

Linguistic and Economic Characteristics of Francophone Minorities in Ontario and New
Brunswick from 1981 to 2011

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Abstract

This paper uses the 2011 National Household Survey to analyze the economic position of the Francophone minorities of Ontario and New Brunswick. The results are compared with earlier ones for 1981 and 1991 obtained by Grenier (1997). Demographic and other characteristics that are related to economic success are first considered. Earnings regression models are then estimated to analyze the gross and net earnings gap between Anglophones and Francophones. Finally, the paper considers a new factor, immigration in Ontario, that has become important in recent times. The major results are as follows. First, assimilation to English by Francophones is higher in Ontario than in New Brunswick, and the assimilation rate has increased in both provinces since 1991. Second, the gap between Francophones and Anglophones in the characteristics that are related to economic success has decreased. Third, most Francophones no longer have an earnings disadvantage in 2011, and some even earn more than Anglophones. Finally, immigrants who speak other languages at home have a large earnings disadvantage, while it is not the case for those who speak French at home.

Content

1. Introduction.....	1
2. Literature review.....	3
3. Data and Descriptive Statistics.....	10
3.1 Data, Population, and Language Use.....	10
3.2 Socio-economic Characteristics.....	15
3.3 Economic Performance.....	18
4. Regression Models.....	20
4.1 Earnings regression by mother tongue and home language.....	21
4.2 Earnings regression by mother tongue and knowledge of the Canadian official languages.	23
5. Empirical Results.....	24
5.1 Regression analysis on earnings by mother tongue and home language.....	24
5.2 Comparison with earlier results.....	29
5.3 Regression analysis on earnings by mother tongue and knowledge of official languages.	29
5.4 Comparison with earlier results.....	33
6. Immigration in Ontario.....	34
6.1 Descriptive Statistics.....	34
6.2 Economic Performance.....	35
7. Conclusion.....	37
References.....	40
Appendix.....	42

1. Introduction

By the Official Languages Act of 1969, Canada recognizes that English and French have equal status in the activities of the government. The federal government provides bilingual services to the population. According to the 2011 Census of Population, close to 10 million Canadians can use French in a conversation, and this number has increased from 9.6 million in 2006. Although the population who speak French increased, the proportion of French-speakers to the overall Canadian population decreased slightly from 30.7% in 2006 to 30.1% in 2011. Similarly, in 2011, around 7.3 million people in Canada had French as mother tongue, an increase of about 328 thousand from 2006. However, their proportion decreased from 22.3% to 22.0%.

Quebec has a majority of French speakers, counting around 80% of its population who have French as mother tongue. At the time of the 1995 referendum on Quebec sovereignty, there was an important controversy about the fate of the French minorities outside Quebec, whether they had been protected well enough or were assimilated to English. How the French speakers perform outside of Quebec and tracking the changes in their population was crucial in the argument and it still is.

In 2011, 14% of the Canadian population who had French as mother tongue lived outside of Quebec, and 76% of them lived in Ontario or New Brunswick. The Francophone minorities of those two provinces are relatively close to Quebec, and they have cultural and economic exchanges with Quebec. However, because of the different social and economic environments of those two provinces, the French language does not have the same status.

Ontario, as the financial and industrial centre of Canada, has attracted many migrants from inside and outside of Canada, as 53% of all immigrants in Canada have settled down in Ontario (National household survey, 2011). With such a large number of migrants, the languages used in Ontario have become very diversified; thus, only 0.8% of the immigrants in Ontario have French as their mother tongue. Although there are over half a million speakers of French as mother tongue, Francophones in Ontario represent only 3.8% of the total population. The Francophones are concentrated in the northeastern and eastern parts of Ontario, which are near the border of Quebec, especially in Ottawa.

In contrast, only 0.4% of the Canadian immigrants live in New Brunswick. Most Francophones are Acadians who settled down in the past centuries. Even though the Francophone population was 230 thousand in 2011, which is only half of that in Ontario, their proportion is approximately one-third of the population of the province. Furthermore, since New Brunswick is the first and only officially bilingual province in Canada, Francophones may have more opportunity in the labour market.

The purpose of this paper is to analyze and compare the economic achievements of the Francophones minorities in Ontario and New Brunswick. The 2011 National household survey is used as the major data base. The paper updates a previous similar analysis done by Grenier (1997) with the 1981 and 1991 censuses in order to see how things have changed. The next section is a literature review, which is a selection of some of the earlier studies that investigated the wage gap between Francophones and Anglophones in Canada, and which includes some studies that are specific to Ontario and New Brunswick. Section 3 provides some descriptive analysis of the data. It divided into three parts: the first is a brief description of the demographic

characteristics and of the different languages used in the population; in the second part, I consider some social and economics characteristics that are related to economic success; and in the last part I show data on incomes and wages. Section 4 presents the regression models that are estimated. Section 5 reports the results and compares them to the previous results of 1981 and 1991. Finally, section 6 focuses on how immigration has influenced the language situation in Ontario.

2. Literature review

There are many studies that have investigated the wage gap between the two official language groups -French and English- in Canada since 1970. A common theme in these papers is the estimation of the wage premium received by knowing a second language.

One of the earliest studies to explain the role of language in economic activity is Vaillancourt (1980). He studied the earnings in the Quebec labour market of individuals who speak different languages. The data source is the public use microdata file of the 1971 Census of Canada. Vaillancourt excluded women, individuals who are neither Anglophones nor Francophones, non-whites, and individuals who had no positive earnings. The main empirical findings are that for Anglophones, bilingualism does not bring monetary returns, but for Francophones, bilingualism brings monetary returns. Bilingualism leads to a wage premium of about ten per cent to Francophones in Quebec. Thus, in Quebec, the knowledge of English is an important skill.

Carliner (1981) examined wage differences between English speakers and French speakers in Canada using a simple market theory. In multilingual societies, the demand and

supply of language skills will lead to different wage premiums for different language groups. Carliner analyzes the factors that can affect the supply and the demand for different language skills and discusses wage differences among language groups in different parts of Canada, using the 1971 Canadian Census. In Quebec, male workers who speak neither English nor French can get substantial economic rewards if they learn French or English. In addition, even though the unilingual English workers can get a higher salary after learning French, the increase is smaller than the one of the unilingual French workers who learn English. However, outside of Quebec, bilingual English workers earn the highest income, and unilingual English men earn more than unilingual and bilingual French ones. Furthermore, unilingual English workers had the highest education level compared to the nonbilingual groups, and this higher education level leads to a higher wage.

Bloom and Grenier (1992) not only focused on the employment and earning differentials between French and English speakers in Canada, but they also compared Spanish and English speakers in the United States in the 1970s and 1980s. The paper used the microdata files of the 1971, 1981, and 1986 Censuses of Canada, and of the 1970 and 1980 U.S. Censuses. The study considered two situations: on the one hand, an increased supply of minority language speakers may decrease the wage of those who cannot speak English; on the other hand, the demand created by minority communities may increase the wage. By comparing these two situations, the authors found that in Canada, the earnings differentials between language groups were larger in Quebec than outside of Quebec. They also found that the earnings differentials decreased over time, especially in Quebec. The sharp decrease in Quebec can be explained by the increase of the demand for French-speaking workers within Quebec. Similarly to Canada, earnings differentials were high in the U.S. in the 1970s; however, the differentials were still high in the 1980s. While

in Canada the demand for French-speaking work increased, in the U.S., the relative supply of Spanish speakers increased due to high immigration.

Shapiro and Stelcner (1997) analyze earnings differentials among Francophones, Anglophones, and Allophones in Quebec during a period of 20 years ranging from 1970 to 1990. They first restricted their sample to full-year and full-time workers between the ages 18 and 65 and examine the trend in earnings disparities. In the second stage, they include all workers (both full-time and part-time) and examine the same trend. Between 1970 and 1980, the income gap between English and French speakers narrowed, and the earnings gap between bilingual, unilingual Anglophones and bilingual Francophone decreased. However, Allophone males were the most disadvantaged group. After considering the entire sample of males (both full-time and part-time) in 1990, the earnings disadvantage rose for the unilingual francophones group, while the earnings of bilingual Francophones and Anglophones remained at the same level. Furthermore, regardless of the official language used, the relative status of the Allophone men was greatly deteriorated. The penalty suffered by both French-speaking allophone men and English-speaking allophone men increased from 1980 to 1990.

