canada for permanent residence. To apply for a CSQ, there are many ways pertaining to the purpose of immigration of the applicant.

[29] "Focus on Geography Series, 2016 Census," *Statistics Canada*, https://www12.statcan.gc.ca/census-recensement/2016/as-sa/fogs-spg/Facts-pr-eng.cfm?LANG=Eng&GK=PR&GC=24&TOPIC=7
[30] "Immigration Policy in Canada," *The Canadian Encyclopedia*, https://thecanadianencyclopedia.ca/en/article/immigration-policy

Immigrants can apply as permanent workers, temporary skilled workers, foreign students, businesspeople, or for family reunification or humanitarian immigration purposes.

There is a difference in the immigration policy between the province of Quebec, Canada and the United States, which is the country receiving the most immigrants in the world[31]. The classic assimilation theory was popular in the United States, while Canada applied multiculturalism as their immigration model, and Quebec's model was "cultural convergence". In the United States, the assimilation theory has long been established and studied over generations of immigrants, which believes that immigrants better integrate into the host country by assimilation. By applying this theory, the immigrants are turned into Americans over a period, that their cultures are deemed to be inferior to that of America. Canada was the first country to adopt a multiculturalism policy in 1971, which embraces a set of various ideals and ideas to encourage cultural diversity[32]. Meanwhile, the government of Quebec identifies their immigration policy as interculturalism[33], which encourages the acceptance and communication between different ethnic groups and cultures, without acknowledging the equality among them. The ideology is also expressed as "cultural convergences". All cultures are honored and respected, given that the supremacy of French characteristics in the languages and culture of this province is maintained. This defined the province as an official French-speaking nation, where minority cultures focus to converge towards French culture. It also indicates the inequality among different nationalities and cultures, for example, all immigrants' cultures are treated as minorities that need to evolve towards the tradition of French culture and language. The cultural convergence defines three categories of minorities: the Anglo-Saxon (the colonial minority), native minorities and other minorities[34]. This definition fuels the tension in the province to acknowledge the cultural diversity instead of

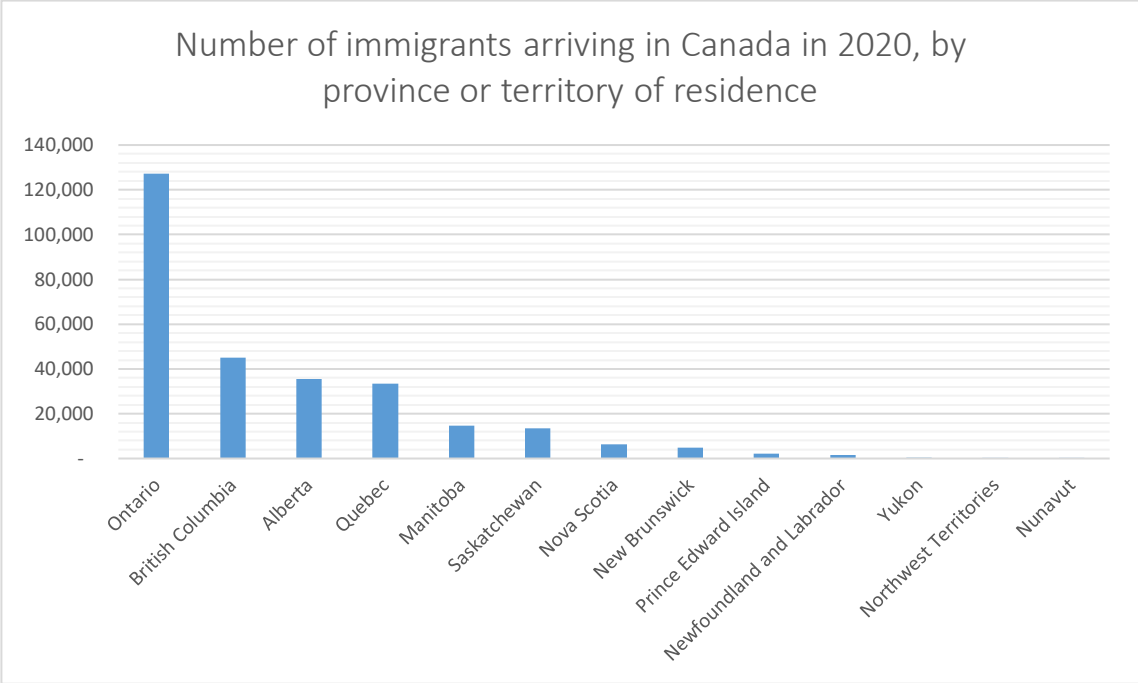
[31] Conor, Phillip and Gustavo Lôpez (2016). "5 facts about the U.S. rank in worldwide migration," Pew Research Centre, https://www.pewresearch.org/fact-tank/2016/05/18/5-facts-about-the-u-s-rank-in-worldwide-migration/#:~:text=1By%20a%20wide%20margin,States%20were%20not%20born%20there.
[32] "Canadian Immigration Acts and Legislation," *Canadian Museum of Immigration at Pier 21*, https://pier21.ca/research/immigration-history/canadian-immigration-acts-and-legislation
[33] Library of Parliament, Publication No. 2009-20-E
[34] Fontaine, Louise. "Immigration and cultural policies: A bone of contention between the Province of Quebec and the Canadian federal government," *The international migration review: IMR*; Thousand Oaks, Vol. 29, Iss. 4 (Winter 1995): 1041.

increasing segmentation of a portion of population which does not belong to the francophone population.

2.2. Immigration trends and statistics

In 2020, Quebec ranked fourth across all provinces, with around 33 000 immigrants. The first destination was Ontario province with 127 000 immigrants, the second and third places were British Columbia (45 000) and Alberta (36 000), respectively (see Figure 4).

Figure 4. Number of immigrants in Canada in 2020, by province or territory of residence [35]



Source Statistics Canada, Table 17-10-0008-01, "Estimate of the components of demographic growth, annual"

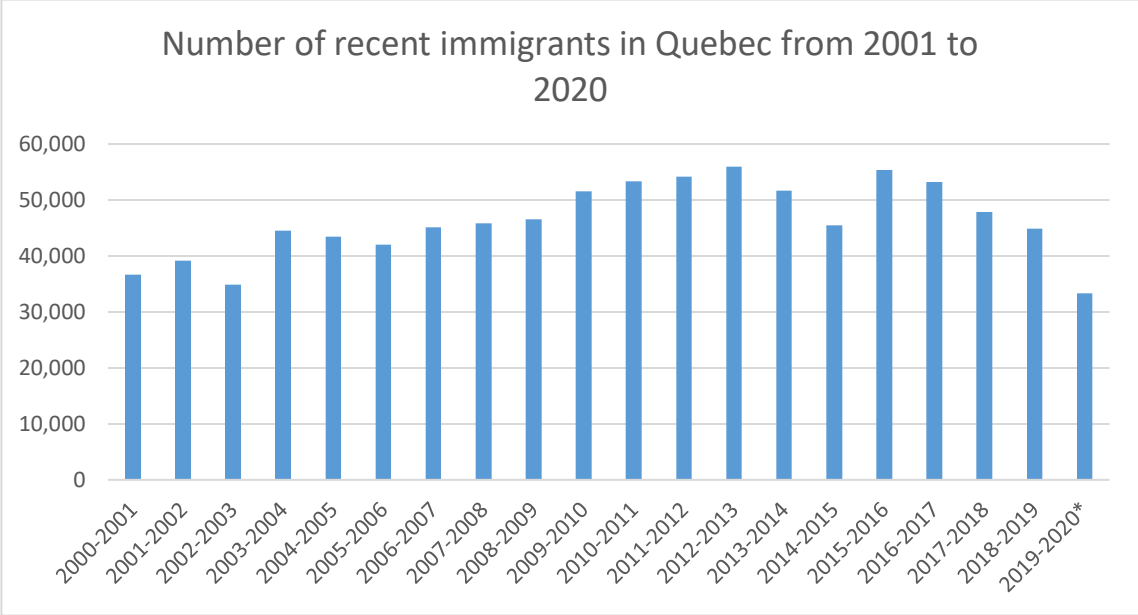
Throughout the past decades, the number of immigrants arriving in Canada and Quebec is on an increasing trend (refer to Figure 5). However, from 2016, this number in Quebec has been decreasing, partly due to the immigration reduction plan of the Coalition Avenir

[35] Statisca, 2020, https://www.statista.com/statistics/444906/number-of-immigrants-in-canada/. Statistics Canada, https://www150.statcan.gc.ca/t1/tbl1/en/cv.action?pid=1710000801#timeframe

Québec (CAQ) Government. Total immigrant population in Quebec in 2001 was 700 000 (9.9%) and in 2016 was 1.1 million (13.7% of total population). In 2016, more than 50% of the immigrant population had come to the province before 2001.

Nowadays, there are less and less Europeans moving to Canada and Quebec. There is still a high portion of French emigrating to Quebec (7% of all immigrants in Quebec). Instead, there are more and more African and Asian immigrants, especially those from Northern Africa (14%), West central Asia (8%), and China (4%).

Figure 5. Number of recent immigrants in Quebec from 2001 to 2020[36]



Source Statistics Canada, Table 17-10-0008-01, "Estimate of the components of demographic growth, annual"

The median age of recent immigrants is much younger (32 years old) than total immigrants (45 years old) living in Quebec. The province has recently attracted more economic immigrants (and less refugees), as the respective percentages increased (reduced) from 54.1% (16.9%) to 61.5% (12.3%), compared to the total immigrants.

[36] Statistics Canada, https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1710000801

Moreover, in 2016, there are more immigrants coming from Africa (34.5%) than from Europe (18.3%), where most of the immigrants in the 19th and 20th centuries came from.

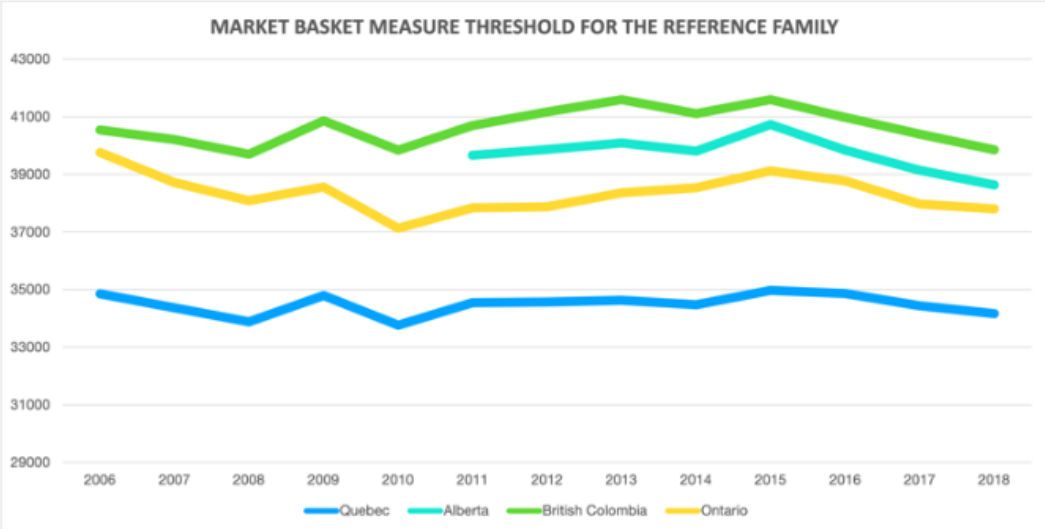
In 2016, the proportion of secondary immigrants[37] (28.2%) and immigrants sponsored by family (27.8%) were higher than the one of principal immigrants (25.9%). Economic immigrants accounted for more than 54% of total immigrants, and 17% were refugees.

2.3. Economic performance of immigrants (compared to Canada as a whole, and other provinces)

To compare the economic performance of immigrants in each province in Canada, I will analyse and present an overview of the standard cost of living. Then, I will show statistics on the low-income situation of immigrants compared with natives in the four most populous provinces: British Columbia, Alberta, Ontario, and Quebec. I will use the Market Basket Measure (MBM) threshold to compare the average living standard in each region. The database is collected from 2006 to 2018, by Statistics Canada, without the information of the province of Alberta from 2006 to 2011.

[37] Secondary immigrants: includes immigrants who were identified as the married spouse, the common-law or conjugal partner or the dependant of the principal applicant on the application for permanent residence. (Statistics Canada) https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/page.cfm?Lang=E&Geo1=PR&Code1=24&Geo2=PR&Code2=01&SearchText=24&SearchType=Begins&SearchPR=01&B1=Immigration%20and%20citizenship&TABID=3&type=1

Figure 6. Market Bastket Measure (MBM) Threshold for the reference family[38]



Source Statistics Canada, Table 11-10-0066-01, "Market Basket Measure (MBM) thresholds for the reference family by Market Basket Measure region, component and base year"

According to Figure 6, the cost of living in Quebec has always been the lowest compared to other large provinces in Canada since 2006. In 2018, the standard cost of living in Quebec is around C$34 000 for a family of two adults and two children, whereas for a family of similar size living in Ontario, it is almost C$38 000, and for Alberta and British Columbia, it is C$39 000 and C$40 000 respectively. When comparing the low-income situation across the country, I use the chronic low-income information[39] provided to public use by Statistics Canada. Chronic low-income is defined as an average family experiencing low-income for five consecutive years or more. The most vulnerable groups of immigrants who suffer low-income by the highest percentage are immigrant seniors, lone-parents, and unattached individuals. Table 3 shows the chronic low-income of immigrants over 25 years old in Canada from 2000 to 2012. Among the four densely populated provinces, Quebec had significantly improved the low-income situation of

[38] Statistics Canada, https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1110006601. This graph presents the threshold of Market Basket Measure from 2006 to 2018 in four populous provinces (Quebec, Ontario, Alberta and British Columbia).
[39] Chronic Low Income Among Immigrants in Canada and its Communities, *Statistics Canada*, https://www150.statcan.gc.ca/n1/pub/11f0019m/11f0019m2017397-eng.htm

immigrants. The chronic low-income rates of its big cities decreased up to 9.6 percentage points (Quebec City and Montreal) from 2000 to 2012. Meanwhile, the incidence reduced up to 5.7 percentage points in Ottawa-Gatineau, and 1.1 percentage points in Toronto city, in the province of Ontario, around 6 percentage points in the province of Alberta and around 5 percentage points for the province of British Columbia. In 2012, Alberta was the province that had the least percentage of immigrants, 3.7 percent, who had income below the cut-offs among the four. British Columbia had 7.1 percent, the highest portion of immigrant population living in chronic low-income. The situation is almost the same for Ontario and Quebec, 6.5 and 6.4 percent, respectively. It is notable that within the province of Quebec, there is a vast difference between the capital city – Quebec City - and the metropolitan Montreal City in the chronic low-income rate among immigrants. One of the most probable reasons is the language spoken in these two big cities. While Montreal is deemed as a bilingual city, with more than half of its total population speaking English (53.9%), Quebec City only has a third of its habitants familiarizing in English (2011 data, Statistics Canada)[40]. This attracts more Anglophone and Allophone immigrants to Montreal. According to a study published in 2018 by the Association for Canadian Studies, Quebec's Anglophone community is more likely worse off financially than their Francophone counterparts. The situation is even worse for Allophone community. Due to the scope of this study, I do not go in depth for the Allophone community, but only consider the languages that immigrants speak at home, either English or French, to study the relation between that and the immigrants' economic well-being.

Table 3. Chronic low-income rate[41] among immigrants by province, region or city, all immigrants in Canada for 5 to 20 years[42], 2000 to 2012

	2000	2002	2004	2006	2008	2010	2012
	rate						

[40] Visual Census – Language, Quebec, *Statistics Canada*, https://www12.statcan.gc.ca/census-recensement/2011/dp-pd/vc-rv/index.cfm?Lang=ENG&VIEW=D&GEOCODE=421&TOPIC_ID=4

[41] Chronic low-income rate is percentage of immigrants who were in low income for five consecutive years, up to and including the year of interest.

[42] Immigrants who landed in Canada 5 to 20 years ago, who were aged 25 and older, who lived in one of the 10 provinces and filed tax returns for five consecutive years, up to and including the year of interest.

Newfoundland and Labrador	9.7	11.8	14.5	13.1	10	10.2	9
Prince Edward Island	13.4	11.9	13	9.4	10.2	8.8	9.4
Nova Scotia	16.6	17.7	18.9	17.5	16.4	15.7	14.5
New Brunswick	11.5	10.2	12.3	10.9	9.7	8.9	9.1
Québec City	15.4	13.3	13.3	10.6	8.7	7.3	5.8
Sherbrooke	15.9	14.7	13.4	12	10	10.8	10.3
Montréal	19.9	18.3	18	15.2	13.4	12.6	10.4
Quebec, other	10.8	10.4	11.3	9.2	7.4	7.4	6.4
Ottawa–Gatineau	18	16.7	16.8	15.8	14.3	13.4	12.3
Oshawa	7	7.2	8.8	8.2	6.5	7.1	6.9
Toronto	16	15.7	16.1	15.1	14.7	14.9	14.9
Hamilton	9.6	10.3	11	10.4	9.8	9.7	9.3
St. Catharines–Niagara	8.2	8.6	10	9.4	8.9	8.9	9.6
Kitchener	7.2	7.3	8.2	7	6.7	6.9	7.2
Guelph	5.3	5	5.8	5.5	5.3	5.9	6.2
London	13.6	13.3	14.3	12.5	11.6	11.6	12
Windsor	12.3	13.2	15.4	15.2	15.5	16.3	16.2
Ontario, other	7.4	7.8	9.1	7.8	6.7	6.9	6.5
Winnipeg	8.4	8.1	8.5	7.7	6.5	6.1	5.1
Manitoba, other	10.8	10.8	10.8	8.3	5.5	4.5	3.1
Regina	8.9	10.2	9.7	8.3	8	6.6	5.5
Saskatoon	12	12	13.4	10.6	9.4	7.8	6.5
Saskatchewan, other	13.2	13.1	15.4	12	8.2	6.6	4.6
Calgary	11.8	11	10.9	7.8	6.4	5.9	5.6
Edmonton	11.4	10.2	9.5	7	5.4	5.1	4.9
Alberta, other	9.6	8.9	9.2	6.7	4.8	4.1	3.7
Vancouver	20.6	22.9	23.1	21.4	17.1	16	15.2
Victoria	11.3	12.2	13.5	12.2	8.9	8.7	8.4
British Columbia, other	12.2	12.7	13.3	11.8	8.5	7.9	7.1

Source: Statistics Canada, Longitudinal Immigration Database

Overall, the immigrant population is growing as Canadian government plans to welcome more young foreign-born individuals to come and settle down in this country. Based on the country's rich history in immigration and immigrant policy, as well as the policies to fight against poverty, the low-income rate is moving in a downward trend in the 21st century. However, the gap between the native and the newcomers is still visible. Studying the low-income situation of immigrants could support the policy makers to establish policies that benefit not only immigrants but also the community as a whole, as the poverty rate of immigrants has a huge impact on the national poverty rate, which in turn is associated with various issues relating to health, education and securities.

