Language as an Important Determinant of Poverty in the Aging Francophone Minority Population in Canada

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Abstract: Six cycles of the Canadian Community Health surveys (CCHS) from 2001 to 2009 were used to compare the income and health of the minority French-speaking aging population (over 65 years of age) to the majority English-speaking group in Canada, excluding Quebec. A sequential multivariate logistic regression analysis showed that men and women of the minority French-speaking population of this age group, living in Canada outside the province of Quebec, are more likely to be in the poorest income quintile than their English-speaking counterparts. This disparity remains significant even after controlling for residence (province and urban/rural), household makeup (living alone or not), immigration status, education, employment, health status, chronic diseases, and restrictions in activities. Independently of other key socio-demographic factors modulating health, our results also show that being in the poorest income quintile is associated with a poor self-perceived health, a finding that was more prevalent in the French-speaking aging population living in situation of minority.

Keywords: Minority Francophone Population, Aging, Low Income, Poverty, Health, Canada.

Introduction

Francophone minorities in Canada represent approximately one million people living outside the province of Quebec, of which, 51% live in the province of Ontario (4.5% of the total population of that province) and 22% live in New Brunswick (32.7% of the total population of that province). In the remaining provinces, the Francophone population accounts for less than 4% of the population (Statistics Canada, 2006). According to the 2006 census, the number of elderly Canadians, defined here as people of 65 years old or more, are over four million, constituting 13% of the total population. The population aged 80 and over increased significantly reaching one million. In Canada, the average life expectancy is 78 years for men and 83 years for women (Statistics Canada, 2007). The aging of the population is more marked in the French population living in a situation of linguistic minority in Canada, where the elders represent 20% of that population. Saskatchewan is the province with the highest proportion of elders, with 34% of the French population aged 65 and over, followed by Prince Edward Island, with 26% and Manitoba, with 24% (Bouchard et al., 2011).

Studies on a number of determinants have shown that the health status of minority Francophones is generally poorer than that of their fellow Anglophones in any given province (Health Canada, 2001). The Francophone population outside Quebec is older, has less schooling and less income and is in general more represented in the lowest socioeconomic groups (Bélanger et al. 2011; Bouchard, 2011; Bouchard et al. 2009). These French-speaking minority groups in Canada are more likely to declare a poorer health condition than the majority English speaking groups. These conditions are attributed to circumstances of life in a minority situation (Bouchard et al. 2009).

The International Journal of Aging and Society
Volume 2, 2013, www.agingandsociety.com, ISSN 2160-1909

COMMON GROUND

In a previous study, we found that language was an important determinant of health in the Francophone population living in Canada outside the province of Quebec (Bouchard et al. 2009). In the present study, we sought to determine the relationship between language and poverty. Francophones older than 65 years are the focus of this study because, in general, the elderly population is poorer, more deprived and less healthy (Hardy and Hazelrigg, 1995). We therefore hypothesize that members of the Francophone population over 65 years are more represented in the lowest quintile of incomes and that their health situation is worse than that of their Anglophone majority counterparts.

Methods

Data from six cycles of the Canadian Community Health surveys (CCHS) from 2001 to 2009 (2001, 2003, 2005, 2007, 2008 and 2009) was used for this analysis. There are 131,535 observations in the CCHS 2001, 135,573 observations in the CCHS 2003, 132,947 observations in the CCHS 2005, 131,959 observations in the CCHS 2007, 66,013 observations in the CCHS 2008 and 61,679 observations in the CCHS 2009. We merged these surveys to increase the sample size of French speakers and to have information from several years. Since in Quebec, the majority of the population is French speaking, we excluded the population of this province. Some variables had missing observations. Since the distribution of missing values didn't differ across the language groups, we assumed that the bias introduced by the missing values was negligible. After these restrictions and having dropped observations with missed information, our sample consisted of 33,925 men (32,673 Anglophones and 1,252 Francophones) and 45,556 women (43,684 Anglophones and 1,872 Francophones). In order to ascertain if the minority French-speaking population - men and women- older than 65 years in Canada outside Quebec, was more likely to be in the poorest income quintile than their English-speaking counterparts, a sequential additive multivariate logistic regression model was run according to equation (1). The regression was estimated separately for men and women as follows:

$$Low\ QI^{i}_{j} = \beta_{j0} + \beta_{j1} LANG^{i}_{j} + \beta_{j2} Province^{i}_{j} + \beta_{j3} Urban^{i}_{j} + \beta_{j4} Immigrant^{i}_{j} + \beta_{j5} Alone^{i}_{j} + \beta_{j6} Edu^{i}_{j} + \beta_{j7} Job^{i}_{j} + \beta_{j8} Health^{i}_{j} + \epsilon_{j}^{i} \qquad j = \text{men or women} \quad (1)$$

Where $Low\ QI^{i}$ is 1 if individual i is in the low household income quintile and 0 otherwise as it is explained in the appendix. The variable household income quintile was adjusted for provinces and household size by Statistics Canada. $LANG^{i}$ is 1 for Francophones and 0 for Anglophones. This language variable was created based on Bouchard et al. (2009) using language of conversation, mother tongue, language of interview and preferred language for the interview (See Figure 1). $Province^{i}$ is the dummy variable for the Canadian province where the individual lives, and $Urban^{i}$ is a binary variable; that is 1 when the individual i lives in an urban area and 0 otherwise. $Immigrant^{i}$ is 1 for immigrants and 0 otherwise. $Alone^{i}$ is also a binary variable where 1 represents a person living alone and 0 otherwise. Edu^{i} is a vector of 3 dummy variables for education levels: secondary degree, some post-secondary education or college, and university degree (the reference group is less than secondary degree education). Job^{i} is 1 if the individual i is currently working and 0 otherwise. $Health^{i}$ denotes a vector of health condition, chronic diseases and restriction of activities. Finally, ϵ_{j}^{i} is the error term.

We used the bootstrap method to estimate the variance of logistic regression coefficients (Korn and Graubard, (1991); Rao et al. (1992); Rust and Rao, (1996)) and added the variables in four steps (the variables used were the most commonly utilized in these studies and the ones available in the CCHS). Firstly, we estimated the impact of province, urban/rural area, immigrant status, and living alone on the likelihood of being in the first income quintile. Secondly, we added education

to other explanatory factors; thirdly, we included employment status of individuals to the model. Lastly, health status, restriction in activities, and chronic diseases were added to the model. The appendix contains the definitions of all of the variables used in this study. All the regressions and descriptive analysis are weighted using the person's weight variable.