Albouy (2008) also focuses on the wage gap between Francophones and Anglophones in Canada, extending the study to the period from 1970 to 2000 and focusing on Canadian-born men between the ages of 20 and 59. The data are from the 1971, 1981, 1986, 1991, 1996 and 2001 Canadian censuses. By comparing the wage gap in Canada and Quebec, the study found that from 1970 to 2000, the gap between Francophone and Anglophone men decreased by 25% in Quebec, but in the whole of Canada the gap only decreased by 10%. The wages for Anglophones in Quebec also decreased by 15% relative to Canada as a whole. According to

Albony, the changes were caused by the improvement of education, the reforms of the laws, and the control of the Quebec economy by Francophones.

The above studies examined the wages of Francophones and Anglophones in Quebec or in Canada as a whole, but it is not clear what the gap between Francophones and Anglophones is in specific provinces other than Quebec. This is relevant especially for Ontario and New Brunswick, which have the majority of the population whose mother tongue is French outside of Quebec.

According to Lepage (2012), the overall unemployment rate of Francophones in Canada (8.3%) was higher than that of Anglophones (7.4%) in 2012, this difference being a reflection of the distribution of Francophones and Anglophones in Canada. In Ontario, the unemployment rate of the Francophones minority was 5.4%, which is lower than the 7.9% rate of Anglophones, and Francophones employees earned more than Anglophones in Ontario. However, things are different in New Brunswick. The unemployment rate of the Francophone minority (13.7%) was higher than that of the Anglophones (10.6%), and the wages of Francophones and Anglophones were similar. In both Ontario and New Brunswick, the proportion of Francophones who work in public administration and educational services is higher than the proportion in their total proportion, but they are less represented in manufacturing and trade.

Corbeil and Lafrenière (2010) observed that the population with French as a mother tongue in Ontario has increased since 1951, while the share of that population in the province has steadily declined. The population which has French as first official language follows the same trend, but the number of people whose French is the first official language is slightly larger than the population with French as mother tongue. This is mainly due to the arrival of French-

speaking immigrants. The Francophones of Ontario are concentrated in specific parts of the province, with a quarter of them living in the Ottawa area. The strong increase in the number of French-English exogamous couples since 1971 caused a significant decrease in the rate of transmission of French to children. Women pass on their mother tongue more easily than men. Ontario receives over half of the French-speaking immigration outside of Quebec. Most of these immigrants in Ontario come from the African continent and Western Europe. The study also mentions that while 23% of physicians working in Ontario reported being able to converse in French, only 7% reported using the language at least regularly at work and these results vary by region. French-speaking people often cite the lack of professionals who can carry on a conversation in French as an explanation for the deficiency of services in the language. Similarly, in the justice domain, the interactions between Francophones and municipal and provincial police are often conducted in English, even in the southeast and Ottawa areas. The authors also note, similarly to Lepage (2012), that in Ontario, the median income of Francophones is higher than that of Anglophones.

Francophone immigration outside of Quebec has become a reality of many regions in Canada. Belkhodja (2005) explores the initiatives taken by the Acadian community in New Brunswick and its efforts to develop strategies to attract immigrants to the Francophone areas of New Brunswick. In Canada, the majority of the new immigrants choose large cities rather than rural areas, and the gap between big cities and rural areas is growing. In this situation, the Atlantic provinces, especially New Brunswick, are in a very competitive position and are facing specific regional challenges. The first challenge is that only a few new immigrants choose New Brunswick, and that most Francophone immigrants decide to settle down in Quebec. The second challenge is related to the population structure of New Brunswick: low birth rate, population

aging, with many young people deciding to go to urban centres. The third challenge is that because of the high unemployment rate and the poor economic performance, people have a bad impression of New Brunswick. According to the New Brunswick Francophone Immigration Action Plan 2014-2017, the most important way to increase Francophone immigration is through the New Brunswick Provincial Nominee Program (NBPNP). The NBPNP has two main streams, skilled workers and business applicants, and the investment from government also helps to create Francophone immigration settlement services and increase the number of PNP nominees.

Bonikowska, Hou, and Picot (2015) focused on the reasons that explain the different proportions of immigrants in different parts of Canada. The authors researched two different samples. The first one included the intended destinations of immigrants that are identified on the landing records, and the second one included the actual destinations of immigrants. They found a big discrepancy between their intended and actual destinations. The concentration of new immigrants to Toronto has declined, and more immigrants were received by non-traditional regions since 2000, the annual inflow of immigration to Canada rose from 227,500 to 280,700 between 2000 to 2010, but the proportion of immigrants who intended to settle in Toronto decreased from 48% to 33%. In addition, the regional distribution of immigrants depends on the source countries of immigrants. Immigrants often go to cities where there are large numbers of previous immigrants from the same country, as the changes of the source countries tend to increase geographic dispersion of the new immigrants, and these changes have led to a decline in immigration to Toronto and Montréal.

Since the 1990s, immigration has been a major driver of Canada's population growth. The language skills of immigrants have been the object of some research. Mady (2017) compared the

degree of proficiency of English and French for three groups of students in French immersion programs in Canada: multilingual immigrants, Canadian-born English speakers, and Canadian-born multilingual students. In the tests of French proficiency, the immigrants performed better than the two Canadian-born groups. However, in the tests of English proficiency, there is no significant difference among the three groups. Immigrants who are more likely to learn French may be influenced by their expectations of bilingualism given Canada's two official languages. Parents can communicate their positive expectations of the education system to their children. The Ontario French curriculum document from the Ontario Ministry of Education makes explicit the value of other languages and encourages the development of metalinguistic knowledge.

The research done in this paper is related to a comparison of the Francophones in Ontario and New Brunswick that was done by Grenier (1997), in order to see the demographic trends and the influence of language skills on incomes. The data come from the public use microdata files on individuals of the 1981 and 1991 Canadian Censuses. The paper found that Francophones in New Brunswick have maintained their numbers and proportions, but that in Ontario, the growth of the English-speaking population has reduced the relative importance of the Francophones. Considering the social and economic performances, he noted that Francophones have fewer features associated with economic success than Anglophones in both provinces. Assimilation to English is high in Ontario, but it is relatively low in New Brunswick. Comparing to two provinces, in New Brunswick, the Francophones earn significantly less than Anglophones, but in Ontario, the gap is much smaller and Francophones even earn as much as Anglophones.

Since the 1990s, the demographic structure of the different language groups has changed, one reason being that more immigrants have moved to Canada. This paper will update Grenier

(1997)'s study by adding the data from the 2011 National Household survey in order to look at the changes in the population and economic performance in Ontario and New Brunswick. In addition, this paper will consider some immigrants background to explain the changes.

3. Data and Descriptive Statistics

3.1 Data, Population, and Language Use

This paper uses the public use microdata files on individuals of the 2011 National Household Survey (NHS), that Statistics Canada conducted between May and August 2011. The NHS aims to collect social and economic data on the Canadian population. The sample includes 2.7% of the total Canadian population, or 887,012 individuals. The response rate was 68.6%. This survey excludes persons living in collective dwellings, Canadian citizens living outside of Canada, foreign residents, and full-time members of the Canadian Forces stationed outside Canada.

The two most important language concepts for this paper are the home language and the mother tongue. According to the NHS, home language refers to the language spoken most often at home by the individual at the time of the survey. Mother tongue refers to the language first learned in childhood and still understood by the individual at the time of the survey.

Table 1 presents the population distribution by mother tongue and home language for Ontario and New Brunswick. Results for 1981 and 1991 are from Grenier (1997), and I added the 2011 numbers. It can be seen that, for both language group definitions, Ontario has more Francophones than New Brunswick. However, the proportion of Francophones to the total population is different; the French count more in New Brunswick (around 30%) than in Ontario

(less than 4%) in both mother tongue and home language. In Ontario, most people have English as mother tongue and home language, but this proportion decreased from 1981 to 2011; the same trend also can be found for French. The population that increased the most is the group that speaks other languages. The proportion of the group with other languages as mother tongue increased from 17.2% to 27.8% between 1981 and 2011; it is the same with the proportion as home language, the other languages group increasing from 10.1% to 18.6%.