Chapter 2: Literature review

This chapter presents a review of relevant literature of immigration and poverty. In the first section, I review the general definition of poverty, and how it is assessed in Canada on a monetary basis. Secondly, I examine empirical studies on the influencing factors of poverty of immigrants to determine the key and control variables, which will be used in the econometric model. I also explain some specific terms and concepts used throughout my study. Finally, I propose two hypotheses regarding the association of family composition on the economic well-being of immigrant families.

1. Poverty concept and low-income

Poverty is an abstract term which is difficult to define, and which could be assessed based on a monetary or non-monetary basis. According to the United Nation[43], poverty does not only include hunger, malnutrition, but also limitations in various aspects of life, such as education, and human rights. It is essential to accurately define what constitutes poverty as it will help the policy makers to track the portion of society that needs further support. Traditionally, information on income and consumption were the key factors for the World Bank to estimate poverty. Nevertheless, with the aim of covering other non-economic aspects of human welfare, such as well-being and quality of health care, a multidimensional poverty measurement has been developed by the United Nations. With this tool, they can assess the living condition of a community by aggregating the results into an index called The United Nations Development Programme's Multidimensional Poverty Index (Global MPI)[44]. However, it is very ambitious to establishing an international baseline for poverty, especially when the current financial health gap between developed and developing countries is enormous[45]. Even within one country, such as the United States or Canada, the income gaps differ from states to states, or from provinces to provinces.

In Canada, an official definition of poverty does not yet exist. Living in a low-income situation does not necessarily mean the person is poor. According to Chief Statistician Ivan Felligi (1997)[46], the federal government could never use the low-income line to measure poverty due to lack of consensus among Canadians about how it should be defined. However, most of the time, Canadian researchers still use low-income as a monetary basis for assessing poverty. It distinguishes those who earn less than, or at least not significantly more than, the poverty level. Even though monetary basis does not encompass all aspects of life, it does, however, provide the most reliable information of

[43] United Nations, "Ending Poverty," https://www.un.org/en/sections/issues-depth/poverty/
[44] Produced in conjunction with the Oxford Poverty and Human Development Initiative, "Poverty and Shared Prosperity, 2018," *The World Bank Group*, page 87.
[45] There is almost a 177-fold difference in the average income of the poorest country – the Central African Republic at $661 versus the average income of the richest country in the world – Qatar with a GDP per capita of almost $117 000. Roser, Max (2017). "Global Economic Inequality," https://ourworldindata.org/global-economic-inequality
[46] As stated in "Child Poverty and Family Structure in Canada, 1981 – 1997," by Don Kerr and Eoderic Beaujot.

the capacity of a person or a family to afford their living conditions. Within a country, where most of its population share the same health care policy, education policy and living environment, the average income becomes the most critical factor to distinguish the rich from the poor. Moreover, this financial element also provides profound understanding in different social aspects, such as discrimination between communities, ethnicities, genders, or inequality perception of Canadian-born population and the immigrants. By such definition, "low-income" and "poverty" are used interchangeably in this study.

How can we measure poverty?

There are various measures of low-income, which could be relative or absolute, to quantify the low-income situation of Canadian population. Each of them provides a different threshold and a unique perspective of low-income incidence. According to Murphy, Zhang and Dionne (2012), the prime objective of establishing a low-income line is to provide criteria to classify those who are considered at risk of poverty. The basis of these methods is family income, consisting of all kinds of income and revenue, and government transfer. Family income provides a comprehensive picture of the family's economic resources. At a familial level, low-income status offers a better understanding of a family or a household welfare situation than at a personal income level. For example, a family consisting of working-aged people and seniors could generate earnings from market income, from social assistance or retirement income. In such a case, considering only market income would not provide an accurate overview of each family member's economic situation. If the total family income falls below the line, all members of the family are regarded as being in low-income, regardless of how much each member earns. It is noteworthy to discuss the pros and cons of the low-income line. A key benefit of low-income measures is that, as mentioned earlier, they provide a thorough understanding of the economic performance of a family based on the aggregated family income. As a result, it considers people who are unemployed or out of the labour market – who do not generate any earning for themselves but use other economic resources, such as unemployment insurance, or government transfer payment. Nevertheless, low-income measures also have inherent problems related to the possession of assets or foreign income, and information about the consumption. First, the information of assets possession, oversea incomes, or

transfer, which is quite common among immigrants, is unavailable to the statistician. Hence, a person with low-income status might not be poor if one considers the value of his or her private properties. Second, low-income measures cannot fully identify who are really in a low-income situation. For instance, a family whose income is above the baseline, but must spend more than usual on health care or child-care due to some specific reason, can be left with little income to spend on other basic needs, such as food, shelter, and clothing.

I discuss below some general information on these measurements and their advantages and disadvantages in application.

1.1. Relative measurements

There are two relative measures of poverty frequently used in Canada, the Low-income Cut-Offs (LICO) and Low-Income Measurement (LIM). The incidence of low-income is measured as the ratio of the total number of low-income people divided by the whole population.

Low-Income Cut-Offs (LICO). Since the 1960s, Statistics Canada has developed Low-Income Cut-Offs (LICO) measurement that became the most popular measure of low-income in Canada. According to Statistics Canada[47], "the LICOs are income thresholds below which a family will likely devote a larger share of its income on the necessities of food, shelter and clothing than the average family". The idea of LICO is that they determine which families live in poverty based on their percentage of spending for necessities over their total family income. Specifically, the threshold is 20 percentage points more compared to the average family income of similar size. If a person's family income is below the cut-off, the individual is therefore considered to be in poverty. More precisely, the term "person in low-income situation" also means that the individual belongs to a low-income family. There is a set of 35 cut-offs for seven family sizes (from one person to seven or more persons) and five community sizes (from rural areas to big cities). There are also two sets, one for before-tax and the other for after-tax income.

[47] "Low-income definition," *Statistics Canada*, https://www150.statcan.gc.ca/n1/pub/75f0011x/2013001/notes/low-faible-eng.htm

Before-tax LICOs are based on the total family income except any deductions from federal or provincial income tax. After-tax LICOs are based on the actual disposable income that is left after paying the federal and/or provincial income tax. The after-tax LICOs are normally preferred by researchers to make conclusions about a person's state of well-being as they consider the difference in the tax system between provinces. According to Murphy, Zhang and Dionne (2012), the before-tax LICOs overstate the number of people in low-income, as the progressive income tax bracket redistributes the income and tax revenue. Hence, people who could have been classified as low-income members are relatively better off in the after tax LICOs threshold.

LICO is categorized in theory as a relative measure because it is based on the average expenditure for human basic needs. There are a few drawbacks to LICO, according to Crossman (2013). He stated the four main drawbacks as follows. First, the relative characteristics of this method do not reflect the cost of living of each region, which makes it impossible to compare across regions or provinces within Canada. This point is essential when studying immigrants as they tend to settle down in large urban cities. Second, LICOs are based on the consumption behavior of Canadian population at a specific time range. The current LICOs are based on the data observed in 1992. Hence, the relevance of the base is reduced through time, depending on the changes of each period (i.e., technology era compared to industrial era). Third, the selected criteria, which are included or excluded in calculation, are not simple and transparent to the public. Fourth, LICOs are not internationally comparable as they are specifically built for the Canadian environment. Yet, despite their drawbacks, LICO has always been widely used in research about low-income situations.

Low-income Measure (LIM). The second low-income relative measure is LIM. Among all the measurements, LIM is the most popular tool worldwide. It was first introduced by Statistics Canada in 1991. While LICO derives its results from an expenditure survey, and then comparing the findings to an income survey, LIM's results are derived and applied based on a single income survey. "It is a fixed percentage (50%) of median adjusted household income, where "adjusted" indicates that household needs are taken into account" (definition of Statistic Canada). The adjustment in the household reflects the

positive correlation between the number of family members and its needs. A person is considered living in low-income if his or her family income is lower than half of the population adjusted median family income. Compared to LICOs, where the economic family is a unit of sharing, LIMs use the notion of household, which is applied when only one or a group of persons live together under a dwelling. The logic under this application is the share of mortgage payments, rentals, and other utilities fees. It allows a wider pool of economic resources. Moreover, the unit of household is also globally used in studying income distribution. There are three sets of LIMs: calculated with market income, before-tax income, and after-tax income. Unlike LICOs that need to be rebased using an inflation index, LIM are computed annually based on the Survey of Labour and Income Dynamics (SLID). This is also one of the challenges of LIM. The base of LIM changes every year, which leads to the change of threshold and challenge in goal setting. Thus, one feasible solution could be to use a range of moving income as a threshold instead of using a constant number over a period of years. Another difference between LICO and LIM is that while LICO is based on the average basic expenditure, LIM simply depends on the income and its median. Hence, it does not provide information about how much is needed to fulfill basic needs. Another disadvantage of LIM is that, like LICOs, LIM does not reflect the cost of living. LIM also does not help with poverty reduction, as there will always be a portion of the population who is below the line.

A key advantage of LIM is that it is simple and transparent. It is relative and easy to compare the low-income situation through different countries and regions, using local LIM (Zhang, Murphy, and Michaud, 2011).

1.2. Absolute measurement

Market Basket Measure (MBM). The Market Basket Measure (MBM) was the first absolute measure of low-income in Canada. It was designed by a group of Federal, Provincial and Territorial officials, led by Human Resources Development Canada (HRSDC) between 1997 and 1999 (Hatfield, 2002; Michaud, Cotton and Bishop 2004). After that, it has gone through many strict and comprehensive reviews of both the criteria and the methodology. Finally, MBM was officially launched and applied in 2016 Census data provided by Statistics Canada. It is the only low-income measure that is based on the

specific regional standard cost of living. MBM provides a threshold at a finer geographic level than LICOs. It allows the consideration of varied baskets cost among different regions. In the basket, the costs of basic needs, for example, food, shelter, transportation, are included for two adults (aged 25 – 49) and two children (aged 9 and 13). A person is deemed to be low-income using MBM if his disposable income falls below the MBM of his community. The calculation process includes a number of adjustments for specific family needs, such as child-care costs, child support payments, health care treatments or supports for people with disabilities. This whole process results in a final relative disposable income that is used to assess economic performance of a family. It eliminates the complication of before or after-tax income calculation as seen in other relative measurements. MBM enables analysts to have a better understanding about the actual living conditions within a specific territory. For example, when one looks at the MBM among the provinces in Canada, that person can tell it costs more to live a decent life in British Columbia than in Ontario or Quebec. Like LICOs, MBM also has the economic family unit of sharing. It is an absolute measure, which provides a predetermined threshold income, classifying people into two groups: low-income and not low-income.

2. Studies on the integration process and poverty of immigrants

After presenting the definition of poverty and its measurement, I now review some of the main studies, research, and theories on the integration process and poverty on immigrants, specifically in Canada.

Integration, a well-known sociological concept, is an important process that all immigrants must go through to develop. The large history of this word came from a concept of the society as an integrated body. In such sense, immigrants need to adjust themselves in order to integrate well into the large body, yet ultimately to be a property of the whole. At the beginning of the immigration history, a classic theory of integration was first established in America and was called assimilation theory. This will be discussed in the next part of this chapter. As mentioned earlier in Chapter 1, Quebec and Canada support different policies of integration. While the federal government aims at a multiculturalism perception, Quebec advocates the cultural convergences policy, which

encourages cultural diversity yet surrounding the French culture and language. The integration process has an important impact on the well-being of immigrants. Successful integration of immigrants builds communities that are financially, socially as well as culturally stronger. Hence, the government establishes various programs to attract high-profile immigrants and expect they will fit well with the society and grow. However, according to Borjas (1987), the immigration is rather a self-selection entity than a "selected" individuals who are supposed to be successful where they immigrate to.

Willem Schinkel (2018)[48] shows that there are two broad categories to measure integration, "social-cultural integration" and "socio-economic integration". In this research, I focus only on the socio-economic integration of immigrants, by using the social-ecoonomic characteristics of immigrants in studying their association with their financial status.

Among recent studies, Crossman (2013), shows that the decomposition of low-income incidence of immigrants in Canada is multifarious. According to Crossman, there are three main aspects: socio-economic characteristics of immigrants, government's transfers, and economic conditions (i.e., employment, market earning.). Among them, socio-economic characteristics are most popularly used in other studies (Picot, Hou and Qiu (2016); Fleury (2007); Dempsey (2006); etc.). Crossman emphasizes the necessity of combining various factors, such as the immigrant category of admission, years since migration, personal characteristics, country of origins, demographics, level of immigration and settlement patterns as well as skills that immigrants bring with them to Canada, to have an overview of the socio-economic situation of immigrants. These aspects are also examined in the study of Kazemipur and Halli (2001), in which they defined three different approaches: assimilation factors, human capital factors and structural factors. These approaches share similar values to those of Crossman. The assimilation factors are influenced by the classic assimilation theory, which explains the poor economic performance of immigrants most of the time occurs during their arrival, when there are plenty of obstacles in their progress

[48] Schinkel, Willem (2018), "Against "immigration integration" : for an end to neocolonial knowledge production", *Comaprative migration studies, https://comparativemigrationstudies.springeropen.com/articles/10.1186/s40878-018-0095-1*

to integrate into the new society. This could be due to the insufficient language proficiency, lack of information of job openings, or the age at the time of arrival. The second category examines individual skills and qualifications. The last category analyzes the labor market structure's relation with the poverty of immigrants. My study is mainly based on the study of Kazemipur and Halli. Thus, beside family composition factors, I will also leverage the association of assimilation factors, human capital, together with other factors: work status and house ownership to analyze the poverty situation of immigrants and the correlation of family composition on it. These groups of factors are discussed in the next subsection.

3. Important factors to immigrants' poverty

3.1. Assimilation approach

The classical assimilation theory originated from the Chicago School in the United States in the 1920s[49]. Classical assimilation theory describes assimilation as an integral part of the whole progress of immigrants into the American middle-class (Warner and Srole (1945))[50]. It sees immigrants following a straight-line convergence, slowly sharing the same value in culture, behaviors, and characteristics. Hence, immigrants suffering from poverty at the beginning when they first arrive in the host country are believed to have better outcomes over time. Their obstacles could relate to various factors, such as their qualifications in their home countries not being recognized in the new country, or disadvantages in home languages other than the new languages, etc. The longer the immigrants stay in the host country, the more they could improve and ameliorate their financial situation. According to this theory, the descendants of the first immigrant generation should outperform their parents and grandparents. However, many research papers of second and third generation immigrants and their economic performance put the assimilation theory in question. Umut Ozek (the American Institutes for Research) and

[49] Greenman, Emily and Xie, Yu (2009), "Is Assimilation theory dead? The effect of assimilation on adolescent well-being," *Soc Sci Res. 2008 Mar*; 37(1): 109 – 137.

[50] Warner, W. Lloyd and Leo Srole (1949), "The social system of American Ethnic groups," *New Haven*, CT: University press, 1945.

David Figlio (Northwestern University) published their findings[51] of the "immigrant paradox": "for the children of immigrants […] becoming American [might be] a development risk". They used comprehensive long-term data to compare the school grade of three generations of immigrants in Florida. Contrary to the assimilation theory, the older generation scored better than their direct descendants. Regardless of the diverse result in later generations, assimilation is still functional when studying the social integration progress that immigrants undergo in their new environment.

The assimilation notion was first developed as a « cultural process ». According to Park and Burgess (1921): "Assimilation is a process of interpenetration and fusion in which persons and groups acquire the memories, sentiments, and attitudes of other persons or groups, and by sharing their experiences and history, are incorporated with them in a common cultural life". In this definition, they referred to assimilation as a progress to erase an immigrant's past and culture, then to fill in with new culture and social customs. In 1964, Gordon made a huge contribution to the classical notion, which brought it to an advanced stage. According to him, the assimilation process now involves not only cultural dimension, but also social dimension. The "structural assimilation" which Gordon developed consists of "marital, identificational, attitude receptional, behavior receptional and civic assimilation"[52]. Nevertheless, the new definition of Gordon still lacked the economic perspective, which many researchers tried to incorporate into their studies (Portes, 1997; Huber and Espenshade, 1997; Gans, 1992).

In this study, I apply assimilation theory in studying immigration in Quebec, by examining the influence of several factors, including age at the time of arrival and country of origin on the economic performance of immigrant families. However, the relation between aging (or years since migration) and earning is difficult to identify, as Borjas (1987) mentioned in this study that "analysis of a single cross section of data cannot separately identify aging and cohort effects". The positive correlation of earnings and years since immigration could either be explained in terms of an aging effect or due to cohort

[51] Özek, Umut and David N. Figlio (May 2016). "Cross-Generational Differences in Educational Outcomes in the Second Great Wave of Immigration," https://www.nber.org/papers/w22262
[52] See Kazemipur and Halli (2001)

differences in quality, which is caused by the inclination of nonrandom return migration or secular shifts in the skill mix of immigrants. Thus, years of immigration is not considered as an assimilation factor in this study.

3.2. Human Capital factors

Human capital factors include personal qualities, for example, gender, age, health, level of education, etc. These factors could directly impact immigrants' financial performance. Increasing their capacity in languages, or skills increase their chance to improve their socio-economic status. Hence, Schultz (1993)[53] consider human capital as a valuable investment. According to Chiswick (1978)[54], immigrants tend to finance a great portion of their investments in their postgraduate training, which is profitable and facilitate their job search in the new country. Consequently, having little investment in human capital stock could result in getting low-paid jobs, and low socio-economic status. Low education level or language barriers can suppress one's chance of finding a well-paid job, which normally requires a high-skilled labor force. All the human capital factors are not totally independent to each other. For instance, youth is highly associated with higher education and better health conditions. On the other hand, immigrants at older ages can benefit from their working experiences and high skills in their major. Hence, gender, age, level of education and languages are preferred by researchers due to their explanatory power and their correlation with other factors.

Do human capital factors have a consistent impact on immigrants' poverty? Spigelman (1998) presented various human capital factors that work against the high low-income rate in recent immigrants (immigrants who have arrived in Canada less than 15 years). He questioned the efficacy of the point system which ranks immigrants based on different aspects allowing them to integrate better into the host country. Statistics have shown an opposite result, that immigrants in fact have higher and higher low-income incidence than those born in Canada[55]. Even though immigrants are more likely to have a bachelor's

[53] Schultz (1993), "Investments in the schooling and Health of Women and Men: Qualities and Returns", *Journal of Human Resources*, vol.28, issue 4, 694-734
[54] Chiswick (1978), "The effect of Americanization on the Earnings of Foreign-born Men", *Journal of Political Economy*, vl.86, no. 5, 897-921
[55] See Figure 2, Introduction, page 2

degree than Canadians, their qualifications are not as rewarding as they are for natives. In terms of the labor force, immigrants also have a larger-than-average share of the working-age population participating in the labour market. These elements should put the immigrant population in a better financial situation than it has been so far.