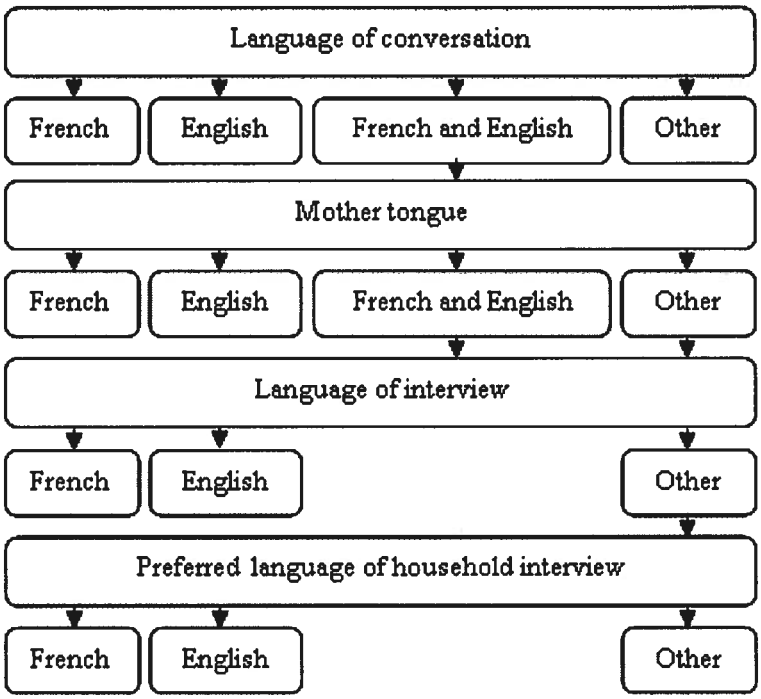

Figure 1: Language Diagram

Results

Characteristics of the Population

Table 1 shows the average percentile values of the variables of interest for men and women. We compared the whole sample of Francophones and Anglophones over 65 years from all the provinces of Canada with the exception of Quebec.

Among men older than 65 years, a higher percentage of Francophones than Anglophones were in poorest income quintile (28% compared to 24%). This difference was much higher among women. On average, 46% of Francophone women older than 65 years were in the poorest income quintile, compared with 37% of Anglophone women. Also, a higher percentage of Anglophones lived in urban areas (78% compared to 64 % for men and 82% compared to 66% for women).

Immigrants were more represented among the Anglophone population, with approximately 31% of the population being immigrant. In contrast, immigrants represented only 10% of the Francophone population. The percentages of Francophones and Anglophones living alone were the same; however, on average, more women lived alone than men (40% vs. 20%). Francophones had significantly less formal education than Anglophones. For example, 1.57 times more Francophone men than Anglophone ones didn't have a high school diploma (55% vs. 35% for Francophones and Anglophones respectively). The same gap was observed among women. In all educational categories, Francophones of both sexes lagged behind their Anglophone counterparts. More Francophones than Anglophones were not working in this age group.

More Anglophone men (40%) and women (41%) reported having very good or excellent health, compared to 32% of the Francophone men and 31% of the Francophone women; whereas a greater proportion of Francophones reported having poor or fair health (32% of the Francophone men compared to 26% of the Anglophone men).

Table 1: Characteristics of Francophone and Anglophone men and women over 65 years old (Percentages). All provinces except Quebec. 2001 to 2009

	Men		*Women*	
	Anglophones	***Francophones***	*Anglophones*	***Francophones***
	(n=32,673)	**(n=1,252)**	(n=43,684)	**(n= 1,872)**
	%	%	%	%
Socio-demographic factors				
Being in the poorest income quintile	24	**28**	37	**46**
Urban	78	**64**	82	**66**
Immigrants	31	**10**	27	**9**
Person living alone	19	**18**	42	**40**
Education				
Less than secondary degree	35	**55**	38	**62**
Secondary degree	14	**5**	20	**10**
Postsecondary education without a diploma /college	35	**25**	34	**21**
Diploma or certificate from university	17	**15**	8	**7**
Employment				
Currently not working at a job	71	**80**	86	**93**
Perceived health				
Poor	8	**9**	7	**6**
Fair	18	**23**	18	**21**
Good	33	**36**	34	**42**
Very good	28	**22**	29	**21**
Excellent	12	**10**	12	**10**
Restriction of activities				
Never	49	**51**	46	**53**
Sometimes	25	**19**	26	**24**
Often	26	**30**	27	**23**
Chronic diseases				
Asthma	6	**8**	8	**9**
Arthritis	37	**39**	54	**52**
Back problems	25	**27**	29	**23**
Blood pressure	41	**38**	48	**48**
Migraine	3	**3**	6	**6**
COPD	8	**10**	7	**8**
Diabetes	18	**16**	13	**14**
Heart disease	22	**23**	17	**17**
Cancer	8	**8**	5	**4**
Ulcers	4	**5**	4	**7**
Stroke	5	**5**	4	**3**
Bowel disorder	4	**4**	8	**7**

These numbers are weighted

Characteristics of the Population in the Lowest Quintile of Income

Table 2 compares Francophones and Anglophones men and women older than 65 years who are situated in the poorest quintile of income.