Table 1 Population distribution by mother tongue and home language (Ontario and New Brunswick, 1981, 1991 and 2011)

<i>Ontario</i>						
<i>Language</i>	<i>Mother tongue</i>			<i>Home language</i>		
	<i>1981</i>	<i>1991</i>	<i>2011</i>	<i>1981</i>	<i>1991</i>	<i>2011</i>
<i>English</i>	77.3%	74.1%	68.3%	86%	84.3%	79.1%
<i>French</i>	5.5%	5.2%	3.8%	3.9%	3.4%	2.3%
<i>Other</i>	17.2%	20.7%	27.8%	10.1%	12.3%	18.6%
<i>Total</i>	100%	100%	100%	100%	100%	100%
<i>Number of francophones</i>	472000	521000	484600	336000	340000	2970000
<i>Total population</i>	8616000	9935000	1263200	8616000	9935000	1263200
<i>New Brunswick</i>						
<i>Language</i>	<i>Mother tongue</i>			<i>Home language</i>		
	<i>1981</i>	<i>1991</i>	<i>2011</i>	<i>1981</i>	<i>1991</i>	<i>2011</i>
<i>English</i>	65.1%	63.9%	65.1%	67.9%	67.7%	68.4%
<i>French</i>	33.7%	34.8%	32.0%	31.5%	31.6%	29.4%
<i>Other</i>	1.2%	1.3%	2.9%	0.7%	0.6%	2.2%
<i>Total</i>	100%	100%	100%	100%	100%	100%
<i>Number of Francophones</i>	234000	249000	235000	220000	226000	215700
<i>Total population</i>	697000	716000	734410	697000	716000	734410

Source: Census of Canada, 1981 and 1991 (from Grenier, 1997), 2011 National Household Survey public-use samples.

Things are different in New Brunswick. The proportion of the people who have English as mother tongue decreased a little bit between 1981 and 1991, but then it increased to 65.1% in 2011,

which is the same level as in 1981. In contrast, the proportion of people who have French as mother tongue increased from 33.7% to 34.8% between 1981 and 1991, and then it decreased to 32.0% in 2011. For the people who have English as a home language, the only increase is after 1991, and the proportion of people who use French as home language decreased a little from 1981 to 2011. The proportion with other languages as mother tongue or home language kept increasing from 1981 to 2011.

In both provinces, the use of other languages has an increasing trend and the use of French goes down. The increase in the use of other languages is caused by the expansion of immigration in Canada. As the table shows, more and more people use other languages in Ontario, while the increase in New Brunswick is small, at less than 2 percentage points, compared to around 9 percentage points in Ontario. Clearly, Ontario is the most attractive province for immigrants, as 33% of them settled down in Ontario in 2010 (Bonikowska, Hou, and Picot, 2015). From 1981 to 1991, there was a slight increase in the number of Francophones, for both mother tongue and home language definitions, in the two provinces, but between 1991 and 2011, the number of Francophones decreased in Ontario, while it kept relatively constant in New Brunswick. The total population increased in both provinces. In New Brunswick, it increased by 5.4% from 1981 to 2011, but the number of Francophones did not increase. In Ontario, the population increased by 46.7% between 1981 and 2011, but the number of people who use French at home decreased by 11.5%.

To see how people switch between languages, one can look at the ratio of the number of individuals speaking a language as home language to the number who have that language as mother tongue. From Table 2, we can see that the ratios for English are all greater than one and the ratios for French are all smaller than one. This result reveals the existence of assimilation to

English. In Ontario, the ratio for English increases from 1.11 in 1981 to 1.16 in 2011 and the one for French decreases from 0.71 in 1981 to 0.65 in 2011. This indicates that more people prefer to use English at home, even though their mother tongue is French. In addition, differently from the situation in 1981 and 1991, the ratio for other languages increases in 2011. Thus, in terms of assimilation to the majority language, the Francophones also face the challenge from the increased population whose mother tongue is another language, which comes mainly from immigration in Ontario.

In contrast, in New Brunswick, the ratio for English remained about the same, changing from 1.04 to 1.05 between 1981 and 2011, and the ratio for French decreased marginally between 1981 and 1991, and then increased slightly to 0.92 in 2011. The ratio for French in New Brunswick is very close to one, and it is higher than in Ontario. This shows that assimilation in New Brunswick is lower than in Ontario. The ratio for the other languages in New Brunswick decreased between 1981 and 1991, but it increased to 0.77 in 2011; this change seems to be caused by the increase in the number of immigrants.

Table 2 Ratio of home language to mother tongue (Ontario and New Brunswick, 1981, 1991 and 2011)

<i>Language</i>	<i>Ontario</i>			<i>New Brunswick</i>		
	<i>1981</i>	<i>1991</i>	<i>2011</i>	<i>1981</i>	<i>1991</i>	<i>2011</i>
<i>English</i>	1.11	1.14	1.16	1.04	1.06	1.05
<i>French</i>	0.71	0.65	0.63	0.94	0.91	0.92
<i>Other</i>	0.59	0.59	0.67	0.56	0.48	0.77

Source: Census of Canada 1981 and 1991 (from Grenier, 1997), 2011 National Household Survey public-use samples.

People who no longer use their mother tongue at home may lose the ability to speak and to write their mother tongue. Not surprisingly, marriages between different language groups influence the viability of French, and this also affects the mother tongues of the next generation.

(Iqbal, 2005). Furthermore, according to Landry (2003), only 20% of children in Canada (up to four years old) speak French at home if one of their parents is Francophone and live in a linguistically exogamous relationship.

Table 3 shows the proportion of children aged 14 or less for different mother tongue groups. In Ontario, the proportion for the French mother tongue group decreased from 18.2% in 1981 to 12.6% in 2011; this is much lower than for the English mother tongue group (19.7% in 2011). One of the reasons is that many children with one Francophone parent, especially father, can have English as mother tongue. In addition, the gap in the proportion between French and English mother tongue groups increased from 5.2 to 7.1 percentage points. In New Brunswick, the difference between French and English groups is only 0.7 percentage points in 1981, but this difference increased to 4.5 percentage points in 2011. The Francophones in New Brunswick were doing better than in Ontario between 1981 to 1991, but in 2011, both provinces show a similar situation. One interesting result is that, in Ontario, as the proportion in both English and French groups decreases, the one of the other languages group remains at a similar level from 1981 to 2011.

Table 3 Percentage of children aged 14 or less in the population, by mother tongue (Ontario and New Brunswick, 1981, 1991 and 2011)

<i>Mother tongue</i>	<i>Ontario</i>			<i>New Brunswick</i>		
	<i>1981</i>	<i>1991</i>	<i>2011</i>	<i>1981</i>	<i>1991</i>	<i>2011</i>
<i>English</i>	23.4%	23%	19.7%	25.3%	21.9%	17.2%
<i>French</i>	18.2%	15.8%	12.6%	24.6%	19.5%	12.7%
<i>Other</i>	12.9%	12.0%	12.0%	16.5%	11.1%	10.3%

Source: Census of Canada 1981, 1991 (from Grenier, 1997), and 2011 National Household Survey, public-use samples.

3.2 Socio-economic Characteristics

This paper compares the social and economic status of the Francophones and the Anglophones by looking at some socio-economic characteristics. Because these characteristics are mainly linked to the labour market, this analysis only includes people between 20 and 64 years old. In addition, this analysis only includes the mother tongues of English and French, the other mother tongues being left out.

Table 4 presents four relevant characteristics. According to Panel A, there are more Francophones with a low education level than there are Anglophones.¹ Also, New Brunswick has a higher proportion of people with low education level for both Francophones and Anglophones than Ontario. The interesting point is that the share of the population who have low-level education decreased dramatically for Francophones in both provinces, but the share of the population with low-level education for the Anglophone decreased from 1981 to 1991 and then increased. The gap between in low education between Francophone and Anglophone decreased dramatically from 14 to 2 percentage points in Ontario, and from 16.5 to 9.5 percentage points in New Brunswick.

Panel B of Table 4 shows the other end of the educational ladder. The proportion in both language groups with university level education in Ontario increased. The proportion of Francophones with high education increased sharply from 14.7% in 1981 to 27.0% in 2011. The share of the population with university education level for Francophones in New Brunswick also

¹ Unlike the censuses of 1981 and 1991, the NHS does not have the number of years of schooling. This paper created a variable year of education by using the individual's highest education level (see Appendix Table A1). For this variable, 8 years of schooling or less were assigned for those who have no certificate, diploma or degree.

increased, while the share for the Anglophones increased from 1981 to 1991, but it decreased slightly after 1991.

Panel C of Table 4 presents the proportion of the worker in the public and semi-public sector. In Ontario, relatively more Francophones than Anglophones work in the public and semi-public sectors, since many Francophones in Ontario work in the federal capital region of Ottawa. The government is officially bilingual, and this provides opportunities for Francophones. In New Brunswick, a higher percentage of Anglophones worked in the public sector than Francophones in 1981, but the proportion of Francophone increased. As New Brunswick became officially bilingual to serve the two official languages equally, the government had to fill a sufficient number of positions that can communicate in both French and English. Thus, in 2011, Francophones are more represented in those sectors than Anglophones

Finally, Panel D of Table 4 shows the proportion of people who are employed. In all the years, Anglophones have a higher employment rate than Francophones in both Ontario and New Brunswick. However, the employment rate of Francophones increased very fast and became close to the one of Anglophones in both provinces. In 2011, the gap between Francophones and Anglophones in the employment rate is only 1 percentage point in both Ontario and New Brunswick, while it was around 7 percentage points in 1981.