I aim at examining the relationship between human capital factors on the poverty of immigrants to validate these opposing views, based on age, gender, level of education and languages spoken. Beside assimilation theory and human capital factors, a person's financial situation should always be studied in the context of the whole family, including the dependants and other financial contributors. For an immigrant family, assimilation theory needs to be examined together with the characteristics of the family, for example, the family structure and family size.

3.3. Family Composition factors

The family composition factors include family types and family size. Dempsey (2006) summarized the income composition of immigrants compared to non-immigrants in Canada, between 1982 to 2006. The author highlighted the unfavorable economic situation of single parents and unattached individuals[56]. He concluded that "lone-parents and unattached individuals have the least favourable income situations", for both immigrants and non-immigrants populations in Canada. Those below 60 years old were reported to have the least family market income. Among those, immigrant families experience low-income more than Canadian-born families, with their disadvantages of being newcomers (less than 15 years of living in Canada). They are less like to report market income, and more likely to report receiving social assistance or provincial supplement, such as OAS[57] and GIS[58]/Allowance.

[56] Unattached individual is a person living either alone or with others to whom he or she is unrelated, such as roommates or a lodger. (https://www150.statcan.gc.ca/n1/pub/75f0011x/2011001/notes/fam-eng.htm)

[57] OAS is a non-contributory pension that is related to an individual's years of residence in Canada. It is available to Canadian citizens, permanent residents (landed immigrants), and individuals with a Minister's permit who are 65 years of age or older and have a minimum of 10 years of residence in Canada after reaching age 18. (Dempsey, Colleen, 2006, Immigrant Income and the Family) (For further details see Human Resource and Development Canada's information sheet, "How to Apply for the Old Age Security Pension, Allowance and Allowance for the Survivor"

[58] GIS is another non-contributory pension and is available to residents of Canada who receive a full or partial OAS pension. GIS benefits may begin in the same month as OAS benefits. (Dempsey, Colleen, 2006, Immigrant Income and the Family) (Section 22.0, Old Age and Security Regulations).

Thomas's study (2001)[59] shows that family arrangement plays an important part in the migration process of an individual. According to the statistics for household living arrangements by immigrant status and sex in Canada in 2011, a large majority of newcomers in Canada cohabitate with their relatives[60]. It could either be a combination of skills and resources in the immigration application which could gain a higher score in the immigration system and facilitate the process; or the needs of family reunions, in which one of the family members has already arrived in Canada. The lowest percentage belongs to immigrants that live alone (only 2.3% and 2.7% of total male and female immigrants in Canada in 2011, respectively). Hence, family arrangement factors and family income are essential factors when studying immigrants' behavior and performance.

Similarly, Liu and Kerr (2003), studied the economic well-being among immigrant families with children from 1977 to 1997 using the income-to-need ratio[61] as the economic well-being measurement. The researchers document the drop in performance of immigrants who arrived during the 1990s, compared to those who arrived earlier during the 1970s and 1980s. They analyze the changes in economic performance of newcomers by analyzing the income to needs ratio that is calculated based on family size and arrangement. Even though the net income to needs ratio of the native family with children slightly increased during this period, that of immigrant families did not. In such context, they examine the impact of a change in family structures on the economic well-being of recent immigrants.

The first trend mentioned in the study of Liu and Kerr (2003) is the declining trend in immigrant fertility, which has a direct impact on the economy, especially tax since fewer dependent children in a household means less deductible income-tax (Dooley, 1988; Brouillette et al, 1990). Another trend that relates to this fertility issue is the increasing age of parents when they have their first child (Ram, 1990, Beaujot et al., 1995, Belanger,

[59] Derrick, Thomas (2001), "Evolving family living arrangements of Canada's immigrants", *Canadian Social Trends*, Statistics Canada

[60] Statis Canada, Table 2, Household living arrangements by immigrant status and sex, Canada, 2011. https://www150.statcan.gc.ca/n1/pub/89-503-x/2015001/article/14217/tbl/tbl2-eng.htm

[61] Income-to-need-ratio: "computed as the ratio of household income to its hypothesized level of economic need (with the latter typically defined in terms of a set of low-income cutoffs)" (Liu, Jianye; Kerr, Don; 2003, p8)

1999). This change could affect the well-being of a family, for example, they could have better economic resources when they give birth later in their reproductive years (Oppenheimer, 1988; Grindstaff et al., 1989). The most essential evolution during the 80s – 90s period is the rise of lone parenthood as marriage uncertainty could affect negatively on economic well-being of both women and children (Ross and Shillington, 1989, Dooley, 1991; Rashid, 1994). By applying the decomposition technique with a series of regressions, their study discovered the relative importance of changes in certain family structures to the economic performance of immigrant families. Their result shows that the growth trend in lone parenthood has a negative effect on financial performance of the study subject. Changes in other aspects, such as number of children, range of age of parents and the extension of family have less importance in influencing the low-income incidence in recent immigrants.

Besides, they also presented that the changes in family structures and household sizes such as the number of children in a family, the age distribution of parents, or the existence of an extended family have an opposite impact on shaping the economic well-being trend in that period. They showed that the decreasing trends of number of children in a family, together with the delayed childbearing trend in the study's period result in an increase in income to needs ratio, which, in turn, offsets the negative impact from the substantial increasing trend of lone parenthood. A limitation of Liu and Kerr (2003)'s research is that it did not consider ethnicity or language as potential controls due to lack of data at the time of the study. This study also focuses on studying the impact of family composition on poverty incidence of immigrants and verifies its relationship by the econometric model. A change in family structures or sizes has an impact on the financial performance of the immigrant family, compared to the native family. Moreover, due to the varied policies between Quebec and the rest of Canada in social assistance (i.e., childcare benefits), and other aspects, the author expects to see a variation in magnitude of this impact when comparing the low-income situation in Quebec to Canada.

3.4. Economic conditions

Crossman (2013) also said that it is essential to consider the economic and social environment of the host country, such as the opportunities and the challenges presented

to new immigrants. To settle down, integrate and enhance one's position in society, one needs to consider the condition of the labour market condition, occupations in demand; how the society perceives immigrants and different cultures; social programs aiding newcomers to integrate into the new environment; how well the returns of foreign qualifications and education is in the destination country, and the financial support from the government. The research on this issue has faced many obstacles. It is not simple to gather the information on economic sectors and their demand, as well as their influence on immigrants. Hence, I adopt two variables to represent the economic conditions of immigrants instead: full-time or part-time nature of the job and house ownership. Finding a job by far remains the most important element to get immigrants out of the low-income situation. Picot and Hou (2009) agree that the decline in entry level earning among immigrants is, to some extent, connected to the rise in low-income rate. Noel (2012) emphasizes the importance of the job's quality in being able to keep people in or out of a situation of low-income. Besides, I also adopt the housing ownership status in this study as it represents an asset as well as an essential expense of an immigrant family.

Below is a table summarizing the relevant literature on the topic of immigrants and poverty.

Table 4. Summary of literature review

Authors	Method	Objectives & Findings
Spigelman, Martin (1998)	Empirical analysis	Causes of poverty: unemployment, marriage breakdown, bureaucratic, language, cultural barrier.
Kazemipur, Abdolmhammad and Shiva Halli (2001)	Logistic regression model on 1991 Census of population	Poverty rate is high in big cities due to large concentration of immigrants; for visible minorities, mostly recent immigrants Human capitals were less rewarding for immigrants than natives.
Picot, Garnett, Yuqian Lu and Feng Hou (2009)	Manually compute direct effect on Census data 1981, 1991, 1996, 2001, 2006	Poverty rate is high among junior immigrants; it is rising faster than other groups of immigrants. Poverty rate declines among seniors in Canada: increasing family market income, increase in the transfer system's increased tendency to reduce low-income incidence. Poverty gap between senior immigrants and natives doubled.
Fleury, Dominique (2007)	Logistic regression model on Survey of Labour and Income Dynamics (SLID), target population aged 18 to 64	Compared to other Canadians living in poverty, low-income recent immigrants were more likely to: • be in the core working-age population (to be aged between 30 and 44); • live in the large urban areas of Toronto or Vancouver; • be a member of a visible minority group; • have a university degree; and • do not have any work-limiting disabilities.
Dempsey, Colleen (2006)	Empirical analysis on Longitudinal Immigration Database (IMDB) and Longitudinal Administrative Database (LAD) 1982 - 2003	Senior immigrants have a higher poverty rate compared to that of natives. Lone parents and unattached individuals also have high poverty incidence.
Liu, Jianye & Don Kerr (2003)	Decomposition using a series of regressions and "nested" models. Canadian survey of consumer Finances (SCF) Survey of Labour and Income Dynamics (SLID)	Lone parenthood has a positive impact on the poverty rate. Other changes have less importance (i.e., number of children per family)
Picot, Garnett, Feng Hou and Hanqing Qiu (2016)	Normal regression on IMLD (longitudinal immigration database)	Highly educated economic immigrants have less favorable short-run outcomes and continue to do better in the long-run.

In this study, I use the economic family size, which refers to the number of family members occupying the same dwelling. It includes nuclear families, extended families, or multi-generations families.

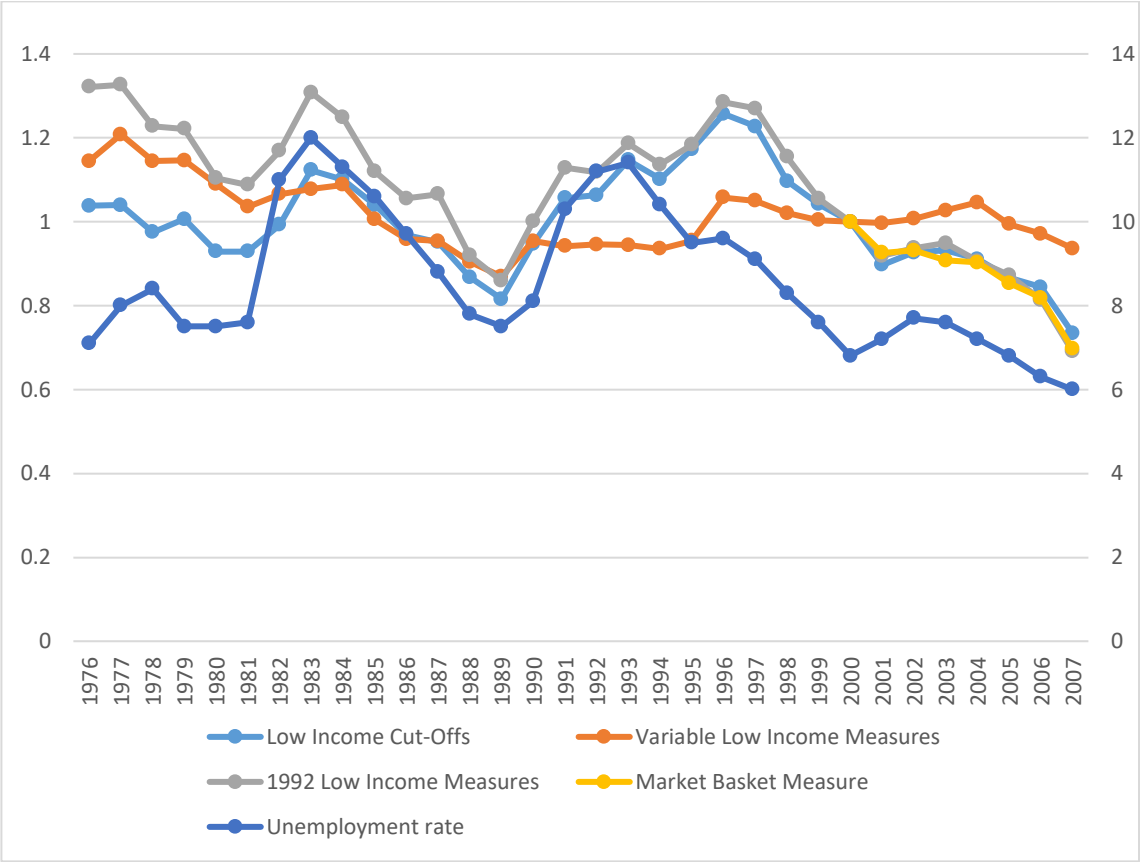
Chapter 3:
Descriptive evidence

Before presenting the empirical methodology and data, I conduct in this chapter a preliminary analysis of the relationships between poverty incidence and immigrant assimilation, human capital, family composition, and other factors. I make use of the cross-sectional database of the 2016 Census in Canada. First, I discuss how I choose the measurement of poverty in this study. Then, I examine the relationship between poverty and various factors relating to immigrants, which will be used in the econometric models, by reviewing the descriptive evidence in the province of Quebec, compared to other large provinces of Canada. This section answers question 1 and 2 presented in the introduction. Finally, I formulate my hypotheses to be tested in the econometric models of the next chapter.

1. Selection of poverty measurement

As presented in the previous chapter, I will only use the monetary measurement of poverty, which is the low-income measurement. Most of the available measurements of poverty show similar trends in Canada, with different magnitudes due to different focused aspects. Figure 7 shows the trends in low-income incidence under alternative lines from 1976 to 2007.

Figure 7. Trend in low-income incidence under alternative lines (1976 – 2007)



Source: Survey of Consumer Finance (1976 to 1995), Survey of Labour and Income Dynamics (1996 to 2007) and CANSIM table 282-0002.

Overall, these measurements have similar trends as they all track the business cycle. The low-income incidence increased significantly during the recessions in the 80s, then declined until the early 90s. After that, they followed an upward trend until mid 90s and

a downward trend up to 2007. However, during short periods, each poverty measure presents a unique movement or a different rate of low-income, because each of them traces different aspects. Thus, it should be noted that when comparing all the measurements, inconsistencies in magnitude and tendency exist. LICO shows that the poverty rate has reduced dramatically from the 90s, while LIM shows a mild trend with fluctuation throughout this period. LICO focuses on the amount of money that a family spends on necessities, while LIM focuses on the income of a family instead. Neither of them is based on the cost of living of a particular destination. With MBM, the costs of "necessities" are calculated with a base market price and are distinguished from place to place.

In August 2018, the government of Canada announced that MBM would be used as its official poverty measure. Nevertheless, MBM has a few drawbacks (Eden Crossman, 2013). Its first drawback lies with the assumptions in calculating the costs of the market baskets. Once the assumption changes, the threshold needs to be recalculated and changed as well. Second, there is a disagreement among the public and experts in using the 2008 National Nutritious Food basket as the basis, due to many raw foods and foods less-frequently consumed by the low-income population. It also does not reflect the choice of foods of different ethnicities, such as Asians, or other minorities. Yet, despite its limitation, MBM is still the first absolute low-income measure that is based on extensive price data and its application in research across the country is very promising. Thus, MBM was chosen as the main indicator of low-income immigrant families in this study to reflect the different living standard between Quebec and other provinces in Canada.

2. Descriptive statistics: Quebec versus other provinces (Ontario, Alberta, British Columbia)

This subsection presents the descriptive statistics of immigration and its low-income situation in 2016 in Quebec and other large provinces (Ontario, Alberta, and British Columbia). First, I present the overview of immigrant profiles in these regions. Then, I describe the key factors relating low-income incidence of immigrants. As discussed in the previous chapter, they are mainly classified into four groups as discussed in the previous chapter: assimilation, human capital, family composition, and other factors. In the first

group, we focus on elements such as age at the time of immigration and country of origin. Human capital factors include age in 2016, gender, education, and languages. The third group, also the main group, consists of the family structure and size. The last group includes work status in 2015 and house ownership status of immigrants.

2.1. Immigrant profile

In the 2016 Census data sample, there are in total 930 421 individuals, of which there are 215 041 Quebecers. Among the total population, immigrants account for 21.7% in Canada, and 13.6% in Quebec. More than one out of ten people living in Quebec was born in foreign countries. Compared to other large provinces (Ontario, Alberta, and British Columbia), Quebec has the smallest share of immigrants in its total population. (see Table 5.a)

Table 5.a - Immigrant status, Canada and selected provinces

Immigration: Immigrant status	CA	QC	ON	AB	BC
Non-immigrants	76.62	85.21	69.41	76.98	69.31
Immigrants	21.74	13.60	28.98	21.12	28.26
Non-permanent residents	1.38	1.02	1.40	1.69	2.16
Not available	0.26	0.16	0.21	0.20	0.28
Total	**100.00**	**99.99**	**100.00**	**99.99**	**100.01**

Source: Statistics Canada, 2016 Census data

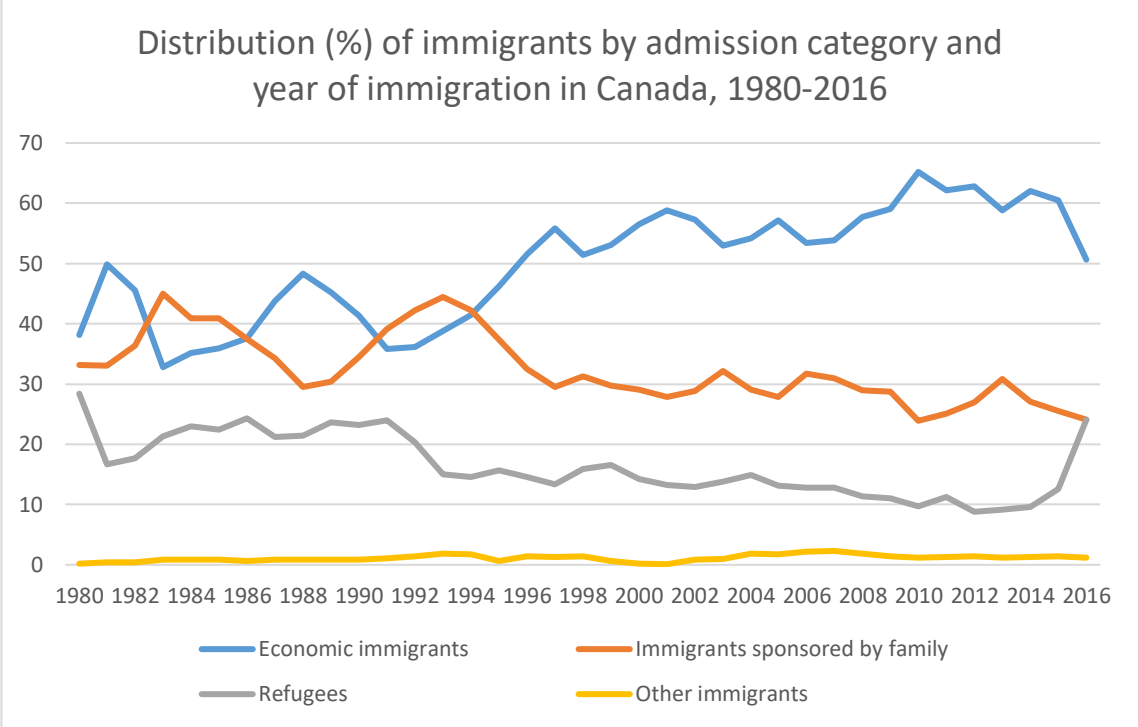
Table 5.b - Immigrant categories, Canada and selected provinces

Immigration: Admission category – Summary	CA	QC	ON	AB	BC
Non-immigrants	77%	85%	69%	77%	69%
Immigrants who landed before 1980	5%	3%	8%	4%	7%
Non-permanent residents	1%	1%	1%	2%	2%
Economic immigrants	9%	6%	10%	10%	12%
Immigrants sponsored by family and other immigrants	5%	3%	7%	5%	7%
Refugees	2%	2%	4%	3%	2%
Not available	0%	0%	0%	0%	0%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

Source: Statistics Canada, 2016 Census data

Immigrants are classified into various categories depending on their admission classes, such as economic immigrants or refugees. After 1980, the information on immigration categories was made available. Those who had arrived before this year are grouped into the "immigrants who landed before 1980" category. As of 2016, economic immigrants account for the largest proportion of the immigrant population in each province (see Table 5.b). Below is a chart of the distribution (in percentage) of immigrants by admission category and year of immigration (Figure 8), from 1980 to 2016 in Canada. The proportion of economic immigrants has an upward trend through time, while that of the immigrants sponsored by family and refugee categories fluctuates (but remains) around 25-30%. Meanwhile, during the same period, we notice an important drop in the percentage of economic immigrants in Canada.