Anglophones and Francophones older than 65 years, in the lowest quintile, had less formal education in comparison with the general population of people over 65 years. In both groups, the majority of the population did not have a high school diploma, but the percentage was much higher for the Francophone population, where more than 70% did not have a high school degree. In the female Francophone population in this quintile of income, there were no women with university degrees. Also, in both groups, there was more proportion of elders living alone in this quintile of income then in the general elderly population (30% vs. 19% for Anglophone men; 28% vs. 18% for Francophone men).

Although a greater proportion of Francophones than Anglophones (39% vs. 37% of men) in the same quintile of income perceived their health as being poor and fair, in general, the population of this quintile had a worse perception about their health than the general population of the same linguistic groups (39% vs. 32% for Francophone men, as an example) and reported having more chronic diseases of all categories (See the proportion of chronic diseases in Table 2 vs. Table 1).

Table 2: Characteristics of Francophone and Anglophone men and women over 65 years old (Percentages). First income quintile. All provinces except Quebec. 2001 to 2009

	Men		*Women*	
	Anglophones	***Francophones***	*Anglophones*	***Francophones***
	(n=8,368)	**(n=420)**	(n= 18,482)	**(n=1,017)**
	%	%	%	%
Socio-demographic factors				
Urban	83	**65**	86	**69**
Immigrants	39	**7**	31	**5**
Person living alone	30	**28**	61	**55**
Education				
Less than secondary degree	49	**72**	51	**77**
Secondary degree	12	**5**	18	**7**
Postsecondary education without a diploma /college	31	**18**	27	**16**
Diploma or certificate from university	8	**5**	4	**0**
Employment				
Currently not working at a job	83	**89**	92	**96**
Perceived health				
Poor	12	**10**	10	**9**
Fair	25	**29**	23	**26**
Good	33	**37**	35	**40**
Very good	21	**14**	24	**18**
Excellent	9	**10**	8	**7**
Restriction of activities				
Never	44	**53**	40	**49**
Sometimes	25	**18**	28	**23**
Often	32	**29**	32	**29**
Chronic diseases				
Asthma	8	**14**	10	**11**
Arthritis	40	**42**	58	**51**
Back problems	28	**25**	33	**23**
Blood pressure	43	**38**	51	**49**
Migraine	4	**5**	6	**5**
COPD	10	**12**	9	**10**
Diabetes	20	**15**	16	**14**
Heart disease	24	**28**	20	**19**
Cancer	8	**7**	5	**6**
Ulcers	6	**7**	6	**8**
Stroke	7	**2**	5	**4**
Bowel disorder	4	**2**	8	**7**

These numbers are weighted

Regression Analysis

Figure 2 shows the odd ratios for being in the lowest quintile of income, comparing Francophones with Anglophones, according to the sequential additive multivariate logistic model.