To summarize, Table 4 shows that Francophones in both provinces used to have fewer of the socio-economic characteristics that are associated with social and economic success than Anglophones, but Francophones are doing better than before. Specifically, the education levels and employment rates of Francophones are very close to those of Anglophones.

Table 4 Percentage of the population aged 20 to 64 with certain characteristics, by mother tongue (Ontario and New Brunswick, 1981, 1991 and 2011)

Characteristic and mother tongue		Ontario			New Brunswick		
		1981	1991	2011	1981	1991	2011
A.	People with less than nine years of schooling						
	English	10.1%	4.9%	10.0%	19.8%	10.8%	13.1%
	French	24.1%	13.2%	12.0%	36.3%	24.4%	22.6%
B.	People with university education						
	English	21.7%	26.6%	27.9%	16.6%	21.8%	21.3%
	French	14.7%	21.2%	27.0%	13.9%	17.6%	19.6%
C.	Workers in public and semi-public sectors						
	English	23.7%	25.4%	27.1%	27.1%	28.1%	29.8%
	French	28.1%	32.8%	38.1%	23.7%	28.6%	33.1%
D.	People who are employed						
	English	75.3%	76.8%	75.3%	64.4%	68.2%	70.8%
	French	69.1%	72.7%	74.0%	57.3%	60.3%	69.4%

Public and semi-public sectors include health, social services, education, and public administration.

For panels A, B and D, the denominator is the entire population aged 20 to 64; for panels C the denominator is only people who worked.

Source: Census of Canada 1981, 1991 (from Grenier, 1997), and 2011 National Household Survey, public-use samples.

As mentioned before, bilingualism becomes an asset for people who want to work for the federal or provincial government, especially for Francophones. Table 5 shows that most Francophones can speak both English and French. In Ontario, this proportion even reaches 94.1% in 2011, but in New Brunswick, only 78.6% of Francophone are bilingual in 2011. This is likely because the geographical separation of the language communities is more precise in New Brunswick than in Ontario. Most Anglophones speak English only in both provinces, but the proportion of Anglophones who are bilingual increased from 1981 to 2011.

Table 5 Population distribution by knowledge of the Canadian official languages, ages 20 to 64, by mother tongue (Ontario and New Brunswick, 1981, 1991 and 2011)

Official language(s) spoken	<i>English only</i>	<i>French only</i>	<i>English and French</i>	<i>total</i>
<i>English mother tongue</i>				
Ontario				
1981	92.4%	0%	7.5%	100%
1991	92.5%	0%	7.5%	100%
2011	91.7%	0%	8.3%	100%
New Brunswick				
1981	90.7%	0.1%	9.2%	100%
1991	89.7%	0.1%	10.2%	100%
2011	84.9%	0%	15.1%	100%
<i>French mother tongue</i>				
Ontario				
1981	3.3%	7.0%	89.7%	100%
1991	4.2%	4.9%	90.8%	100%
2011	3.3%	2.6%	94.1%	100%
New Brunswick				
1981	0.7 %	26.1%	73.2%	100%
1991	0.9%	27.1%	72.1%	100%
2011	0.8%	20.6%	78.6%	100%

Source: Census of Canada 1981, 1991 (from Grenier, 1997), and 2011 National Household Survey, public-use samples.

3.3 Economic Performance

To evaluate economic success, I use two concepts: total income, and wages and salaries. According to the census and the NHS, total income refers to monetary receipts from all sources, before income taxes and deductions. The sources include income from work, income from the government, income from investment, and other regular cash income. For the calculation of total income, this paper includes all individuals between 20 to 64 years old, no matter whether they work or not, and the income could be positive, negative, or zero. Wages and salaries refer to gross wages and salaries before deductions for such items as income tax, pensions and Employment Insurance. Since wage is related to the labour market, only individuals who worked

for pay and who have a positive wage are included. Since both 1981 and 1991 reported a maximum of \$100,000 and \$200,000 for those types of income, this paper also gives a limitation of wages and income at \$300,000. Salaries and wages and income higher than \$300,000 are dropped. Only 0.60% of the population in Ontario was dropped for that reason, and no value was dropped in New Brunswick.

Table 6 shows the mean values of total income and wages and salaries for the two language groups and by gender. In 1981, all Francophones have lower income than Anglophones in both provinces for both genders. It is very similar in 1991. Francophones have lower income than Anglophones, except women's wages and salaries in Ontario. However, things are different in 2011; Francophones are doing better than before, and some Francophones are now doing generally better than Anglophones. In 2011, only two categories show that Anglophones have a higher income than Francophones: total income for men in New Brunswick and wages and salaries for men in New Brunswick. The income gap between Francophones and Anglophones decreased from 1981 to 1991 and kept decreasing until 2011. In Ontario, the total income gap between French-speakers and English-speakers is higher than the gap for wages and salaries.

From Table 5 above, 94.1% Francophones in Ontario and 78.6% Francophones in New Brunswick can speak both English and French, but only 8.3% of Anglophones in Ontario and 15.1% Anglophones in New Brunswick can do so. The fact that they are bilingual could explain why Francophones earn more than Anglophones. In addition, Table 4 showed that Francophones' education levels increased sharply. In general, for both genders and language groups, total income and wages and salaries in Ontario are higher than in New Brunswick. Thus, the Francophones in Ontario show a better economic performance than those in New Brunswick.

However, this result may also relate to the higher cost of living in Ontario than in New Brunswick.

Table 6 Mean total income and wages and salaries, population aged 20 to 64, by sex and mother tongue (Ontario and New Brunswick, 1981, 1991 and 2011)

<i>Total income (including zero and negative incomes) (Current dollars)</i>						
	<i>Ontario</i>			<i>New Brunswick</i>		
	<i>1981</i>	<i>1991</i>	<i>2011</i>	<i>1981</i>	<i>1991</i>	<i>2011</i>
Women						
English	7,752	19,560	37,148	5,404	13,238	29,983
French	6,711	18,614	41,067	4,970	12,687	31,001
English/French	1.16	1.05	0.90	1.09	1.04	0.97
Men						
English	19,546	35,943	48,900	15,758	28,263	44,792
French	18,265	34,025	52,821	12,680	24,637	41,465
English/French	1.07	1.06	0.93	1.24	1.15	1.08
<i>Wages and salaries (excluding zero and negative wages) (Current dollars)</i>						
	<i>Ontario</i>			<i>New Brunswick</i>		
	<i>1981</i>	<i>1991</i>	<i>2011</i>	<i>1981</i>	<i>1991</i>	<i>2011</i>
Women						
English	9,441	21,193	30,536	7,576	15,219	22,637
French	9,297	21,425	33,202	6,823	14,160	23,404
English/French	1.02	0.99	0.92	1.11	1.07	0.97
Men						
English	18,948	34,527	41,959	15,774	27,519	38,869
French	18,302	33,717	43,564	12,298	23,001	33,254
English/French	1.04	1.02	0.96	1.28	1.20	1.17

Source: Census of Canada 1981, 1991 (from Grenier, 1997), and 2011 National Household Survey, public-use samples.

4. Regression Models

This paper further examines the economic position for the different language groups by using earnings regressions. In those regressions, I focus on mother tongue and home language.

The dependent variable is the natural logarithm of the annual wages and salaries of individuals in 2010.

Since the functions use the natural logarithm of the annual wages and salaries, the first restriction is that wages and salaries must be positive. A second restriction is that the age of a person is between 20 to 64. Since this paper focuses on Anglophones and Francophones, a third restriction is that the people who use other languages as mother tongue have been left out. The last restriction is that I impose a limitation for the wages and salaries in 2011 NHS, 300,000, which is same as the restriction on Table 6.

4.1 Earnings regression by mother tongue and home language.

To find how language influences wages, I first focus on gross gap, which is the log earnings gap between workers with different language characteristics without including any explanatory variable. In addition, this regression focuses on whether using English or French at home has an effect on earnings. There are two main language dummy variables: individual who speak French as mother tongue and also speak French at home (*French speak French*) and individual who speak French as mother tongue and speak English at home (*French speak English*). Anglophones who speak English at home are the reference category. The function is:

$$\ln Wages_i = \beta_0 + \beta_1 French\ speak\ French + \beta_2 French\ speak\ English + \varepsilon_i$$

In the second step, I estimate the net gap, which is the log earnings gap after including independent variables in the regression. The independent variables of this earning function are the same as in Grenier (1997) and can be classified into 4 categories: human capital, working status, demographic characteristics, and geographic characteristics.