Figure 8. Distribution (in %) of immigrants by admission category and year of immigration in Canada, 1980 - 2016



Source: 2016 Census data, Statistic Canada

Extracting data from the 2016 Census data, Table 6 below shows the details of the percentage of each admission category that experienced low-income situations in 2016. As we can see, both economic immigrants and those sponsored by family and other immigrants present the same average low-income rate of 18% in Canada, based on MBM. Refugees remain the most vulnerable group to low-income, at 27%. At the same time, immigrants who had landed before 1980 have the lowest low-income incidence, 8%, which is even lower than that of non-immigrants, at 11%. The same situation, in which there is a gap in poor economic performance among immigrant admission categories, is observed in Quebec as well.

Table 6. Low-income incidence by immigration category in 2016, Canada and selected provinces

Immigration: Admission category – Summary	CA	QC	ON	AB	BC
Non-immigrants	11%	9%	12%	10%	13%
Immigrants who landed before 1980	8%	9%	8%	6%	8%
Non-permanent residents	52%	51%	56%	31%	57%
Economic immigrants	18%	18%	19%	10%	22%
Immigrants sponsored by family and other immigrants	18%	18%	20%	12%	17%
Refugees	27%	25%	29%	22%	25%
Not available	18%	20%	18%	17%	16%

Source: 2016 Census data, Statistic Canada

In comparison with the other populous provinces, Quebec has an average low-income rate (17% of its immigrant population), the same rate as in Ontario and British Columbia (see Table 7). Alberta had the lowest rate (11% of the total immigrant population). The other provinces are less densely populated than the top four provinces, hence, they are not focused on this study.

Table 7. Low-income incidence by province in the 2016 Census data, Canada and selected provinces

	Income: Low-income status based on MBM				
Immigration: Immigrant status	**CA**	**QC**	**ON**	**AB**	**BC**
Non-immigrants	11%	9%	12%	10%	13%
Immigrants	17%	17%	17%	11%	17%
Non-permanent residents	52%	51%	56%	31%	57%
Not available	18%	20%	18%	17%	16%

Source: 2016 Census data, Statistic Canada

In brief, Quebec has the least share of immigrants, who are as vulnerable to poverty as any immigrant in Canada. Among the immigrant population, the economic immigrant class accounts for the highest proportion during the past decade. Among the different classes of immigrants, refugees were the most likely to live in poverty. The next part will discuss the influencing factors of immigrants' poverty in detail.

2.2. Assimilation factors

Age at immigration. Age is an important factor when studying immigration. It is believed that if an immigrant arrives at a young age, he or she will have more time to (either) become fluent in the new language and (or) understand the culture, hence, their way of living will resemble those of Canadian-born counterparts. Moreover, it is easier for young immigrants, whose mother tongue is different from English or French, to learn a new language than for immigrants of older ages. The 2016 Census data presents another perspective: that immigrants coming to Canada before reaching 40 years old have a lower chance of living in poverty than those older than 40 years old.

Table 8 presents that the older the immigrants were at the time of immigration, the higher the likelihood that those immigrants would experience a low-income situation in Canada and in Quebec. The best age range to immigrate and assimilate into a new country is shown to be from 20 to 29 years old. Only 14 – 15% of Quebec immigrants of this age range ended up in a low-income situation. While older people, above 40 years old or more, have more than 20% chance of falling into the low-income category. As a result, the

federal government accords bonus points to younger immigrants under the Express Entry program to attract younger immigrants to Canada. The 2016 Census database does not include the information on the years since migration, which is believed to be one of the critical factors in studying low-income incidence among immigrants.

Table 8. Low-income incidence by age at immigration in the 2016 Census data, Canada and selected provinces

Immigration: Age at Immigration	CA	QC	ON	AB	BC
0 to 4 years	17%	16%	17%	14%	18%
5 to 9 years	16%	17%	16%	12%	17%
10 to 14 years	17%	18%	17%	11%	18%
15 to 19 years	15%	17%	16%	10%	16%
20 to 24 years	13%	14%	14%	11%	12%
25 to 29 years	14%	15%	15%	11%	13%
30 to 34 years	16%	17%	17%	10%	17%
35 to 39 years	18%	19%	19%	11%	20%
40 to 44 years	20%	21%	22%	10%	23%
45 to 49 years	22%	23%	24%	11%	23%
50 to 54 years	23%	26%	26%	12%	23%
55 to 59 years	24%	28%	26%	13%	23%
60 years and over	24%	23%	28%	14%	21%
Not available	20%	24%	19%	13%	23%

Source: 2016 Census data, Statistic Canada

Country of origin. Picot and Hou (2003) show that one of the most essential elements leading to high low-income incidence is the region of origin. As shown in Table 9, unlike those coming from European countries, immigrants from African, South American, and Asian countries have a high incidence of living in a low-income situation. As the trend of immigrants' home countries has moved from European countries to mainly African and Asian countries lately, the share in the poverty of immigrants from these countries is getting higher as well. Due to many challenges, such as living standard, education, or language barrier, they are more vulnerable to low-income than their European counterparts. Table 10 shows that in Quebec, the weighted average incidence of being in the low-income situation of immigrants from different regions are quite similar, while in

the rest of Canada, Asians who experience poverty accounts for the highest share of the total population of each region.

Table 9. Low-income incidence by country of origins in the 2016 Census data, Canada and selected provinces

Place of birth of person: Detailed	CA	QC	ON	AB	BC
Canada	0%	0%	0%	0%	0%
United States	12%	13%	13%	8%	12%
Central America	17%	18%	19%	14%	18%
Jamaica	17%	19%	17%	6%	0%
Other Caribbean and Bermuda	17%	17%	18%	8%	21%
South America	17%	19%	17%	12%	13%
United Kingdom	7%	9%	7%	6%	8%
Germany	8%	8%	7%	7%	10%
France	10%	10%	8%	0%	15%
Other Northern and Western Europe	7%	7%	7%	6%	9%
Poland	12%	15%	13%	6%	14%
Other Eastern Europe	15%	13%	18%	11%	14%
Italy	5%	6%	4%	3%	6%
Portugal	6%	6%	7%	3%	4%
Other Southern Europe	11%	11%	11%	4%	12%
Eastern Africa	23%	15%	27%	21%	17%
Northern Africa	24%	22%	27%	30%	32%
Other Africa	20%	23%	22%	14%	12%
Iran	37%	37%	39%	13%	37%
Other West Central Asia and the Middle East	33%	25%	34%	31%	36%
China	26%	21%	27%	12%	30%
Hong Kong	15%	14%	14%	8%	17%
South Korea	28%	27%	29%	14%	31%
Other Eastern Asia	23%	15%	23%	11%	25%
Philippines	9%	12%	11%	6%	10%
Viet Nam	17%	16%	19%	9%	19%
Other Southeast Asia	12%	12%	14%	7%	13%
India	12%	11%	13%	9%	11%
Pakistan	27%	34%	27%	21%	33%
Sri Lanka	17%	16%	17%	5%	17%
Other Southern Asia	29%	26%	32%	17%	23%

Oceania and others	10%	23%	9%	5%	11%
Not available	14%	15%	15%	13%	16%
Total					

Source: 2016 Census data, Statistic Canada

Table 10. Weighted average low-income incidence of immigrants by continent of origins in the 2016 Census data, Canada and selected provinces

Origin	CA	QC	ON	AB	BC
North America	2%	4%	2%	1%	1%
Europe	2%	3%	3%	1%	2%
South America	2%	5%	1%	2%	0%
Africa	3%	3%	3%	2%	2%
Asian	8%	3%	8%	5%	12%
Oceania and others	0%	0%	0%	0%	0%
Total	**17%**	**17%**	**17%**	**11%**	**17%**

Source: 2016 Census data, Statistic Canada.

2.3. Human Capital

Age in 2016. While arriving in Canada at a young age is an advantage, a young individual was more likely to experience a low-income situation than an adult or the elderly. As shown in Table 11 below, immigrants below 24 years old have at least 24% (in Canada) and 25% (in Quebec) of their population that is worse off financially compared to their seniors. Children that are below 10 years old and teenagers are especially vulnerable to live in poverty. This is mainly due to the low-income of their immigrant parents who were also living in poverty. The senior immigrants in Quebec are more likely to be exposed to poverty than the senior immigrants across the country, though the difference is very small (1%). The native seniors perform much better financially than the immigrants. At the time, in Canada, only 8% of the Canadian-born seniors above 65 years old belonged to a low-income family. (see Table 11)

Table 11. Low-income incidence of immigrants by age in the 2016 Census data, Canada and selected provinces

Immigrants	CA	QC	ON	AB	BC
0 to 4 years	52%	44%	60%	43%	50%

5 to 6 years	41%	31%	47%	37%	49%
7 to 9 years	33%	28%	41%	20%	37%
10 to 11 years	29%	23%	36%	19%	32%
12 to 14 years	27%	22%	33%	16%	34%
15 to 17 years	23%	21%	27%	14%	30%
18 to 19 years	24%	24%	26%	14%	29%
20 to 24 years	24%	25%	26%	14%	30%
25 to 29 years	19%	20%	20%	13%	19%
30 to 34 years	19%	20%	21%	13%	17%
35 to 39 years	19%	19%	20%	12%	20%
40 to 44 years	17%	15%	19%	12%	18%
45 to 49 years	15%	14%	17%	9%	17%
50 to 54 years	15%	15%	15%	8%	17%
55 to 59 years	14%	15%	14%	8%	15%
60 to 64 years	15%	18%	16%	9%	17%
65 to 69 years	12%	14%	12%	9%	13%
70 to 74 years	10%	11%	11%	6%	10%
75 to 79 years	10%	11%	11%	7%	9%
80 to 84 years	11%	11%	11%	6%	11%
85 years and over	10%	8%	11%	7%	11%

Natives	**CA**	**QC**	**ON**	**AB**	**BC**
0 to 4 years	16%	11%	18%	14%	16%
5 to 6 years	15%	9%	17%	14%	17%
7 to 9 years	15%	10%	16%	15%	17%
10 to 11 years	14%	9%	14%	13%	16%
12 to 14 years	13%	9%	13%	13%	16%
15 to 17 years	12%	9%	12%	12%	15%
18 to 19 years	13%	12%	13%	13%	15%
20 to 24 years	15%	14%	15%	13%	18%
25 to 29 years	12%	10%	12%	10%	14%
30 to 34 years	10%	9%	10%	8%	12%
35 to 39 years	10%	8%	9%	9%	12%
40 to 44 years	9%	8%	9%	8%	11%
45 to 49 years	10%	9%	10%	8%	12%
50 to 54 years	10%	10%	10%	8%	13%
55 to 59 years	11%	11%	11%	8%	12%
60 to 64 years	12%	12%	12%	9%	13%
65 to 69 years	8%	7%	7%	7%	9%
70 to 74 years	6%	5%	5%	5%	7%
75 to 79 years	6%	5%	5%	4%	7%
80 to 84 years	6%	5%	5%	5%	6%

85 years and over	7%	6%	6%	6%	8%

Source: 2016 Census data, Statistic Canada

Gender. Crossman (2013) mentioned the "double jeopardy" situation for women, especially immigrants in Canadian labour force. The "Double jeopardy" situation is the double discrimination with which female immigrants face in the Canadian labour market due to their gender and their foreign origins, which led to a higher low-income incidence for immigrant women (23% in 2001 Census data) compared to 16% for Canadian-born women and 20% for immigrant men. However, according to the 2016 Census data, either immigrant women or men, have almost the same possibility of living in poverty (around 17%) (Table 9). This could be the result of the evolution in female roles in businesses and society in the past decades. (see Table 12)

Table 12. Low-income incidence by gender in the 2016 Census data, Canada and selected provinces

Immigrants	**CA**	**QC**	**ON**	**AB**	**BC**
Female	16.80%	17.35%	17.73%	11.48%	17.53%
Male	16.24%	16.97%	17.03%	11.27%	16.87%

Natives	**CA**	**QC**	**ON**	**AB**	**BC**
Female	11.72%	9.61%	11.85%	10.57%	13.44%
Male	11.00%	9.20%	11.36%	9.63%	12.92%

Source: 2016 Census data, Statistic Canada

Language. The low-income incidence of immigrants speaking both English and French is 15%, the lowest rate compared to those speaking English only, French only and neither French nor English (16%, 20% and 29% respectively). However, the situation is different in Quebec – the only province whose sole official language is French. In 2016, there were around 80% of immigrants speaking French. People speaking both English and French are the least likely to experience low-income (14%). The odds are similar for immigrants speaking either English only or French only (19%). Obviously, it is challenging for those who neither speak French nor English as they have higher chances of being poor either in this province or in the rest of Canada (almost 30%). As for natives, the Francophone

population is more favorable than their Anglophone counterpart in Quebec (10% versus 17%). (see Table 13)

Table 13. Low-income incidence by languages in the 2016 Census data, Canada and selected provinces

Immigrants	CA	QC	ON	AB	BC
English only	16%	19%	16%	11%	16%
French only	20%	19%	39%	22%	0%
Both English and French	15%	14%	16%	13%	15%
Neither English nor French	29%	29%	30%	21%	28%

Natives	CA	QC	ON	AB	BC
English only	12%	17%	12%	10%	13%
French only	10%	10%	14%	21%	0%
Both English and French	9%	8%	9%	8%	12%
Neither English nor French	28%	22%	35%	19%	27%

Source: 2016 Census data, Statistic Canada

2.4. Family composition factors

Family structure. Table 14 shows a tendency: persons living with non-relative only, persons living alone, children of a lone parent and lone parent (48%, 32%, 26%, and 24% respectively in Quebec) have the highest incidence of being in low-income. Compared to other well-known provinces as immigrants' destinations, Quebec has the lowest proportion of two-parent families (20% of total immigrants) and the highest proportion of persons living alone (13% of total immigrants). However, Quebec has the same percentage (17%) of immigrants living in the low-income situation as those of British Columbia, Ontario, and slightly above Alberta (11%) (see Table 7). Hence, it is believed that the low-income situation in Quebec could have been even better if the percentage of two-parent families in this province was as high as in other provinces.

Table 14. Low-income incidence by family type in the 2016 Census data, Canada and selected provinces

Immigrants	CA	QC	ON	AB	BC
Couples without children	10%	10%	10%	6%	10%
Couples with children	13%	12%	14%	10%	14%
Lone parent	25%	24%	26%	21%	27%
Child of a couple	19%	18%	21%	13%	21%
Child of a lone parent	28%	26%	28%	22%	34%
Person living alone	29%	32%	30%	19%	29%
Person living with non-relatives only	43%	48%	48%	29%	42%
Person not in a census family but living with other relatives	10%	14%	10%	6%	11%

Natives	CA	QC	ON	AB	BC
Couples without children	4%	4%	4%	4%	5%
Couples with children	4%	3%	4%	5%	6%
Lone parent	23%	18%	23%	24%	27%
Child of a couple	7%	4%	8%	7%	8%
Child of a lone parent	27%	20%	26%	29%	30%
Person living alone	23%	22%	24%	17%	24%
Person living with non-relatives only	39%	40%	43%	28%	43%
Person not in a census family but living with other relatives	15%	13%	13%	13%	17%

Source: 2016 Census data, Statistic Canada

It is noted that there is a significant portion of lone parents being lone mothers. (see Table 15). Lone mothers account for 84% of total lone parents that are immigrants, and 75% of total lone parents that are natives. The low-income rate of Canadian-born lone mothers and lone fathers are 19% and 15% respectively, while that of foreign-born lone mothers and lone fathers are 24% and 21% respectively. Hence, the weighted average low-income incidence of lone mothers is significantly higher than that of lone fathers in both immigrant and native populations.

Table 15. Weighted average low-income incidence by lone parents, by gender in the 2016 Census data, Canada and selected provinces

Immigrants	CA	QC	ON	AB	BC
Female	21.73%	20.39%	22.29%	17.81%	24.33%
Male	3.26%	3.31%	3.39%	2.99%	3.11%

Natives	CA	QC	ON	AB	BC
Female	19%	14%	19%	20%	22%
Male	4%	4%	4%	4%	5%
Total	**23%**	**18%**	**23%**	**24%**	**27%**

Source: 2016 Census data, Statistic Canada

Family size. The number of people living under the same roof could have an impact on the low-income trend. According to the definition mentioned in Chapter 1, there are two types of family: census and economic family. Particularly, census families include parents (or grandparents without the parents of the children) and their children, whereas economic families refer to a wider range of the definition of family. For example, an economic family can be a nuclear or an extended family where many different generations living together under the same roof. Table 16 shows that an increase in the number of children in a census family will increase the chance of being in poverty of all members in that family. The incidence of being low-income 7-persons-or-more families is the highest (20%), while that of a 2-persons family is only 13% (in Quebec). However, due to the lack of information on the age of the children in a family, I could not analyze further the relationship between census family size and immigrant's poverty. Thus, I focus only on the extended family type, or economic family.