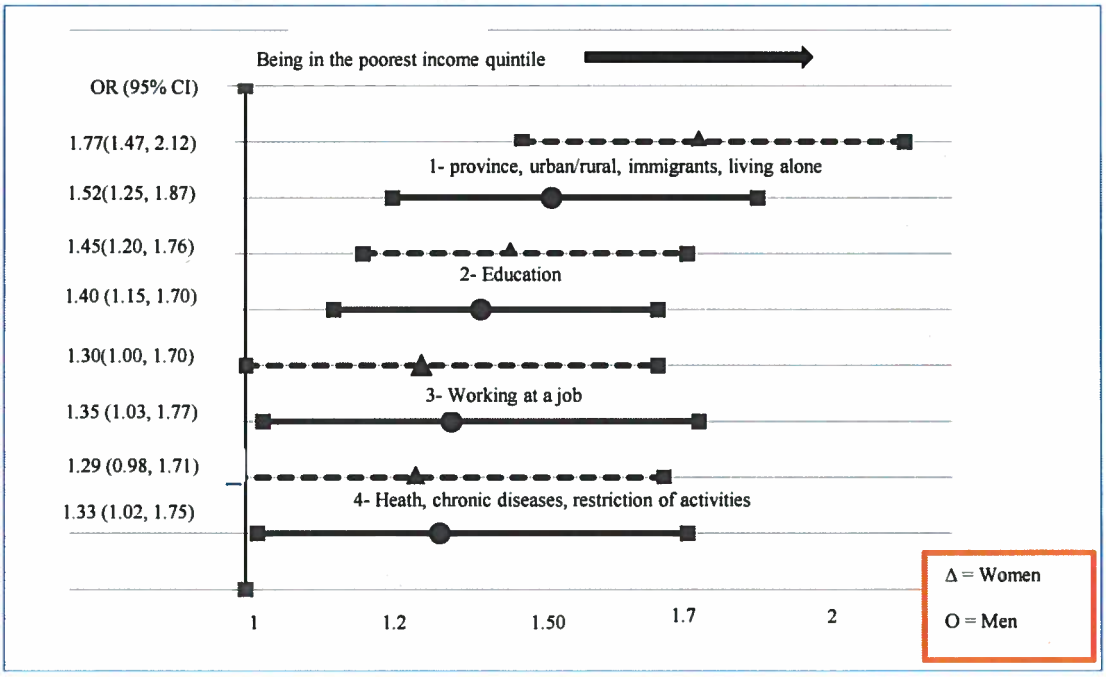

Figure 2: Odds ratio relating the population of higher income to the population of lowest income for Francophones versus Anglophones older than 65 years. Canada, except Quebec. 2001-2009

Note: The dependent variable is being in the poorest income quintile. In the first step the variables language, provinces, urban/rural, immigrants, and living alone were controlled for. In step two and three, education and employment respectively were additionally controlled for. Finally, in step 4, we controlled for health status (perceived health, chronic diseases and restriction in activities).

The results show that after controlling for major social determinants associated with poverty -such as area and province of residence, immigration status, living alone, education, employment and health - Francophone men older than 65 years were 1.33 times at higher risk of being in the poorest income quintile (95% CI: 1.02, 1.75), and Francophone women of the same age group were 1.29 times more likely to be in the poorest income quintile than the majority English-speaking population over 65 years (95% CI: 0.98, 1.71).

Discussion

Consistent with previous research (Bélanger, et al. 2011; Bouchard, 2009), the present study shows that the Francophone population older than 65 years is more rural, poorer and less educated than the Anglophones of the same age group. A higher proportion of Francophones had a worse perception of their health than the Anglophones. Our results also demonstrate that in both language groups, the population of the poorest quintile of income reported having more chronic diseases than the elderly population with all income brackets combined.

Since health is strongly related to income (Humphries and Van Doorslaer, 2000; Van Doorslaer et al. 1997; Cairney and Arnold, 1996; and Kotler-Berkowitz, 2009) and socioeconomic status (Marmot, 2007), we sought important to understand the link between linguistic minority status and income.

The level of income is influenced by different conditions. Miles (1997) found that the number of people living in a household and the number of employed members were two important explanatory variables of the household income. Age, gender and education of the head of household and area of residence were other factors that affected household income (Wilder et al. 1999). Similarly, it was shown that income was affected by most of the socioeconomic factors such as age, size of the household, marital status, gender, race, immigration, education, and occupation (Elmelech and Lu, 2004; Blume et al., 2007; Naschold, 2009; Hisnanick, 2011). Hardy and Hazelrigg (1995) showed that women, the elderly, the unemployed and the less educated had a higher chance of being in the lowest income group, and more importantly, that the minority ethnic/racial groups were at more risk of being in this category.

The present study shows that even after controlling for many of the above determinants- immigrant status, employment, education, composition of the household, urban and rural area of residence, province of residence, occupation, perception of own health- the minority Francophone population older than 65 years remained more likely to be in the poorest income quintile than their English-speaking counterparts. Francophone men were at an even higher risk of being poor.

These results suggest that language can be an important determinant for poverty of the elderly Francophone population living in situation of minority. To our knowledge this is the first time that language has been shown as a relevant determinant of poverty in this population.