The human capital variables are: *age*, *age squared*, *years of education*, and *years of education squared*. The 2011 National household survey only provides age group, so I reassigned the mid-point of the age group as individual's ages. Furthermore, the NHS does not have the years of education (or years of schooling), it only provides the highest certificate, diploma or degree. Thus, I create a new variable *year of education* by using the individual's highest education level, as shown in Appendix Table A1.

For the working status I include weeks worked and hours of work per week. For the weeks worked, I create 6 dummy variables: *Work 9 weeks* if the person worked 9 weeks or less, *Work 19 weeks* if the person worked 10 to 19 weeks, *Work 29 weeks* if the person worked 20 to 29 weeks, *Work 39 weeks* if the person worked 20 to 39 weeks, *Work 48 weeks* if the person worked 40 to 48 weeks, and *Work 52 weeks* if the person worked 48 to 52 weeks. The reference category for weeks worked is the group whose weeks worked are unknown. For the hours of work per week I have *Full Time* which is a dummy variable; if the person worked full time during the reference week, then the value of *Full Time* is 1; if the person worked part time, then the value of *Full Time* is 0.

The demographic characteristic of marital status is a dummy variable. The *marital status* is equal to 1 if an individual is legally married (and not separated) or living common law, and equal to 0 otherwise. The geographic characteristics is *Metropolitan Area*. The *Metropolitan Area* is a dummy variable; if the city is Toronto or Ottawa then the value is 1, otherwise it is 0. This independent variable is applicable only in Ontario.

$$\begin{aligned}
\ln \ln Wages_i = & \beta_0 + \beta_1 \text{French speak French} + \beta_2 \text{French speak English} + \beta_3 \text{Age} \\
& + \beta_4 \text{Age} * \text{Age} + \beta_5 \text{Education} + \beta_6 \text{Education} * \text{Education} \\
& + \beta_7 \text{Marital Status} + \beta_8 \text{Work 9 weeks} + \beta_9 \text{Work 19 weeks} \\
& + \beta_{10} \text{Work 29 weeks} + \beta_{11} \text{Work 39 weeks} + \beta_{12} \text{Work 48 weeks} \\
& + \beta_{13} \text{Work 52 weeks} + \beta_{14} \text{Full Time} + \beta_{14} \text{Metropolitan Area} + \varepsilon_i
\end{aligned}$$

These two regressions are estimated in the two provinces and by gender. Thus, every step will have four regressions, which are women in Ontario, men in Ontario, women in New Brunswick, and men in New Brunswick separately.

4.2 Earnings regression by mother tongue and knowledge of the Canadian official languages.

As I discussed before, the wages of the Francophones may be affected by the fact that they are bilingual, so this paper also focuses on how bilingualism effects wages. Thus, in this part I use the language categories of mother tongue and knowledge of the Canadian official languages. The knowledge of the Canadian official languages refers to the ability to conduct a conversation in English only, in French only, in both English and French, or in none of the official languages of Canada. The language groups are different from those of the last regression. This regression includes 4 language groups: Anglophones who are bilingual (*English Bilingual*), Francophones who are unilingual in English (*French Unilingual English*), Francophones who are bilingual (*French Bilingual*), Francophones who are unilingual in French (*French Unilingual French*). Anglophones who are unilingual in English are the reference category in this regression. One interesting category is Francophones who are unilingual in English. This not only shows the assimilation to English, but also the loss of the ability to speak French, and I only put this

variable into the regression of Ontario, because there are almost no observations in New Brunswick that have this characteristic.

As before, this regression also uses two steps. The first step is the gross gap:

$$\ln \ln Wages_i = \beta_0 + \beta_1 \text{English Bilingual} + \beta_2 \text{French Unilingual English} \\ + \beta_3 \text{French Bilingual} + \beta_4 \text{French Unilingual French} + \varepsilon_i$$

The second step is the net gap which includes the same variables as before for age, education, weeks worked, hours worked, marital status, and metropolitan area as independent variables:

$$\ln \ln Wages_i = \beta_0 + \beta_1 \text{English Bilingual} + \beta_2 \text{French Unilingual English} \\ + \beta_3 \text{French Bilingual} + \beta_4 \text{French Unilingual French} + \beta_5 \text{Age} + \beta_6 \text{Age} \\ * \text{Age} + \beta_7 \text{Education} + \beta_8 \text{Education} * \text{Education} + \beta_9 \text{Marital Status} \\ + \beta_{10} \text{Work 9 weeks} + \beta_{11} \text{Work 19 weeks} + \beta_{12} \text{Work 29 weeks} \\ + \beta_{13} \text{Work 39 weeks} + \beta_{14} \text{Work 48 weeks} + \beta_{15} \text{Work 52 weeks} \\ + \beta_{16} \text{Full Time} + \beta_{17} \text{Metropolitan Area} + \varepsilon_i$$

5. Empirical Results

5.1 Regression analysis on earnings by mother tongue and home language

The results in Table 7 show how different home languages for Francophones affect earnings, or it also can be understood as whether speaking English can influence the earnings of Francophones. The reference category is Anglophones who speak English at home. The hypothesis is that the Francophones who speak English at home will have higher earnings, since English is a dominant language in Canada.

In Ontario, speaking both English and French has a positive influence on women's earnings, compared to people who speak only English, and Francophones who speak French at home have higher earnings (estimated coefficient is 0.243) than Francophones who speak English at home (estimated coefficient is 0.103). These two positive influences are significant. In addition, the Francophone men who speak French in home have significant higher earnings than Anglophones, but the influence on earnings is smaller than that of women. Similar to women, the Francophone men who speak French at home have higher earnings than people who speak English at home.

In New Brunswick, only the coefficient of Francophone men who speak French at home is statistically significant, and the value of the coefficient is negative, showing that those men earn less than Anglophones. Thus, in both provinces, the initial hypothesis is not confirmed by the data, since the Francophones who speak English at home do not have higher earnings than Anglophones.

Table 7 Gross earnings gap from semi-logarithmic regressions, by sex, mother tongue and home language (English and French), persons aged 20 to 64 years with positive earnings (Ontario and New Brunswick, 2011)

VARIABLES	Ontario		New Brunswick	
	Women	Men	Women	Men
French, speak French at home	0.243*** (0.040)	0.094** (0.044)	0.050 (0.051)	-0.131*** (0.051)
French, speak English at home	0.103** (0.042)	0.063 (0.043)	0.183 (0.113)	0.134 (0.106)
Constant	10.074*** (0.007)	10.346*** (0.007)	9.885*** (0.029)	10.292*** (0.028)
Observations	55,968	55,995	4,232	4,537
R-squared	0.001	0.000	0.001	0.002

The stars besides the coefficients indicate the levels of significance for rejection of the null hypothesis that the coefficient is equal to zero: *** (1%), ** (5%), and * (10%).

Standard errors in parentheses

Source: 2011 National household survey, public-use samples.

Table 8 adds the independent variables in order to find the net influences of language attributes on earnings. Compared to Table 7, only one coefficient of the language groups in Ontario is significant. The coefficient estimates for women who speak French at home is 0.102, which is positive and significant at 1% level; this means that Francophone women who speak French at home have an earnings advantage compared to Anglophones. The coefficients of the other language groups in Ontario are all positive but they are not significant. In New Brunswick, the significant coefficient is for the Francophone women who speak French at home, and the value of the coefficient is also positive. Thus, in both Ontario and New Brunswick, Francophone women who speak French at home have higher earnings.

I also consider other variables in the regression. All coefficients of age in both provinces and genders are significant at the 1% level, and the value of the coefficients are all positive. Thus, age has a positive effect on people's earning, the older people can earn more. In addition, the value of the coefficient for men in Ontario is the highest. Years of schooling have totally different influence for Ontario and New Brunswick. In Ontario, years of schooling has positive effect on earnings, which means the longer people spend in school or the higher degree they get, the more wages they will earn. In contrast, the coefficient of years of schooling is negative in New Brunswick and significant at 5% level. In addition, years of schooling squared are all positive and significant for both provinces, so years of schooling affect earnings, but the effect is different between two provinces.