Table 16. Low-income incidence by census family size in the 2016 Census data, Canada and selected provinces

Immigrants	CA	QC	ON	AB	BC
2 persons	12%	13%	13%	7%	12%
3 persons	14%	13%	15%	9%	18%
4 persons	14%	14%	15%	10%	15%
5 persons	18%	16%	20%	14%	19%
6 persons	22%	16%	25%	19%	23%
7 persons or more	29%	20%	31%	31%	27%

Natives	CA	QC	ON	AB	BC
2 persons	8%	6%	8%	7%	8%
3 persons	10%	7%	10%	9%	12%
4 persons	7%	4%	7%	7%	8%
5 persons	9%	5%	10%	10%	11%
6 persons	13%	8%	13%	13%	15%
7 persons or more	20%	9%	19%	22%	15%

Source: 2016 Census data, Statistic Canada

Table 17. Low-income incidence by economic family size in the 2016 Census data, Canada and selected provinces

Immigrants	CA	QC	ON	AB	BC
2 persons	13%	15%	14%	8%	14%
3 persons	15%	14%	16%	9%	19%
4 persons	15%	14%	16%	10%	16%
5 persons	15%	14%	16%	12%	15%
6 persons	13%	12%	14%	12%	10%
7 persons or more	12%	12%	13%	12%	7%

Native	CA	QC	ON	AB	BC
2 persons	8%	6%	9%	7%	9%
3 persons	10%	7%	11%	9%	12%
4 persons	7%	4%	7%	7%	9%
5 persons	9%	5%	9%	9%	11%
6 persons	11%	7%	10%	12%	11%
7 persons or more	15%	9%	12%	18%	10%

Source: 2016 Census data, Statistic Canada

There are some significant differences between the statistics for census family size and economic family size, for both regions: the province of Quebec and the rest of Canada (except for Alberta). For a census family, Table 16 shows a steep upward trend when the number of children increases. The acceleration rate in Canada is higher than that of Quebec. In Quebec, the probability of living in a low-income family increases from 13% for a two-person family, to 20% for a 7-person-or-more family, 7 percentage points. Meanwhile in Canada as a whole, the probability rises significantly from 13% to 29%, almost 16 percentage points. This could be a result of the unique child-care program in Quebec, which emphasizes great availability and affordability in taking care of the children. On the other hand, for economic families, the situation is reversed. As shown in Table 17, the percentage of living in poverty tends to decline as the number of people in a family goes up. One possible reason is that more adults in a family could contribute more to the family income in various ways, such as social assistance, retirement allowances, etc. Moreover, they can enjoy economies of scale in consumption when living in the same house.

Education. As for low-income incidence by qualification, people without a university education are the most vulnerable to poverty (19% for immigrants and 18% for natives in Canada). As observed from Table 18 below, the gap of low-income odds among different qualifications is much larger for natives than for immigrants. In Quebec, while 20% of immigrants with no degrees fell into poverty, only 14% of those attaining a degree level higher than bachelor's suffered the same. Meanwhile for natives, the odds are 16% and 4% respectively, which are far less than that of immigrants. This is consistent with the findings of Kazemipur and Halli (2001) and Fleury (2007) that higher education is less rewarding for immigrants than for natives.

Table 18. Low-income incidence by education in the 2016 Census data, Canada and selected provinces

Immigrants	CA	QC	ON	AB	BC
No degree	19%	20%	20%	15%	19%
Lower than bachelor's degree	16%	16%	17%	10%	16%
Bachelor's degree	14%	15%	14%	8%	16%
Higher than bachelor's degree	14%	14%	14%	8%	16%

Natives	CA	QC	ON	AB	BC
No degree	18%	16%	17%	16%	20%
Lower than bachelor's degree	10%	8%	10%	8%	12%
Bachelor's degree	6%	6%	6%	5%	8%
Higher than bachelor's degree	4%	4%	4%	3%	5%

Source: 2016 Census data, Statistic Canada

Labour: Full-time or part-time weeks worked in 2015. As observed in Table 19, immigrants who worked for longer hours are less vulnerable to low-income. For example, in Quebec, 16% of immigrants who were unemployed in 2015 lived in poverty. Those who worked full-time in 2015 are the least likely to be in poverty (5%). This means that market income plays an important part in the financial health of immigrants and their families.

Table 19. Low-income incidence by labour: weeks worked in 2015 of immigrants in the 2016 Census data, Canada and selected provinces

Labour: Full-time or part-time weeks worked in 2015	CA	QC	ON	AB	BC
Worked mainly full-time weeks in 2015	7%	5%	7%	6%	8%
Worked mainly part-time weeks in 2015	15%	14%	16%	13%	19%
Not available	13%	13%	14%	21%	0%
Not applicable	19%	16%	20%	16%	21%
Total					

Source: 2016 Census data, Statistic Canada

House ownership. In 2016, there were 30% of immigrants residing in rented housing living in poverty. Quebec has the least share of immigrants with rented or band housing experiencing poverty, compared to other provinces (25% in Quebec.

Table 20. Low-income incidence by tenure of immigrants in the 2016 Census data, Canada and selected provinces

Tenure	CA	QC	ON	AB	BC
Owned by a member of the household	7%	4%	7%	6%	9%
Rented or Band housing	30%	25%	34%	26%	31%
Not available	13%	12%	13%	10%	14%
Total					

Source: 2016 Census data, Statistic Canada

3. Hypothesis

Based on the literature review and descriptive evidence presented earlier, I formulate two hypotheses to test the influence of family composition on the poverty of immigrants in Quebec.

Hypothesis 1: Economic family size has a positive impact on the economic performance of immigrants in Quebec.

Hypothesis 2: Census family status has a strong influence on the economic performance of immigrants in Quebec.

In summary, the immigrants' poverty situation in Quebec tends to be similar to that of the rest of Canada, except for the situation of children and the influence of languages. Children in Quebec are less likely to be in poverty, compared to their counterparts in other provinces. Contrary to our expectation that French-speaking immigrants have a more favorable financial situation than that of the English-speaking community in Quebec, evidence show that they have the similar odds of falling into poverty. Descriptive statistics presented overall tendencies of various poverty factors among immigrants, from assimilation to human capital and family composition; however, these preliminary evidence only show tendency but do not control for multivariate factors affecting poverty.

In Chapter 4, I will present the empirical methodology used to test my main hypothesis based on multivariate regression models, including expected signs of the variables. Empirical results will be presented in Chapter 5.

Chapter 4: Methodology and Data

This chapter presents the econometric methodology used to test whether family composition and other factors affect the poverty rate of immigrants in Quebec. As discussed, the purpose of this study is to examine the factors influencing the poverty rate of immigrants, in particular the importance of family composition in the economic situation of the foreign-born population in Quebec, compared to other provinces. First, I summarize the main literature that I am building on and present the selected econometric model. Second, I describe the data and variables used in the empirical model. The expected signs of the variables are presented in a table at the end of the chapter.

1. Overview

To test my research hypotheses, I apply logistic regression models following the studies of Kazemipur and Halli (2001), Fleury (2007), and Kei et al. (2019) using cross-sectional data of the 2016 Census database in Canada. The aim is to verify the relationship between poverty and family composition factors, and their influences when being examined together with other controls. First, I summarize the differences between these studies. Then, I explain the econometric methodology used in this research.

All the main literature I am building on made use of the logistic regression model to analyze the impact of specific factors on immigrants' poverty. It is the generally chosen regression model selected by researchers in immigration and poverty fields, as it is used for binary data. In their model, the dependent variable varies among the available binomial measurements of poverty, such as LIM, LIM-AT, LICO-AT. Kazemipur and Halli (2001) include in their analysis three groups of predictors: human capital, assimilation, and structural factors. Fleury (2007) and Kei et al. (2019) have studied different populations, which are recent and senior immigrants, respectively. Hence, the main predictors of these studies are different even though they use the same set of controls, such as age, gender, or ethnic groups. I will apply a combination of controls beside the main variables, in particular family structure and family size. Furthermore, there were typically no diagnostic tests for the predictors in previous studies. In this study, I will apply a test of multicollinearity (see Chapter 5 – Results) to my multivariate regression models. Below is a summary table of the main studies in the literature I am building on as well as my study:

Table 21. Comparison table

Comparison	Kazemipur, Abdolmhammad , Shiva Halli (2001)	My study
Objectives	Study the economic performance of immigrants in Canada through an examination of their poverty status.	Verify the impact of family composition on poverty incidence of immigrants in Quebec, compared to other provinces
Dependent Variable	LICO	MBM
Independent variable	3 groups of variables: - Human capital: age, years of schooling, immigration status, migration (domestic) status. - Assimilation: year of immigration, age at the time of immigration, languages spoken - Structural factors: part-time job, economic sector	Main variables: census family status; census family size, and economic family sizes Control variable groups: - Human capital - Assimilation factors - Structural factors - House ownership
Data	1991 Census of population in Canada (10% sample)	2016 Census of population in Canada
Method	Logistic regression	Logistic regression
Diagnostic Test	NA	VIF, Tolerance
Main conclusion	Immigrants in Canada are consistently overrepresented among the poor. Their poverty rates are particularly high in larger cities, where there is larger concentration of foreign-born population Poverty rates are higher for visible minorities, who are mostly recent immigrants. Second generation immigrants have a higher poverty rate than their parents. Human capitals were less rewarding for immigrants than natives.	Family compositions have strong impact on the poverty incidence of immigrants Besides, other factors such as assimilation, human capital and market earnings also play an important role in their economic performance. Nevertheless, the impact of education and languages on immigrants is not as strong as on native-born.

2. Methodology

2.1. Logistic model

The logistic regression model is a multivariate technique, which is an "alternative to discriminant analysis, particularly when the assumption of a normal distribution is not appropriate" (Halli and Rao, 1992,). The logistic model is applied for instance in Liu and Kerr (2003)[63] to decompose the trend affecting immigrant family economic well-being. According to Halli et al. (2001), the logistic model is very robust and flexible, requiring neither linearity nor normal distribution from the logistic regression independent variables. Moreover, it is the most suitable tool to apply when the dependent variable is dichotomous, e.g., low-income situation. It also gives information about the magnitude of the influence that each predictor could have on the outcome.

Our dependent variable is dichotomous and takes the value of:

1 if the immigrant was a member of a low-income family in 2016

0 otherwise

Let $P_i(Y=1)$ be the probability that an *i*th set of characteristics in the chosen sample is in the low-income situation, and $(1 - P_i)$ be the probability that the set is in the opposite category. Hence, $P_i / (1 - P_i)$ represents the odds of being in the category of interest of the *i*th set. Taking the log of $P_i / (1 - P_i)$, we have a continuous variable that has an illimited value $(-\infty; +\infty)$. The logistic regression model for the log odds, is often used when the dependent variable is binary:

$$\text{logit (Pi)} = \log\left(\frac{P_i}{1-P_i}\right) = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \cdots + \beta_k X_{ik} \qquad (1)$$

Where:

X: matrix of continuous explanatory variables;

[63] Liu, Jianye; Kerr, Don, 2003, Family change and Economic Well-being in Canada: The case of recent immigrant families with children

β: vector of the coefficient associated with X.

From equation (1), we have :

$$P_i = \frac{e^{X_i\beta}}{1 + e^{X_i\beta}}$$

The results of a logistic regression model contain coefficients – whose positive value indicates positive association of the independent variable on the dependent variable, or otherwise, if the coefficient is negative, the predictor has a negative relation with the predicted variable.

Using the method of maximum likelihood (MLE), the regression coefficients, or the betas, could be obtained. In their turn, those coefficients can be used to estimate the impact of each explanatory variable on the Y. As mentioned earlier, there are different ways to interpret the results of a logistic regression model. The present study relies on the magnitude of β, the coefficients. The positive impact results in a value of β larger than 0. Otherwise, it indicates a negative impact of the predictor variables on the dependent variable. Below are details of the variables considered in the model.

2.2. Model applied in this study

As mentioned earlier, my goal in this study is to verify the relationship between family composition factors and other factors on immigrants' poverty. Furthermore, I choose the binary measurement of poverty based on MBM. As opposed to many previous studies which included different factors in assessing the economic performance of immigrants, I only use the monetary indicator. This should facilitate the interpretation of the results. The income variable in the Census data was constructed through various administrative tax and benefit records from the Canada Revenue Agency (CRA), instead of being collected through surveys and questionnaires (as was the old practice before 2016). There were three types of data collected through CRA. The first one is with T1 Income Tax and Benefit return filing, which is only accessible to tax filers. The second one is through the tax slips (i.e., T4) provided to the employees by the employers. This information is available for both tax filers and non-tax filers. The third way came from other financial-

aid programs that are administered by CRA (for instance, the Universal Childcare benefit program).

The main variables in our models are economic family size, and census family status. For the set of control variables, I apply all factors from two main groups: assimilation, human capital groups, together with the labour factor and house ownership factor. As for the assimilation factors, I include variables such as age at immigration, original country, etc. Human capital group consists of age (in 2016), gender, education, languages spoken. Due to the possible correlation among the main variables (for instance, economic family includes census family in its definition), I apply them separately in two models, with Quebec immigrants and the immigrant population from the rest of Canada.

We have model (1) as follow:

$$\log\left(\frac{P_{LOMBM=1}}{1 - P_{LOMBM=1}}\right) = \beta_0 + \beta_1 \text{AGEIMM} + \beta_2 \text{PLACEOBIRTH} + \beta_3 \text{EFSIZE} + \beta_4 \text{AGEGRP} + \beta_5 \text{EDUCATION} + \beta_6 \text{KOL} + \beta_7 \text{SEX} + \beta_8 \text{FPTWK} + \beta_9 \text{TENUR}$$

Model (2):

$$\log\left(\frac{P_{LOMBM=1}}{1 - P_{LOMBM=1}}\right) = \beta_0 + \beta_1 \text{AGEIMM} + \beta_2 \text{PLACEOBIRTH} + \beta_3 \text{CFSTAT} + \beta_4 \text{AGEGRP} + \beta_5 \text{EDUCATION} + \beta_6 \text{KOL} + \beta_7 \text{SEX} + \beta_8 \text{FPTWK} + \beta_9 \text{TENUR}$$

(see Table 22 for the summary statistics of variables)

Due to the difference in immigrant and non-immigrant population, I apply two different types of model: type A for immigrant population (as defined above) and type B, without the assimilation factors for the non-immigrant population, to quantify the magnitude of impact of appropriate factors on the low-income situation of each group. Type B is defined as follows:

$$\log\left(\frac{P_{LOMBM=1}}{1-P_{LOMBM=1}}\right) = \beta_0 + \beta_1 \text{EFSIZE (or CFSTAT)} + \beta_2 \text{AGEGRP} + \beta_3 \text{EDUCATION} + \beta_4 \text{KOL} + \beta_5 \text{SEX} + \beta_6 \text{FPTWK} + \beta_7 \text{TENUR}$$

Similar to models from type A, I also apply different models for each main variable. Unlike other linear models, the logistic regression model does not include an error term. This is because it is a general linear model that only models the mean, not each value in the sample. Rather than model each individual value of Y with the predicted means and an error term, it models the predicted mean only. I present the results in Chapter 5.

3. Data sources

There are various sources that can be used when studying immigrant family and low-income issues in Canada. Most of the papers studying immigration in Canada use the Longitudinal Administration Databank (LAD), Survey of Labour and Income Dynamics (SLID) and Census data from Statistics Canada. Each has its advantages and disadvantages.

For the LAD, it contains income information of individuals and their related family. It has about 20% of the annual T1 family file. While there is a family weight available that can generate family-level information, the weight was constructed to permit the construction of low-income estimates rather than to focus on families or family dynamics. For SLID, it was not primarily constructed to study immigration, therefore, it does not contain information of immigration class. The questionnaires also do not emphasize the characteristics of an immigrant family. Thus, there is a limited number of immigrants in the tested population, leading to a limited number of analyses of the topic of immigrants based on SLID. Both databases are not fully available for public use. Only a table (or a chart) containing some information are given on Statistics Canada's website.

Hence, in this study, I use the 2016 Census Public Use Microdata File (PUMF) on individuals available from Statistics Canada. It contains records of more than 930 000 individuals, accounting for almost 3% of the Canadian population. The total number of

immigrants throughout Canada in the 2016 Census data is 202 000, and around 30 000 in Quebec. Since the number of observations in the non-immigration populations, both in and outside of Quebec, and the immigrant population in the rest of Canada are quite large, I decided to use only 10% of the non-immigration population in Quebec, 10% of the immigrant population in the rest of Canada, and 5% of the non-immigrant population in the rest of Canada. The sample sizes are under 30,000 each, which is reliable and large enough for the econometric analysis.

This database has many updates compared to its previous versions, such as information on immigration programs, place of birth, structural type of dwelling, education, etc. Especially, the income information from this source is gathered directly from the administrative database of the Canadian Revenue Agency. This enhances the quantity and quality of the available income information, which was, in its previous versions (before 2016), collected manually, fully or partially, collected through surveys and questionnaires.

Another update in 2016 Census data is the new official low-income measurement: Market Basket Measure (MBM), which is used as the key indicator for low-income rate in this study. As discussed earlier, Market Basket Measure allows comparing living standards between provinces and cities throughout Canada as it is based on the actual cost of a specific basket of goods and services necessary for a modest, basic standard of living for a family of two adults and two children (see Chapter 1). Thus, by studying the low-income incidence of immigrants in Quebec using MBM, we can have a whole picture of their economic well-being versus their counterparts in the rest of the country.