This finding is not surprising, since language is the medium through which human beings communicate and grow intellectually and socially and determines who has access to educational, political and economic resources (Mompolowski, 2006). Despite the fact that English and French are the two official languages of Canada, Francophone communities living as a minority are often confronted with the inexistence of many services in their language (Forgues, et.al. 2011). The inaccessibility of services in the language of the minority group excludes those people who cannot speak and/or read and write in English (Bouchard, et al. 2012)

Additionally, poverty is strongly associated with poor health and subjective well-being (Kennedy et al. 1998; Sanmartin et al. 2006). Social inequality leads to unequal distribution of health (Siegrist and Marmot, 2006) with the population ranked at the lowest socioeconomic class having the poorest health situation (Marmot et al., 1978). In Canada, a study by Wilkins et al. (2008) revealed that mortality rates were elevated among those of lower socioeconomic status, regardless of whether status was determined by education, occupation or income. Furthermore, compared with people in higher-income deciles, those in lower-income deciles had fewer years of health-adjusted life expectancy (McIntoch et al., 2009) and were at a higher risk of suffering from chronic diseases (Raphael, 2002). Other related studies observed that the distribution of relevant chronic diseases and the risk for premature death were highest in the lowest socioeconomic category (Kitagawa and Hauser, 1973; WHO, 2011).

Having a greater proportion of Francophones in the poorest quintile of income in this age group might explain the fact that more Francophones perceived their health to be poor. Previous research has demonstrated that language and culture can be a barrier to health service access in Canada (Bowen, 2001), not only for First Nations and Inuits communities, immigrants and refugees, but also for Francophones and Anglophones living in a situation of linguistic minority.

Language, rather than cultural beliefs and practices of individuals, may likely be the most significant barrier to health service access. This barrier manifests itself in inadequate management of chronic disease and less access not only to physicians and hospital care but also to health promotion and prevention programs. Language barriers have also been shown to affect quality of care, rights of patients, patient and provider satisfaction, but more importantly health outcomes (Bowen, 2001).

The present study revealed that the elderly Francophone population outside Quebec is particularly vulnerable to social exclusion, due to lack of proficiency in English. The majority has very little schooling, approximately one third having only post secondary education. A large proportion of the population is in the poorest quintile of income demonstrating once again that poverty, low education and poor health are conditions associated with Francophones living in a situation of minority.

Conclusion

Francophone older than 65 years living in Canada outside the province of Quebec in a minority situation are poorer than their Anglophone counterparts, even after controlling for main determinants of income such as area and province of residence, immigration status, living alone, education, employment and health. Consequently, the lack of proficiency in English might be a determinant of poverty. This finding represents a new contribution for the evidence of social determinants of health.

The results from this study provide more evidence to inform social policies to reduce poverty and improve income especially for vulnerable populations. Improving income would also improve health outcomes.

Similarly, the higher prevalence of chronic disease in the elderly population having the poorest-income compared with the rest of the Canadian population of the same age group should be the subject of policy interventions particularly in relation to health care strategies taking into account language and communication support.

Further work could be done to investigate the impact of language on poverty. For instance, this work may be improved by comparing the income and health of the minority French-speaking aging population (over 65 years of age) to the majority English-speaking group in Canada at the provincial levels. Also, different age groups among seniors such as 65-75, 75-85 and 85 years and over could be examined. Unfortunately, at the current time, the sample size of the minority French-speaking aging population was not large enough in our study for performing these types of analysis.

Acknowledgment

This research was funded by the Réseau de Recherche Appliquée sur la Santé des Francophones de l'Ontario (RRASFO), an initiative of the Ministry of Health and Long Term Care (Ontario).