Marital status has a significant positive effect for earnings in Ontario. The women who are married and not separated earn 4.2% more than the women who are not married. Marital status for men even has a higher influence, the married men earning 17.1% more than the single men. In New Brunswick, marital status influences only the earnings of men, the influence for women being not significant. The influence for men earnings is 16.6%, which is close to the men in Ontario. The weeks worked include 6 dummy variables, the coefficients of the 6 dummy variables are all significant and positive for both genders and provinces. The more weeks people work, the higher the value of the coefficient. Similarly, all coefficients are significant and negative for part time work. The value of the coefficient is higher in Ontario than in New Brunswick, and the value for men is higher than that for women. The last variable of metropolitan area also has a positive effect on earnings in Ontario. The value of the coefficient is 0.121 for women and 0.073 for men.

Table 8 Net earnings gap from semi-logarithmic regressions, by sex, mother tongue and home language (English and French), persons aged 20 to 64 years with positive earnings (Ontario and New Brunswick, 2011)

VARIABLES	Ontario		New Brunswick	
	Women	Men	Women	Men
French speak French at home	0.102*** (0.033)	0.034 (0.036)	0.110*** (0.042)	0.011 (0.043)
French speak English at home	0.016 (0.034)	0.016 (0.035)	0.082 (0.092)	0.096 (0.089)
Age	0.091*** (0.004)	0.129*** (0.004)	0.092*** (0.013)	0.097*** (0.012)
Age squared	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
Education	0.015 (0.017)	0.029* (0.015)	-0.137** (0.053)	-0.112** (0.048)
Education squared	0.003*** (0.001)	0.001** (0.001)	0.010*** (0.002)	0.007*** (0.002)
Marital Status	0.042*** (0.013)	0.171*** (0.014)	0.023 (0.043)	0.166*** (0.046)
<i>Weeks Worked:</i>				
Worked less 9 weeks	1.285*** (0.047)	2.046*** (0.053)	0.802*** (0.167)	2.238*** (0.181)
Worked 10 to 19 weeks	2.051*** (0.043)	2.831*** (0.045)	2.039*** (0.144)	2.750*** (0.139)
Worked 20 to 29 weeks	2.520*** (0.042)	3.130*** (0.044)	2.326*** (0.145)	3.110*** (0.139)
Worked 30 to 39 weeks	2.771*** (0.043)	3.411*** (0.044)	2.729*** (0.149)	3.166*** (0.146)
Worked 40 to 48 weeks	3.035*** (0.038)	3.746*** (0.039)	3.001*** (0.137)	3.694*** (0.132)
Worked 48 to 52 weeks	3.259*** (0.035)	3.915*** (0.036)	3.168*** (0.128)	3.804*** (0.123)
Part time work	-0.897*** (0.015)	-1.036*** (0.021)	-0.645*** (0.049)	-0.918*** (0.076)
Metropolitan Area	0.121*** (0.012)	0.073*** (0.012)		
Constant	4.517*** (0.140)	3.451*** (0.129)	5.287*** (0.441)	4.962*** (0.401)
Observations	55,850	55,866	4,209	4,514
R-squared	0.323	0.338	0.336	0.308

The stars besides the coefficients indicate the levels of significance for rejection of the null hypothesis that the

coefficient is equal to zero: *** (1%), ** (5%), and * (10%).
Standard errors in parentheses
Source: 2011 National Household Survey, public-use samples.

5.2 Comparison with earlier results

Comparing my results to those of Grenier (1997) can help us see the changes in the last 30 years. In Appendix Table A2, none of the coefficient is significant in Ontario in 1981 and 1991 for the gross gap. However, in 2011, most of the coefficients for Francophones are positive and significant. This shows that Francophones in Ontario earn more than Anglophones. In New Brunswick for the gross gap, the coefficients for Francophones who speak French at home are significantly negative for both females and males in 1981 and 1991, which shows that Francophones who speak French at home earn less than Anglophones. In 2011, this situation still exists for the men, but not for the women. The changes in the negative value of the coefficient of Francophones who speak French at home show that the earnings gap between Francophones and Anglophones decreased. Furthermore, the earnings gap of Francophones who speak English at home were not significant in 1981 and 1991, and it is also the case in 2011.

For the net gap in Ontario, only the 1981 coefficient of Francophones had significant positive value, the other language categories having no significant differences between Francophones and Anglophones. In 2011, the females who speak French had a positive earnings gap compared to Anglophones. For New Brunswick, Francophones who speak French at home have higher earnings from 1981 to 2011.

5.3 Regression analysis on earnings by mother tongue and knowledge of official languages.

This regression analysis does a similar exercise as the previous one, but the focus is now on the knowledge of the official languages rather than on home language.

Table 9 shows the results from the gross gap model. In Ontario, the people who are bilingual have higher earnings, and this is significant for both Francophones and Anglophones. There is evidence that the Francophone men who lost their mother tongue and can speak only English earn less, with a coefficient is -0.391, and this value is significant at 5% level. However, this influence is not significant for women. Francophone women who can only speak French earn less than Anglophones, unlike the Francophone men who earn more than Anglophones. However, these influences are weak and none of them is statistically significant.

Unlike in Ontario, there is no evidence that bilingual Anglophones in New Brunswick earn more than unilingual ones. Female Francophones who are bilingual can increase their earnings by 16% compared to unilingual Anglophones, this influence being smaller than that in Ontario. In contrast, bilingual male Francophones have no significant difference with unilingual anglophones. However, unilingual Francophones earn less than Anglophones, with values of the coefficient being -0.252 and -0.530 for women and men respectively.

Table 9 Gross earnings gap from semi-logarithmic regressions, by sex, mother tongue and knowledge of the Canadian official languages, persons aged 20 to 64 years with positive earnings (Ontario and New Brunswick, 2011)

VARIABLES	Ontario		New Brunswick	
	Women	Men	Women	Men
English, Bilingual	0.131*** (0.023)	0.128*** (0.027)	0.100 (0.071)	0.021 (0.077)
French, Unilingual English	0.021 (0.175)	-0.391** (0.178)		
French, Bilingual	0.209*** (0.030)	0.101*** (0.032)	0.160*** (0.054)	-0.004 (0.052)
French, Unilingual French	-0.188 (0.196)	0.323 (0.250)	-0.252** (0.099)	-0.530*** (0.106)
Constant	10.060*** (0.008)	10.336*** (0.008)	9.865*** (0.032)	10.286*** (0.030)
Observations	55,968	55,995	4,232	4,537
R-squared	0.001	0.001	0.005	0.006

The variable “French, unilingual English” is not included in New Brunswick because there are very few individuals in that situation. The stars besides the coefficients indicate the levels of significance for rejection of the null hypothesis that the coefficient is equal to zero: *** (1%), ** (5%), and * (10%).

Standard errors in parentheses

Source: 2011 National Household Survey, public-use samples.

In the next step, I include the independent variables in Table 10 to estimate the net earnings gaps. After adding those variables in the regression, the coefficient of the men who are bilingual remains positive, but not significant for both Anglophones and Francophones in Ontario. In addition, the coefficient of Francophone men who are bilingual is also not significant. Thus, after adding the other variables that affect earnings, the language influence for men’s earnings is not significantly different between bilingual Francophones and Anglophones. For New Brunswick, the coefficients of unilingual Francophones are not significant, showing that being unilingual in French cannot be the reason of earnings gap between Francophones and Anglophones. Furthermore, the absolute value of all coefficients in this model are smaller than

those in gross gap model, which shows that as more variables are considered, the language influence on earnings decreases.

The other control variables have almost same influence as in the last model; all signs of the coefficients are same, and the values are also very close.