Table 22. Summary statistics of the dependent and independent variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Member of a low-income family	24,689	0.16	0.37	0	1
Economic family size (EFSIZE)					
Person not in an economic family	24,689	0.16	0.37	0	1
2 persons	24,689	0.25	0.43	0	1
3 persons	24,689	0.19	0.40	0	1

4 persons	24,689	0.22	0.41	0	1
5 persons	24,689	0.11	0.32	0	1
6 persons	24,689	0.04	0.19	0	1
7 persons or more	24,689	0.02	0.16	0	1
Census family status (CFSTAT)					
Couples without children	24,689	0.22	0.41	0	1
Couples with children	24,689	0.42	0.49	0	1
Lone parent	24,689	0.06	0.25	0	1
Child of a couple	24,689	0.07	0.25	0	1
Child of a lone parent	24,689	0.03	0.18	0	1
Person living alone	24,689	0.13	0.34	0	1
Person living with non-relatives only	24,689	0.03	0.16	0	1
Person not in a census family but living with other relatives	24,689	0.03	0.18	0	1
Age at the time of immigration (AGEIMM)	24,689	5.80	2.59	1	13
Origin (PLACEOBIRTH)					
North America	24,689	0.22	0.42	0	1
Europe	24,689	0.29	0.45	0	1
South America	24,689	0.22	0.41	0	1
Africa	24,689	0.11	0.31	0	1
Asian	24,689	0.16	0.37	0	1
Oceania and other	24,689	0.00	0.02	0	12
Age (AGEGRP)	24,689	13.22	3.55	6	1
Education (EDUCATION)					
No degree	24,689	0.19	0.40	0	1
Lower than bachelor's degree	24,689	0.48	0.50	0	1
Bachelor's degree	24,689	0.18	0.38	0	1
Higher than bachelor's degree	24,689	0.14	0.35	0	1
Knowledge of official languages (KOL)					
English only	24,689	0.16	0.37	0	1
French only	24,689	0.29	0.45	0	1
Both English and French	24,689	0.51	0.50	0	1
Neither English nor French	24,689	0.04	0.20	0	1
Gender (SEX)					
Female	24,689	0.52	0.50	0	1
Male	24,689	0.48	0.50	0	1
Labour: Full-time worked weeks in 2015 (FPTWK)					

Worked mainly full-time weeks	24,689	0.49	0.50	0	1
Worked mainly part-time weeks	24,689	0.13	0.34	0	1
Not applicable (unemployed)	24,689	0.38	0.48	0	1
Housing ownership (TENUR)					
Owned by a member of the household	24,689	0.55	0.50	0	1
Rented or Band housing	24,689	0.45	0.50	0	1

There are some omitted variables due to redundancy, for example, dummy variable female and male. As the total probability of being female and male is 1, adding both variables in the model will create perfect collinearity, which is also called a dummy variable trap. Table 23 below summarizes the predicted signs of the variable coefficients:

Table 23. Predicted signs

Variable	Group	Sign	Explanation
Economic family size	Family composition	-	The more people there are in an economic family, the less likely they are to live in low-income
Census family status	Family composition	+/-	Certain family structures have a higher impact on economic performance of immigrants than others.
Age at the time of immigration	Assimilation	+	Older immigrants are more likely to be in low-income
Origin	Assimilation	+/-	Certain countries or regions have higher odds to be in low-income (expectation: Africa, Asia, South America)
Age	Human Capital	-	Senior immigrants are less likely to be low-income than children or young adults.
Education	Human Capital	-	Higher education reduces the odds of being in poverty.
Knowledge of official languages	Human Capital	+/-	In Quebec, immigrants speaking French have the least odds of being in poverty. Those speaking English only have high chance of living in low-income
Gender (female)	Human Capital	+	Being a female immigrant increases the odds of being in low-income.
Work status in 2015	Labour	-	Working for a longer period reduces the odds of being in low-income
House ownership	Housing	+	Housing ownership increases the odds of being in low-income

Chapter 5: Results

This chapter presents the empirical results of the econometric models presented in the previous chapter. The objective is to assess the relation between family composition, together with other factors, and poverty rate of immigrants and non-immigrants in Quebec, and in the rest of Canada. First, I use a diagnostic test to verify the collinearity in multiple regression. This is to ensure the integrity and consistency of the results. Then, I present the econometric results and compare them with the results in the literatures.

1. Diagnostic test

As earlier discussed, model (1) and (2) below are built with two objectives: a. to verify the relationship between family composition and poverty; b. to assess the relation of each variable to the poverty incidence of immigrants. Due to the possible relation between the family size (EFSIZE) and the type of family (CFSTAT), I separate the econometric model into two models to study each of the two factors separately.

Model (1):

$$log\left(\frac{P_{LOMBM=1}}{1-P_{LOMBM=1}}\right) = \beta_0 + \beta_1 AGEIMM + \beta_2 PLACEOBIRTH + \beta_3 EFSIZE + \beta_4 AGEGRP + \beta_5 EDUCATION + \beta_6 KOL + \beta_7 SEX + \beta_8 FPTWK + \beta_9 TENUR$$

Model (2):

$$\log\left(\frac{\mathrm{P_{LOMBM=1}}}{1-\mathrm{P_{LOMBM=1}}}\right) = \beta_0 + \beta_1 \mathrm{AGEIMM} + \beta_2 \mathrm{PLACEOBIRTH} + \beta_3 \mathrm{CFSTAT} + \beta_4 \mathrm{AGEGRP} + \beta_5 \mathrm{EDUCATION} + \beta_6 \mathrm{KOL} + \beta_7 \mathrm{SEX} + \beta_8 \mathrm{FPTWK} + \beta_9 \mathrm{TENUR}$$

To diagnose potential multicollinearity of the variables included in the econometric models, I use the Variance Inflation Factor (VIF) and Tolerance Test. VIF measures the inflation in the variances of the parameter, which is estimated due to collinearities among the predictors.

Tolerance shows the percent of variance in the independent variable that cannot be accounted for by other variables. As shown in Table 24, most of the variables, except some that belong to work weeks' variables, follow the rule of thumb that their VIF are less than 10. These exceptions are the dummy control variables; hence they do not affect the main objective of the model. After confirming that there is no collinearity among the variables, I analyze the result of the econometric models.

Table 24. VIF and Tolerance Tests

	Model (1)		Model (2)	
Variables	VIF	Tolerance	VIF	Tolerance
Member of a low-income family	1.26	0.7955	1.28	0.7826
Economic family size				
2 persons	*2.03*	*0.4926*		
3 persons	*1.97*	*0.5076*		
4 persons	*2.14*	*0.4674*		
5 persons	*1.74*	*0.5733*		
6 persons	*1.30*	*0.7711*		
7 persons or more	*1.22*	*0.8206*		
Census family status				
Couples without children			*1.37*	*0.7280*
Lone parent			*1.19*	*0.8410*
Child of a couple			*1.58*	*0.6334*
Child of a lone parent			*1.20*	*0.8344*
Person living alone			*1.36*	*0.7365*
Person living with non-relatives only			*1.08*	*0.9219*
Person not in a census family but living with other relatives			*1.09*	*0.9149*
Age at the time of immigration	1.59	0.6289	2.81	0.3563
Origin				
Europe	1.80	0.5562	1.85	0.5408
South America	1.62	0.6186	1.63	0.6129
Africa	1.38	0.7241	1.39	0.7195
Asian	2.69	0.5908	1.71	0.5832
Oceania and other	1.00	0.9965	1.00	0.9959
Age	1.98	0.5047	4.70	0.2126
Education				
Lower than bachelor's degree	2.08	0.4803	2.10	0.4772

Bachelor's degree	1.92	0.5204	1.96	0.5113
Higher than bachelor's degree	1.86	0.5366	1.90	0.5275
Language				
English only	1.59	0.6273	1.60	0.6264
Both English and French	1.66	0.6037	1.67	0.6004
Neither English nor French	1.32	0.7582	1.33	0.7522
Male	1.05	0.9517	1.11	0.8999
Work status in 2015				
Full-time job in 2015	1.14	0.8771	1.19	0.8413
Part-time job in 2015	1.49	0.6713	1.68	0.5951
House ownership	1.33	0.7496	1.38	0.7270

Source: 2016 Census Data, calculated by author

2. Econometric results

Table 25 present the results of four models, which are applied on two different regions: the province of Quebec and the rest of Canada. For each region, I conduct two logistic regression models with three different main variables: census family status and economic family size. The dependent variable and control variables remain the same throughout the four models. Column (1) presents the association of economic family size; column (2) presents the association of census family status, along with other controls with immigrants'poverty in Quebec. Column (3), (4) repeat the same structure on the immigrant population in the rest of Canada. The variable with positive coefficients (larger than 0) indicates the increase in the log-odds of being in low-income; and negative coefficient (smaller than 0) means it reduces the log-odds of being in low-income. Except for the two variables representing the age at the time of immigration and age group in 2016, the rest of the predictors are dummy variables.

Model (1) and (3) shows the negative relationship between the size of an economic family and the poverty rate, at 1% significance level. As the family size grows, the log-odds of being in low-income reduces. This result agrees with our expectation earlier, that more people sharing the same roof, the more they can enjoy from the economies of scale of consumption. As shown in Model 2, couples without children, lone parents and unattached individuals have positive coefficient, which means that these family structures are more

likely to be in poverty than the others in Quebec. Compared to the rest of Canada, the relation of family structures in the province of Quebec to the low-income situation is similar, except for the case of couples without children. As the base value is "couples with children", couples without children have higher odds of being in poverty.

Table 25. Regression results: Logistic regression model for 4 populations

Dependent variable: Member of a low-income family				
Variables	(1)	(2)	(3)	(4)
Economic family size				
3 persons	-0.504***		-0.214***	
	(0.0649)		(0.0811)	
4 persons	-0.577***		-0.388***	
	(0.0652)		(0.0830)	
5 persons	-0.726***		-0.561***	
	(0.0789)		(0.101)	
6 persons	-1.019***		-0.612***	
	(0.124)		(0.125)	
7 persons or more	-1.448***		-1.197***	
	(0.161)		(0.152)	
Census family status				
Couples without children		0.209***		-0.115
		(0.0618)		(0.0736)
Lone parent		0.913***		0.986***
		(0.0789)		(0.106)
Child of a couple		-1.165***		-1.110***
		(0.104)		(0.121)
Child of a lone parent		-0.192*		0.0147
		(0.110)		(0.142)
Person living alone		1.566***		1.245***
		(0.0597)		(0.0865)
Person living with non-relatives only		1.883***		1.569***
		(0.0962)		(0.119)
Person not in a census family but living with other relatives		-0.218*		-0.681***
		(0.122)		(0.164)
Age at Immigration	0.155***	0.125***	0.186***	0.142***
	(0.0126)	(0.0103)	(0.0143)	(0.0124)
Origin				
Europe	-0.269***	-0.243***	-0.259**	-0.161*
	(0.0796)	(0.0638)	(0.114)	(0.0942)
South America	0.300***	0.151***	0.302**	0.158
	(0.0675)	(0.0586)	(0.140)	(0.122)

Africa	0.760***	0.666***	0.828***	0.862***
	(0.0802)	(0.0700)	(0.120)	(0.109)
Asian	0.311***	0.288***	0.245**	0.228***
	(0.0804)	(0.0696)	(0.0958)	(0.0837)
Oceania and other	0.761	0.839	-0.131	-0.190
	(0.925)	(0.866)	(0.377)	(0.346)
Age	-0.197***	-0.210***	-0.206***	-0.211***
	(0.00989)	(0.00860)	(0.0121)	(0.0113)
Education				
Lower than bachelor's degree	-0.00945	-0.0788	0.00758	-0.0561
	(0.0626)	(0.0541)	(0.0805)	(0.0713)
Bachelor's degree	-0.0472	-0.181**	-0.127	-0.226**
	(0.0810)	(0.0713)	(0.0983)	(0.0889)
Higher than bachelor's degree	-0.0298	-0.284***	0.0442	-0.103
	(0.0895)	(0.0785)	(0.112)	(0.104)
Languages spoken				
English only	0.157**	0.157**	0.113	0.596
	(0.0775)	(0.0655)	(0.758)	(0.687)
Both English and French	-0.194***	-0.0653	-0.263	0.373
	(0.0587)	(0.0510)	(0.770)	(0.696)
Neither English nor French	0.257**	0.204**	0.520	0.992
	(0.115)	(0.0997)	(0.765)	(0.693)
Male	-0.194***	-0.331***	-0.217***	-0.351***
	(0.0476)	(0.0424)	(0.0579)	(0.0537)
Labor: work status in 2015				
Part-time job in 2015	0.761***	1.230***	0.687***	0.994***
	(0.0735)	(0.0634)	(0.0870)	(0.0814)
Not working	1.537***	1.940***	1.231***	1.547***
	(0.0560)	(0.0521)	(0.0676)	(0.0652)
House ownership	-1.293***	-1.210***	-1.134***	-1.068***
	(0.0543)	(0.0477)	(0.0611)	(0.0548)
Constant	-0.236*	-0.516***	-0.0353	-0.490
	(0.134)	(0.122)	(0.774)	(0.701)
Observations	20,695	24,689	12,801	14,656
Pseudo R2	0.204	0.251	0.172	0.207
2 persons	-	-	-	-
Couples with children	-	-	-	-
North America	-	-	-	-
No degree	-	-	-	-
French only	-	-	-	-
Female	-	-	-	-
Full-time job in 2015	-	-	-	-
Rented or Band housing	-	-	-	-

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Note: (1) and (2) are in Quebec, (3) and (4) are in the rest of Canada.

With regards to control variables, I analyze the result in detail as below:

Age at immigration has a positive and significant coefficient at 1% significance level. Age at the time of immigration has a relation to the log-odds of being a member of a low-income family. Either for immigrants living in Quebec or in other provinces of Canada, age at immigration plays an important role in determining their financial performance. The relation of age at immigration to the probability of being in low-income for immigrants in Quebec is around 0.15, and in the rest of Canada about 0.18. The magnitude of the impact is not small; however, the effect is not strong as the coefficient is still close to zero. Indeed, younger immigrants have a lower chance of being in a low-income household than older ones. One of the possible reasons that could explain the association of age at the time of immigration is that immigration at a young age allows the immigrants to accumulate higher education, better social experience which could facilitate their assimilation process. It is also proven in the merit-based point system established by the Canada government - the Express Entry Program, or other Provincial Programs. In these programs, immigrants have higher points if their ages are in a certain range (normally below 30). For ages higher than the threshold, the individual gets progressively a lower score because they are deemed less flexible to adapt to changes in the host country. However, for the older immigrants, it could be argued that they are matured, serious, and could bring to the host country their developed skills and experiences, which could help them adapt to their new lives. Nevertheless, according to Borjas (1987), there is a problem of identifying assimilation's effect on earnings when considering a single cross-section data set. Thus, studies of cohort or longitudinal data should be necessary to study the relation thoroughly.

This variable is of course not available for the non-immigrant population.

Age in 2016. In both populations, age at the present time has a negative coefficient in the regression model. In both cases, it is statistically significant, and we can conclude that age influences low-income incidence. Results support the initial expectation that the older the immigrants, the less likely they are exposed to poverty. Even though being young at the time of migration is an advantage, all immigrants are better off over time. One possible explanation is that the older immigrants living in the country are usually sponsored through

family sponsorship into well-established families. Hence, their odds of being in low-income are smaller than younger immigrants. On the other hand, long-time immigrants, who have been living in Canada for over 15 years, have well integrated into the society. Moreover, they could also be eligible for federal and provincial program supplements, such as Old Age Security (OAS)[64] and Guaranteed Income Supplement Allowance[65]. These allowances are available to people aged over 60 years old.

Gender. As shown in Table 25, Male has a negative coefficient, indicating that men have less chance of being in a low-income household than women. Women, especially immigrants, still suffer from inequality in many social and market labour aspects. Due to the gender equality revolution in the past century, the difference in the odds of being a female or a male and living in poverty is smaller than in the past. However, this does not mean that the gender equality is fully incorporated into Canadian society. According to Canadian Women's Foundation, for every dollar a man earns in Canada, a woman can only earn 75 cents (Canadian Income Survey, Statistics Canada. Table 206-0053 – Distribution of employment income of individuals by sex and work activity, Canada, provinces, and selected census metropolitan areas, annual).

Countries of Origins. The countries of origin of immigrants in Canada are categorized into four main continents: America, Europe, Africa, and Asia. For immigrants in Quebec, only

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[64] "OAS is a non-contributory pension that is related to an individual's years of residence in Canada. It is available to Canadian Citizens, permanent residents (landed immigrants), and individuals with a Minister's permit who are 65 years of age or older and have a minimum of 10 years of residence in Canada after reaching age 18. A full OAS pension is only available to those who have lived in Canada for 40 years or longer after reaching the age 18. A person who cannot meet the requirements for the full OAS pension may qualify for a partial pension. A partial pension is earned at the rate of 1/40th of the full monthly pension for each year an individual has lived in Canada after reaching 18. Although citizenship and/or legal residency status is a requirement for OAS eligibility, in some instances time spent in Canada on a temporary basis prior to landing can factor into an applicant's residence history. As a result, an immigrant with less than ten years since landing can potentially be eligible for partial OAS benefits." (Dempsey Colleen, 2006, Immigrants Income Family).

[65] "GIS is another non-contributory pension and is available to residents of Canada who receive a full or partial OAS pension. GIS benefits may begin in the same month as OAS benefits. To qualify for GIS a person must be in receipt of an OAS pension and have an annual income not exceeding a specified amount. Sponsored immigrants from countries with which Canada has agreements are not eligible for GIS during their sponsorship period (up to a maximum of 10 years) unless they have resided in Canada for an aggregate of ten years after reaching 18 years of age. OAS and GIS are activated upon approval of an individual's application, with GIS requiring individuals to reapply on an annual basis. See Appendix, Table A1: Schedule of Countries with which Canada has Agreements (Section 22.0, Old Age and Security Regulations)." (Dempsey Colleen, 2006, Immigrants Income Family).

those who come from European countries show negative coefficients, indicating that they are less likely to be in a low-income household than the others. Meanwhile, immigrants from African countries have the highest coefficients, followed by those from Asian countries and finally from South American countries. This result is statistically significant at a 5% significance level. It is noticeable that immigrants from European countries financially perform better than their counterparts. It can be explained due to the corresponding living standards, education and working experience that these immigrants obtain from their home country and bring with them to Canada.

All models are consistently showing higher coefficients for immigrants coming from Africa and Asia, indicating that they have a greater chance of being part of a low-income household. These groups present many disadvantages compared to their counterparts, for example, being victims of racism, or language barriers. Specifically, according to René Houle (2020)[66], "discriminatory practices were noted in several social and economic areas, including the justice system and relations with police services […] the immigration system, the child welfare system […], the education system […], and the nursing workforce". Discrimination could have severe impact on education and socialization of the black population, which results in less proportion of the youth going to postsecondary schools (Turcotte, 2020).

Education. Compared to the reference category (immigrants with no diploma or certificate), all levels of education have negative association on the probability of being in low-income. Especially, immigrants with bachelor's degrees are less likely to be in low-income. The relationship between higher degrees than bachelor's degree on immigrants'poverty is much weaker than that of natives. This shows the inequality between immigrants and Canadian-born population regarding their education.

Columns 3 and 4 of Table 25 present the regression results for the immigrant sample in the rest of Canada. These are consistent with those for Quebec. Previous studies (e.g., Green

[66] Houle, René (2020). "Changes in the socioeconomic situation of Canada's Black population, 2001 - 2016," *Statistics Canada*. https://www150.statcan.gc.ca/n1/pub/89-657-x/89-657-x2020001-eng.htm

and Worswick, 2010; Picot and Hou, 2003)[67] have shown that the entry earning level for newcomers has been declining, compared to their counterpart (domestic-born), the decrease being bigger for higher educated individuals. Immigrants regularly find jobs where they are overqualified with lower pay than their counterparts.