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APPENDIX:

Dictionary of Variables

Appendix: Dictionary of variables

Variables	*Labels*	*Definitions*
Language	LANG	= 1 for Francophones and 0 for Anglophones. Diagram 1 shows how the sample divided to French and English speaking groups.
Language of conversation		= "English" if the individual can converse English, = "French" if the individual can converse French, = "English and French" if the individual can converse French and English, = "other" if the individual can converse neither French nor English.
Mother tongue		= "English" if the individual's spoken language at home is English, = "French" if the individual's spoken language at home is French, = "English and French" if the individual's spoken languages at home are French and English, = "other" if the individual's spoken language at home is neither French nor English.
Language of interview		= "English" if the individual's language of interview is English, = "French" if the individual's language of interview is French, = "other" if the individual's language of interview is neither French nor English.
Preferred language of interview		= "English" if the individual's language of preference in the household interview is English, = "French" if the individual's language of preference in the household interview is French, = "other" if the individual's language of preference in the household interview is neither French nor English.
Socio-demographic factors		
Being in the poorest income quintile	Low QI	= 1 if the individual is in the low income quintile according to one of the survey variable. This variable is adjusted for size of the household and provinces by Statistics Canada.
Urban	Urban	= 1 if the individual lives in an urban area, = 0 if the individual lives in a rural area.
Immigrants	Immigrants	=1 if the individual is an immigrant, otherwise = 0.
Person living alone	Alone	= 1 if the individual lives alone, otherwise = 0.
Province	Province	
British Columbia		British Columbia = 1, otherwise = 0. (The reference group)
Alberta		Alberta = 1, otherwise = 0.
Saskatchewan		Saskatchewan = 1, otherwise = 0.
Manitoba		Manitoba = 1, otherwise = 0.
Ontario		Ontario = 1, otherwise = 0.
Quebec		Quebec = 1, otherwise = 0.
New Brunswick		New Brunswick = 1, otherwise = 0.

Nova Scotia		Nova Scotia = 1, otherwise = 0.
Prince Edward Island		Prince Edward Island = 1, otherwise = 0.
Newfoundland and Labrador		Newfoundland and Labrador = 1, otherwise = 0.
Education	Edu	
Less than secondary degree		= 1 if the individual's education is less than secondary degree, otherwise = 0. (The reference group)
High School Diploma/Secondary degree		= 1 if the individual has a secondary degree, otherwise = 0.
Postsecondary education without a diploma /college		= 1 if the individual's education is postsecondary education without a diploma /college degree, otherwise = 0.
Diploma or certificate from university		= 1 if the individual has a diploma or certificate from university , otherwise = 0.
Employment	Job	
Currently not working at a job		= 1 if the individual does not currently work, otherwise = 0.
Health	Health	
Perceived health		
Poor		= 1 if the individual's perceived health is poor, otherwise= 0. (The reference group)
Fair		= 1 if the individual's perceived health is fair, otherwise= 0.
Good		= 1 if the individual's perceived health is good, otherwise= 0.
Very good		= 1 if the individual's perceived health is very good, otherwise= 0.
Excellent		= 1 if the individual's perceived health is excellent, otherwise= 0.
Restriction of activities		
Never		= 1 if the individual does not have any restriction of activities, otherwise= 0. (The reference group)
Sometimes		= 1 if the individual has sometimes restriction of activities, otherwise= 0.
Often		= 1 if the individual has often restriction of activities, otherwise= 0.
Chronic diseases		
Asthma		= 1 if the individual has asthma, otherwise= 0.
Arthritis		= 1 if the individual has arthritis, otherwise= 0.
Back problems		= 1 if the individual has back problem, otherwise= 0.
Blood pressure		= 1 if the individual has blood pressure, otherwise= 0.
Migraine		= 1 if the individual has had migraine, otherwise= 0.

COPD	= 1 if the individual has COPD (chronic bronchitis, emphysema or chronic obstructive pulmonary disease), otherwise= 0.
Diabetes	= 1 if the individual has diabetes, otherwise= 0.
Heart disease	= 1 if the individual has heart disease, otherwise= 0.
Cancer	= 1 if the individual has had cancer, otherwise= 0.
Ulcers	= 1 if the individual has ulcers, otherwise= 0.
Stroke	= 1 if the individual has had stroke, otherwise= 0.
Bowel disorder	= 1 if the individual has bowl disorder, otherwise= 0.