Table 10 Net earnings gap from semi-logarithmic regressions, by sex, mother tongue and knowledge of the Canadian official languages, persons aged 20 to 64 years with positive earnings (Ontario and New Brunswick, 2011)

VARIABLES	Ontario		New Brunswick	
	Women	Men	Women	Men
English, Bilingual	0.043** (0.019)	0.026 (0.023)	0.094 (0.059)	0.083 (0.066)
French, Unilingual English	0.018 (0.144)	-0.205 (0.147)		
French, Bilingual	0.070*** (0.025)	0.030 (0.026)	0.141*** (0.044)	0.040 (0.044)
French, Unilingual French	-0.025 (0.162)	0.231 (0.204)	0.070 (0.083)	0.023 (0.092)
Age	0.091*** (0.004)	0.129*** (0.004)	0.094*** (0.013)	0.098*** (0.012)
Age squared	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
Education	0.016 (0.017)	0.030** (0.015)	-0.135** (0.053)	-0.110** (0.049)
Education squared	0.003*** (0.001)	0.001** (0.001)	0.009*** (0.002)	0.007*** (0.002)
Marital Status	0.041*** (0.013)	0.171*** (0.014)	0.024 (0.043)	0.168*** (0.046)
Weeks Worked:				
Worked less 9 weeks	1.285*** (0.047)	2.046*** (0.053)	0.801*** (0.167)	2.242*** (0.181)
Worked 10 to 19 weeks	2.052*** (0.043)	2.831*** (0.045)	2.041*** (0.144)	2.747*** (0.139)
Worked 20 to 29 weeks	2.521*** (0.042)	3.129*** (0.044)	2.329*** (0.145)	3.109*** (0.139)
Worked 30 to 39 weeks	2.772*** (0.043)	3.411*** (0.044)	2.730*** (0.149)	3.168*** (0.146)
Worked 40 to 48 weeks	3.036***	3.746***	3.002***	3.695***

	(0.038)	(0.039)	(0.137)	(0.132)
Worked 48 to 52 weeks	3.260***	3.915***	3.166***	3.806***
	(0.035)	(0.036)	(0.128)	(0.123)
Work hours	-0.896***	-1.036***	-0.643***	-0.919***
	(0.015)	(0.021)	(0.049)	(0.076)
Metropolitan Area	0.120***	0.072***		
	(0.012)	(0.012)		
Constant	4.503***	3.446***	5.231***	4.920***
	(0.140)	(0.129)	(0.443)	(0.405)
Observations	55,850	55,866	4,209	4,514
R-squared	0.323	0.338	0.337	0.308

The stars besides the coefficients indicate the levels of significance for rejection of the null hypothesis that the coefficient is equal to zero: *** (1%), ** (5%), and * (10%).

Standard errors in parentheses

Source: 2011 National household survey, public-use samples.

5.4 Comparison with earlier results

Comparing my results to Grenier (1997) can help us understand the changes in the last 30 years. From Appendix Table A3, looking at the gross gap, speaking only French in Ontario decreases earnings, but the evidence is very weak. In 2011, this evidence is still weak, but it becomes positive for men. Anglophones who are bilingual earn more in both 1991 and 2011. For New Brunswick, there is strong evidence that unilingual Francophones earn less than Anglophones in both 1991 and 2011, but the earnings gap between unilingual Francophones and Anglophones decreases. In 1981 and 1991, Francophone men who were bilingual had lower earnings than Anglophones, and Francophone women had higher but not significant earnings. The results for 2011 are different; the signs of the coefficients for men and women are still the same, but the women's coefficient becomes significant while men's influence is still not significant. Bilingual Francophone women earn more than Anglophones in 2011. Until 2011, there was no evidence that being bilingual had a reward for Anglophones, but being bilingual

indeed brought benefits for Francophone women. In addition, we can see that the gap for Francophone men declined in the last 20 years.

When the net gap is considered, there is no evidence that shows that bilingualism increased earnings for Ontario in 1991. However, in 2011, both female Francophones and Anglophones who are bilingual have a significant earnings advantage. For New Brunswick, in both 1991 and 2011, the coefficients of bilingual Francophone men are positive and significant, and the value of the coefficient increases. This shows that the Francophone men who are bilingual earn more than Anglophones, and this earnings advantage increased from 1991 to 2011.

6. Immigration in Ontario

Immigration has become more and more important in Canada. The proportion of immigrants in the total population in 1981 was 16.1%, and it increased to 20.6% in 2011. Ontario, as the largest province, has received the greatest number of immigrants, 53% of all immigrants in Canada having settled down in Ontario, and the foreign-born residents representing 28.5% of the total population (NHS, 2011). In contrast, immigrants in New Brunswick represent only a very small proportion of the population. Since immigration has an important influence on the economic condition of Francophones in Ontario, a specific analysis is done in this section.

6.1 Descriptive Statistics

Table 11 shows the distribution by mother tongue and home language of immigrants in Ontario in 2011. About one quarter of the immigrants have English as mother tongue and the largest number of immigrants (73.2%) have another language as mother tongue. However, the proportion of immigrants who speak English at home is higher (48%), and the proportion who

speak another language at home is smaller. This shows that the level of assimilation to English from speakers of other languages is very high. In addition, only 0.8% of the immigrants have French as mother tongue, but the good thing is that 0.7% of immigrants can protect their language and use French in home. Thus, even though only a few immigrants are Francophones, they can protect and keep using their language, which is better than immigrants from other mother tongues in Ontario.

Table 11 Population distribution by mother tongue and home language for immigrants in Ontario (2011)

<i>Language</i>	<i>Mother tongue</i>	<i>Home language</i>
<i>English</i>	26.0%	48.0%
<i>French</i>	0.8%	0.7%
<i>Other languages</i>	73.2%	51.3%
<i>Total</i>	100%	100%
<i>Number of francophones</i>	30,300	30,300
<i>Total population</i>	3,617,700	3,617,700

Source: 2011 National Household Survey public-use samples.

6.2 Economic Performance

To examine the economic position for the different language groups of immigrants, I use the same regression model as before, earnings regression. However, this regression will include workers with other languages as mother tongue, since most immigrants belong to that group.

In this regression, the main independent variables are the characteristics of speaking French at home and speaking another language at home, with speaking English at home being the reference category. As in section 4, first I do a gross earnings gap regression:

$$\ln \ln Wages_i = \beta_0 + \beta_1 French + \beta_2 Other\ language + \varepsilon_i$$

Then the second regression considers net earnings gap, which includes the same control variables that I used in Table 8 and Table 10, with the addition of two variables: country of origin and years since immigration. The countries are divided by continent: America, Europe, Africa, and Asia (and rest of the world), with immigrants from the United Kingdom and the United States as the reference category.

$$\begin{aligned}
 \ln \ln Wages_i = & \beta_0 + \beta_1 French + \beta_2 Other\ language + \beta_3 Age + \beta_4 Age * Age \\
 & + \beta_5 Education + \beta_6 Education * Education + \beta_7 Marital\ Status \\
 & + \beta_8 Work\ 9\ weeks + \beta_9 Work\ 19\ weeks + \beta_{10} Work\ 29\ weeks \\
 & + \beta_{11} Work\ 39\ weeks + \beta_{12} Work\ 48\ weeks + \beta_{13} Work\ 52\ weeks \\
 & + \beta_{14} Full\ Time + \beta_{14} Metropolitan\ Area + \beta_{15} Country\ of\ origin \\
 & + \beta_{16} Years\ since\ Immigration + \varepsilon_i
 \end{aligned}$$

The results in Table 12 show how different home languages affect the earnings of immigrants in Ontario. Speaking French at home has a positive effect on earnings, for both men and women, but this influence is not significant in neither the gross gap nor the net gap regressions. In contrast, using other languages at home leads to lower earnings compared to using English. Those coefficients are negative and significant at the 1% significance level, and the effects for the women are larger than those for the men in both the gross gap and the net gap regressions. This could be one reason why Francophone immigrants can keep using their language more than those from other mother tongues.

Table 12 Earnings gap for immigrations from semi-logarithmic regressions, by sex, home language (French and other languages), persons aged 20 to 64 years with positive earnings (Ontario, 2011).²

	<i>Gross gap</i>		<i>Net gap</i>	
	<i>Women</i>	<i>Men</i>	<i>Women</i>	<i>Men</i>
<i>Gap relative to English home language</i>				
<i>French</i>	0.003 (0.109)	0.102 (0.106)	0.137 (0.106)	0.105 (0.103)
<i>Other language</i>	-0.284*** (0.022)	-0.194*** (0.020)	-0.137*** (0.023)	-0.127*** (0.022)
R-squared	0.007	0.004	0.275	0.266
Sample size	24,601	24,570	22,805	22,854

The stars besides the coefficients indicate the levels of significance for rejection of the null hypothesis that the coefficient is equal to zero: *** (1%), ** (5%), and * (10%).

Standard errors in parentheses

Source: 2011 National Household Survey public-use samples.

7. Conclusion

This paper has investigated the linguistic and economic position of Francophones in Ontario and New Brunswick based on the 2011 NHS. Here are some important findings:

First, Assimilation to English is higher in Ontario than in New Brunswick in 2011, which is not very surprising given the particularly large influence of Anglophones in Ontario. In addition, in both provinces, assimilation has increased since 1991. Between 1981 and 1991, Francophones were able at least to maintain their numbers and the population increased slightly. However, in 2011, the number of Francophones decreased in both provinces and their share in the total population also dropped.

² The net gap is the gap after including in the regression the following variables: age, age squared, education, education squared, marital status (2 dummy variables), weeks worked (6 dummy variables), part-time work (2 dummy variables), metropolitan area (for Ontario only, Toronto and Ottawa), country of origin, and years since immigration.