Languages. The observed relationship between languages and poverty is very different in Quebec compared to Canada, and between immigrants and non-immigrants. Both in Quebec and in Canada, immigrants speaking both official languages are less likely to be in poverty. This result is statistically significant at a 5% level. Quebec is the only province whose official language is French, hence, English-only-speaking immigrants is unfavorable in this province as compared to the francophone counterparts.

Work status and Housing ownership. As expected, working part-time, or not working at all raises the odds of being in poverty for immigrants, at a 1% level. This result indicates that market income plays an important role in the poverty incidence of immigrant families. As for assets, owning a house reduces the odds of immigrants being in low-income households 1.3 times compared to that of immigrants who live in rented apartments or houses.

3. Summary and comparison of the results

Our econometric results are consistent with the findings of previous studies. Factors that are positively related with low-income incidence are age at the time of immigration, being a couple without children (in Quebec), lone parent, an unattached individual, and the countries of origins in South America, Africa, and Asia. It is noteworthy that the work status (full-time or part-time) and house ownership have strong relation to economic performance of immigrants. Those who do not have a job or do not own a house are the most vulnerable to low-income situation.

On the contrary, current age, gender (male), the languages spoken that are both French and English, are negatively related with the probability of being a member of a low-income family. Especially, even though Quebec is the only province where French is the official

[67] Statistics Canada, 2011, "Do highly-educated Immigrants perform differently in the Canadian and U.S. Labour markets?"

language, the francophone-immigrant population are not favored with regard to poverty status over their counterpart, the anglophone-immigrant population. Education levels do not show a strong influence on the financial health of immigrants. Kazemipur and Halli (2001) mentioned that assimilation factors can contribute to the poor financial performance of immigrants. The association of the assimilation factors are proven to be significant. According to Fleury (2007), and Kazemipur and Halli (2001), human capital factors are less rewarding for immigrants than natives. Fleury shows that level of education is not a significant factor for immigrants in leveraging their financial status.

With regard to family composition factors, the results support conclusions of previous studies (e.g., Liu and Kerr, 2003; Dempsey, 2006) that certain types of family are more prone to be in low-income group, essentially lone parents and people who live alone or live with non-relative only. I also find that the larger an economic family, the less likely its members are in poverty. This applies everywhere in Canada.

In summary, the results of the various logistic regression for each group and geographical area correspond to our expectations (see Table 26).

Table 26. Summary of results: main findings and expectations

Variable	**Group**	**Sign**	**Main findings**
Age at the time of immigration	Assimilation	+	Same as expectation
Origin	Assimilation	+/-	
Economic family size	Family composition	(-)(-)(-)	Extended family structure strongly reduces the odds of living in low-income
Census family status	Family composition	+/-	Lone parents and unattached individuals have strong influences on the poverty rate of immigrants
Age	Human Capital	-	Same as expectation

Education	Human Capital	-	Weak influence on the odds of being in low-income
Knowledge of official languages	Human Capital	+/-	In Quebec, speaking either French or English only doesn't have much difference on the economic performance of immigrants.
Gender (female)	Human Capital	(+)(+)(+)	Same as expectation, with strong influence
Labour: weeks worked in 2015	Labour	-	Same as expectation
Home ownership	Housing	(-)(-)(-)	Same as expectation

In the next chapter, I test the robustness of these results under various conditions.

Chapter 6:
Sensitivity analysis

This chapter assesses the robustness of our main findings by using alternative time range, alternative explanatory variables and Ordinary Least Square (OLS) regression model. As the main models were applied for two different populations, the models used in this chapter are also applied for the same populations for comparison purposes. The main results are presented in tables in Appendix 8, 9 and 10.

1. Different set of data

To validate whether the results of our main models are consistent, I make use of different data sets from (a) a different period and (b) two specific big cities in the province of Quebec, compared to the rest of the province. The results of these tests are presented in Appendix 8, 9 and 10.

Metropolitan cities

According to Kazemipur and Halli (2000, 2001), Garnett Picot and Feng Hou (2010), the place of settlement of immigrants can impact their economic performance. Indeed, neighborhoods can have a strong influence on the odds of living in poverty of their habitants, especially the newcomers. For example, immigrants who live in large and crowded cities might be exposed to higher competition and find it harder to find a job. In this subsection, I apply the same model for two different regions: (1) including two large metropolitan cities in Quebec – Montreal and Quebec-city; (2) for the rest of the province.

As observed in Appendix 8, the results are qualitatively consistent with the findings of our main models. Most of the p-values are significant at 10% confidence level. Thus, I conclude that the results are robust for family composition regarding the location of settlement. However, there are discrepancies in the magnitude of the impacts between the two region groups. In metropolitan cities, the association between the economic family size and the low-income situation of immigrants is larger than that in the rest of the province. Census family status has stronger influence on immigrants in other cities than in Montreal and Quebec-city. One of the reasons is that the cost of living in metropolitan cities is more expensive than in smaller and less crowded cities. Hence, living together in an extended family in large cities could have a stronger relation to the economic situation of immigrant families.

Alternative time-period

As discussed, this study uses data of the year 2016, which is the latest Census data available up to present to test the robustness of the main results, I make use of the Census

database of 2011. The results are presented in Appendix 9. I only summarize the general result in the following paragraphs.

Alternative time-period does not affect the impact of the predictor on poverty incidence of immigrants. In 2011, the results of the econometric models still show significant coefficients of our main variables (economic family size, and census family status). Therefore, the results of different time-periods appear to be consistent and robust.

2. Different dependent variable and regression model

Beside changing the dataset and time-period, I do a sensitivity analysis by applying a new regression model with a new dependent variable. I choose "Total disposable income for MBM of an economic family for all persons" – a continuous variable (with range of amount, for example, $2 000 - $4 999) – as the dependent variable. The binary variable used in the main models is based on this variable, with a poverty threshold, calculated by MBM. Using the new variable, I aim at testing whether an increase in one predictor could lead to an increase in their economic family income or not. Since the dependent variable is treated as a continuous variable, I apply an OLS linear regression model to test the relationship between the dependent and the independent variables. As the meaning of the new dependent variable is opposite to the old one, I expect that all the signs of the coefficients of the predictors will be the opposite of those of the main models.

Table 27. Descriptive statistic of new dependent variable

Variable	Obs	Mean	Std. Dev.	Min	Max
Disposable income of economic families (MBM)	20,695	18.50	9.04	1	88

The regression results of these robustness tests are presented in Appendix 10. For simplicity, I only summarize the general result in this subsection. As observed, an increase in the number of members of an economic family will increase the disposable income of such family, at a 1% confidence level. Specifically, a 3-persons family increases the disposable income of the family 2.7 times compared to the reference group of a 2-persons

family. While a 7-persons-or-more family increases almost 10 times the disposable income of the family compared to the reference family size. In terms of family structure, being a lone parent or an unattached individual reduces the disposable income of the family. All the results are significant at a 1% significance level.

In summary, all the results of the robustness tests (changes in database, time-period; change in dependent variable and regression model) are consistent with the main results presented in Chapter 5.

Chapter 7: Conclusion

It has been a challenge for the government and policy makers to find the best way to facilitate the integration and settling process of immigrants so that they can be financially independent. By studying the low-income situation of immigrant families, this study has sought to help understand the main factors explaining the poverty incidence. Hence, better policies could be developed to support immigrant communities.

More specifically, the objective of this study was to examine the relationship between economic performance and various factors, especially family composition factors, in the province of Quebec using the 2016 Census database. Specifically, it addressed different questions on the association of family types and sizes with the low-income situation of immigrant families. I also analyzed the influence of employment status, housing ownership factors, assimilation factors (such as age at the time of immigrations, language spoken) on poverty of the foreign-born Canadians.

As our research topic was the low-income situation of immigrants, we chose a binary variable of whether an individual is a member of a low-income family or not as our dependent variable. Logistic regression was seen as the most suitable econometrics model for this type of analysis. Econometric models were applied to different sets of variables among four different populations: immigrant and non-immigrant populations, in Quebec and in the rest of Canada. I assessed the contribution of each variable and also analyzed the gaps between the two regions to study the geographical impact on poverty of immigrants, which could be explained by different policies and social programs among provinces.

In 2016, the low-income incidence of immigrant families in Quebec was similar to the average of Canada, while the odds of Canadian-born family in Quebec was the lowest among the provinces. The relation of age at immigration, family types and sizes, and poverty rate tend to be significant and consistent with the findings from previous studies. According to the econometric results, the situation of immigrants tends to be more

favorable when they arrive in Canada at a young age. The older they are when they first arrive in Canada, the higher the chance for them to suffer from poverty. Unlike the age at immigration, the seniors living either in Quebec or in the rest of Canada have a lower chance of being in a low-income household compared to younger generations. This result is also in line with that of the number of years an immigrant settling in Canada. The high low-income rate clusters around the recent immigrants group. The longer they stay in Canada, the better they assimilate, or integrate into the society and its work force. The econometric models' results prove that gender has an association with immigrants' poverty in Quebec, as well as in the rest of Canada. Regardless of their immigration status, men always have a better chance to financially outperform their female counterparts.

There is a noteworthy finding that even though French is also an official language in Canada, the Francophone-immigrant population outside Quebec do not enjoy much benefit, if not to say, are more likely to be in low-income than the Anglophone-immigrant population. In Quebec, only immigrants that are bilingual and fluent in English and French have the lowest odds to live in poverty. The Francophone immigrant population are as vulnerable to poverty as their Anglophone counterparts.

Low-income incidence is also associated with living arrangement. Lone-parent and children of lone parents have much higher odds to experience low-income than those from two-parent families. Especially, immigrants living alone or with non-relative members most likely to live in poverty. The data shows a significant coefficient between the economic family size and the low-income incidence of immigrant families in Quebec. Meanwhile, for the rest of Canada, and for the non-immigrant population in Quebec, the relationship is not as strong as it is in Quebec. The findings demonstrated that families with more children have a much lower chance to be in poverty than those with fewer children in Quebec. This could be due to the subsidy in childcare from the provincial government.

The main findings in this study provide the answers to three questions proposed in the introduction:

Question 1. *What types of individuals, families, and communities are experiencing low-income among immigrants in the province of Quebec?*

- Immigrants who experience low-income in Quebec are mostly those who arrive in Canada at an old age, speak neither of the official languages, children and young adults, originate from Africa and Asia, and who are female. Family structure which is prone to poverty is lone parent, especially female lone parent, and unattached individuals.

Question 2. *How does the situation compare across provinces?*

- The low-income situation of immigrants in Quebec is similar to other provinces, even though it has the lowest MBM threshold. However, the native population's situation in Quebec is more favorable than their counterpart's in other provinces, and Quebec natives are less likely to be in poverty.

Question 3. *From a family composition perspective, how is the incidence of low-income among immigrants influenced by the prevalence of extended families, and the structure of a family?*

- Family composition factors have a significant influence on the poverty incidence of an immigrant family. Specifically, extended families (economic families with a high number of people) are less likely to experience poverty. Lone parents and unattached individuals are the most influential factors affecting the odds of being in low-income of immigrants, as well as natives.

The findings from this study provide some policy implications for the Canadian, especially the Quebec provincial government to improve their immigration policy, as well as other policies to reduce poverty and assist the integration process of immigrants. It is recommended to adjust the policy to reflect the modern trends of immigration. For example, there are more and more immigrants from other continents (i.e., Africa, Asia) than Europe. Thus, the integration of those immigrants faces multiple obstacles, such as racism, language barrier, as compared to the foreign-born white population. According to Chiswick (1978) and Borjas (1987), immigrants are likely to suffer from low earning at the beginning, yet their earnings tend to exceed those of natives after a period of time

(about 10 to 15 years). Hence, it is recommended that the government should incorporate the delayed prosperity of immigrants into their policy making process.

Among the limitation of this research, we can note that it uses the 2016 Census data, which is not originally designed to study immigrants and its characteristics. The method of choosing a sample that is not specialized for this purpose can have a significant impact on the result of the regression model. A survey or a database specifically aimed at immigrant families would have been beneficial, as it would provide more adequate data to understand the roots of the low-income incidence among immigrants. Another set of limitation is the problem inherent to the dataset. For example, even though the family income variable used in this study was combined from many sources and was linked to CRA, there was no data on immigrants' foreign assets or income. In future research, it would be interesting to do further analysis on the poverty of immigrants based on information of immigrants' foreign income and assets. Lastly, there should be further exploration of the workforce participation of immigrant families. According to the study of Fleury (2007), not all the working-age members of immigrant families participate in the labour force. It would be interesting to analyse the causes of such situations, whether it is due to cultural differences, employment barriers, or family responsibilities.

Appendix

Appendix 1. Immigration programs in Canada[68]

1. Express Entry: Immigrate into Canada as a skilled worker
2. Family sponsorship: Sponsor the applicant's relatives, including spouse, partner, children, parents, grandparents, and others to immigrate
3. Provincial nominees: Immigrate by being nominated by a Canadian province or territory
4. Quebec-selected skilled workers: Immigrate as a skill worker in the province of Quebec (See below Immigration programs in Quebec)
5. Atlantic Immigration Pilot: Immigrate by graduating from a school or working in New Brunswick, Prince Edward Island, Nova Scotia, or Newfoundland and Labrador.
6. Caregivers: Immigrate by providing care for children, the elderly or those with medical needs, or work as a live-in caregiver
7. Star-up Visa: Immigrate by starting a business and creating jobs
8. Self-employed: Immigrate as a self-employed person in cultural or athletic activities
9. Rural and Northern Immigration Pilot: Smaller Canadian communities supporting their local economy through immigration. Pilot opens to permanent residence applicants later in 2019
10. Agri-Food Pilot: Immigrate by working in specific agri-food industries and occupations

Refugees: Immigrate as a refugee or become a sponsor.

[68] Immigrate to Canada, *Government of Canada*, https://www.canada.ca/en/immigration-refugees-citizenship/services/immigrate-canada.html

Appendix 2. How to converse from coefficients to odds ratio in logistic regression model

$$logit\ (p) = \log(odds) = \log\frac{p}{1-p} = a + bX$$

We have:

$$\exp\ (\log\frac{p}{1-p}) = \exp(\ a + bX)$$

which is:

$$\frac{p}{1-p} = \exp(a + bX)$$

For a coefficient describing a difference in the log-odds for two values which vary by 1 unit in the independent variable X, we have:

$$b = \log(odds(\ p\ |X =\ x_0 + 1)) + \log\ (odds(\ p\ |X =\ x_0))$$

Therefore, when we exponentiate b, we have the direct relationship of the coefficient and the odds ratio:

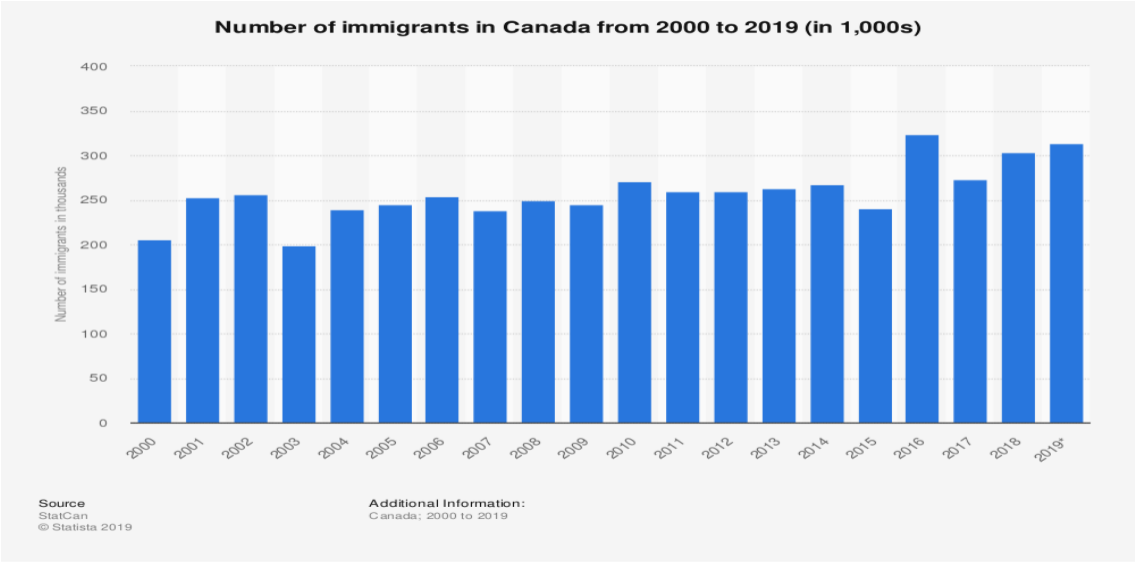
$$\exp(b) = odds(p|X =\ x_0 + 1)/odds(p|X =\ x_0)$$

Appendix 3. Low-income Cut-offs (LICO) in Canada, for the period 2014 – 2018

Low-income cut-offs after tax, 1992 base						
		Canada				
Community size4	Family size	2014	2015	2016	2017	2018
Rural areas	1 person	13,188	13,335	13,525	13,735	14,051
	2 persons	16,051	16,230	16,461	16,718	17,102
	3 persons	19,987	20,211	20,498	20,817	21,296
	4 persons	24,934	25,213	25,571	25,970	26,567
	5 persons	28,394	28,711	29,119	29,573	30,253
	6 persons	31,489	31,841	32,294	32,797	33,552
	7 persons or more	34,585	34,972	35,469	36,021	36,850
Population under 30,000	1 person	15,093	15,261	15,478	15,719	16,081
	2 persons	18,370	18,576	18,840	19,133	19,573
	3 persons	22,873	23,129	23,457	23,823	24,371
	4 persons	28,537	28,856	29,266	29,722	30,406
	5 persons	32,495	32,859	33,326	33,845	34,624
	6 persons	36,038	36,441	36,959	37,535	38,399
	7 persons or more	39,581	40,024	40,593	41,225	42,173
Population 30,000 to 99,999	1 person	16,836	17,025	17,267	17,536	17,939
	2 persons	20,493	20,722	21,016	21,344	21,835
	3 persons	25,517	25,802	26,169	26,577	27,188
	4 persons	31,835	32,191	32,649	33,157	33,920
	5 persons	36,251	36,657	37,178	37,757	38,626
	6 persons	40,204	40,654	41,232	41,874	42,837
	7 persons or more	44,155	44,649	45,284	45,989	47,047
Population 100,000 to 499,999	1 person	17,050	17,240	17,485	17,758	18,166
	2 persons	20,750	20,982	21,281	21,612	22,109
	3 persons	25,839	26,128	26,499	26,912	27,531
	4 persons	32,236	32,596	33,060	33,575	34,347
	5 persons	36,707	37,118	37,646	38,232	39,112

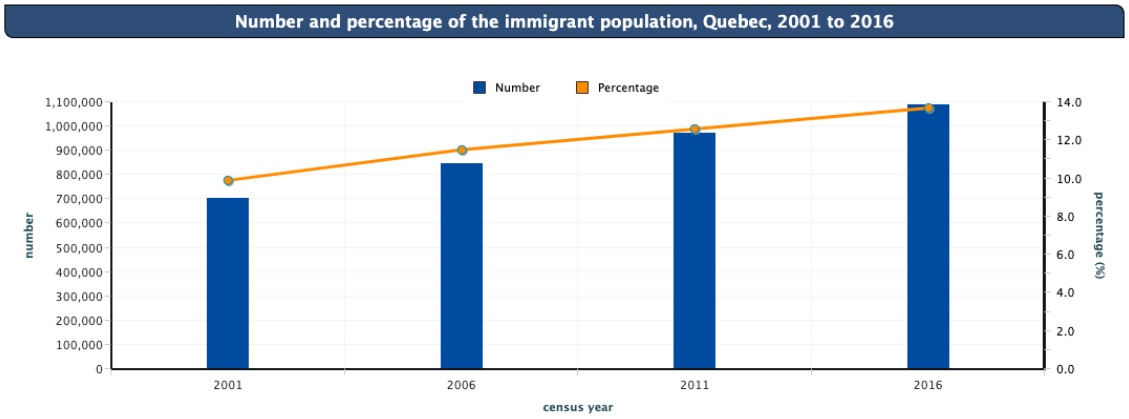
	6 persons	40,709	41,165	41,750	42,400	43,376
	7 persons or more	44,711	45,211	45,854	46,568	47,640
Population 500,000 and over	1 person	20,160	20,386	20,675	20,998	21,481
	2 persons	24,536	24,811	25,163	25,555	26,143
	3 persons	30,553	30,895	31,334	31,822	32,554
	4 persons	38,117	38,544	39,092	39,701	40,614
	5 persons	43,404	43,890	44,514	45,207	46,247
	6 persons	48,136	48,675	49,367	50,136	51,289
	7 persons or more	52,869	53,460	54,220	55,065	56,331

Appendix 4. Number of recent immigrants in Canada from 2000 to 2019



Source Statisca, 2020

Appendix 5. Number and percentage of the immigration population, Quebec, 2001 to 2016[69]



Source Statistics Canada.