Second, Francophones have fewer of the socio-economic characteristics that are associated with social and economic success than Anglophones in both provinces. However, the gap between Francophones and Anglophones is decreasing in education level and employment rate. Furthermore, there is an important characteristic in which Francophones perform better in both provinces, which is the ability to use two languages.

Third, Francophones in Ontario have higher wages and income than those in New Brunswick. In addition, one interesting result is that in New Brunswick the wage gap for men and women are different. Francophone women earn more than Anglophone ones, while Francophone men earn less than Anglophone ones. In the past, it was quite different, since in 1981 and 1991, Anglophones had higher incomes and wages than Francophones.

In addition, to investigate the effect of language on earnings, this paper used two earnings functions, one focusing on mother tongue and home language, and the other one focusing on mother tongue and knowledge of the Canadian official language. In the first model, there is evidence that Francophone women who speak French at home have higher earnings than Anglophones. This is different from before; in 1991, no coefficient of the language variables was significant for Ontario, and in New Brunswick, speaking French at home had a negative influence on the earnings of Francophone women.

In the second model, looking at the gross gap, the most significant finding in Ontario is that the people who are bilingual have higher earnings for both Francophones and Anglophones, while this influence could only be found for Anglophone men in 1991. In New Brunswick, it is not surprising to find that people who are unilingual in French have had lower earnings since

1981. Looking at the net gap, the earnings advantage for being bilingual only can be found for women.

Finally, for the immigrants in Ontario, using French at home brings an insignificant earnings advantage, but the people who use other languages at home have a significant earnings disadvantage compared to English-speakers. Thus, immigration does not have a negative influence on the earnings for Francophones.

Actually, to encourage more people to learn French in Canada, a number of French as second language programs have been established for students: Core French, Extended French, and French Immersion. According to Canadian Parents for French (2017), the average student enrolment rate of core French in Canada is 35.9% in 2016, and the average student enrolment rate of French immersion in Canada is 11.3 % in 2016. However, while these programs are offered in all Canadian provinces, different provinces show different acceptability. For example, the core French programs aimed to provide students with the ability to communicate fully in French are offered in both Ontario and New Brunswick, and the student enrolment rate is 57.7% in New Brunswick and 40.6% in Ontario in 2016. Even though the rate is lower in Ontario, both provinces have higher rates than the average level in Canada. The French immersion program shows a smaller proportion in these two provinces. The student enrolment rate was only 8.5% in Ontario in 2012, and it increased to 11.3% in 2016. This rate in New Brunswick was 24.2% in 2012, which was the second highest rate across all provinces, and it increased to 28.5% in 2016. Thus, both Ontario and New Brunswick are trying to improve the use of French, but with the limitation of the financial support from the government, there is a limit on what can be done by the government.

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Appendix

Table A1: Construction of number of years of schooling variable

Highest certificate, diploma or degree	Estimated years of schooling
No certificate, diploma or degree	8
High school diploma or equivalent	12
Trades certificate or diploma (other than apprenticeship) ; Registered Apprenticeship certificate; College, CEGEP or other non-university certificate or diploma from a program of 3 months to less than 1 year	13
College, CEGEP or other non-university certificate or diploma from a program of 1 year to 2 years	14
College, CEGEP or other non-university certificate or diploma from a program of more than 2 years; University certificate or diploma below bachelor level	15
Bachelor's degree	16
University certificate or diploma above bachelor Level; Degree in medicine, dentistry, veterinary medicine or optometry	17
Master's degree	18
Earned doctorate degree	22

Table A2 Earnings gap from semi-logarithmic regressions, by sex, mother tongue and home language (English and French), persons aged 20 to 64 years with positive earnings (Ontario and New Brunswick, 1981 and 1991)

<i>Gap relative to English mother tongue</i>	<i>Women</i>				<i>Men</i>			
	<i>Ontario</i>		<i>New Brunswick</i>		<i>Ontario</i>		<i>New Brunswick</i>	
	<i>1981</i>	<i>1991</i>	<i>1981</i>	<i>1991</i>	<i>1981</i>	<i>1991</i>	<i>1981</i>	<i>1991</i>
<i>Gross gap</i>								
<i>French, speaks French</i>	-0.001 (0.072)	0.025 (0.048)	-0.132** (0.053)	-0.116*** (0.039)	-0.044 (0.048)	0.004 (0.042)	-0.342*** (0.037)	-0.252*** (0.030)
<i>French, speaks English</i>	-0.098 (0.080)	0.028 (0.053)	0.084 (0.121)	0.119 (0.084)	0.068 (0.055)	0.029 (0.045)	-0.036 (0.075)	0.022 (0.062)
<i>Net gap</i>								
<i>French, speaks French</i>	0.080 (0.050)	0.053 (0.038)	0.123** * (0.039)	0.060** (0.031)	0.072** (0.036)	0.045 (0.034)	0.005 (0.027)	-0.011 (0.024)
<i>French, speaks English</i>	0.007 (0.055)	0.014 (0.041)	0.074 (0.085)	0.099 (0.063)	0.079* (0.041)	0.013 (0.036)	0.059 (0.053)	0.047 (0.048)
<i>R2</i>	0.544	0.407	0.519	0.430	0.467	0.387	0.525	0.417
<i>Sample size</i>	6,792	13,603	2,060	4,149	8,788	15,167	2,034	5,077

The numbers in parentheses are the standard errors of the coefficients.

The stars besides the coefficients indicate the levels of significance for rejection of the null hypothesis that the coefficient is equal to zero: *** (1%), ** (5%), and * (10%).

Source: Census of Canada 1981, 1991 (from Grenier, 1997)

Table A3 Earnings gap from semi-logarithmic regressions, by sex, mother tongue and knowledge of the Canadian official languages, persons aged 20 to 64 years with positive earnings (Ontario and New Brunswick, 1981 and 1991)

<i>Gap relative to English unilingual</i>	<i>Women</i>				<i>Men</i>			
	<i>Ontario</i>		<i>New Brunswick</i>		<i>Ontario</i>		<i>New Brunswick</i>	
	<i>1981</i>	<i>1991</i>	<i>1981</i>	<i>1991</i>	<i>1981</i>	<i>1991</i>	<i>1981</i>	<i>1991</i>
<i>Gross gap</i>								
<i>English, bilingual</i>	-0.007 (0.050)	0.106*** (0.034)	-0.008 (0.100)	-0.024 (0.068)	0.075** (0.037)	0.060* (0.032)	0.107 (0.069)	-0.079 (0.057)
<i>French, unilingual English</i>	-0.078 (0.30)	-0.112 (0.173)			-0.102 (0.194)	-0.046 (0.149)		
<i>French, bilingual</i>	-0.026 (0.057)	0.061 (0.038)	0.012 (0.057)	0.005 (0.042)	0.020 (0.038)	0.030 (0.033)	0.222 (0.038)	-0.128 (0.031)
<i>French, unilingual</i>	-0.386 (0.245)	-0.464** (0.193)	-0.453*** (0.090)	-0.350*** (0.063)	-0.124 (0.170)	-0.187 (0.171)	-0.556*** (0.067)	-0.579*** (0.053)
<i>Net gap</i>								
<i>English, bilingual</i>	-0.034 (0.035)	0.018 (0.027)	-0.017 (0.071)	0.026 (0.052)	0.0002 (0.028)	0.015 (0.026)	0.090 (0.049)	0.045 (0.050)
<i>French, unilingual English</i>	0.027 (0.208)	0.075 (0.133)			0.051 (0.142)	0.075 (0.117)		
<i>French, bilingual</i>	0.043 (0.039)	0.043 (0.030)	0.098** (0.041)	0.076** (0.033)	0.073** (0.029)	0.029 (0.026)	0.007 (0.027)	0.005 (0.025)
<i>French, unilingual</i>	0.067 (0.166)	-0.193 (0.149)	0.183*** (0.068)	0.048 (0.050)	0.141 (0.125)	0.035 (0.134)	0.100** (0.050)	-0.019 (0.043)
<i>R²</i>	0.544	0.407	0.519	0.433	0.468	0.387	0.525	0.417
<i>Sample size</i>	6,791	13,600	2,035	4,135	8,784	15,166	3,025	5,054

The numbers in parentheses are the standard errors of the coefficients.

The stars besides the coefficients indicate the levels of significance for rejection of the null hypothesis that the coefficient is equal to zero: *** (1%), ** (5%), and * (10%).

Source: Census of Canada 1981, 1991 (from Grenier, 1997)