[69] Statistics Canada, https://www12.statcan.gc.ca/census-recensement/2016/as-sa/fogs-spg/Facts-pr-eng.cfm?LANG=Eng&GK=PR&GC=24&TOPIC=7

Appendix 6. Population by immigrant status and period of immigration, Quebec and Canada, 2016

Population by immigrant status and period of immigration, Quebec and Canada, 2016

Immigrant status and period of immigration	Quebec			Canada		
	number	% of the total population	% of the immigrant population	number	% of the total population	% of the immigrant population
Total population in private households	7,965,450	100.0	...	34,460,060	100.0	...
Non-immigrants	6,788,085	85.2	...	26,412,615	76.6	...
Immigrants	1,091,305	13.7	100.0	7,540,830	21.9	100.0
Period of immigration: Before 2001	553,855	7.0	50.8	4,343,720	12.6	57.6
Period of immigration: 2001 to 2005	140,170	1.8	12.8	928,940	2.7	12.3
Period of immigration: 2006 to 2010	182,110	2.3	16.7	1,056,090	3.1	14.0
Period of immigration: 2011 to 2016	215,170	2.7	19.7	1,212,075	3.5	16.1
Non-permanent residents	86,060	1.1	...	506,625	1.5	...

Source Statistics Canada.

Appendix 7. Econometric results for non-immigrant population in QC and ROC

Dependent variable: Member of a low-income family				
Variables	(1)	(2)	(3)	(4)
Economic family size				
3 persons	-0.204*		-0.0924	
	(0.123)		(0.0902)	
4 persons	-0.756***		-0.360***	
	(0.160)		(0.0996)	
5 persons	-0.882***		-0.395***	
	(0.220)		(0.128)	
6 persons	-1.827***		-0.285	
	(0.526)		(0.187)	
7 persons or more	-0.990**		-0.305	
	(0.428)		(0.212)	
Census family status				
Couples without children		0.189		-0.0495
		(0.144)		(0.0948)
Lone parent		1.849***		1.504***
		(0.160)		(0.112)
Child of a couple		-2.347***		-1.682***
		(0.231)		(0.133)
Child of a lone parent		-0.943***		-0.570***
		(0.189)		(0.128)
Person living alone		2.086***		1.562***
		(0.132)		(0.0888)
Person living with non-relatives only		2.510***		1.864***
		(0.153)		(0.103)
Person not in a census family but living with other relatives		0.783***		0.150
		(0.239)		(0.175)
Age	-0.119***	-0.241***	-0.0954***	-0.174***
	(0.0136)	(0.0123)	(0.00997)	(0.00933)
Education				
Lower than bachelor's degree	-0.334***	-0.581***	-0.232***	-0.410***
	(0.109)	(0.0795)	(0.0790)	(0.0645)
Bachelor's degree	-0.733***	-1.049***	-0.734***	-0.771***
	(0.225)	(0.145)	(0.142)	(0.104)
Higher than bachelor's degree	-0.802**	-0.755***	-0.995***	-1.142***
	(0.343)	(0.190)	(0.237)	(0.173)
Languages spoken				
English only	0.721***	0.454**	-0.566	-0.601*
	(0.232)	(0.187)	(0.425)	(0.329)

Both English and French	-0.0114	-0.0168	-0.821*	-0.674**
	(0.104)	(0.0751)	(0.439)	(0.338)
Male	0.217**	-0.0900	0.106	-0.187***
	(0.0962)	(0.0699)	(0.0674)	(0.0546)
Labor: work status in 2015				
Part-time job in 2015	0.586***	1.558***	0.691***	1.484***
	(0.143)	(0.107)	(0.0939)	(0.0783)
Not working	1.456***	2.431***	1.229***	1.937***
	(0.119)	(0.0977)	(0.0825)	(0.0719)
House ownership	-1.702***	-1.084***	-1.676***	-1.103***
	(0.0997)	(0.0749)	(0.0675)	(0.0556)
Constant	-0.868***	-0.347*	-0.0423	0.328
	(0.218)	(0.189)	(0.453)	(0.355)
Observations	11,504	14,777	16,349	20,188
Pseudo R2	0.192	0.334	0.159	0.262
2 persons	-	-	-	-
Couples with children	-	-	-	-
No degree	-	-	-	-
French only	-	-	-	-
Female	-	-	-	-
Full-time job in 2015	-	-	-	-
Rented or Band housing	-	-	-	-

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: (1) and (2) are in Quebec, (3) and (4) are in the rest of Canada.

Appendix 8. Robustness Test – alternative dataset CMA vs. non-CMA (2016 Census data)

Dependent variable: Member of a low-income family				
Variables	(1)	(2)	(3)	(4)
Economic family size				
3 persons	-0.500***		-0.693**	
	(0.0664)		(0.319)	
4 persons	-0.583***		-0.637*	
	(0.0666)		(0.335)	
5 persons	-0.732***		-0.934**	
	(0.0804)		(0.432)	
6 persons	-1.055***		-0.845	
	(0.128)		(0.556)	
7 persons or more	-1.474***		-1.492	
	(0.166)		(0.910)	
Census family status				
Couples without children		0.214***		0.242
		(0.0634)		(0.294)
Lone parent		0.899***		1.762***
		(0.0801)		(0.534)
Child of a couple		-1.142***		-1.529***
		(0.106)		(0.534)
Child of a lone parent		-0.193*		-0.0984
		(0.112)		(0.534)
Person living alone		1.571***		1.401***
		(0.0608)		(0.332)
Person living with non-relatives only		1.910***		0.787
		(0.0978)		(0.647)
Person not in a census family but living with other relatives		-0.227*		0.155
		(0.125)		(0.634)
Age at Immigration	0.157***	0.127***	0.113*	0.0849*
	(0.0129)	(0.0106)	(0.0577)	(0.0490)
Origin				
Europe	-0.229***	-0.226***	-0.888***	-0.462
	(0.0823)	(0.0657)	(0.326)	(0.282)
South America	0.344***	0.176***	-0.407	-0.310
	(0.0697)	(0.0601)	(0.295)	(0.281)
Africa	0.763***	0.657***	0.973**	0.953**
	(0.0823)	(0.0714)	(0.437)	(0.405)
Asian	0.354***	0.301***	-0.904	-0.194
	(0.0822)	(0.0709)	(0.600)	(0.526)

Oceania and other	0.775	0.841		
	(0.925)	(0.864)		
Age	-0.199***	-0.210***	-0.161***	-0.189***
	(0.0102)	(0.00880)	(0.0467)	(0.0440)
Education				
Lower than bachelor's degree	-0.0170	-0.0719	0.0925	-0.245
	(0.0642)	(0.0554)	(0.304)	(0.268)
Bachelor's degree	-0.0384	-0.167**	-0.270	-0.441
	(0.0827)	(0.0728)	(0.424)	(0.375)
Higher than bachelor's degree	-0.0110	-0.261***	-0.642	-1.059**
	(0.0913)	(0.0799)	(0.503)	(0.483)
Languages spoken				
English only	0.131	0.142**	0.363	0.353
	(0.0795)	(0.0671)	(0.382)	(0.337)
Both English and French	-0.208***	-0.0825	-0.0761	0.181
	(0.0604)	(0.0524)	(0.264)	(0.235)
Neither English nor French	0.200*	0.173*	1.897**	1.203*
	(0.118)	(0.102)	(0.758)	(0.679)
Male	-0.196***	-0.334***	-0.212	-0.360*
	(0.0488)	(0.0433)	(0.234)	(0.215)
Labor: work status in 2015				
Part-time job in 2015	0.764***	1.238***	0.929**	1.104***
	(0.0751)	(0.0645)	(0.372)	(0.355)
Not working	1.534***	1.936***	1.647***	2.016***
	(0.0572)	(0.0532)	(0.289)	(0.278)
House ownership	-1.280***	-1.201***	-1.332***	-1.261***
	(0.0558)	(0.0488)	(0.265)	(0.242)
Constant	-0.225	-0.523***	-0.244	-0.449
	(0.138)	(0.125)	(0.636)	(0.615)
Observations	19,441	23,253	1,254	1,436
Pseudo R2	0.202	0.249	0.268	0.292
2 persons	-	-	-	-
Couples with children	-	-	-	-
North America	-	-	-	-
No degree	-	-	-	-
French only	-	-	-	-
Female	-	-	-	-
Full-time job in 2015	-	-	-	-
Rented or Band housing	-	-	-	-

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: (1) and (2) are in Montreal and Quebec cities, (3) and (4) are in the rest of Quebec.

Source: 2016 Census data, calculated by author.

Appendix 9. Robustness Test – alternative period (2011 Census data)

Dependent variable: Member of a low-income family				
Variables	(1)	(2)	(3)	(4)
Economic family size				
3 persons	-0.0801		0.0343	
	(0.0582)		(0.0269)	
4 persons	-0.228***		-0.156***	
	(0.0592)		(0.0267)	
5 persons	-0.422***		-0.273***	
	(0.0715)		(0.0311)	
6 persons	-0.422***		-0.594***	
	(0.100)		(0.0397)	
7 persons or more	-1.045***		-0.912***	
	(0.138)		(0.0455)	
Census family status				
Couples without children		0.149**		0.373***
		(0.0593)		(0.0258)
Lone parent		1.074***		1.183***
		(0.0863)		(0.0380)
Child of a couple		-1.355***		-0.838***
		(0.101)		(0.0410)
Child of a lone parent		-0.341***		0.0185
		(0.106)		(0.0470)
Person living alone		1.264***		1.347***
		(0.0663)		(0.0318)
Person living with non-relatives only		1.671***		1.773***
		(0.0997)		(0.0429)
Person not in a census family but living with other relatives		-0.174		0.0134
		(0.116)		(0.0481)
Age at Immigration	0.138***	0.113***	0.163***	0.125***
	(0.0118)	(0.00993)	(0.00472)	(0.00414)
Origin				
Europe	-0.179***	-0.0609	-0.127***	-0.0609**
	(0.0622)	(0.0542)	(0.0327)	(0.0284)
Africa	0.192***	0.222***	0.523***	0.445***
	(0.0544)	(0.0497)	(0.0348)	(0.0321)
Asian	-0.0289	0.0270	0.273***	0.274***
	(0.0670)	(0.0612)	(0.0284)	(0.0256)
Age	-0.186***	-0.230***	-0.213***	-0.247***
	(0.00918)	(0.00824)	(0.00393)	(0.00376)
Education				

Lower than bachelor's degree	0.0315	-0.0622	0.0432*	-0.00138
	(0.0605)	(0.0537)	(0.0257)	(0.0233)
Bachelor's degree	0.0897	-0.0880	-0.169***	-0.231***
	(0.0784)	(0.0702)	(0.0330)	(0.0305)
Higher than bachelor's degree	0.182**	-0.0157	-0.0653*	-0.148***
	(0.0834)	(0.0745)	(0.0360)	(0.0334)
Others	-0.627***	-0.287***	-0.863***	-0.732***
	(0.0938)	(0.0943)	(0.0408)	(0.0400)
Languages spoken				
French only	-0.297***	-0.305***	0.246	0.108
	(0.0696)	(0.0612)	(0.172)	(0.165)
Both English and French	-0.352***	-0.274***	-0.197***	-0.125***
	(0.0657)	(0.0575)	(0.0399)	(0.0361)
Neither English nor French	0.0335	0.00838	0.312***	0.313***
	(0.103)	(0.0917)	(0.0331)	(0.0307)
Male	0.104**	0.248***	0.0999***	0.251***
	(0.0416)	(0.0384)	(0.0177)	(0.0168)
Labor: work status in 2015				
Full-time job in 2015	-0.689***	-1.096***	-0.594***	-0.956***
	(0.0713)	(0.0634)	(0.0286)	(0.0267)
Not working	0.570***	0.608***	0.482***	0.486***
	(0.0689)	(0.0612)	(0.0281)	(0.0257)
House ownership	1.446***	1.289***	1.014***	0.960***
	(0.0474)	(0.0426)	(0.0186)	(0.0170)
Constant	-0.683***	-0.0193	-0.442***	-0.00921
	(0.151)	(0.149)	(0.0583)	(0.0621)
Observations	21,026	24,814	126,379	143,712
Pseudo R2	0.198	0.235	0.152	0.186
2 persons	-	-	-	-
Couples with children	-	-	-	-
North America	-	-	-	-
No degree	-	-	-	-
English only	-	-	-	-
Female	-	-	-	-
Part-time job in 2015	-	-	-	-
Rented or Band housing	-	-	-	-

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Note: (1) and (2) are in Quebec, (3) and (4) are in the rest of Canada.

Source: 2011 Census data, calculated by author.

Appendix 10. Robustness Test – alternative dependent variable and linear regression model (2016 Census data)

Dependent variable: Disposable income of economic families (MBM)				
Variables	(1)	(2)	(3)	(4)
Economic family size				
3 persons	2.368***		2.488***	
	(0.0965)		(0.0520)	
4 persons	4.020***		4.044***	
	(0.0973)		(0.0515)	
5 persons	5.338***		5.478***	
	(0.118)		(0.0610)	
6 persons	6.848***		7.270***	
	(0.174)		(0.0758)	
7 persons or more	9.215***		9.640***	
	(0.212)		(0.0821)	
Census family status				
Couples without children		-2.470***		
		(0.0892)		
Lone parent		-2.967***		-1.478***
		(0.142)		(0.0843)
Child of a couple		3.754***		5.486***
		(0.156)		(0.0813)
Child of a lone parent		0.158		1.647***
		(0.195)		(0.106)
Person living alone		-7.322***		-6.108***
		(0.109)		(0.0664)
Person living with non-relatives only		-8.045***		-7.641***
		(0.213)		(0.110)
Person not in a census family but living with other relatives		0.774***		2.972***
		(0.188)		(0.0895)
Age at Immigration	-0.355***	-0.233***	-0.403***	-0.231***
	(0.0165)	(0.0157)	(0.00810)	(0.00777)
Origin				
Europe	0.457***	0.149	0.0338	-0.246***
	(0.101)	(0.0944)	(0.0580)	(0.0547)
South America	-0.686***	-0.422***	-1.062***	-0.898***
	(0.104)	(0.0982)	(0.0746)	(0.0722)
Africa	-1.378***	-1.076***	-0.868***	-0.768***
	(0.128)	(0.122)	(0.0548)	(0.0525)
Asian	-0.426***	-0.316***		
	(0.118)	(0.113)		

Oceania and other	1.471	0.702		
	(1.461)	(1.372)		
Age	0.409***	0.344***	0.518***	0.408***
	(0.0135)	(0.0130)	(0.00703)	(0.00684)
Education				
Lower than bachelor's degree	0.502***	0.274***	0.575***	0.341***
	(0.0969)	(0.0926)	(0.0504)	(0.0488)
Bachelor's degree	1.688***	1.208***	2.223***	1.615***
	(0.121)	(0.115)	(0.0634)	(0.0615)
Higher than bachelor's degree	2.831***	2.243***	2.712***	1.982***
	(0.131)	(0.123)	(0.0691)	(0.0667)
Languages spoken				
English only	-0.0399	-0.0283		
	(0.117)	(0.110)		
French only			-0.0336	0.478
			(0.416)	(0.408)
Both English and French	1.089***	1.021***	1.000***	0.754***
	(0.0864)	(0.0804)	(0.0750)	(0.0715)
Neither English nor French	-0.151	-0.188	-0.442***	-0.244***
	(0.191)	(0.181)	(0.0722)	(0.0694)
Male	0.443***	0.635***		
	(0.0691)	(0.0671)		
Female			-0.401***	-0.515***
			(0.0345)	(0.0340)
Labor: work status in 2015				
Full-time job in 2015			1.752***	2.417***
			(0.0560)	(0.0554)
Part-time job in 2015	-1.439***	-2.018***		
	(0.105)	(0.102)		
Not working	-2.701***	-3.283***	-1.546***	-1.614***
	(0.0814)	(0.0814)	(0.0594)	(0.0580)
House ownership – Yes	3.520***	3.720***		
	(0.0765)	(0.0719)		
House ownership – No			-3.702***	-3.639***
			(0.0435)	(0.0412)
Constant	8.129***	11.51***	10.69***	11.72***
	(0.215)	(0.208)	(0.120)	(0.133)
Observations	20,695	23,959	126,379	140,435
Pseudo R2	0.372	0.423	0.275	0.300
2 persons	-	-	-	-
Couples with children	-	-	-	-
North America	-	-	-	-
No degree	-	-	-	-

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: (1) and (2) are in Quebec, (3) and (4) are in the rest of Canada.

Source: 2016 Census data, calculated by author.

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